Aurora EMS Protocols

Authorized Version of
Denver Metropolitan Prehospital Protocols

This version is effective January 24, 2022
The Aurora EMS Protocols are based on the Denver Metro EMS Protocols. The Denver Metro
EMS Protocols are updated twice annually, and the Aurora EMS Protocols will follow this
process.

The medical oversight for the Aurora EMS system is performed by the Prehospital Care
Consortium (PCC), which is comprised of members from Aurora Fire Rescue, Falck Rocky
Mountain, the AFR Medical Director, 3 Assistant Medical Directors, and EMS Managers
representing the hospitals in the community. The PCC participates in protocol development,
training, and the Quality Assurance and Quality Improvement for Aurora Fire Rescue.

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Aurora Fire Rescue would like to thank the members of the PCC for their dedication and
expertise to support the Aurora EMS system.
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INTRODUCTION

The following protocols have been developed and approved by the Medical Director and Assistant Medical Directors of Aurora Fire Rescue. These protocols are based on the Denver Metro EMS Protocols developed by the Denver Metro EMS Medical Directors Group. These protocols define the standard of care for EMS providers in the City of Aurora, and delineate the expected practice, actions, and procedures to be followed.

No protocol can account for every clinical scenario encountered, and the Medical Directors recognize that in rare circumstances deviation from these protocols may be necessary and in a patient’s best interest. Variance from protocol should always be done with the patient’s best interest in mind and backed by documented clinical reasoning and judgment. Whenever possible, prior approval by direct verbal order from base station physician is preferred. Additionally, all variance from protocol should be documented and submitted for review by the agency’s Medical Director in a timely fashion.

The protocols are presented in an algorithm format. An algorithm is intended to reflect real-life decision points visually. An algorithm has certain limitations, and not every clinical scenario can be represented. Although the algorithm implies a specific sequence of actions, it may often be necessary to provide care out of sequence from that described in the algorithm if dictated by clinical needs. An algorithm provides decision-making support but need not be rigidly adhered to and is no substitute for sound clinical judgment.

In order to keep protocols as uncluttered as possible, and to limit inconsistencies, individual drug dosing has not been included in the algorithms. It is expected the EMTs will be familiar with standard drug doses. Drug dosages are included with the medications section of the protocols as a reference.

If viewing protocol in an electronic version, it will be possible to link directly to a referenced protocol by clicking on the hyperlink, which is underlined.

PROTOCOL KEY

Boxes without any color fill describe actions applicable to all certification levels. Blue filled boxes are for Paramedic level. When applicable, actions requiring Base Contact are identified in the protocol.

- Teaching points

Teaching points deemed sufficiently important to be included in the protocol are separated into grey-filled boxes with a double line border.

TRAINING AND EDUCATION

These protocols define the treatments, procedures, and policies approved by the Medical Director for Aurora Fire Rescue. In Colorado, the scope of practice and acts allowed for EMT, EMT-IV, AEMT, EMT-I and Paramedic certifications are defined by the Colorado Department of Public Health and Environment, Chapter Two - Rules Pertaining to EMS Practice and Medical Director Oversight. These protocols do not supersede Chapter Two allowances unless approved by a waiver from the EMPAC, but in some instances may vary from Chapter Two depending on medical directors’ preference.

The curriculum for initial EMS provider training may not cover some of the treatments, procedures and medications included in these protocols. Therefore, it is the responsibility of the EMS agency and Medical Director to ensure the initial training, verification, and maintenance of these skills falling outside traditional EMS education with all agency providers.
INTRODUCTION

For the purposes of these clinical care protocols, the following age guidelines will be used. These are general guidelines, however individual protocols, including medication dosages, may deviate from these age ranges.

ADULT

Adult patients are considered 12 years of age or older.

GERIATRICS

Geriatric patients will be considered 65 years of age or older. Geriatric specific indications will be indicated by a green box.

PEDIATRICS

Pediatric patients are those less than 12 years of age. Infant is defined as less than 1 year of age. Neonate is defined as less than one month of age. Pediatric specific indications will be noted by a purple box.
CONFIDENTIALITY

A. The patient-physician relationship, the patient-registered nurse relationship, and the patient-EMT relationship are recognized as privileged. This means that the physician, nurse, or EMT may not testify as to confidential communications unless:

1. The patient consents
2. The disclosure is allowable by law (such as Medical Board or Nursing Board proceedings, or criminal or civil litigation in which the patient's medical condition is in issue)

B. The prehospital provider must keep the patient's medical information confidential. The patient likely has an expectation of privacy, and trusts that personal, medical information will not be disclosed by medical personnel to any person not directly involved in the patient's medical treatment.

1. Exceptions
   i. The patient is not entitled to confidentiality of information that does not pertain to the medical treatment, medical condition, or is unnecessary for diagnosis or treatment.
   ii. The patient is not entitled to confidentiality for disclosures made publicly.
   iii. The patient is not entitled to confidentiality with regard to evidence of a crime.

C. Additional Considerations:

1. Any disclosure of medical information should not be made unless necessary for the treatment, evaluation or diagnosis of the patient.
2. Any disclosures made by any person, medical personnel, the patient, or law enforcement should be treated as limited disclosures and not authorizing further disclosures to any other person.
3. Any discussions of prehospital care by and between the receiving hospital, the crewmembers in attendance, or at in-services or audits which are done strictly for educational or performance improvement purposes, will fall under the “Carol J. Shanaberger Act” Colorado Revised Statutes §25-3.5-901 et seq., provided that all appropriate criteria have been met for the agencies peer protection program. Further disclosures are not authorized.
4. Radio communications should not include disclosure of patient names.
5. This procedure does not preclude or supersede Aurora Fire Rescue’s HIPAA policy and procedures.
6. Any communication from the prehospital setting to the receiving hospital or other facility or care provider should be kept in compliance with HIPAA including all smart technology, SMS messaging, wireless communication or otherwise. No personal identifier information should be transmitted over non-HIPAA compliant secure means.
0030 GENERAL GUIDELINES: CONSENT

**General Principles**
- An adult in the State of Colorado is 18 years of age or older.
- Every adult is presumed capable of making medical treatment decisions. This includes the right to make "bad" decisions that the prehospital provider believes are not in the best interests of the patient.
- A call to 9-1-1 itself does not prevent a patient from refusing treatment. A patient may refuse medical treatment (IVs, oxygen, medications), but you should try to inform the patient of the need for therapies, offer again, and treat to the extent possible.
- The odor of alcohol on a patient's breath does not, by itself, prevent a patient from refusing treatment.

**Involuntary Consent**
In rare circumstances a person other than the patient may authorize consent. This may include:
- Court order (Guardianship)
- Law enforcement officer may authorize transport of prisoners in custody or detention in order to be evaluated but cannot dictate treatment decisions.
- Persons under a mental health hold or commitment who are a danger to themselves or others or are gravely disabled.
- It is sufficient to assume the patient lacks decision-making-capacity if there is a reasonable concern when any person appears to have a mental illness and, as a result of such mental illness, appears to be an imminent danger to others or to himself or herself or appears to be gravely disabled. Effort should be made to obtain consent for transport from the patient, and to preserve the patient's dignity throughout the process. However, the patient may be transported over his or her objections and treated under involuntary consent if the patient does not comply.

**Contact Base** if there are any questions or concerns about decision-making-capacity.
General Principles: Minors

A. A parent, including a parent who is a minor, may consent to medical or emergency treatment of his/her child. There are exceptions:
   1. Neither the child nor the parent may refuse medical treatment on religious grounds if the child is in imminent danger as a result of not receiving medical treatment, or when the child is in a life-threatening situation, or when the condition will result in serious handicap or disability.
   2. The consent of a parent is not necessary to authorize hospital or emergency health care when an EMT in good faith relies on a minor's consent, if the minor is at least 15 years of age and emancipated or married.
   3. Minors may seek treatment for abortion, drug addiction, and venereal disease without consent of parents. Minors > 15 years may seek treatment for mental health.

B. When in doubt, your actions should be guided by what is in the minor's best interests and BASE CONTACT.

Procedure: Minors

A. A parent or legal guardian may provide consent to or refuse treatment in a non-life-threatening situation.

B. When the parent is not present to consent or refuse:
   1. If a minor has an injury or illness, but not a life-threatening emergency, you should attempt to contact the parent(s) or legal guardian. If this cannot be done promptly, transport.
   2. If the child does not need transport, they can be left at the scene in the custody of a responsible adult (e.g., teacher, social worker, grandparent). It should only be in very rare circumstances that a child of any age is left at the scene if the parent is not also present.
   3. If the minor has a life-threatening injury or illness, transport and treat per protocols. If the parent objects to treatment, CONTACT BASE immediately and treat to extent allowable, and notify law enforcement to respond and assist.
Purpose
A. To provide guidelines for prehospital personnel who encounter a physician at the scene of an emergency

General Principles
A. The prehospital provider has a duty to respond to an emergency, initiate treatment, and conduct an assessment of the patient to the extent possible.
B. A physician who voluntarily offers or renders medical assistance at an emergency scene is generally considered a "Good Samaritan." However, once a physician initiates treatment, he/she may feel a physician-patient relationship has been established.
C. Good patient care should be the focus of any interaction between prehospital care providers and the physician.

Procedure
A. See algorithm below and sample note to physician at the scene

Special notes
A. Every situation may be different, based on the physician, the scene, and the condition of the patient.
B. CONTACT BASE when any question(s) arise.
NOTE TO PHYSICIANS ON INVOLVEMENT WITH EMS PROVIDERS

THANK YOU FOR OFFERING YOUR ASSISTANCE.

The prehospital personnel at the scene of this emergency operate under standard policies, procedures, and protocols developed by their Medical Director. The drugs carried and procedures allowed are restricted by law and written protocols. After identifying yourself by name as a physician licensed in the State of Colorado and providing identification, you may be asked to assist in one of the following ways:

1. Offer your assistance or suggestions, but the prehospital care providers will remain under the medical control of their base physician, or
2. With the assistance of the prehospital care providers, talk directly to the base physician and offer to direct patient care and accompany the patient to the receiving hospital. Prehospital care providers are required to obtain an order directly from the base physician for this to occur.

THANK YOU FOR OFFERING YOUR ASSISTANCE DURING THIS EMERGENCY.

Medical Director

Agency
PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM

EMS arrives on scene

EMT attempts patient care

Physician reports on patient and relinquishes patient care
Provide care per protocol

Physician wants to help or is involved in or will not relinquish patient care
Prehospital provider identifies self and level of training

Physician willing to just help out
Provide general instructions and utilize physician assistance

Physician requests or performs care inappropriate or inconsistent with protocols
Shares Physician at the Scene/Medical Direction Note with physician and advise physician of your responsibility to the patient

Physician does not relinquish patient care and continues care inconsistent with protocols

CONTACT BASE for Medical Consult

Physician complies
Provide care per protocol
0050 GENERAL GUIDELINES: FIELD PRONOUNCEMENT

Purpose
A. To provide guidelines for resuscitation and field pronouncement of patients in cardiac arrest in the prehospital setting. EMS may transport any patient perceived to be viable, or if scene dynamics or public perception necessitates transport.

General Principles
A. Agency policy determines base contact requirements for patients for whom resuscitation efforts are being withheld.
B. Medical Arrest:
   1. EMS providers should try their best to determine a patient’s end-of-life wishes and honor them. Refer to Advanced Medical Directives protocol for discussion of advanced directives and decision making about appropriateness of performing or withholding resuscitation efforts.
      a. Do not attempt resuscitation for patients with a “No CPR” directive based on the patient’s wishes or compelling reasons to withhold resuscitation as covered in Advanced Medical Directives protocol.
      b. Do not attempt resuscitation for patients with definite signs of death, such as dependent lividity, rigor mortis, decomposition.
   2. For medical arrests, Field Pronouncement can be made under standing order per the Medical Director when patient is pulseless and apneic with definite signs of death (dependent lividity, rigor mortis, decomposition). Documentation in medical record must clearly document all of the criteria used to make the pronouncement.
C. Traumatic Arrest:
   1. Do not attempt resuscitation if there is evidence of a non-survivable injury and no sign of life. Examples of non-survivable injuries include decapitation, evidence of massive head, chest, or abdominal trauma, or massive burn with charring.
   2. Blunt trauma: consider field pronouncement if there are no signs of life. Signs of life include spontaneous movement, breathing, presence of a pulse, or reactive pupils.
   3. Penetrating trauma: consider field pronouncement if there are no signs of life, and the arrest duration is suspected to be > 10 minutes.
   4. For trauma arrests, Field Pronouncement can be made under standing order per the Medical Director when the patient has non-survivable injuries as noted above, or if the criteria for no signs of life are met for blunt and penetrating arrest as noted above. Documentation in the medical record must clearly document all of the exam criteria used to make the pronouncement.
5. Exceptions to the above recommendations to consider field pronouncement include arrests with the following mechanisms/scenarios:
   a. Hypothermic arrest
   b. Drowning w/ hypothermia and submersion < 60 min
   c. Lightning strike and electrocution
   d. Avalanche victim
   e. Pregnant patient with estimated gestational age ≥20 weeks
Purpose
A. To provide guidelines for termination of resuscitation for patients in medical pulseless arrest in the prehospital setting. EMS may transport any patient perceived to be viable, or if scene dynamics or public perception necessitates transport.

General Principles
A. Resuscitate according to Medical Pulseless Arrest Algorithm on scene (unless unsafe) until one of the following endpoints is met:
   1. Return of spontaneous circulation (ROSC).
   2. No ROSC despite 30 minutes of ALS care or BLS care with an AED. If shockable rhythm still present, continue resuscitation and transport to closest emergency department.
   3. Contact base for TOR at any point if the effort is considered futile despite adequate CPR with ventilation and no reversible causes have been identified.
B. For BLS-only providers, contact base for TOR when all of the following criteria met:
   1. No AED shock advised
   2. No ROSC
   3. Arrest unwitnessed by either EMS or bystanders
   4. No bystander CPR before EMS arrival
C. The following patients found pulseless and apneic warrant resuscitation efforts beyond 30 minutes and should be transported:
   1. Hypothermic arrest
   2. Drowning w/ hypothermia and submersion < 60 min
   3. Lightning strike and electrocution
   4. Avalanche victim
   5. Pregnant patient with estimated gestational age ≥20 weeks
D. Once the patient is pronounced, they become a potential coroner’s case. From that point on the patient should not be moved and no clothing or medical devices (lines, tubes etc.) should be removed or altered pending coroner evaluation.
0060 General Guidelines: Advanced Medical Directives

General Principles:

1. These guidelines apply to both adult and pediatric patients.
2. It is the intention of this guideline to protect the welfare of patients and to respect the appropriate exercise of professional judgments made in good faith by EMS personnel. In cases where there is doubt, contact base physician for consult.
3. From Colorado State Statute: Any EMS personnel who in good faith complies with a CPR directive shall not be subject to civil or criminal liability or regulatory sanction for such compliance pursuant to CRS Section 15-18.6-104.
4. EMS providers should try their best to determine a patient’s end-of-life wishes and honor them. These wishes may not be written down or documentation may be unavailable. In cases where no documentation exists, consider if compelling reasons to withhold resuscitation exist. Example of compelling reasons to withhold resuscitation may include when written information is not available, yet the situation suggests that the resuscitation effort will be futile, inappropriate, and inhumane and the family, life partner, caregiver, or healthcare agent indicates that the patient would not wish to be resuscitated.
5. Specific examples where resuscitation efforts should be withheld or stopped include:
   a. A readily available “No CPR” directive based on the patient’s wishes:
      i. According to CO State Rules this could include: personally written directive, wallet card, “No CPR” bracelet, Healthcare Agent verbal request, MOST form, or other document or item of information that directs that resuscitation not be attempted. Photocopied, scanned, faxed copies are valid.
   b. The resuscitation may be stopped if after a resuscitation effort has been initiated, the EMS practitioner is provided with a Do Not Resuscitate directive or compelling reasons that such an effort should have been withheld.
   c. Suspected suicide does not necessarily invalidate an otherwise valid No CPR directive, DNR order, etc. When in doubt, contact base.
6. “Do Not Resuscitate” does not mean “do not care.” A dying patient for whom no resuscitation effort is indicated should still be provided with comfort care which may include the following:
   a. Clearing the airway (including stoma) of secretions.
   b. Provide oxygen using nasal cannula or facemask and other non-invasive measures to alleviate respiratory distress.
   c. Pain management.
   d. Transport to the hospital as needed to manage symptoms with the No CPR directive in place.

Additional Considerations

1. Document the presence of the CPR Directive on the incident report. Describe the patient’s medical history, presence of an advanced directive (if any), or verbal request to withhold resuscitation.
2. Mass casualty incidents are not covered in detail by these guidelines.
3. If the situation appears to be a potential crime scene, EMS providers should disturb the scene as little as possible and communicate with law enforcement regarding any items that are moved or removed from the scene.
4. Mechanisms for disposition of bodies by means other than EMS providers and vehicles should be prospectively established in each county or locale.
5. In all cases of unattended deaths occurring outside of a medical facility, the coroner should be contacted immediately.
0070 GENERAL GUIDELINES: PATIENT DETERMINATION: “PATIENT OR NO PATIENT”

General Guidelines

This protocol is intended to refer to individual patient contacts. In the event of a multiple party incident, such as a multi-vehicle collision, it is expected that a reasonable effort will be made to identify those parties with acute illness or injuries. Adult patients indicating that they do not wish assistance for themselves or dependent minors in such a multiple party incident do not necessarily require documentation as patients.

No protocol can anticipate every scenario and providers must use best judgment. When in doubt as to whether individual is a “patient”, err on the side of caution and perform a full assessment and documentation.

Person is a minor (Age < 18 yrs)

Yes

Person lacks decision-making capacity (Refer to consent protocol)

No

Acute illness, injury, or intoxication suspected based on appearance, MOI, etc

Yes

Person has a complaint resulting in a call for help

No

3rd party caller indicates individual is ill, injured or gravely disabled

Yes

Individual meets definition of a Patient (PCR Required)

No

Person does not meet definition of a patient, and does not require PCR or refusal of care

Yes

Able to safely assess and provide care?

Refer to psychiatric/behavioral and agitated/combative protocols

Standard care per protocol

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A person who has decision-making capacity may refuse examination, treatment, and transport

Refer to General Guidelines: Consent for complete decision-making-capacity guidelines

If in doubt about patient decision-making-capacity, CONTACT BASE for physician consult.

Documentation Requirements for Refusal
- Confirm decision-making-capacity
- EMS assistance offered and declined
- Risks of refusal explained to patient
- Patient understands risks of refusal
- Name of Base Station physician authorizing refusal of care unless standing order refusal
- Signed refusal of care against medical advice document, if possible
- Any minor with any complaint/injury is a patient and requires a PCR

0080 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL

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**Purpose**

A. To provide a standard approach to EMS destination decision making that is practical for field use and maintains equity for patients, EMS, and hospitals.

B. To facilitate unobstructed access to hospital emergency departments (ED) for ambulance patients

C. To allow for optimal destination policies in keeping with general EMS principles and Colorado State Trauma System Rules and Regulations.

**General EMS Principles**

A. EMResource, an internet-based tracking system, is used to manage diversion in the Denver Metro area. The EMResource screen should be routinely monitored for situational awareness of ED capacities to receive patients.

B. The RETAC Prehospital Trauma Triage Algorithm Guidelines should be followed

C. The only time an ambulance can be diverted from a hospital is when that hospital is posted on EMResource as being on official **ED Divert (RED)** or **Closed (BLACK)** status.

D. The following are appropriate reasons for an EMS provider to **override** **ED Divert (RED)** and, therefore, deliver a patient to an emergency department that is on **ED Divert** status:

1. All alerts (trauma, cardiac, stroke, sepsis, etc), cardiac arrests, imminent OB or imminent airway emergencies.
2. Specially care needs such as pediatric, obstetric, and burn patients
3. If the patient’s condition and/or system constraints do NOT allow transport to a hospital outside of the EMS agency’s service area.
4. EMS providers always have the discretion to override and transport to the closest facility if they determine the patient’s condition warrants.

E. There are EMResource notifications that are considered **Advisory (YELLOW)** or **Critical (ORANGE)**. These notifications are informational only and are intended to inform field personnel that a hospital on an **Advisory** or **Critical** status may not be able to optimally care for a patient due to a specific resource limitation (such as Psych, ICU) or overall capacity limitation in the availability of staffed ED beds (ED)

F. Prehospital personnel should take into consideration hospital ED capacity notifications, when possible considering the patient’s condition, travel time, weather, and system constraints. Patients with specific problems that fall under a specific resource limitation (such as Psych) should be transported to a hospital not experiencing that resource limitation when feasible.

G. The following resource limitations may be seen with **Advisory (YELLOW)** or **Critical (ORANGE)** and listed in the Comment section of EMResource:

   1. ICU (Intensive Care Unit)
   2. Psych (Psychiatric)
   3. OB (Obstetrics)
   4. OR (Operating Room)
   5. Trauma, Stroke, STEMI
   6. ED (Emergency Department staffed beds)

**EMResource Hospital ED Load Leveling Rotation Board Notifications**

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>&lt;80% Staffed ED beds occupied</td>
</tr>
<tr>
<td>Advisory</td>
<td>80-100% Staffed ED beds occupied</td>
</tr>
<tr>
<td>Critical</td>
<td>&gt;100% of staffed ED beds occupied and &gt;1 ESI2 patient unable to be roomed</td>
</tr>
<tr>
<td>Divert</td>
<td>&gt;120% of staffed ED beds occupied and &gt;1 ESI2 patient unable to be roomed and no longer able to safely care for high acuity patients, OR department discretion due to acute incident</td>
</tr>
<tr>
<td>Closed</td>
<td>Unable to care for patients due to infrastructure damage, active shooter, etc</td>
</tr>
</tbody>
</table>
Denver Metro Patient Load Leveling Guideline

A. All hospitals and free-standing emergency departments (FSED) are grouped in EMResource by regions. The Denver Metro area consists of North, East, West, South, Central, and Boulder regions.
   1. **Regional Saturation** exists when all hospitals within a region are either on Critical (ORANGE) or ED Divert (RED) status excluding FSED.

B. The following guidelines are to be considered when one Denver Metro region experiences **Regional Saturation**.
   1. All Denver Metro dispatch centers track hospital destinations in the EMResource Hospital ED Load Leveling Rotation Board view to establish a real time rolling count of 911 EMS transports to hospitals over a 24-hour period. This would begin at the time of regional saturation to 08:00 the following day, then repeat at 24-hour time intervals until the Critical (ORANGE) and/or ED Divert (RED) regional saturation is resolved.
   2. Dispatch centers may restructure facilities on the EMResource Hospital Load Leveling Rotation Board view to accommodate the distribution of patients to hospitals within their geographic area.
   3. FSED are not included in hospital destination tracking or the hospital ED load leveling rotation board. However, to decrease the burden on hospitals, EMS providers are encouraged to transport appropriate patients per FSED protocol.
   4. The closest appropriate hospital destinations will still apply for patients meeting criteria for overriding ED Divert (RED) as outlined in this protocol.
   5. Hospital distribution of stable patients not meeting ED Divert (RED) override criteria are considered in the Hospital ED Load Leveling Board procedure as per EMResource Hospital ED Load Leveling Board Instructions.
   6. Patients may be transported out of the primary region at the EMS providers discretion, if it is in the patient’s best interest and the EMS system constraints allow. Likewise, EMS providers always have the discretion to override the load leveling board and transport to the closest facility if they determine the patient’s condition warrants.
   7. A hospital that experiences a significant infrastructure issue such as loss of power, flooding, etc. preventing the facility from receiving patients, it should be listed as Closed (BLACK) status in EMResource and be exempt from load leveling until functional again.
**Purpose:**

The purpose of the EMResource Hospital ED Load Leveling Board is to ensure timely ambulance destination assignments within a region (zone) and avoiding significant travel distance for an EMS service transporting a patient to hospital. This will ONLY be utilized when ALL HOSPITALS are either on ED Divert (RED) or Critical (ORANGE) within a particular region. Freestanding emergency departments (FSED) will not be used in the rotation nor does this apply to ED advisories and thus will not need to be tracked. Once all hospitals in a region are on ED Divert or Critical, patient transports by EMS will be distributed in an equitable fashion across facilities as determined through the coordination with local dispatch centers, EMS agencies, and hospitals in a region. When the load leveling procedure is activated, EMS patient transports to hospital emergency departments will be tracked on the EMResource Hospital ED Load Leveling Board.

The following situations (which exist under all circumstances) remain intact and override load leveling:

1. All alerts (trauma, cardiac, stroke, sepsis, etc.), cardiac arrests, imminent OB or imminent airway emergencies.
2. Specialty care needs such as pediatric, obstetric, and burn patients.
3. If the patient’s condition and/or system constraints do NOT allow transport to a hospital outside of the EMS agency’s service area.
4. EMS providers always have the discretion to override and transport to the closest facility if they determine the patient’s condition warrants.

Free-standing emergency departments (FSED) should be utilized for transport of all appropriate patients as delineated by agency protocols and local medical direction.

After the hospital ED load leveling process is begun, all EMS providers, dispatch centers and Emergency departments should have constant monitoring of the EMResource screen. As per local protocol, the EMS provider may continue to use their current local dispatch centers for communication and patient destination decisions if EMResource is not available on scene. Once Regional Saturation is triggered, the dispatch center will open the EMResource screen under the “view” tab. The EMResource Hospital ED Load Leveling Board will continually and automatically sort facilities within a region and list the “next up hospital” on the top of the list for that region.

1. Once you log into EMResource, click on “View”
2. Scroll down the list and find the “Hospital ED Load Leveling” and click.

3. Find the region that your ambulance is transporting to. The hospital that is eligible for the next patient will automatically be sorted to the top of the list by the Hospital Rotation Board.

PSAP/EMS should notify transporting ambulance of “Next Up” status and await ambulance destination decision. Click in the area of the “Hospital Next” Column on the dash (--) or number to assign a patient to the next up hospital. This will bring up the popup box for you to enter the number of patients and any comments, which are optional. Click SAVE.
4. The number you enter should be how many patients that are being transferred by that ambulance. So, if the number was a three and you are transferring one patient enter a four. If the number was a five and you are transferring two patients in the ambulance enter the number 7. Comments are not required. Click SAVE to exit.

5. The facility you just entered a number for will go to the bottom of the list. If it was a higher number than the rest, it will stay out of the rest of the rotation.

6. Now it’s time to move on to the next facility in the rotation and complete steps 1 through 5 again.

MCI Events – In case a MCI Event occurs, hospitals will be requested to input appropriate numbers for Red, Yellow, and Green patients that they are willing to accept above any Hospital ED Load Leveling in place. Hospitals entering numbers will receive patients. Hospitals may elect to enter zeros (0) depending on their status. After hospitals entering numbers have been exhausted, the ED Load Leveling plan will be utilized for remaining patients.
Purpose
A. To provide guidelines for the reporting of suspected abuse patients.

Definition of Abuse:
A. Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation OR an act or failure to act which presents an imminent risk of serious harm.
B. An at-risk elder or at-risk adult with intellectual and developmental disability per Colorado Revised Statutes §18-6.5-102, or child who are suspected to be victims of abuse, neglect, or exploitation, as defined in Colorado Revised Statutes §19-3-304, should be reported in a manner consistent with agency guidelines/procedures in a timely manner. Any “suspected” or known incident of abuse, neglect, or exploitation must be reported.

Types of Abuse:
A. Types of maltreatment:
   1. neglect (majority of cases)
   2. physical abuse
   3. sexual abuse
   4. emotional abuse
   5. exploitation

Role of Mandated Reporter:
A. A mandatory reporter has reasonable cause to know or suspect that someone has been subjected to abuse, neglect, or exploitation. At time of concern, report the information to the department of human services (DHS) where the patient lives and/or if there is concern that the person is at risk in their own home, and to law enforcement where the crime was committed
B. Mandatory reporters that do not report abuse, neglect, or exploitation can be:
   1. Charged with a class 3 misdemeanor
   2. Liable for damages proximately caused by failing to report

What to report:
A. The name, address, age, sex, and race of the child, at-risk elder, or at-risk adult with intellectual and developmental disability
B. The name(s) and address(es) of the person(s) responsible for the suspected abuse, neglect, or exploitation—if known
C. A description of the concern(s).
D. The nature and extent of any injuries—if known
E. The family composition, including any siblings or others in the household
F. The name, address and/or contact phone number, and occupation of the person making the report
G. Any other information reporting person feels is important.

Additional Information:
A. An at-risk elder or at-risk adult with intellectual and developmental disability (per Colorado Revised Statutes §18-6.5-102), or child who are suspected to be victims of abuse, neglect, or exploitation, as defined in Colorado Revised Statutes §19-3-304, should be reported in a manner consistent with agency guidelines/procedures within 24 hours.
B. Any “suspected” or known incident of abuse, neglect, or exploitation must be reported.
C. Protecting patient confidentiality does not legally justify a failure to report
D. There is established immunity for reporters “acting in good faith”
E. For children, the Colorado Child Abuse and Neglect (CCAN) Hotline is 844-CO-4-KIDS (844-264-5437)
F. For Adults, report the incident to Adult Protective Services (APS) for county the incident occurred in
G. Report the incident to the Community Health Officer (in addition to APS & CCAN)
Colorado Department of Human Services web page:
- CDHS APS website: https://cdhs.colorado.gov/aps

Adams County
- APS Phone: 720-523-2057
- APS website: https://www.adcogov.org/adult-protection-services

Arapahoe County
- APS website: https://www.arapahoegov.com/390/Adult-Protection
- APS Phone: 303-636-1750

Douglas County
- APS website: https://www.douglas.co.us/community/protective-services/adult-protective-services/
- APS Phone: 303-663-6270

Denver County
- APS website: https://www.denvergov.org/content/denvergov/en/police-department/safety-prevention/At-RiskPersons.html
- APS Phone: 720-944-2994

Elbert County
- APS website: https://www.elbertcounty-co.gov/207/Adult-Protective-Services
- APS Phone (business hours): 303-621-3149, option 8 (Mon-Fri: 8am-5pm)
- APS Phone (after hours): 303-660-7500 "For after-hours reports of adult abuse or neglect, please call Douglas County Regional Dispatch."

County Map Reference:
- https://www.google.com/maps/d/viewer?mid=15C5-O3Pt28PZ8axPFxRT-ANhon-w6N7&ll=39.685591591053694%2C-104.66976933776611&z=12
Purpose

A. A freestanding emergency department (FSED) is a facility that is structurally separate and distinct from a hospital and provides emergency care. There are two types of FSEDs:
   1. A hospital outpatient department (HOPD), also referred to as an off-site hospital-based or satellite emergency department (ED), these may be either hospital owned or hospital affiliated.
   2. The second type of FSED is the independent freestanding emergency centers (IFECs).

B. The number of FSEDs is increasing rapidly with an ever-changing regulatory and health care environment. These facilities have various capability and capacity and the range of accepting ambulance patient is also variable.

C. Hospital-affiliated free-standing emergency departments accepting EMS traffic include:
   - Southlands ER (FSED for Parker Adventist)
   - Sky Ridge South Parker ER (FSED for Sky Ridge)

Recommendations

A. Hemodynamically stable patients may be considered for transport to a hospital-affiliated FSED with the following exceptions:
   1. No OB patients > 20 weeks estimated gestational age
   2. No trauma patients meeting RETAC trauma center destination guidelines.
   3. No alerts (e.g. STEMI, Stroke, Sepsis).
   4. No unstable cardiac arrhythmias
   5. No post-cardiac arrest patients with ROSC unless uncontrolled airway

B. Give consideration to the fact that elderly patients often require hospitalization for conditions such as falls, generalized weakness, dehydration, syncope. These patients should be targeted for full function hospital to avoid secondary transport

C. A psychiatric patient may exceed the capability of the FSED. The facility may not have security available or be able to provide psychiatric evaluation. These patients should be transported to facilities with the capabilities to meet patient’s needs.

D. When time and conditions allow, patients whom pre-hospital providers presume to require inpatient management may be transported to a hospital emergency department to avoid subsequent patient transfers.
Background:
1. Emergent ("lights and sirens") transport of patients has not been demonstrated to improve patient outcomes.
2. Emergent patient transports place EMS providers and the public at risk.

Emergent patient transports should be reserved for situations that meet the following two criteria.

1. Patient has injury or illness that requires emergent hospital intervention not immediately available to the EMS providers.

AND

2. Benefit to the patient of emergent transport outweighs risks to the patient, EMS providers, and the public that are created by emergency transport.

Criteria 1
Patient has injury or illness that may require emergent hospital intervention.

Examples:
1. Airway
   a. Inability to establish or maintain a patent airway
   b. Upper airway stridor
2. Breathing
   a. Severe respiratory distress
3. Circulation
   a. Cardiac Arrest
   b. Hemodynamic instability
   c. Severe, uncontrolled hemorrhage
4. Neurologic
   a. GCS <8
   b. Seizure activity unresponsive to treatment
5. Obstetric
   a. Complicated Delivery
6. Trauma
   a. Penetrating/blunt trauma to head, neck, or torso
   b. Two or more suspected proximal long bone fractures with symptoms of shock or absence of distal pulses after manipulation

Criteria 2
Benefit to the patient of emergent transport outweighs risks to the patient, EMS providers, and the public that are created by emergency transport.

Notes:
- In most situations time saved by emergent transport will not outweigh risks when transport time is short (< 10 minutes)
- Emergent transport should never be used solely to "get the attention" of the receiving facility.
- The decision to transport emergent should be made jointly by the primary treating EMS provider (who must consider patient condition and availability of treatments enroute) and the Emergency vehicle operator (who must consider time of day, anticipated transport time, and road/traffic conditions at time of call).
2020 MHRETAC Prehospital Trauma Triage Algorithm Guideline
Adult Patients (Ages 15 and older)

UNABLE TO ADEQUATELY VENTILATE

NO

ANY PHYSIOLOGIC CRITERIA
1. Intubation or assisted ventilation
2. Respiratory rate < 10 or > 29
3. Systolic BP < 90 or <110 for age 65 plus
4. GCS motor score ≤ 5

YES

Transport to the most rapidly accessible appropriate medical facility

NO

ANY ANATOMIC CRITERIA
Known or Suspected:
1. Penetrating injuries to the head, neck, torso or extremities above the elbow or knee
2. Flail chest (chest wall instability or deformity)
3. Two or more proximal long bone fractures
4. Unstable pelvic fracture
5. Paralysis or neurologic deficit
6. Amputation above the wrist or ankle
7. Crushed, devloved, mangled, or pulseless extremity
8. Open or depressed skull fracture

YES

Transport to the most rapidly accessible appropriate Level I or II trauma center

NO

ANY MECHANISM OF INJURY CRITERIA
1. Falls > 20 feet
2. High risk auto crash, with such components as:
   - Intrusion of vehicle or ≥ 12 inches in occupant compartment;
     > 18 inches any site
   - Ejection (partial or complete) from automobile
   - eath in same passenger compartment
3. Auto vs. pedestrian/bicyclist thrown, run over, or with significant impact
4. Motorcycle crash > 20 mph
5. Events involving high energy dissipation, such as:
   - Ejection from motorcycle, ATV, animal, etc.
   - Striking a fixed object with momentum
   - Blast or explosion
6. High energy electrical injury

YES

Transport to the most rapidly accessible appropriate trauma center

NO

OTHER CONSIDERATIONS
1. Older adult: Risk of death increases after age 55 years
2. Anticoagulation or bleeding disorders
3. End-stage renal disease requiring dialysis
4. Pregnancy > 20 weeks
5. Suspicion of hypothermia
6. Suspicion of abdominal injury/seatbelt sign
7. Burns > 10% TBSA (2nd or 3rd degree) and/or burns to the hands, face, feet, or groin and/or Inhalation burns
8. EMS provider judgement for triage to a higher-level trauma center
9. Low impact mechanisms for older adults with suspicion of injury
10. Suspicion of nonaccidental trauma

YES

Transport to most appropriate trauma center

NO

Transport to any appropriate acute care facility
0112 TRAUMA TRIAGE ALGORITHMS

2020 MHRETAC Prehospital Trauma Triage Algorithm Guideline
Pediatric Patients (Less than 15 years old)

UNABLE TO ADEQUATELY VENTILATE

- Intubation or assisted ventilation
- Signs or symptoms of respiratory insufficiency, such as:
  - Severe hypoxia
  - Accessory muscle use, grunting or abdominal breathing
- Signs or symptoms of abnormal perfusion such as:
  - Decreased capillary refill (> 2 sec)
  - Low systolic BP for age
- Only responsive to pain or unresponsive (AVPU)

ANY PHYSIOLOGIC CRITERIA

<table>
<thead>
<tr>
<th>AGE</th>
<th>SBP (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>&lt; 60</td>
</tr>
<tr>
<td>1-10 years</td>
<td>&lt; 70 + (2 x age in yrs)</td>
</tr>
<tr>
<td>&gt; 10 years</td>
<td>&lt; 90</td>
</tr>
</tbody>
</table>

ANY ANATOMIC CRITERIA

- Known or suspected:
  1. Penetrating injuries to the head, neck, torso or extremities above the elbow or knee
  2. Flail chest (chest wall instability or deformity)
  3. Two or more proximal long bone fractures
  4. Unstable pelvis fracture
  5. Paralysis or neurologic deficit
  6. Amputation above the wrist or ankle
  7. Crushed, dagloved, mangled or pulseless extremity
  8. Open or depressed skull fracture

ANY MECHANISM OF INJURY CRITERIA

- Falls > 15 feet or 3x the height of the child
- High risk auto crash, with such components as:
  - Intrusion of vehicle or > 12 inches in occupant compartment;
    > 18 inches any side
  - Ejection (partial or complete) from automobile
  - Death in same passenger compartment
  - Moderate/high speed crash with unrestrained or improperly restrained child
- Auto vs. pedestrian/bicyclist thrown, run over or with significant impact
- Motorcycle crash > 20 mph
- Events involving high energy dissipation, such as:
  - Ejection from motorcycle, ATV, animal, etc.
  - Striking a fixed object with momentum
  - Blast or explosion
- High energy electrical injury

OTHER CONSIDERATIONS

- Suspicion for non-accidental trauma
- Anticoagulation or bleeding disorders
- End-stage renal disease requiring dialysis
- Pregnancy > 20 weeks
- Suspicion of hypothermia
- Intra-abdominal injury: abdominal tenderness, distension or seatbelt sign on the torso
- Burns > 10% TBSA (2nd or 3rd degree) and/or burns to the hands, face, feet, or groin and/or inhalation burns
- EMS provider judgement for triage to a higher-level trauma center

DESTINATION INSTRUCTIONS PER MHRETAC PROTOCOL

- Transport to protocol
- Transport to the most rapidly accessible appropriate facility
- Transport to the most rapidly accessible appropriate designated pediatric Level I or II trauma center
- Transport to the most rapidly accessible appropriate Level I or II trauma center
- Transport to the most rapidly accessible appropriate Level I or II trauma center
- Transport to the most rapidly accessible appropriate Level I or II trauma center
- Transport to the most rapidly accessible appropriate level trauma center
- Transport to the appropriate trauma center
- Transport to any appropriate acute care facility

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0113 SALT Triage

Step 1: Sort: Global Sorting
- Walk
- Assess 3rd
- Wave / Purposeful Movement
- Assess 2nd
- Still / Obvious Life Threat
- Assess 1st

Step 2 - Assess: Individual Assessment

Lifesaving Interventions:
- Control major hemorrhage
- Open airway (if child consider 2 rescue breaths)
- Chest decompression
- Auto injector antidotes

Breathing?
- Yes
- Dead
- \(\text{No} \rightarrow \) Breathing?

- \(\text{No} \rightarrow \) Minor injuries only?
- \(\text{Yes} \rightarrow \) Minimal
- \(\text{No} \rightarrow \) Delayed

- \(\text{Any No} \rightarrow \) Likely to survive given current resources?
- \(\text{Yes} \rightarrow \) Immediate
- \(\text{No} \rightarrow \) Expectant

TABLE OF CONTENTS
The Multiple Patient Incident Criteria should be used on all incidents involving more than one patient. If the total number of patients in any one category exceeds the maximum number indicated, the event should be considered a Mass Casualty Incident (MCI).

The Multiple Patient Incident Distribution Worksheet should be utilized by the Transport Officer to keep track of patients. The worksheet can be used as a secondary triage system to help avoid overloading a single trauma centers capabilities. Treatment officer should attempt to disperse the patients to several trauma centers if indicated based on number of patients and severity of injuries.

### Recommended Resource Management

Two AFD personnel for each Critical / Serious patient.
One AFD person for each Moderate patient.

One transport unit per Critical / Serious patient.
One transport unit per two Moderate patients.

### Emergency Department Contact Guidelines

Do not call dispatch to give an ED a "heads-up" notification unless that facility will be receiving more than 2 Critical or more than 5 Serious patients.
0115 EMS DESTINATION CAPABILITIES

Purpose
A. To provide EMS crews with some guidance on the appropriate destination for the most commonly utilized emergency departments in the Aurora EMS System.

B. Most emergency departments can handle the routine medical and trauma call brought in by EMS. This table is meant to give guidance on special patient populations to get them to an appropriate destination facility for definitive treatment.

C. This list is not all inclusive of every capability for each hospital, and will change over time as hospitals change their capabilities.

<table>
<thead>
<tr>
<th>PATIENT TYPES AND CLINICAL CRITERIA</th>
<th>AIP (University)</th>
<th>Childrens Hospital</th>
<th>TMCA (Aurora South)</th>
<th>Parker Hospital</th>
<th>Centennial Hospital</th>
<th>VA Hospital</th>
<th>Southlands FSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Alert</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
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<td>Stroke Alert</td>
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<tr>
<td>Sepsis Alert</td>
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<td>Major Trauma by RETAC Guidelines</td>
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<td>Major Burns</td>
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<td>Cardiac Arrest &amp; Post ROSC Patients</td>
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<td>YES</td>
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<td>NO</td>
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<tr>
<td>OB Patients &gt; 20 weeks</td>
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<td>Combative Psych or Substance Abuse</td>
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<td>FSED Criteria Only</td>
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<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

Notes
A. The VA hospital will only accept patients who are eligible for VA benefits. If a patients requests transport to the VA, the patient must be eligible for care at the VA and meet the clinical criteria as noted above. It is not the responsibility of EMS to verify their eligibility for VA benefits beyond asking the patient if they are eligible.
0120 GENERAL GUIDELINES: BASE CONTACT FOR PHYSICIAN CONSULTATION

Purpose
A. To explain the Medical Directors' expectations regarding base physician contact.

General Principles
A. “BASE CONTACT” is contact with a physician who is familiar with the protocols.
B. The Aurora EMS protocols function as standing order treatment guidelines designed to reflect CDPHE Chapter 2 Rules pertaining to EMS practice and Medical Director oversight. Protocols are to be used as guidelines and cannot account for every patient scenario. Deviation from protocol may at times be justified and in the patient's best interest. The medical directors place great faith in the training and expertise of our EMS colleagues and therefore wide latitude is granted throughout the protocol.
C. Base contact for physician consultation is not the same as emergency department pre-notification of patient arrival and handoff. Base contact may be used in multiple care scenarios including but not limited to: forewarning of unstable or complicated patients, patient refusal, and medical consultation and discussion.
D. Throughout the protocol patient “BASE CONTACT” is used to signify the need for call in. These algorithm points are set and agreed upon by the medical directors and reflect critical decision points in care where communication with physician support is expected.

Preferred Base Contact Times.
A. The medical director feels strongly that access to medical consultation should be readily available at all times and utilized in the following circumstances:
   1. Any time “BASE CONTACT” is required or recommended per protocol.
   2. Unusual presentations or patient care situations not covered by set protocol and outside the scope of practice or comfort level of care by individual prehospital provider.
   3. Necessary deviation from protocol deemed to be in the best interest of the patient.
   4. For selected patient care refusals as indicated by General Guidelines: Patient Non-Transport or Refusal.
   5. During the care of critically ill patient who is not responding to protocol/algorithmic treatment.

BASE CONTACT

Aurora Fire Rescue and Falck Rocky Mountain can contact a physician at any of these Emergency Departments as a BASE CONTACT physician. EMS crews should receive the consultation or medication order from the facility they are transporting too if it is one of these facilities.

- AIP (University)
- Childrens Hospital
- TMCA (The Medical Center of Aurora)
- Centennial Hospital
General Principles:

For the purpose of the protocols, pediatric patients are defined as <12 years of age. The unique anatomy, physiology and developmental needs of children in this age range affect prehospital care. Several specific differences include:

A. Airways are smaller, softer and easier to obstruct or collapse. Actions such as neck hyperflexion, hyperextension, or cricoid pressure may create an upper airway obstruction in a child.

B. Respiratory reserves are small, resulting in the possibility of rapid desaturation in the setting of increased demand. One of the earliest signs of physiologic stress in a child may be an unexplained increase in respiratory rate.

C. Infants and young children utilize their abdominal musculature to assist with respirations. Tight, abdominally-placed straps used to secure children to spine boards may result in onset of or worsening respiratory distress.

D. Circulatory reserves are small. The loss of as little as one unit of blood can produce severe shock in an infant.

E. Fluid overload is not a concern in children. 20 mL/kg boluses are always considered safe as the initial fluid resuscitation.

F. The developmental stage of a child impacts his/her ability to cooperate. The perception and memory of pain is escalated by anxiety. Discuss or forewarn what will be done with any child over 2 years of age. Infants, especially those under 6 months of age, tolerate painful procedures better if allowed to suck on a pacifier (especially if dipped in D25W) during the procedure. Utilize the parent or familiar guardian whenever possible to distract/comfort (tell a story, sing a song, etc.) for all pediatric patients during painful procedures.

G. Vital signs on pediatric should include a blood pressure regardless of age. Providers should, if possible, make at least one attempt at obtaining a blood pressure on every pediatric patient.

Specific Consideration: Transportation safety

Children represent a unique challenge for safe transportation in emergency vehicles. The National Highway Traffic Safety Administration has established guidelines to ensure the safe restraint and positioning of children in emergency vehicles. Children should be restrained during transport. Transport of a child in a restrained adult's arms is not recommended, but may be considered in special circumstances (i.e. severe croup, newborn). Transportation of children on the side bench seat in the rear compartment is also not recommended. The published goals are to prevent forward motion/ejection of the child, secure the torso, and protect the head, neck, and spine in each of the following scenarios:

1. For a child who is not a patient, but requires transport to a facility
   All reasonable effort should be made to transport children who are not patients in a vehicle other than the ambulance. If transport in a vehicle other than an ambulance is not possible, transport in a size-appropriate child restraint system in the front passenger seat (with air bags off) or rear-facing EMS provider’s seat in the ground ambulance.

2. For a child who is injured/ill and whose condition does not require continuous monitoring or interventions
   Transport child in a size-appropriate child restraint system secured appropriately on a cot (rear-facing) or in an integrated seat in the EMS provider’s seat. Do not use a rear-facing child restraint system in a rear-facing EMS provider’s seat. If no child restraint system is available, secure the child on the cot using three horizontal restraints across the child’s chest, waist and knees and one vertical restraint across each of the child’s shoulders. Remove any bulky clothing on child before restraining. Use blankets to maintain warmth.

3. For a child whose condition requires continuous or intensive monitoring or interventions
   Transport child in a size-appropriate child restraint system secured appropriately on a cot. If no child restraint system is available, secure the child on the cot using three horizontal restraints across the child’s chest, waist and knees and one vertical restraint across each of the child’s shoulders.

4. For a child whose condition requires spinal precautions or lying flat
   Perform spinal motion restriction procedure per protocol. Three points of restraint with shoulder straps is the optimal for the patient. Avoid placing any restraints across the abdomen. Secure the patient, not just the immobilization device to the stretcher. We do not recommend utilizing the child restraint.
system if spinal motion restriction is required, as upright positioning places additional axial load on
the patient’s neck and emergent airway intervention is not possible.

5. **For a child requiring transport as part of a multiple patient transport (newborn with mother,
multiple children, etc.)**
   If possible, transport each as a single patient. When available resources prevent single patient
   transportation, transport patients using safe, designated space available exercising extreme caution
   and driving at reduced speeds. For mother and newborn, the newborn should be transported in a
   rear-facing EMS provider seat using a convertible or integrated child restraint system. Do not use a
   rear-facing child restraint system in a rear-facing EMS provider’s seat.

**Transportation of the child with special health care needs:**
Treat the child, not the equipment. Starting with the ABCs still applies to medically complicated or medical
technology-assisted children.

   A. The parent/guardian of a special needs child is the expert on that child and knows the details of that
      illness, typical responses, and baseline interactions better than anyone. Utilize and trust his/her
      knowledge and concerns. This may include vital signs, medication responses, or physical positioning (i.e.
      of contracted limbs) that may not be typical.

   B. Medically complicated children are often given healthcare notes describing their unique medical history
      and emergency healthcare needs. Ask the parent/guardian for an emergency information sheet,
      emergency healthcare form, or QR code.

   C. Ask the parent/guardian for the “go bag” for medical technology-assisted children. This will contain the
      child’s spare equipment and supplies that may be needed on scene, during transport or in the hospital

   D. Transport the child to their medical “home” hospital whenever possible.
0140 GENERAL GUIDELINES: 911 SYSTEM RESPONSE TO REQUEST FOR INTERFACILITY TRANSPORT

Guidelines:
- The purpose of this protocol is to address the scenario where a 911 response is requested for an interfacility transport and is not intended to supersede existing interfacility transport agency protocols for care.
- Follow existing Aurora EMS Protocols during transport.
- All reasonable efforts should be made to accommodate sending physician's destination choice, as specialized care may have already been arranged at the receiving facility, however, transports must be in compliance with Aurora EMS Protocols.
- Per Colorado 6 CCR 1015-3, Chapter 2 - Rules Pertaining to EMS Practice and Medical Director Oversight, Section 15 - Interfacility Transport, subsection 15.2 “The transporting EMS provider may decline to transport any patient he or she believes requires a level of care beyond his or her capabilities.”
0150 ALTERNATE DISPOSITION OF ACUTELY INTOXICATED PATIENTS

Purpose
1. To provide an alternative destination for which to transport acutely intoxicated patients by ambulance.
2. To provide direction and criteria for patients who are eligible to be transported by ambulance to EMDR.
3. To ensure patients who are in need of a higher level of emergency care are transported to an appropriate receiving facility.

General Principles
1. East Metro Detoxification and Recovery Services (EMDR) located at 1290 South Potomac Street, and formerly known as the Arapahoe House, will accept acutely intoxicated patients transported by ambulance when all specified criteria are met and verbal confirmation of the facility’s ability to receive a new patient has been given by phone.
2. Patients who are determined to be clinically intoxicated, but according to the Drug/Alcohol Intoxication protocol (4070), do not require transport to an emergency department, can be transported by ambulance to EMDR if all of the criteria are met and the associated work sheet is complete.
3. Send the completed form to the battalion chief.
4. In the event the patient meets all of the criteria for transport to EMDR, however, the attending EMS providers determine care in the emergency department is warranted, and/or if during the assessment, the patient’s condition deteriorates, then the patient should be transported to the nearest appropriate emergency department.

---

**Decision Tree**

- **Patient is acutely intoxicated with drugs or alcohol and has no acute injury or illness requiring treatment in an emergency room, and cannot remain on scene.**
  - Ref. Drug/Alcohol
  - **Yes**
  - **No**

- **All criteria are met for direct transport to EMDR**
  - **Yes**
  - **No**

- **Contact EMDR by phone to confirm bed availability.**
  - **Does EMDR accept the patient?**
  - **Yes**
  - **No**

- **Complete EMDR checklist form**
- **Transport patient directly to EMDR**
- **Give verbal handoff to EMDR staff and give them pink copy of EMDR checklist**
- **Transport to appropriate Emergency Department**

---

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All criteria must be a NO for direct transport to EMDR

Vitals:
- Systolic BP < 90 or > 180
- Diastolic BP >110
- Pulse < 60 or >130
- Respirations <12 or > 30
- Pulse oximetry < 90% on room air or prescribed oxygen
- BGL < 60 or > 250

Assessment:
- Suspected acute illness or injury requiring medical attention
- Respiratory difficulty as evidenced by labored breathing or wheezing
- Decreased level of consciousness (must respond appropriately to verbal stimuli)
- Aggressive or combative behavior
- Patient is incapacitated due to intoxication (unable to stand from seated position and walk independently)
- Bizarre behavior not explained by intoxication

History:
- Seizure within the past 48 hours
- Untreated GI bleeding in last 24 hours
- Medical Device (Colostomy, Trach, G-Tube, Foley)
  (Can be taken to detox if they can perform self care of the device and have 48 hours of supplies if needed)
- Currently on Mental Health Hold
Purpose
1. To provide an alternative destination for which to transport patients who are having a behavioral health problem
2. To provide direction and criteria for patients who are eligible to be transported by ambulance to WIC (Aurora Mental Health Walk-In Clinic)
3. To ensure patients who are in need of a higher level of emergency care are transported to an appropriate receiving facility.

General Principles
1. Aurora Mental Health Walk-In Clinic (WIC) located at 2206 Victor Place, will accept patients with acute behavioral health problems transported by ambulance when all specified criteria are met.
2. Patients who are determined to have a psychiatric or behavioral health emergency, but according to the Psych / Behavioral Patient Protocol do not require transport to an emergency department, can be transported by ambulance to WIC if all of the criteria are met and the associated worksheet is complete.
3. Send the completed form to the battalion chief.
4. In the event the patient meets all of the criteria for transport to WIC, however, the attending EMS providers determine care in the emergency department is warranted, and/or if during the assessment, the patient’s condition deteriorates, then the patient should be transported to the nearest appropriate emergency department.

Patient has acute behavioral health emergency and has no acute injury or illness requiring treatment in an emergency room, and cannot remain on scene. Ref. Psych/Behavioral Protocol

No

Transport to appropriate emergency department

Yes

All criteria are met for direct transport to WIC

No

Yes

- Complete WIC checklist form
- Transport patient directly to WIC
- Give verbal handoff to WIC staff and give them pink copy of WIC checklist
All criteria must be a NO for direct transport to WIC

Vitals:
- Systolic BP < 90 or > 180
- Diastolic BP >110
- Pulse < 60 or >130
- Respirations <12 or > 30
- Pulse oximetry < 90% on room air or prescribed oxygen
- BGL < 60 or > 250

Assessment:
- Suspected acute illness or injury requiring medical attention
- Decreased level of consciousness/coherent behavior (must respond to verbal stimuli)
- Aggressive or combative behavior
- Cannot maintain safety without needing to be physically or chemically restrained
- Cannot engage in a coherent exchange of information

History:
- Medical Device (Colostomy, Trach, G-Tube, Foley)
  (Can be taken to WIC if they can perform self care of the device and have 48 hours of supplies if needed)
Description
Emergency Triage, Treat, and Transport (ET3) is a program initiated by CMS in which EMS agencies can receive payment for treatment on scene or transport of patients without having to take patients to an Emergency Department. Falck Rocky Mountain is participating in the pilot program for this initiative.

Purpose
1. To provide an alternative treatment option for patients utilizing telemedicine to provide treatment at home with EMS and/or outpatient medications prescribed by a physician.
2. To provide alternate destinations for transport depending on the nature of the condition. Patients may have the option of being transported to participating urgent cares in addition to the East Metro Detox and Aurora Mental Health Walk-In Clinic.
3. ET3 algorithms may be updated more frequently than the protocols and new algorithms may be added as the ET3 program progresses.

General Principles
1. Participation in the program is optional for the patient. Any patient wanting to be transported to an Emergency Department will be transported in accordance with current protocols and policy.
2. Patients must meet the inclusion criteria to be a candidate for a telemedicine visit or transport to an alternate destination facility.
3. Telemedicine visits will be performed by a licensed physician in the State of Colorado. The request for the visit will be initiated by the Falck employee and be conducted via video conferencing. The telemedicine physician may direct treatment on scene, prescribe medications for the patient, or direct the patient to be taken to an Emergency Department or Alternate Care Destination if appropriate.
4. Alternate Care Destinations include the East Metro Detox facility per Protocol 0150, the Mental Health Walk-In Clinic per Protocol 0160, and select urgent care facilities who have agreed to receive patients by EMS as a part of the ET3 program.
5. The inclusion criteria and exclusion criteria are meant to screen out patients who would not be good candidates for this program and who would likely benefit from treatment in an Emergency Department.
6. Patients who meet the inclusion criteria and consent to telemedicine will have the telemedicine process initiated and completed by the Falck employees.
7. Prior to transporting any patients to an urgent care, the urgent care must be contacted and given a patient report to ensure they agree to accept the patient. Any alternative destination facility can decline to accept a patient at their location. If this occurs, patients will be offered transportation to an emergency department.
ALTERNATE DESTINATION & TELEHEALTH WORKFLOW

911 CALL

- VITAL SIGNS OUTSIDE OF PARAMETERS
- ABNORMAL MENTAL STATUS
- TIME SENSITIVE (CHEST PAIN, STROKE OR ABNORMAL NEUROLOGIC SIGNS, PREGNANCY, MAJOR TRAUMA)
- NOT AMBULATORY
- UNSAFE ENVIRONMENT
- AGE: <2 YEARS OLD

NO

IS PATIENT...
COMBATIVE?
UNCOOPERATIVE?
SHOWING INCAPACITATING INTOXICATION OF ETOH OR DRUGS?
HAVING HALLUCINATIONS?

YES

BEHAVIORAL HEALTH OR ALCOHOL ABUSE RELATED COMPLAINT

SEVERE EXACERBATION OF CHRONIC DISEASE (ex. Back pain, COPD, Asthma, etc)
SERIOUS INJURY OR ILLNESS
ABDOMINAL PAIN
PELVIC/GYN/SCROTAL COMPLAINTS
UNEXPLAINED HEADACHE
ABSENCE OF MEDICAL DECISION-MAKING CAPACITY

NO

PATIENT CONSENT TO ALTERNATE DESTINATION?

YES

CONTACT WITHDRAWAL MANAGEMENT (DETOX) OR BEHAVIORAL HEALTH CENTER (WALK IN CLINIC OR CSU)

ER

CAN'T ACCEPT

CAN'T ACCEPT TELEMEDICINE PHYSICIAN DETERMINED ER IS NEEDED

PATIENT CONSENT TO ALTERNATE DESTINATION?

CAN'T ACCEPT

CONTACT URGENT CARE

YES

TELEHEALTH CONSENT

NO

TELEHEALTH

TREAT IN PLACE

0170 ALTERNATE DISPOSITION BY ET3

VITAL SIGN PARAMETERS
ADULT
- Systolic BP <90 or >180mmHg
- Diastolic BP >110mmHg
- Pulse <60 or >130
- Respirations <12 or >30
- SpO2 <90% on room air or prescribed oxygen

PEDIATRIC
Refer to Pedi Field Guide for normal values

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### Abbreviations

| S = Standing order | B = Base contact |

### Airway Procedures

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<td>ECG - Interpretation (including 12-lead)</td>
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<td>Use of established central line (including PICC) for fluid and medication administration (must have appropriate equipment, e.g. Huber needle, and training to access subcutaneous ports)</td>
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### Medications

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<td>• Tricyclic antidepressant overdose</td>
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<td>Topical ophthalmic anesthetics</td>
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Indications:

- Respiratory failure
- Absence of protective airway reflexes
- Present or impending complete airway obstruction

Contraindications:

- There are no absolute contraindications. However, in general the primary goals of airway management are adequate oxygenation and ventilation, and these should be achieved in the least invasive manner possible
  - Orotracheal intubation is associated with worse outcomes among pediatric patients and head injured patients when compared to BLS airway maneuvers. Therefore, it is relatively contraindicated in these populations, and BLS airway is preferred unless patient cannot be oxygenated or ventilated by other means.
  - Intubation is associated with interruptions in chest compressions during CPR, which is associated with worse patient outcomes. Additionally, intubation itself has not been shown to improve outcomes in cardiac arrest. Intubation should only be performed during pulseless arrest if it does not cause interruptions in chest compressions.
  - With traumatic brain injury, secondary insult from hypoxia or hypotension have been associated with worse outcomes. Caution should be taken to minimize these potential side effects with intubation.

Special Considerations

During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.

Technique for Video Laryngoscopy:

1. Initiate BLS airway sequence.
2. Start high flow oxygen at 15 lpm
3. Suction airway and pre-oxygenate with BVM ventilations, if possible
4. Check equipment and position patient:
   a. If trauma: have assistant hold in-line spinal motion restriction in neutral position
   b. If no trauma, neutral head position is preferred for use with the Airtraq video laryngoscope
   c. Prepare the Airtraq device for intubation:
      i. Attach the camera device to the appropriate disposable blade. Camera device will automatically begin recording.
      ii. Turn the light on the disposable blade.
      iii. Choose your endotracheal tube and load it into the channel on the blade. No stylet should be used. Using some KY jelly on the tube can help to pass it easier in the channel
5. Suction out airway before insertion of the blade into the mouth
6. Perform video laryngoscopy
   a. Insert the blade into the midline area of mouth and follow the curvature of the tongue until the tip of the blade is in the hypopharynx.
   b. Gentle manipulation of the camera should be done until the vocal cords are in view. If you cannot see the cords, try pulling the blade backwards towards yourself.
   c. Do no attempt to blindly pass the tube. If you don’t see cords on first attempt, remove blade and ventilate the patient and suction as needed. Clean the tip of the blade if the camera view was obscured.
   d. Can repeat attempt at video laryngoscopy 1 time if patient condition permits before moving to secondary airway.
1000 PROCEDURE PROTOCOL: OROTRACHEAL INTUBATION

7. Advance ETT through the cords under video visualization. Once placed, hold tube with hand
at the mouth and disengage the tube from the channel on the blade.
   a. If the cords can be partially visualized and there is difficulty in getting the
      endotracheal tube to advance through the cords, an endotracheal introducer device
      “bougie” should be used. The bougie can be advanced through the cords easier
      and will act as a guide rail for the endotracheal tube to advance through the cords.

8. Confirm tracheal location and appropriate depth and secure tube
   a. Correct tube depth may be estimated as 3 times the internal diameter of tube at teeth
      or gums (e.g: 7.0 ETT is positioned at 21 cm at teeth)

9. Confirm and document tracheal location by:
   a. ETCO₂ waveform capnography
   b. Presence and symmetry of breath sounds
   c. Rising SpO₂

10. Ventilate with BVM. Assess adequacy of ventilations

11. During transport, continually reassess ventilation, oxygenation and tube position with
    continuous waveform capnography and SpO₂

Direct Laryngoscopy

1) Direct laryngoscopy is not the primary intubation technique. It can only be used in the following
   circumstances.
   a) Pediatric patients <12 years old when you are unable to ventilate and oxygenate the patient using
      BLS and iGel airway placement.
   b) Choking patient when you need to use Magill forceps to remove an obstruction.
   c) Airtraq device mechanical failure

2) Continue BLS airway sequence
3) Start high flow oxygen at 15 lpm
4) Suction airway and pre-oxygenate with BVM ventilations, if possible
5) Check equipment and position patient:
   a) If trauma: have assistant hold in-line spinal motion restriction in neutral position
   b) If no trauma, sniffing position or slight cervical hyperextension is preferred
6) Perform laryngoscopy
   a) To improve laryngeal view, use right hand to manipulate larynx, or have assistant apply backwards,
      upwards, rightward pressure (BURP)
   b) If the cords can be partially visualized and there is difficulty in getting the endotracheal tube
      to advance through the cords, an endotracheal introducer device “bougie” should be used.
      The bougie can be advanced through the cords easier and will act as a guide rail for the
      endotracheal tube to advance through the cords.

7) Place ETT. Confirm tracheal location and appropriate depth and secure tube
   a) Correct tube depth may be estimated as 3 times the internal diameter of tube at teeth or gums (e.g:
      7.0 ETT is positioned at 21 cm at teeth)

8) Confirm and document tracheal location by:
   a) ETCO₂ waveform capnography
   b) Presence and symmetry of breath sounds
   c) Rising SpO₂
   d) Other means as needed

9) Ventilate with BVM. Assess adequacy of ventilations
10) During transport, continually reassess ventilation, oxygenation and tube position with continuous
    waveform capnography and SpO₂

Precautions:
- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
  o Dislodgement
  o Obstruction
  o Pneumothorax
  o Equipment failure (balloon cuff torn or leaking, no oxygen)
- If a ET tube exchange is needed for a ET cuff tear, a bougie can be used for the tube
  exchange.
- Reconﬁrm and document correct tube position, preferably with waveform capnography, after
  moving patient and before disconnecting from monitor in ED
Unsuccessful intubation does not equal failed airway management. Many patients cannot be intubated without paralytics. Abandon further attempts at intubation and use supraglottic airway or BVM ventilations if 2 attempts at intubation unsuccessful.

- After the call, the intubation video must be downloaded from the Airtraq device and attached to the PCR.
- Any intubation performed without a video attached to the PCR must have an atypical incident report sent to Operations Commander.
1010 PROCEDURE PROTOCOL: NASOTRACHEAL INTUBATION

Indications:

- Age 12 years and older spontaneously breathing patient with indication for intubation who cannot tolerate either supine position or laryngoscopy
- Present or impending airway obstruction
- Lack of protective airway reflexes

Contraindications:

- Apnea
- Severe mid-face trauma

Special Considerations

During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.

Technique:

1. Initiate BLS airway sequence and confirm ETCO2 production at this time
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment, choose correct ETT size (usually 7.0 in adult, limit is size of naris)
4. Position patient with head in midline, neutral position
5. If trauma: cervical collar may be in place, or assistant may hold in-line stabilization in neutral position
6. If no trauma, patient may be sitting upright
7. Administer phenylephrine nasal drops in each nostril
8. Lubricate ETT with lidocaine jelly or other water-soluble lubricant
9. With gentle steady pressure, advance the tube through the nose to the posterior pharynx. Use the largest nostril. Abandon procedure if significant resistance is felt
10. Keeping the curve of the tube exactly in midline, continue advancing slowly
11. There will be slight resistance just before entering trachea. Wait for an inspiratory effort before final passage through cords. Listen for loss of breath sounds
12. Continue advancing tube until air is definitely exchanging through tube, then advance 2 cm more and inflate cuff
13. Note tube depth and tape securely
14. Confirm and document endotracheal location by:
   a. Continuous waveform capnography
   b. Presence and symmetry of breath sounds
   c. Rising SpO2
15. Ventilate with BVM. Assess adequacy of ventilations
16. During transport, continually reassess ventilation, oxygenation and tube position with continuous waveform capnography and pulse oximetry.
Precautions:

- Before performing BNTI, consider if patient can be safely ventilated with non-invasive means such as CPAP or BVM
- Use caution in anticoagulated or bleeding disorders given risk of epistaxis.
- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think "DOPE"
  - Dislodgement
  - Obstruction
  - Pneumothorax
  - Equipment failure (no oxygen)
- Reconfirm and document correct tube position, preferably with waveform capnography, after moving patient and before disconnecting from monitor in ED
- Blind nasotracheal intubation is a very gentle technique. The secret to success is perfect positioning and patience.
1020 PROCEDURE PROTOCOL: CRICOTHYROTOMY

Introduction:

- Surgical cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The reason for performing this procedure must be documented in an atypical report and submitted for review to Medical Director through the chain of command within 24 hours.
- An endotracheal tube introducer ("bougie") facilitates this procedure and has the advantage of additional confirmation of tube position and ease of endotracheal tube placement.
- Follow the manufacturer’s instructions on proper technique to place the device.

Indications:

- A life-threatening condition exists AND advanced airway management is indicated, AND adequate oxygenation and ventilation cannot be accomplished by other less invasive means. ("CANNOT INTUBATE/CANNOT VENTILATE")

Contraindications:

- Age < 12, likelihood of success with a favorable outcome in the pediatric patient is exceedingly low. (see pediatric needle cricothyrotomy protocol for patients <12 years old)

Technique:

Perform cricothyrotomy according to manufacturer's instructions for Pulmodyne Control Cric. Video Link: https://youtu.be/M5D4ZGZxTaw

1. Prepare skin using aseptic solution
2. Position the patient in a supine position, with in-line spinal motion restriction if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view
3. Secure the larynx laterally between the thumb and forefinger. Find the cricothyroid membrane (in the midline between the thyroid cartilage and the cricoid cartilage).
4. Using the scalpel device, make an incision over the cricothyroid membrane. If the landmark is easily felt, the incision can be a horizontal incision directly over the membrane. If not easily felt, perform a vertical incision first and then use your finger to locate the membrane before the horizontal cut into the membrane.
5. Once the scalpel blade is through the membrane, advance the cric hook off the device and secure the hook on the thyroid cartilage. Remove the scalpel from the neck while leaving the hook in place.
6. Advance the control cric device with bougie in place into the incision and advance the bougie into the neck until fully inserted.
7. Remove the bougie from the device while holding the cric tube in place.
8. Inflate the balloon and use a BVM to confirm ventilation of the patient.
9. Secure the device to the neck using the included strap.
10. Continue ventilation with 100 percent oxygen and periodically assess the airway
11. Confirm and document tube placement by:
   a. ETCO₂, breath sounds, rising pulse oximetry
12. Ventilate with BVM assessing adequacy of ventilation
13. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
14. Secure tube with tube ties or device
15. Continually reassess ventilation, oxygenation and tube placement

Precautions:

- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage
**Introduction:**

- Needle cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. An atypical report with the reason for performing this procedure must be documented and submitted for review to the Operations Commander for review by the Medical Director at conclusion of the incident.
- Due to the funnel-shaped, rostral, highly compliant larynx of a pediatric patient, cricothyrotomy is an extremely difficult procedure to successfully perform. As such, every effort should be made to effectively oxygenate the patient before attempting needle cricothyrotomy.
- This protocol is considered optional, and may not be adopted by all EMS Medical Directors or by all EMS agencies.
- A standardized, pre-prepared kit is recommended, and can be assembled using common airway equipment. An example is given below. Kit selection may vary and should be approved by the individual agency Medical Director.
- Example of kit:
  - 14 ga. and 16 ga. catheter over needle
  - 3 mL syringe
  - 15 mm endotracheal tube adaptor that fits the 3 mL syringe used by agency (syringe barrel sizes vary)

**Indications:**

- A life-threatening condition exists **AND** adequate oxygenation and ventilation cannot be accomplished by other less invasive means for patients < 12 years old.

**Contraindications:**

- If patient can be ventilated and oxygenated by less invasive means

**Technique:**

1. Ensure patent upper airway with placement of an oral airway and nasal airway, unless contraindicated.
2. Open pre-prepared kit, attach angiocath to syringe, and aspirate 1-2 mL of saline into syringe
3. Prepare skin using aseptic solution
4. Insert the IV catheter through the skin and cricothyroid membrane into the trachea. Direct the needle at a 45° angle caudally (toward the feet). When the needle penetrates the trachea a “pop” will be felt.
5. Aspirate with the syringe. If air is returned easily or bubbles are seen (with saline), the needle is in the trachea.
6. Advance the catheter over the needle while holding the needle in position, then withdraw needle after catheter is advanced flush to skin.
7. Remove the plunger and attach the 3 mL syringe to the catheter hub
8. Attach the 15 mm adaptor to the needle hub
9. Oxygenate the patient with bag-valve-mask device using the 15 mm adaptor provide high flow oxygen.
10. Confirm and document catheter placement by:
   - Continuous waveform capnography
   - Rising pulse oximetry
11. **Do not let go of catheter and be careful not to kink the catheter.** There is no reliable way to secure it in place, and it is only a temporizing measure until a definitive airway can be established at the hospital
12. Observe for subcutaneous air, which may indicate tracheal injury or extra-tracheal catheter position
13. Continually reassess oxygenation and catheter position.
Indications:

- Rescue airway if unable to intubate a patient in need of airway protection
- Primary airway if intubation anticipated to be difficult and rapid airway control is necessary
- Preferred advanced airway in the pediatric patient

Contraindications:

- Intact gag reflex
- Caustic ingestion

Technique:

1. Initiate BLS airway sequence & oxygen administration
2. Suction airway as needed and preoxygenate with BVM, if possible
3. For adult patients select proper size i-gel O₂ based on IDEAL patient body weight (not what the pt actually weighs):
   a. # 3 Small adult 30-60kg (65-130 lbs)
   b. # 4 Medium adult 50-90kg (110-200 lbs)
   c. # 5 Large adult 90 + kg (200 + lbs)
4. For Pediatric patients refer to length based tape and AFR pediatric field guide
   a. #1 Neonate 2-5 kg
   b. #1.5 Infant 5-12 kg
   c. # 2 Small pediatric 10-25 kg
   d. # 2.5 Large pediatric 25-35 kg
5. Open packaging and remove inner tray, setting the support strap (adult) and packet of lubricant to one side within easy reach. Remove the i-gel O₂.
6. Open the packet of lubricant and place a small bolus on the inner side of the main shell of the packaging.
7. Grasp the i-gel O₂ along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant. (Ensuring any excess is removed prior to insertion.)
8. Grasp the lubricated i-gel O₂ firmly along the bite block. The patient should be in the ‘sniffing the morning air’ position with head extended and neck flexed. *Unless suspected spinal trauma.
9. Position the device so that the i-gel O₂ cuff outlet is facing towards the chin of the patient. Introduce the leading soft tip into the mouth of the patient towards the hard palate.
10. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
11. Once insertion has been completed, the tip of the airway should be located into the upper esophageal opening, with the cuff located against the laryngeal framework. The incisors should be resting on the bite block.
12. Secure the device underneath the patient’s neck with a head strap (or tape). Take care to ensure there is sufficient tension to hold the i-gel O₂ securely in place, but not excessive tension that may cause trauma. Some adjustment of the strap may be needed to ensure optimal positioning.
13. For pediatric patients secure with tape
14. Place extension elbow and Waveform Capnography sensor on the end of i-gel O₂
15. Confirm tube placement by auscultation, chest movement and continuous waveform capnography.
16. Lubricate and insert appropriate size suction catheter into gastric lumen.
   a. Size # 5 use 14F
   b. Size # 2 through # 4 use 12F
   c. Size # 1.5 use 10F
   d. Size # 1 not applicable
17. Once the i-gel O₂ has been correctly prepared, inserted and secured, positive pressure ventilation can commence.
18. Continuously monitor waveform capnography, SpO₂, and vital signs
1050 PROCEDURE PROTOCOL: SUPRAGLOTTIC AIRWAY

Special Considerations

During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.

Precautions:

1. Do not remove a properly functioning supraglottic airway in order to attempt intubation
2. Correct sizing of supraglottic airways is critical for correct function
3. Supraglottic airways are safe and effective in pediatric patients, provided the correct size tube is selected. The age-range for supraglottic airway use is dependent on the specific device being used. Providers should be trained on and familiar with correct size selection for their device.
4. Use with caution in patients with known esophageal disease who are at increased risk of esophageal injury.
1060 PROCEDURE PROTOCOL: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

**Indications:**
- Symptomatic patients with moderate-to-severe respiratory distress as evidenced by at least two (2) of the following:
  - Rales (crackles)
  - Dyspnea with hypoxia (SpO₂ less than 90% despite O₂)
  - Dyspnea with inability to speak in full sentences
  - Accessory muscle use
  - Respiratory rate greater than 24/minute despite O₂
  - Diminished tidal volume

**Contraindications:**
- Respiratory or cardiac arrest
- Systolic BP less than 90mmHg
- Lack of airway protective reflexes
- Significant altered level of consciousness such that unable to follow verbal instructions or signal distress
- Vomiting or active upper GI bleed
- Suspected pneumothorax
- Trauma
- Patient size or anatomy prevents adequate mask seal

**Special Considerations**
During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.

**Technique:**
1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR, SpO₂, and ETCO₂)
3. Apply the CPAP mask and secure with provided straps, progressively tightening as tolerated to minimize air leak
4. Operate CPAP device according to manufacturer specifications
5. Start with the lowest continuous pressure that appears to be effective. Adjust pressure following manufacturer instructions to achieve the most stable respiratory status utilizing the signs described below as a guide
6. Monitor patient continuously, record vital signs every 5 minutes.
7. Assess patient for improvement as evidenced by the following:
   - Reduced dyspnea
   - Reduced verbal impairment, respiratory rate and heart rate
   - Increased SpO₂
   - Stabilized blood pressure
   - Appropriate ETCO₂ values and waveforms
   - Increased tidal volume
8. Observe for signs of deterioration or failure of response to CPAP:
   - Decrease in level of consciousness
   - Sustained or increased heart rate, respiratory rate or decreased blood pressure
   - Sustained low or decreasing SpO₂ readings
   - Rising ETCO₂ levels or other ETCO₂ evidence of ventilatory failure
   - Diminished or no improvement in tidal volume

**Precautions:**
- Should patient deteriorate on CPAP:
  - Troubleshoot equipment
  - Consider endotracheal intubation
  - Assess need for possible chest decompression due to pneumothorax
  - Assess for possibility of hypotension due to significantly reduced preload from positive pressure ventilation
• In-line nebulized medications may be given during CPAP as indicated and in accordance with manufacturer guidelines
• Some fixed pressure CPAP devices do not have FiO2 adjustment and will only administer up to 30% oxygen. If no improvement in oxygenation with a fixed pressure CPAP device, consider adding supplemental oxygen.
Indications:
A. MANDATORY: to rule out esophageal intubation and confirm endotracheal tube position in all intubated patients.
B. To identify late endotracheal tube dislodgement
C. To monitor ventilation and perfusion in any seriously ill or seriously injured patient

Contraindications:
A. None

Technique:
A. In patient with ETT or advanced airway: place ETCO₂ detector in-line between airway adaptor and BVM after airway positioned and secured
B. Patients without ETT or advanced airway in place: place ETCO₂ cannula on patient. May be placed under CPAP or NRB facemask
C. Assess and document both capnography waveform and ETCO₂ value

Precautions:
A. To understand and interpret capnography, remember the 3 determinants of ETCO₂:
  1. Alveolar ventilation
  2. Pulmonary perfusion
  3. Metabolism
B. Sudden loss of ETCO₂:
  1. Tube dislodged
  2. Circuit disconnected
  3. Cardiac arrest
C. High ETCO₂ (> 45)
  1. Hypoventilation/CO₂ retention
D. Low ETCO₂ (< 25)
  1. Hyperventilation
  2. Low perfusion: shock, PE, sepsis
E. Cardiac Arrest:
  1. In low-pulmonary blood flow states, such as cardiac arrest, the primary determinant of ETCO₂ is blood flow, so ETCO₂ is a good indicator of quality of CPR
  2. If ETCO₂ is dropping, change out person doing chest compressions
  3. In cardiac arrest, if ETCO₂ not > 10 mmHg after 20 minutes of good CPR, this likely reflects very low CO₂ production and is associated with poor outcome
  4. Sudden rise in EtCO₂ may be an indicator of ROSC.
**Indications:**
A. All of the following clinical indicators must be present:
   1. Severe respiratory distress
   2. Hypotension and signs of shock
   3. Unilateral absent or decreased breath sounds
B. Consider bilateral needle chest decompression in traumatic pulseless arrest if patient is being resuscitated and any trauma to trunk

**Technique:**
A. Expose entire chest
B. Clean skin overlying site with available skin prep
C. ≥ 12 year old:
   Insert Air Release System (ARS) catheter at 2nd intercostal space at midclavicular line. Remove needle and leave catheter in place.
D. < 12 year old:
   Use 18g 1 ½” angiocath at 2nd intercostal space at midclavicular line. Remove needle and leave catheter in place.
E. Notify receiving hospital of needle decompression attempt

**Precautions:**
A. Angiocath may become occluded with blood or by soft tissue
B. A simple pneumothorax is NOT an indication for needle decompression
C. Extra care is needed when performing on a pediatric patient.
Unstable tachyarrhythmia with a pulse

Check:
- O₂ via NRB facemask
- Functioning IV line
- Suction
- Advanced airway equipment ready

Sedate with benzodiazepine if not contraindicated

Perform Synchronized Cardioversion

Adult
- 1st: 120 Joules
- 2nd: 150 Joules
- 3rd: 200 Joules

Pediatric
- 1st: 0.5 Joules/kg
- 2nd: 1 Joules/kg

Continue treatment according to Tachycardia with Poor Perfusion

Precautions:
- If rhythm is AV nodal reentrant tachycardia (AVNRT, historically referred to as “PSVT”) it is preferred to attempt a trial of adenosine prior to electrical cardioversion, even if signs of poor perfusion are present, due to rapid action of adenosine
- If defibrillator does not discharge in “synch” mode, then deactivate “synch” and reattempt
- If sinus rhythm achieved, however briefly, then dysrhythmia resumes immediately, repeated attempts at cardioversion at higher energies are unlikely to be helpful. First correct hypoxia, hypovolemia, etc. prior to further attempts at cardioversion
- If pulseless, treat according to Medical Pulseless Arrest Algorithm
- Chronic atrial fibrillation is rarely a cause of hemodynamic instability, especially if rate is < 150 bpm. First correct hypoxia, hypovolemia, before considering cardioversion of chronic atrial fibrillation, which may be difficult, or impossible and poses risk of stroke
- Sinus tachycardia rarely exceeds 150 bpm in adults or 180 bpm in children and does not require or respond to cardioversion. Treat underlying causes.
- Transient dysrhythmias or ectopy are common immediately following cardioversion and rarely require specific treatment other than supportive care
1100 PROCEDURE PROTOCOL: TRANSCUTANEOUS CARDIAC PACING

Indications
1. Symptomatic bradyarrhythmias (includes A-V block) not responsive to medical therapy
2. Pacing is rarely indicated in patients under the age of 12 years. CONTACT BASE

Precautions
1. Conscious patient will experience discomfort; consider sedation with benzodiazepine if blood pressure allows.

Contraindications
1. Pacing is contraindicated in pulseless arrest.

Technique
1. Apply electrodes as per manufacturer specifications: (-) left anterior, (+) left posterior. Be sure to apply limb leads in addition to the pacer pads.
2. Turn pacer unit on.
3. Start pacing
4. Select pacing rate at 80 beats per minute (BPM)
5. Initial pacing energy is set at 30 mAmmps.
6. Confirm that pacer senses intrinsic cardiac activity by adjusting ECG size.
7. If no initial capture, increase current 10 mAmmps every 10-15 seconds until capture or 200 mAmmps (usually captures around 100 mAmmps).
8. Check for femoral pulse once there is electrical capture.
9. If no capture occurs with maximum output, discontinue pacing and resume ACLS.

Complications
1. Ventricular fibrillation and ventricular tachycardia are rare complications, but follow appropriate protocols if either occur.
2. Muscle tremors may complicate evaluation of pulses; femoral pulse may be more accurate.
3. Pacing may cause diaphragmatic stimulation and apparent hiccups.
**Indications:**

1. Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness defined as any of the following:
   A. Cardiopulmonary arrest or impending arrest
   B. Profound shock with severe hypotension and poor perfusion
   C. Hypoglycemia with severe symptoms (e.g. unresponsive) and no venous access
2. Utilization of IO access for all other patients requires base station contact

**Technique:**

1. Site of choice –
   A. Proximal tibia is the typical location, located 2 fingerbreadths inferior and 2 fingerbreadths medial to the tibial tuberosity.
   B. Humeral head insertion is an authorized location for IO placement at paramedic discretion. Humeral head IO’s are advantageous in patients with knee replacements and lower extremity fractures, but can be dislodged easier if the shoulder joint moves. Follow your training guidance on proper landmark identification.
2. Clean skin per agency approved aseptic technique (alcohol, chlorhexidine)
3. Place intraosseous needle perpendicular to the bone.
   A. For infants less than 6 months consider manual insertion of needle rather than powered device to avoid puncturing through both sides of the bone.
4. Follow manufacturer’s guidelines specific to the device being used for insertion.
5. Entrance into the bone marrow is indicated by a sudden loss of resistance.
6. Flush line with 10 mL saline. Do not attempt to aspirate marrow
   A. IO infusion is very painful. If the patient is conscious, administer lidocaine for pain control before infusing fluids or medications.
7. Secure line
   A. Even if properly placed, the needle will not be secure. The needle must be secured and the IV tubing taped. The IO needle should be stabilized at all times.
8. Observe for signs of limb swelling, decreased perfusion to distal extremity that would indicate a malpositioned IO catheter or other complication. If limb becomes tense or malperfused, disconnect IO tubing immediately and leave IO in place.
9. A person should be assigned to monitor the IO at the scene and en route to the hospital.
10. Do not make more than one IO placement attempt per bone.
11. Do not remove IO needles in the field.
12. Notify hospital staff of all insertion sites/attempts and apply patient wristband included with kit to identify IO patient.

**Complications:**

1. Fracture
2. Compartment syndrome
3. Infection

**Contraindications:**

1. Fracture of target bone
2. Cellulitis (skin infection overlying insertion site)
3. Osteogenesis imperfecta (rare condition predisposing to fractures with minimal trauma)
4. Total knee replacement for proximal tibia location (hardware will prevent placement)
5. Pediatric patients for proximal humerus location
6. DO NOT USE EZ IO Drill for patients less than 3kg (Shorter than grey color on Broselow)
   – Pink EZ IO needle should be placed by hand.
7. DO NOT USE EZ IO Drill for newborns (pts less than 24 hours old)
   – Pink EZ IO needle should be placed by hand.
**Side Effects and Special Notes:**

1. IO placement may be considered prior to peripheral IV attempts in critical patients without identifiable peripheral veins.
2. Some authorities recommend aspiration of marrow fluid or tissue to confirm needle location. This is not recommended for field procedures, as it increases the risk of plugging the needle.
3. Expect flow rates to be slower than peripheral IVs. Pressure bags may be needed. Any drug or IV fluid may be infused.
4. Some manufacturers recommend the use of lidocaine for the treatment of pain associated with fluid administration. Check with your manufacturer and Medical Director for further guidance.
Indications

A. A tourniquet should be used for initial control of life threatening hemorrhage.

Precautions

A. In cases of life-threatening bleeding, benefit of tourniquet use outweighs any theoretical risk of limb ischemia.
B. A commercially made tourniquet is the preferred tourniquet. If none is available, a blood pressure cuff inflated to a pressure sufficient to stop bleeding is an acceptable alternative.

Technique

A. First, attempt to control hemorrhage by using direct pressure over bleeding area.
B. If a discrete bleeding vessel can be identified, point pressure over bleeding vessel is more effective than a large bandage and diffuse pressure.
C. If unable to control hemorrhage using direct pressure, apply tourniquet according to manufacturer specifications and using the steps below:
   1. Cut away any clothing so that the tourniquet will be clearly visible. NEVER obscure a tourniquet with clothing or bandages.
   2. Apply tourniquet 3-4" proximal to the wound and not across any joints.
      a. In tactical situations or if unable to quickly identify the location of the injury, apply the tourniquet as proximal as possible.
   3. Tighten tourniquet until bleeding stops. Applying tourniquet too loosely will only increase blood loss by inhibiting venous return.
   4. If bleeding is not controlled with the application of a single tourniquet, a 2nd can be applied adjacent to the 1st.
   5. Mark the time and date of application on the patient’s skin next to the tourniquet.
   6. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.
   7. Pain management as needed.
Indications:
A. Physical restraint of patients is permissible and encouraged if the patient poses a danger to him/herself or to others. Only reasonable force is allowable, i.e., the minimum amount of force necessary to control the patient and prevent harm to the patient or others. Try alternative methods first. Verbal de-escalation should be used first if the situation allows.
   1. **Paramedic:** Consider pharmacological sedation for agitated patients that require transport and are behaving in a manner that poses a threat to him/herself or others. See Agitated/Combative Patient Protocol
B. Restraints may be indicated for patients who meet the following criteria:
   1. A patient who is significantly impaired (e.g. intoxication, medical illness, injury, psychiatric condition, etc) and lacks decision-making capacity regarding his or her own care.
   2. A patient who exhibits violent, combative or uncooperative behavior who does not respond to verbal de-escalation.
   3. A patient who is suicidal and considered to be a risk for behavior dangerous to his or herself or to healthcare providers.
   4. A patient who is on a mental health hold if there is concern for elopement.

Precautions:
A. When appropriate, involve law enforcement. However, law enforcement never serves as medical control for EMS and cannot tell EMS to restrain a patient for their own purposes.
B. Restraints shall be used only when necessary to prevent a patient from seriously injuring him/herself or others (including the EMS providers), and only if safe transportation and treatment of the patient cannot be accomplished without restraints. They may not be used as punishment, or for the convenience of the crew.
C. Any attempt to restrain a patient involves risk to the patient and the prehospital provider. Efforts to restrain a patient should only be done with adequate assistance present.
D. Be sure to evaluate the patient adequately to determine his or her medical condition, mental status and decision-making capacity.
E. Do not use hobble restraints and do not restrain the patient in the prone position or any position that impairs the airway or breathing.
F. Search the patient for weapons.
G. Handcuffs are not appropriate medical restraints and should only be placed by law enforcement personnel. See Transport of Handcuffed Patient Protocol.

Technique:
A. Be alert for any medical conditions that may ensue following physical struggle. Refer to Agitated/Combative protocol for appropriate assessment and treatment.
B. Treat the patient with respect. Attempts to verbally reassure or calm the patient should be done prior to the use of restraints. To the extent possible, explain what is being done and why.
C. Have all equipment and personnel ready (restraints, suction, a means to promptly remove restraints).
D. Use assistance such that, if possible, 1 rescuer handles each limb and 1 manages the head or supervises the application of restraints.
E. Apply restraints to the extent necessary to allow treatment of, and prevent injury to, the patient. Under-restraint may place patient and provider at greater risk.
F. After application of restraints, check all limbs for circulation. During the time that a patient is in restraints, continuous attention to the patient's airway, circulation and vital signs is mandatory. A restrained patient may never be left unattended.

Documentation
Document the following in all cases of restraint:
A. Description of the facts justifying restraint
B. Efforts to de-escalate prior to restraint
C. Type of restraints used
D. Condition of the patient while restrained, including reevaluations during transport
E. Condition of the patient at the time of transfer of care to ED staff
F. Any injury to patient or EMS personnel
Complications:
A. Aspiration: continually monitor patient's airway
B. Nerve injury: assess neurovascular status of patient's limbs during transport
C. Complications of medical conditions associated with need for restraint
   1. Patients may have underlying trauma, hypoxia, hypoglycemia, hyperthermia, hypothermia, drug ingestion, intoxication or other medical conditions
   2. Hyperactive delirium with severe agitation
**Indications:**

- Gastric decompression in the intubated patient
- Gastric decompression with placement of supraglottic airway
- Intended for situations where time and conditions allow for gastric decompression without interruption of routine care

**Contraindications:**

- Known esophageal varices

**Technique:**

3. Determine length of tube for insertion. Measure from tip of nose, to earlobe, then down to xiphoid process
4. Liberally lubricate the distal end of the orogastric tube
5. Suction airway and pre-oxygenate with BVM ventilations, if possible
6. Insert tube:
   a. For orotracheal and nasotracheal intubation, insert tube into patient’s mouth; continue to advance the tube gently until the appropriate distance is reached
   b. For supraglottic airway, insert tube through gastric access lumen and continue to advance tube till appropriate distance is reached.
7. Confirm placement by injecting 30cc of air and auscultate for the swish or bubbling of the air over the stomach. Aspirate gastric contents to confirm proper placement.
8. Secure with tape to inserted airway and attach to low continuous suction if indicated
1150 PROCEDURE PROTOCOL: TASER® PROBE REMOVAL

Indications
- Patient with TASER® probe(s) embedded in skin.

Contraindications
- TASER® probe embedded in the eye or genitals, or close to major neurovascular structures. In such cases, transport patient to an emergency department for removal.

Technique
1. Be alert for any medical conditions which may ensue following physical struggle. Refer to agitated/combative protocol for appropriate assessment and treatment.
2. Confirm the TASER® has been shut off and the barb cartridge has been disconnected.
3. Using a pair of shears cut the TASER® wires at the base of the probe.
4. Place one hand on the patient in area where the probe is embedded and stabilize the skin surrounding the puncture site. Using the other hand (or use pliers) firmly grasp the probe.
5. In one uninterrupted motion, pull the probe out of the puncture site maintaining a 90° angle to the skin. Avoid twisting or bending the probe.
6. Repeat the process for any additional probes.
7. Once the probes are removed, inspect and assure they have been removed intact. In the event the probe is not removed intact or there is suspicion of a retained probe, the patient must be transported to the emergency department for evaluation.
8. Cleanse the probe site and surrounding skin with betadine and apply sterile dressing.
9. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever.
Goal of Pain Management
A. Use comfort measure therapies as first line.
B. If used, medications should be administered to a point where pain is tolerable. This point is not necessarily pain free.

Assessment
A. Determine patient’s pain assessment and consider using a pain scale:
   1. Pediatric use observational scale (see Pediatric Pain Scales)
   2. Adult Self-report scale (Numeric Rating Scale [NRS])
B. Categorize the assessment of pain to mild, moderate, or severe.
   1. Overreliance on pain scores may lead to either inadequate pain control in stoic patients, or over sedation in patients reporting high levels of pain. Use subjective and objective findings to evaluate need for and efficacy of pain management.
   2. For pediatric patients, pain scale use is recommended. A pain score of 0-3 is mild pain, scores from 4-6 moderate pain, and 7-10 severe pain.

General Pain Management Technique

Use comfort measure therapies as first line:
- Place patient in position of comfort
- Splint/support painful area
- Apply ice, if applicable
- Consider compression, if applicable

Some conditions are complex and may be harmed by opioid use. It may be better to have physician evaluation prior to opioid use. These conditions include:
- Headaches
- Chronic abdominal pain

Mild pain
Consider oral acetaminophen or ibuprofen

Moderate pain
Consider oral acetaminophen or ibuprofen
Consider IV ketorolac
Consider titration of opioids until pain tolerable or dosing maximized

Severe pain
For severe pain consider IN administration of opioid if IV not readily available
Consider oral acetaminophen or ibuprofen
Consider titration of opioids until pain tolerable or dosing maximized
Consider IV ketorolac

Transport in position of comfort and reassess as indicated
Consider and prepare for administration of antiemetic if patient develops nausea and/or vomiting after pain medication
General Information

A. Document assessment or pain scale before and after administration of pain medications. Reassess pain 5 minutes after IV administration.
B. Strongly consider ½ typical dosing in the elderly or frail patient

Pediatric Pain Scales

Faces, Legs, Activity, Cry, Consolability (FLACC) Behavioral Scale

Appropriate age for use (per guideline): less than 4 years

<table>
<thead>
<tr>
<th>Categories</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Face</td>
<td>No particular expression or smile</td>
</tr>
<tr>
<td>Legs</td>
<td>Normal position or relaxed</td>
</tr>
<tr>
<td>Activity</td>
<td>Lying quietly, normal position, moves easily</td>
</tr>
<tr>
<td>Cry</td>
<td>No cry (awake or asleep)</td>
</tr>
<tr>
<td>Consolability</td>
<td>Content, relaxed</td>
</tr>
</tbody>
</table>

Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.

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Recommended Pain Scale for Ages 4-12 Years

Faces Pain Scale – Revised (FPS-R)

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**2000 OBSTRUCTED AIRWAY**

**EMT**  
**Paramedic**

**Attempt to determine cause of obstruction**

- Does patient show universal sign of choking?
  - Yes
  - • Perform Heimlich maneuver
    - For visibly pregnant or obese patients perform chest thrusts only
  - No
  - Assess severity of obstruction
    - • For infants, 5 chest thrusts then 5 back blows

**If obstruction is complete, patient will be mute. If patient can speak, obstruction is incomplete**

**Severe or Complete Obstruction**  
*mute, silent cough, severe stridor*

- Open airway with head tilt-chin lift or jaw thrust if craniofacial trauma
- Attempt ventilation with BVM

- Able to ventilate or obstruction cleared?
  - Yes
    - • Perform laryngoscopy
      - If foreign body visualized, use McGill forceps to remove or consider pushing object into mainstem bronchus with ETT
  - No
    - • Perform abdominal thrusts or chest thrusts until obstruction relieved then reattempt ventilations with BVM
      - For infants, 5 chest thrusts, then 5 back blows

**Consider cricothyrotomy if suspected supraglottic obstruction and unable to oxygenate with BVM**

**If obstruction is complete, patient will be mute. If patient can speak, obstruction is incomplete**

**Unconscious Patient**

- Begin chest thrusts
  - Each time airway is opened look in mouth for FB and if found, remove it

- Able to ventilate or obstruction cleared?
  - Yes
    - • Perform laryngoscopy
      - If foreign body visualized, use McGill forceps to remove or consider pushing object into mainstem bronchus with ETT
  - No
    - • Perform abdominal thrusts or chest thrusts until obstruction relieved then reattempt ventilations with BVM
      - For infants, 5 chest thrusts, then 5 back blows

**Once obstruction relieved:**

- • Position of comfort or left lateral recumbent position
- • O2 via NRB 15 Lpm
- • Monitor ABCs, SpO2, vital signs
- • Suction PRN and be prepared for vomiting, which commonly occurs after obstruction relieved

**Mild or Moderate Obstruction**

- Do not interfere with a spontaneously breathing of coughing patient
- • Position of comfort
- • Give high flow oxygen
- • Suction if needed

- Is obstruction cleared?
  - Yes
    - • Supportive care and rapid transport
    - • If patient deteriorating or develops worsening distress proceed as for complete obstruction
  - No
2010 ADULT UNIVERSAL RESPIRATORY DISTRESS

Respiratory Distress

For all patients:
While assessing ABCs: give supplemental O₂, monitor vital signs, cardiac rhythm, SpO₂ and waveform capnography

Consider pulmonary and non-pulmonary causes of respiratory distress:
- Pulmonary embolism
- Pneumonia
- Heart attack
- Pneumothorax
- Sepsis
- Metabolic acidosis (e.g.: DKA)
- Anxiety
- Cardiac tamponage
- Cardiac dysrhythmia

Patent airway?

Are ventilations adequate for physiologic state?

Is anaphylaxis likely?

Obstructed Airway protocol

Assist ventilations with BVM and airway adjuncts as needed

Allergy/Anaphylaxis protocol

Adult Wheezing protocol

CHF/Pulmonary Edema protocol

Mixed picture may exist
- Goal is maximization of oxygenation and ventilation in all cases
- CPAP may be particularly useful in mixed picture with hypoxia and/or hypoventilation
- Avoid albuterol in suspected pulmonary edema

Is asthma or COPD likely?

Is CHF/pulmonary edema likely?

Transport
- Provide supportive care
- Maximize oxygenation and ventilation
- Contact Base if needed for consult
- Consider 12 lead ECG

TABLE OF CONTENTS
Respiratory Distress

For all patients:
While assessing ABCs: give supplemental O₂, monitor vital signs, cardiac rhythm, SpO₂, and consider waveform capnography

Patent Airway?

Are ventilations adequate for age?

Is anaphylaxis likely?

Is there a barky cough and stridor?

Is there wheezing?

- Provide supportive care
- Maximize oxygenation and ventilation
- CONTACT BASE if needed for consult

Obstructed Airway protocol

Assist ventilations at age-appropriate rate with BVM and airway adjuncts as needed

Allergy/Anaphylaxis protocol

Pediatric Stridor/Croup protocol

Pediatric Wheezing protocol

Age-appropriate ventilation rate in respiratory failure:

<table>
<thead>
<tr>
<th>Age</th>
<th>Breaths/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>40</td>
</tr>
<tr>
<td>Infants</td>
<td>30</td>
</tr>
<tr>
<td>Children</td>
<td>20</td>
</tr>
</tbody>
</table>

Assisted ventilation rates listed do not apply to the patient in cardiac arrest

Characteristics of Stridor:
- High-pitched, harsh sound most often heard on inspiration
- Occurs with upper airway restriction
- Significant restriction may result in biphasic stridor (heard on inspiration and expiration)

Consider pulmonary / and non-pulmonary causes:
- Foreign body
- Croup
- Pneumonia
- Bronchiolitis
- Pulmonary embolism
- Sepsis
- Metabolic derangement
- Anxiety
Presentation suggests Bronchospasm: wheezing, prolonged expiratory phase, decreased breath sounds, accessory muscle use, known hx of asthma/COPD

Adult Respiratory Distress Protocol and prepare for immediate transport

Give oxygen, check SpO2, waveform capnography, & consider IV for severe respiratory distress

Give nebulized albuterol + ipratropium
May give continuous neb for severe respiratory distress

Therapeutic Goals:
- Maximize oxygenation
- Decrease work of breathing
- Identify cardiac ischemia (Obtain 12 lead EKG)
- Identify complications, e.g. pneumothorax

Consider pulmonary and non-pulmonary causes of respiratory distress:
Examples: pulmonary embolism, pneumonia, pulmonary edema, anaphylaxis, heart attack, pneumothorax, sepsis, metabolic acidosis (e.g.: DKA), Anxiety

COPD
- Correct hypoxia: do not withhold maximum oxygen for fear of CO2 retention
- Patients with COPD are older and have comorbidities, including heart disease.
- Wheezing may be a presentation of pulmonary edema, “cardiac asthma”
- Common triggers for COPD exacerbations include: Infection, dysrhythmia (e.g.: atrial fibrillation), myocardial ischemia
- COPD exacerbations are particularly responsive to CPAP, which may help avoid the need for intubation and should be considered early in treatment

Is response to treatment adequate?
Yes
- Reassess for pneumothorax
- Consider CPAP early, especially in COPD
- If CPAP contraindicated, ventilate with BVM, and consider advanced airway

- IV methylprednisolone
- Obtain ECG: rule out unstable rhythm, ACS

No
- Consider IM epinephrine. Indicated only if no response to neb, CPAP and for patient in severe distress. Use with caution if any concern for myocardial ischemia or known coronary artery disease.

- Consider IV magnesium

- IV methylprednisolone will help resolve acute asthma exacerbation over hours, without immediate effect. In severe exacerbations, it may be given prehospital but should not be given for mild attacks responding well to bronchodilators

- IM epinephrine is only indicated for most severe attacks deemed life-threatening and not responding to inhaled bronchodilators. Use extreme caution when administering. Cardiopulmonary monitoring is mandatory

- IV magnesium may be beneficial in some patients with severe attacks. It should not be given routinely, rather should be reserved for life-threatening asthma attacks not responding to conventional therapy

Is response to treatment adequate?
Yes
- IV methylprednisolone
- Obtain ECG: rule out unstable rhythm, ACS

No
- Consider IM epinephrine. Indicated only if no response to neb, CPAP and for patient in severe distress. Use with caution if any concern for myocardial ischemia or known coronary artery disease.

- Consider IV magnesium

- Continue monitoring and assessment en route
- Be prepared to assist ventilations as needed
- Contact base for medical consult as needed
### Characteristics of Croup:
- Most common cause of stridor in children
- Child will have stridor, barky cough, and URI symptoms of sudden, often nocturnal onset
- Most often seen in children < 9 years old
- Agitation worsens the stridor and respiratory distress

### Considerations with Stridor:
- Stridor is a harsh, usually inspiratory sound caused by narrowing or obstruction of the upper airway
- Causes include croup, foreign body aspiration, allergic reactions, trauma, infection, mass
- Epiglottitis is exceedingly rare. May consider in the unimmunized child. Treatment is minimization of agitation. Airway manipulation is best done in the hospital.

### Pediatric Universal Respiratory Distress Protocol and Prepare for Immediate Transport

### Minimize Agitation:
*Transport in position of comfort, interventions only as necessary*

### Check SpO₂, Give Oxygen as Needed

### Are Symptoms Severe and Croup Most Likely?
- Stridor at rest or biphasic stridor
- Severe retractions
- SpO₂ < 90% despite O₂
- Altered LOC
- Cyanosis

**No**

**Yes**

### Give Nebulized Epinephrine

### If Signs of Poor Perfusion AND/OR Hypotension for Age, See Medical Shock Protocol and Begin Fluid Resuscitation

- Continue monitoring and assessment en route
- Contact Base for repeat dose of nebulized epinephrine and medical consult as needed
**Universal Respiratory Distress Protocol**

CHF/Pulmonary edema

Obtain 12 lead ECG: rule out unstable rhythm, STEMI

Give nitroglycerin (NTG)

Is oxygenation and ventilation adequate?

- Yes
  - **Therapeutic Goals:**
    - Maximize oxygenation
    - Decrease work of breathing
    - Identify cardiac ischemia (Obtain 12 lead ECG)
  - **Special Notes:**
    - In general diuretics have little role in initial treatment of acute pulmonary edema and are no longer considered first line therapy.

- No
  - Start CPAP protocol

Is response to treatment adequate?

- Yes
  - Continue monitoring and assessment
  - Transport
  - Contact base for medical consult as needed

- No
  - If failing above therapy:
    - Remove CPAP and ventilate with BVM
    - Consider pneumothorax
    - Consider alternative diagnoses/complications
    - Consider advanced airway
2090 TRACHEOSTOMY EMERGENCIES

Adult or Pediatric Universal Respiratory Distress Protocol

Tracheostomy in Place

Attempt repositioning and supplemental oxygen

If gurgling, rhonchi, or mucous present:
- Preoxygenate with 3-5 BVM breaths
- If inner cannula present, remove while stabilizing tracheostomy flange
- Measure suction catheter to length of inner cannula (generally 3-6 cm)
- Instill 1-2 mL saline and suction for ≤10 seconds
- Replace inner cannula if removed
- Begin ventilations with supplemental oxygen through tracheostomy.

If patient still has signs of inadequate oxygenation and ventilation:
- Remove tracheostomy, deflating cuff if needed
- Place ETT in stoma if trach is mature (at least 6 weeks old) and advance until balloon is within trachea
- Confirm placement by continuous waveform capnography, presence and symmetry of breath sounds, and rising SpO2.

Tracheostomy Removed

- Attempt to replace the tracheostomy tube if trach is mature (at least 6 weeks old)
- If unsuccessful, attempt to place ETT in stoma and advance until balloon is within trachea
- Confirm placement by continuous waveform capnography, presence and symmetry of breath sounds, and rising SpO2.

If unable to place tube and patient is hypoxic or in respiratory distress, begin BVM over nose and mouth and occlude the stoma with a gloved finger.

If unable to oxygenate or ventilate, last option is oral/nasal intubation with balloon below stoma or supraglottic airway with stoma occluded with gloved finger.

- Transport in position of comfort and monitor
- Reassess for signs of deterioration
- Provide oxygen and ventilator support as needed
- Contact Medical Control if patient is not improving with treatment

ETT Recommended Sizes – Length Based Tape Measurement
- Color Pink through Blue (Newborn to <7 years): 3.5 cuffed
- Color Orange, Green and Adults (7 years and up): 6.0 cuffed

Special Considerations
- Always utilize family members, both for information and for assistance
- Types of tracheostomies include cuffed, uncuffed, fenestrated (allowing for speech), and unfenestrated
- An established tracheostomy is a tracheostomy that was surgically placed longer than 6 weeks ago. Never replace anything into a stoma that is less than 6 weeks of age.
- Ask if family has a suction catheter and use theirs if available to ensure appropriate size. If none available, inquire as to size. If size unknown, estimate by doubling the inner diameter of the tracheostomy tube and rounding down to the available size catheter
- Never force suction catheter. When inserting, allow catheter to gently follow the curvature of the tracheostomy
- If tracheostomy tube is a double lumen tube, the inner cannula must be in place to attach the bag-valve-mask. Remove the inner cannula to suction and then re-insert
- Apply suction only while withdrawing catheter from the tracheostomy tube, never during insertion and always <100mmHg of suction

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**3000 MEDICAL PULSELESS ARREST ALGORITHM**

**BLS Sequence**
- Pulseless Arrest
  - Start CPR
  - Check rhythm & shock if indicated. Repeat every 2 min

**ALS Sequence**
- **EMT**
  - Start CPR
- **Paramedic**
  - Attach manual defibrillator ASAP
  - Give O₂
  - Shockable Rhythm?
  - VT/VF
    - Shock then CPR x 2 min
      - Start IV/IO
      - **Epinephrine**
    - CPR x 2 min
  - Asystole/PEA
    - Start IV/IO
    - **Epinephrine**

**Reversible Causes:**
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis (pulmonary, coronary)

**Defibrillation**
- Paramedic use manual defibrillator
- After 3 unsuccessful defibrillation attempts, consider changing the pad vector

**Witnessed Arrest**
- If the patient goes into cardiac arrest with a shockable rhythm, an immediate shock is indicated if the defibrillation pads are already in place
- If defibrillation pads are not in place already, start CPR and continue resuscitation per routine.

**Suspected hyperkalemic arrest**
- (renal failure/dialysis patient):
  - Give IV calcium
  - Give IV sodium bicarb
  - Flush IV line between meds

**Suspected hyperkalemic arrest**
- Witnessed Arrest
  - If the patient goes into cardiac arrest with a shockable rhythm, an immediate shock is indicated if the defibrillation pads are already in place
  - If defibrillation pads are not in place already, start CPR and continue resuscitation per routine.
3010 MEDICAL PULSELESS ARREST CONSIDERATIONS

**ADULT PATIENT**

**Compressions**
- Minimize interruptions, resume compressions immediately after shocks, rhythm checks. Check pulses only if organized rhythm
- Push hard and fast to appropriate depth (per ACLS) and allow complete chest recoil
- Assess quality of CPR with continuous waveform capnography and cardiac monitor compression feedback
- If ETCO₂ < 10, improve quality of compressions
- Chest compressions will be delivered continuously. Only pauses allowed are for pulse checks and defibrillations, and if required to move the patient.

**Defibrillation**
- Biphasic: Zoll X-Series
  - 1st: 120 Joules
  - 2nd: 150 Joules
  - 3+: 200 Joules
- After 3 unsuccessful defibrillation attempts, consider changing the pad vector

**Ventilations**
- Open the airway, place NPA/OPA, and begin manual ventilations with BVM with O₂ at 15 L/min
- Do not over ventilate
- If no advanced airway, 2 rescuers will keep BVM sealed to face and perform asynchronous ventilations at a rate of 10 breaths/min
- If advanced airway in place, 1 rescuer will ventilate at rate of 10 breaths/min

**Airway**
- An advanced airway (ETT, i-gel) may be placed at any time after initial 6 minutes of resuscitation, if applicable, or as soon as possible if asphyxial arrest suspected, provided placement does not interrupt compressions.
- If not able to ventilate the patient with BLS procedures, ALS airway should be done sooner in the resuscitation

**ROSC**
- Pulse and blood pressure
- Sustained abrupt rise in ETCO₂, typically > 40
- Obtain 12-lead ECG after ROSC and before transport to identify cardiac alert

**PEDIATRIC PATIENT**

**Compressions**
- Follow current PALS guidelines for chest compressions
- Minimize interruptions, resume compressions immediately after shocks, rhythm checks. Check pulses only if organized rhythm
- Push hard (≥ 1/3 of anteroposterior chest diameter and fast (100-120/min) and allow complete chest recoil
- Assess quality of CPR with continuous waveform capnography

**Defibrillation:**
- 1st shock 2 J/kg, subsequent shocks 4 J/kg
- Paramedics use manual defibrillator

**Ventilations**
- If no advanced airway, alternate ventilations and compressions in 15:2 ratio
- If advanced airway in place, ventilate continuously at 10 breaths/minute
- Do not over ventilate

**Airway**
- Supraglottic airway is primary for cardiac arrest < 12 years’ old
- An appropriately-sized supraglottic airway (e.g. i-gel) may be placed
- If unable to ventilate with i-gel airway, resort to BLS airway management
- Early ventilation is paramount in resuscitation as arrest is usually respiratory in nature
- Intubation should only be attempted if cannot ventilate and oxygenate with supraglottic or BLS airway

**Medications**
- Attempt to administer the initial dose of epinephrine within 5 minutes from the start of chest compressions or after arrival of an ALS provider.

**ROSC**
- Pulse and blood pressure
- Sustained abrupt rise in ETCO₂, typically > 40

**Regarding where to work arrest and presence of family members:**
- CPR in a moving ambulance or pram is suboptimal
- In general, work cardiac arrest on scene either to return of spontaneous circulation (ROSC), or to field pronouncement, unless scene unsafe
- Family presence during resuscitation is preferred by most families, is rarely disruptive, and may help with grieving process for family members. Family presence during resuscitation is recommended, unless disruptive to resuscitation efforts
- Contact base for consideration of termination of resuscitation

**Pacing**
- Pacing is not recommended in cardiac arrest

**ICD/Pacemaker patients**
- If cardiac arrest patient has an implantable cardioverter defibrillator (ICD) or pacemaker: place pace/defib pads at least 1 inch from device. Biaxillary or anterior posterior pad placement may be used

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3020 NEONATAL RESUSCITATION

**Term Gestation?**
- Breathing or crying?
- Good flex or tone?

**Routine Care:**
- Provide warmth
- Clear airway if necessary
- Dry
- Ongoing evaluation

**HR <100, gasping or apnea?**
- Yes
  - PPV, SpO2 monitoring
- No

**Labored breathing or persistent cyanosis?**
- Yes
  - Clear airway, SpO2 monitoring
  - Supplementary O2 as needed
- No

**HR <100?**
- Yes
  - Take ventilation corrective steps
- No

**HR <60?**
- Yes
  - Chest compressions
  - Coordinate w. PPV
  - 100% O2
- No

**HR <60 after 60 seconds of chest compressions?**
- Yes
  - IV epinephrine
- No

**Neonatal Oxygen Recommendations**
- Begin resuscitation of newborns ≥ 35 weeks gestation with room air. If breathing is labored, supplement with oxygen to the targets listed
- Begin resuscitation of newborns <35 weeks gestation with supplemental oxygen titrated to the targets listed

**General Considerations**
- Newborn infants who do not require resuscitation can be identified generally based on 3 questions:
  - Term gestation?
  - Crying or breathing?
  - Good muscle tone?
- If answer to all 3 questions is “yes” then baby does not require resuscitation and should be dried skin-to-skin on mother covered to keep warm, including a cap over the head.
- If answer to any of 3 questions is “no” then infant should receive 1 or more of the following 4 categories of intervention in sequence:
  - Initial steps in stabilization (warm, clear airway, dry, stimulate)
  - Ventilation
  - Chest compressions
  - Administration of epinephrine and/or volume expansion
- Initial resuscitation steps should be completed within 60 seconds as illustrated
- The decision to progress beyond initial steps is based on an assessment of respirations (apnea, gasping, labored, or unlabored breathing) and heart rate (>/< 100 bpm)

**Assisting Ventilations**
- Assist ventilations at a rate of 40-60 breaths per minute to maintain HR > 100
- Use 2 person BVM when possible

**Chest Compressions**
- Indicated for HR < 60 despite adequate ventilation w. supplemental O2 for 30 seconds
- 2 thumbs-encircling hands technique preferred
- Allow full chest recoil
- Coordinate with ventilations so not delivered simultaneously
- 3:1 ratio for compressions to ventilations

**Medications**
- Epinephrine is indicated if the newborn’s heart rate remains less than 60 beats/min after at least 30 seconds of PPV AND another 60 seconds of chest compressions coordinated with PPV using 100% oxygen

**Termination of Resuscitation**
- Keep family informed and provide them with realistic expectations regarding the outcome of extended resuscitation

**Targeted Paeductal (Right Arm) SpO2 After Birth**
- 1 minute: 60%-65%
- 3 minutes: 60%-75%
- 5 minutes: 80%-85%
- 10 minutes: 85%-95%
3030 POST-CARDIAC ARREST CARE

Post-Cardiac Arrest Care
- Following ROSC, several simultaneous and stepwise interventions must be performed to optimize care and maximize patient outcome
- Survival and neurologic outcome worsen with fever, hypoxia, hypo/hypercapnia, and hypotension. Post-ROSC care should focus on prevention of these elements

Return of spontaneous circulation (ROSC) criteria:
- Pulse and measurable blood pressure
- Increase in ETCO2 on capnography

document:
- Time of arrest (or time last seen normal)
- Witnessed vs. unwitnessed arrest
- Initial rhythm shockable vs. non-shockable
- Bystander CPR given
- Time of ROSC
- GCS after ROSC
- Initial temperature of patient after ROSC, if possible

Target ROSC Vital Signs
- SpO2 92%-98%
- ETCO2 35-45mmHg
- Systolic pressure >90mmHg or a mean arterial pressure >65mmHg

ROSC after cardiac arrest
- Perform 12 lead EKG
- Is STEMI Present?
  - Yes: Initiate Cardiac Alert
  - No: Is there hypotension for age and/or signs of shock?
    - Yes: Medical Hypotension/Shock protocol
    - No: Assess for dysrhythmia
      - Recurrent dysrhythmia?
        - Yes: Treat recurrent dysrhythmia per appropriate protocol
        - No:
          - Continuous rhythm monitoring and pulse checks
          - Focused neuro exam (AVPU/GCS)
          - If fever and no purposeful movement, provide passive cooling by placing ice packs to neck, axillae, and/or groin
          - Transfer to closest appropriate facility
          - Transport to Children's Hospital Colorado-Anschutz Campus

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Tachyarrhythmia

- Support ABCs
- IV access
- Give oxygen
- 12 lead EKG

Probable Sinus Tachycardia?
- Adult: rate usually <150
- Children: rate usually <180
- Infant: rate usually <220

Probable Sinus Tachycardia? Yes
- Search for and treat underlying cause: e.g. dehydration, fever, hypoxia, hypovolemia, pain
- Consider medical shock

Probable Sinus Tachycardia? No
- Repeat 12 lead ECG
- Monitor in transport
- If recurrent dysrhythmia, go to box A

Is patient stable? Unstable signs include altered mental status, chest pain, hypotension, signs of shock-rate-related symptoms uncommon if HR <150 in adults

Unstable
- Immediate synchronized cardioversion

Stable
- Identify rhythm
- Measure QRS width

Narrow QRS
- Adult < 0.12 msec
- Pediatric <0.09 msec

Wide QRS
- Adult > 0.12 msec
- Pediatric >0.09 msec

Regular
- Children who are stable with AVNRT generally remain so and transport is preferred over intervention
- Try Valsalva maneuver
- Give adenosine IV if suspected AV nodal reentrant tachycardia (AVRNT)*

Irregular
- Atrial fibrillation, flutter, or MAT
- Do not give adenosine
- If becomes unstable go to box B

Regular
- Contact Base for consult
- V Tach (>80%) or SVT with aberrancy
- Contact Base for verbal order for amiodarone unless contraindicated
- If regular and polymorphic (Torsades de Pointes) consider magnesium

Irregular
- See box C
- Contact Base for consult
- Do NOT give adenosine

Converts
- Repeat 12 lead ECG
- Monitor in transport
- If recurrent dysrhythmia, go to box A

Doesn’t Convert
- Contact Base for consult
- Monitor in transport
- If unstable, go to box B

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3050 BRADYARRHYTHMIA WITH POOR PERFUSION

Bradyarrhythmia with a pulse
Heart rate < 60

- Support ABCs
- Give Oxygen
- Start IV
- Initiate transport

- Cardiac monitor
- Identify rhythm
- 12-lead ECG

Are there signs or symptoms of poor perfusion present?
(Altered mental status, chest pain, hypotension, signs of shock)

Adequate perfusion
- Monitor and transport

Poor perfusion
- Give atropine
- Prepare for transcutaneous pacing
- Give epinephrine
- Consider atropine
- If no improvement, Contact Base to discuss transcutaneous pacing

Pediatric Considerations:
- Consider any HR <60 in an ill child abnormal regardless of age
- Perform CPR if HR < 60 with poor perfusion despite oxygenation and ventilation
- Administer epinephrine if bradycardia persists despite oxygenation/ventilation and chest compressions
- Atropine should be administered for increased vagal tone or AV block

Reminders:
- If pulseless arrest develops, go to pulseless arrest algorithm
- Search for possible contributing factors: "5 Hs and 5 Ts"
- Symptomatic severe bradycardia is usually related to one of the following:
  - Ischemia (MI)
  - Drugs (beta blocker, Calcium channel blocker)
  - Electrolytes (hyperlakemia)
**3060 CHEST PAIN**

**Consider life threatening causes of chest pain in all patients**
- While assessing ABCs titrate oxygen, monitor vital signs, cardiac rhythm, start IV
- Obtain 12-lead ECG
- Administer aspirin if history suggests possible cardiac chest pain

**STEMI?**
- Notify receiving facility immediately if Cardiac Alert criteria met
- Place combination defibrillation/pacing pads on patient

**Give SL nitroglycerin if suspected cardiac chest pain and no contraindication**
- An EMT may administer patient’s prescribed nitroglycerin, Contact Base for verbal order

**For hypotension following nitroglycerin** give 250 ml NS bolus, reassess, and repeat bolus as needed. Do not give additional nitroglycerin.

**Consider opioid for chest pain refractory to nitroglycerin, if no contraindication**

- Consider repeat 12-lead if initial 12-lead non-diagnostic and/or patient’s condition changes
- Consider additional 12-lead views such as R sided leads for R ventricular infarct if inferior MI present

**Life threatening causes of chest pain:**
- Acute coronary syndrome (ACS)
- Pulmonary embolism
- Thoracic aortic dissection
- Tension pneumothorax

**Nitroglycerin Contraindications:**
- Suspected right ventricular ST-segment elevation MI (inferior STEMI pattern plus ST elevation in right-sided precordial leads e.g. V4R)
- Hypotension SBP < 100
- Recent use of erectile dysfunction (ED) medication (e.g. Viagra, Cialis)

**Causes of Chest Pain in Children:**
- Costochondritis
- Pulmonary Causes
- Ischemia Is rare but can be seen with a history of Kawasaki’s disease with coronary aneurysms
- Cyanotic or Congenital Heart Disease
- Myocarditis
- Pericarditis
- Arrhythmia
- Anxiety
- Abdominal Causes
**Goal:**
- To identify patients with ST-segment elevation myocardial infarction (STEMI) in the prehospital setting and provide advanced receiving hospital notification in order to minimize door-to-balloon times for percutaneous coronary intervention (PCI)

**Inclusion Criteria:**
- Chest discomfort consistent with ACS
- 12-lead ECG showing ST-segment elevation (STE) at least 1 mm in two or more anatomically contiguous leads
- Age 35 years old or older (If STEMI patient outside age criteria, contact receiving hospital for consult)

**Exclusion Criteria:**
- Wide complex QRS (paced rhythm, BBB, other)
- Symptoms NOT suggestive of ACS (e.g.: asymptomatic patient)
- If unsure if patient is appropriate for Cardiac Alert, discuss with receiving hospital MD

**Actions:**
- Treat according to chest pain protocol en route (cardiac monitor, oxygen, aspirin, nitroglycerin and opioid as needed for pain control).
- Notify receiving hospital ASAP with ETA and request CARDIAC ALERT. Do not delay hospital notification. If possible, notify ED before leaving scene.
- Transmit the EKG to the receiving facility (AIP, Childrens, Parker, TMCA)
- Start 2 peripheral IVs – avoid the right wrist or hand if possible in the field to avoid interfering with cath lab radial access
- Place combo pads on patient due to risk of cardiac arrhythmia
- Rapid transport
- If patient does not meet inclusion criteria, or has exclusion criteria, yet clinical scenario and ECG suggests true STEMI, request medical consult with receiving hospital emergency physician.

**Additional Documentation Requirements:**
- Time of first patient contact
- Time of first ECG
3080 HYPERTENSION

Intent:

A. Even with extremes of blood pressure, treat the medical emergency associated with hypertension (“treat the patient, not the number”)
   1. Treat chest pain, pulmonary edema, or stroke according to standard protocols (pain control will usually improve BP significantly)
B. Do not use medication to treat asymptomatic hypertension
C. Do not treat hypertension in acute stroke
D. Obtain a 12 lead ECG if patient’s chief complaint is hypertension
3090 VENTRICULAR ASSIST DEVICES

Ventricular Assist Device (VAD)
A Ventricular Assist Device (VAD) is a mechanical device used to support circulation in a patient with significant cardiac ventricular dysfunction. The Left Ventricular Assist Device (LVAD) is commonly used to support the left side of the heart and to provide extra cardiac output to the body. This device can be placed short term to bridge patients until they can receive a heart transplant or long term for people who are not candidates for a transplant. LVAD patients can be identified by an electric driveline cable that comes directly out of their abdomen and connects to an external control pack powered by two external batteries they will be wearing with a bag, harness or vest. The patient still has underlying heart function and rhythm that can be assessed and treated as appropriate per protocols.

Assess the patient
Typically, LVAD patients have no discernible pulse. Blood pressure measurement requires manual BP cuff and Doppler which the patient may have. Utilize other parameters for patient assessment:
- Level of consciousness
- Respiratory rate and work of breathing
- Signs of perfusion: skin color/temperature, capillary refill (HR >100 is hemodynamically unstable)
- Cardiac monitor, SpO₂, blood glucose level

Is the patient stable?

STABLE
- Address any medical problems according to protocol
- Transport to University of Colorado Hospital for further treatment, if practical
- Contact VAD Coordinator

UNSTABLE
- Determine if VAD is running and functioning properly
- Auscultate chest for whirling sounds
- Examine VAD control unit for alarms

VAD RUNNING
- 250 mL bolus
- Notify destination of VAD patient inbound
- Consider chest compressions if apneic with no clinical evidence of perfusion
- Initiate ACLS (PALS if patient pre-pubescent) and address underlying dysrhythmia or other problems per protocol

VAD NOT RUNNING
- Consider chest compressions if required
- Address VAD alarms/faults
- Consider defibrillation if required
- Notify destination of VAD patient inbound
- Initiate ACLS (PALS if patient pre-pubescent)

Common VAD Complications
- CVA
- TIA
- Arrhythmias
- Infections
- Sepsis
- Obstructions
- Pump Failure

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### Key Points

- Unstable VAD patients should be transported to the nearest appropriate facility. University of Colorado Hospital is the only facility in the region that definitively treats VAD patients—and is therefore the preferred destination when patient condition is stable and conditions/operational factors allow transport.
- **Contact VAD Coordinator as soon as possible at 24/7 pager # (303) 266-4522.** For pediatric patients contact the Children's Hospital Colorado transplant coordinator pager at (303) 890-3503. Provide patient name, DOB, condition & ETA at destination for consultation and/or if transporting to University of Colorado Hospital. VAD coordinator will call back.
- VAD patient family members are excellent resources to assist with patient history and evaluation/repair of VAD alarms/faults.
- **It is vital to transport the patient's back-up batteries and emergency equipment with the patient.**
- Device specific information for EMS can be found at: [https://www.mylvad.com/medical-professionals/ems](https://www.mylvad.com/medical-professionals/ems)
4000 MEDICAL SHOCK PROTOCOL

Hypotension for age and/or signs of poor perfusion

- ABCs
- Complete set of vital signs
- Full monitoring
- \(O_2\) via NRB facemask @ 15L/min
- IV/IO access

Consider etiology of shock state

Treat dysrhythmia per appropriate protocol

Administer IV/IO fluids 20 mL/kg up to 1 L; reassess and repeat if needed

For ongoing hypotension, poor perfusion or pulmonary edema, consider Vasopressor Infusion

If patient at risk for adrenal insufficiency, see Adrenal Insufficiency protocol

Pediatric Fluid Administration
- For children <40 kg or not longer than length based tape, hand pull/push fluid with a 60 mL syringe utilizing a 3 way stop cock.
- The treatment of compensated shock requires aggressive fluid replacement of 20 mL/kg up to 3 boluses.
- Goal of therapy is normalization of vital signs within the first hour.
- Hypotension is a late sign in pediatric shock patients.

Pediatric Shock
- Normal mental status
- Normal systolic blood pressure
- Tachycardia
- Prolonged (>2 seconds) capillary refill
- Tachypnea
- Cool and pale distal extremities
- Weak peripheral pulse

Pediatric Shock
- Decrease mental status
- Weak central pulses
- Poor color
- Hypotension for age

Etiologies of Shock
- Dysrhythmia, myocardial ischemia
- Sepsis
- Hemorrhage
- Anaphylaxis
- Overdose
- Cyanide or carbon monoxide poisoning
- Other: PE, MI, tension pneumothorax

Hypotension for Age

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<th>Age</th>
<th>Blood Pressure</th>
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<td>&lt;1 year</td>
<td>&lt;70 mmHg</td>
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<td>&lt;70 + (2 x age in years)</td>
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<tr>
<td>&gt;10 years</td>
<td>&lt;50 mmHg</td>
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</table>

Tachycardia for Age

<table>
<thead>
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<th>Age</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
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<td>&gt;120 bpm</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>&gt;100 bpm</td>
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</table>
4010 UNIVERSAL ALTERED MENTAL STATUS

Altered Mental Status (AMS)

Assess ABCs
Go to pulseless arrest, adult respiratory distress,
pediatric respiratory distress or obstructed airway
protocols as appropriate

Persistent AMS?

Yes

Check BGL and consider trial of Naloxone

BGL < 60 mg/dL or clinical condition suggests hypoglycemia?

Yes

Hypoglycemia protocol

No

No

Seizure activity present?

Yes

Seizure protocol

No

Perform rapid neurologic assessment including LOC and
Cincinnati Prehospital Stroke Score (CPSS)

Focal neuro deficit or positive CPSS?

Yes

Stroke protocol

Determine time last seen normal
Consider Stroke Alert criteria and
contact destination hospital

No

Consider other causes of AMS:
Head trauma, overdose, hypoxia,
hypercapnea, heat/cold emergency,
sepsis, & metabolic

Drug or Alcohol intoxication?

Yes

Drug/Alcohol Intoxication protocol

No

During transport:
• Give supplemental oxygen, monitor vital signs, airway, breathing
• Give fluid bolus if volume depletion or sepsis suspected
• Cardiac rhythm / 12 lead ECG for unexplained altered mental status

EMT Paramedic

• Determine character of event
• Consider Seizure, Syncope, and TIA
• Monitor and transport with supportive care

Check BGL and consider trial of Naloxone

Hypoglycemia protocol

Seizure protocol

Stroke protocol

Drug or Alcohol Intoxication protocol

Hypoglycemia protocol

Seizure protocol

Stroke protocol

Drug or Alcohol Intoxication protocol
**General Information:**
- Syncope is defined as transient loss of consciousness accompanied by loss of postural tone.
- A syncopal episode will generally be very brief and have a rapid recovery with no postictal confusion.
- Convulsive movements called myoclonic jerks may occur with syncope. This is often confused with seizures, but should not be accompanied by a post-ictal phase, incontinence or tongue biting.
- Elderly syncope has a high risk of morbidity and mortality

**Pediatric Considerations:**
- Life-threatening causes of pediatric syncope are usually cardiac in etiology (arrhythmia, cardiomyopathy, myocarditis, or previously unrecognized structural lesions)
- In addition to the causes listed above, consider the following in the pediatric patient:
  - Seizure
  - Breath holding spells
  - Toxins (marijuana, opioids, cocaine, CO, etc.)
  - Heat intolerance
  - BRUE (Brief Resolved Unexplained Events, formerly ALTE)
- Important historical features of pediatric syncope include: color change, seizure activity, incontinence, post-ictal state, and events immediately prior to syncope event

**Causes of Syncope:**
- Cardiac
  - Structural heart disease
  - Arrhythmia (Prolonged QT, Brugada, WPW, heart block, etc.)
- Seizure
- Hypovolemia
  - Dehydration
  - Blood loss
  - Pregnancy/ectopic
- Pulmonary Embolism
- Vasovagal

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**Universal Altered Mental Status**
- Assess and stabilize ABCs, give O₂, assess vital signs
- Rule out and treat hypoxia
- Rule out and treat hypoglycemia
- Perform and document neurologic exam

**Obtain 12 lead ECG**

**Consider etiology and treat accordingly**

**All patients with syncope are advised to come to the hospital for evaluation**
The Cincinnati Prehospital Stroke Scale (CPSS) is designed to be very reproducible and identify those strokes most likely to benefit from reperfusion therapy, but does not identify all strokes.

- The CPSS is highly specific for stroke, meaning if you have a positive CPSS, you are almost certainly having a stroke.
- The CPSS is not extremely sensitive, meaning if you do not have a positive CPSS, you still may be having a stroke.

Stroke signs may be very subtle, therefore it is important to know other signs of stroke, which include:
- Impaired balance or coordination
- Vision loss
- Headache
- Confusion or altered mental status
- Seizure

Rule out or treat hypoglycemia

- Obtain medical history
- Document medications
- Identify family or friend who may assist with history and decision-making, get contact info and strongly encourage to come to ED as they may be needed for consent for treatments

Consider common stroke mimics/syndromes

- Start IV and draw blood
- Elevate head 30°, if possible
- Ensure full monitoring in place: cardiac, SpO₂

Fully monitor patient and continually reassess:
- Improvement or worsening of deficit
- Adequacy of ventilation and oxygenation
- Cardiovascular stability

Notify receiving hospital of suspected stroke and time of onset of symptoms in order to provide hospital the opportunity for Stroke Alert

It is more important that you know timeline of your patient’s symptoms than an individual hospital’s Stroke Alert criteria, which may vary

Transport to Children’s Hospital Colorado-Anschutz Campus

Cincinnati Prehospital Stroke Scale
Think “FAST” (face, arm, speech, time)

Assess Facial Droop
Say: “Smile for me”, or “Show me your teeth”

Assess Arm Pronator Drift
Demonstrate, and say: “Put your arms up for me like this and hold them while I count to 10”

Assess Speech
Say: “Repeat after me: you can’t teach an old dog new tricks”, or “No ifs, ands, or buts”

CPSS does not identify all strokes. See below

Consider stroke with the following focal deficits:
- Weakness or numbness on one side
- Word salad, understands but can’t speak
- Uncoordinated on one side
- Unable to see on one side

Stroke Alert Criteria
- Last known normal 12 hours or less
- BGL > 60
- No seizure at onset or recent head trauma
- A positive screening on the CPSS

Stroke Mimics (for all ages):
- Hypoglycemia
- Post-ictal paralysis
- Complex migraine
- Overdose
- Trauma
- Bell’s palsy

 família
4030 STROKE

Mobile Stroke Treatment Unit – Activation and Transfer of Care

AFR Dispatched to Incident

Review of CAD notes reveals possible Stroke patient
**AND**
Pt > 18 years old?

No ➔ Do not request MSTU Response
Treat and transport per protocol

Yes ➔ Request dispatch of MSTU via Aurora Comm. Center

AFD arrival on scene
Request 10 minute ticker
Treat per protocol

Does pt. meet Stroke Alert Criteria
**AND**
Pt > 18 years old?

No ➔ Cancel MSTU response
Treat and transport per protocol

Yes ➔ Treat per protocol
Prepare pt for transport

10 minutes after AFD arrival

MSTU NOT on scene
Cancel MSTU Response
Treat and transport per protocol

MSTU on scene
Pt report made to MSTU team

MSTU Team **DOES NOT** accept transfer of care
Treat and transport per protocol

MSTU team **ACCEPTS** transfer of care
Assist MSTU team loading pt into MSTU
Pt care transferred to MSTU team

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4040 SEIZURE

- Support ABCs:
  - Give oxygen
  - Rule out or treat hypoglycemia
  - Universal seizure precautions (see below)
  - Consider the cause (see below)

**Actively Seizing?**

**Yes**
- If seizure brief and self-limited, treatment not necessary
- Rule out hypoglycemia (check blood glucose)
- If prolonged (e.g.: > 5 min) or recurrent seizure, then treat as follows:

  **Give benzodiazepine IN route if no IV**

- Actively seizing after 5 minutes?
  - Yes
    - Establish IV access if not already in place
    - Repeat benzodiazepine

- Actively seizing after 5 minutes?
  - Yes
    - CONTACT BASE
  - No

**No**
- Check pulse and reassess ABC
- Give supplemental oxygen

- Transport and monitor ABCs, vital signs, and neurological condition
- Cardiac monitoring if recurrent seizures and/or meds given
- Complete head to toe assessment

**Universal Seizure Precautions:**
- Ensure airway patency, but do not force anything between teeth.
- Give oxygen
- Suction as needed
- Protect patient from injury
- Check pulse immediately after seizure stops
- Keep patient on side

**Document:**
- Document: Seizure history: onset, time interval, previous seizures, type of seizure
- Obtain medical history: head trauma, diabetes, substance abuse, medications, compliance with anticonvulsants, pregnancy

**Pregnancy and Seizure:**
- If ≥20 weeks gestational age or up to 6 weeks postpartum administer magnesium sulfate

**Consider the Cause of Seizure**
- Epilepsy
- EtOH withdrawal or intoxication
- Hypoglycemia
- Stimulant use
- Trauma
- Intracranial hemorrhage
- Overdose (TCA)
- Eclampsia
- Infection: Meningitis, sepsis
- Febrile (age 6 months to 6 years old)
Check blood glucose level in ANY patient with signs or symptoms consistent with hypoglycemia

Examples:
- Altered MS, agitation, focal neurologic deficit, seizure, weakness, diaphoresis, decreased motor tone, pallor

If hypoglycemia still most likely despite normal reading on glucometer, administer glucose regardless, while considering other causes of altered mental status

Is BGL < 60?

Yes

Can the patient safely tolerate oral glucose?
intact gag reflex, follows verbal commands

No

Glucagon IM

Alternative: If severe symptoms (coma), consider IO and administer dextrose IO

Are you able to establish IV access?

No

Yes

Administer dextrose IV & re reassess patient

Symptoms resolved?

No

Recheck BGL and consider other causes of altered mental status

Yes

Monitor and transport or contact base for refusal if indicated

Regarding refusals after a hypoglycemic episode:
See Patient Refusal protocol
Transport is always indicated for any of the following patients:
- Pts with unexplained hypoglycemia
- Pts taking oral hypoglycemic meds
- Pts not taking food by mouth
- Pts who do not have competent adult to monitor

Considerations for Hyperglycemia:
- In general, treat the patient, not the glucose value. Treat shock if present.
- Consider NS bolus for patients with hyperglycemia and no evidence of fluid overload.
- Pediatric patients with concern for DKA should not exceed 10-20 mL/kg of fluids.
**DEFINITION:**
An infant < 1 year of age with episode frightening to the observer characterized by apnea, choking/gagging, color change or change in muscle tone

- Support ABCs as necessary
- Obtain detailed history of event and medical history
- Complete head-to-toe assessment

**High-risk BRUE?**
- Second event in 24 hours
- Event lasted > 1 minute
- Required CPR by EMS
- Child < 90 days of age
- History or exam concerning

- **Yes**
  - Transport to Children’s Hospital Colorado- Anschutz Campus
  - Monitor vital signs en route

- **No**
  - **Low-Risk BRUE:**
    - Transport to closest appropriate ED
    - Monitor vital signs enroute

**Clinical history to obtain from observer of event:**
- Document observer’s impression of the infant’s color, respirations and muscle tone
- For example, was the child apneic, or cyanotic or limp during event?
- Was there seizure-like activity noted? Was any resuscitation attempted or required, or did event resolve spontaneously?
- How long did the event last?

**Past Medical History:**
- Recent trauma, infection (e.g. fever, cough)
- History of GERD
- History of Congenital Heart Disease
- History of Seizures
- Medication history

**Examination/Assessment**
- Head to toe exam for trauma, bruising, or skin lesions
- Check anterior fontanelle: is it bulging, flat or sunken?
- Pupillary exam
- Respiratory exam for rate, pattern, work of breathing and lung sounds
- Cardiovascular exam for murmurs and symmetry of brachial and femoral pulses
- Neuro exam for level of consciousness, responsiveness and any focal weakness

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**DEFINITIONS:**

**Intoxicated patient with any of the following must be transported to ED:**

- Incapacitating Intoxication *
  - Semiconscious, unconscious, or somnolent, not protecting airway
  - Unable to stand from seated position and walk with minimal assistance
  - Disoriented
  - Speech is not understandable
  - At immediate risk of environmental exposure or trauma due to unsafe location

**Acute Illness or Injury**

- Abnormal vital signs – Refer to alcohol release form
- Physical complaints that might indicate an underlying medical emergency, e.g.: chest pain
- Seizure or hypoglycemia
- Signs of trauma or history of acute trauma
- History or signs of acute head injury
- Speech that is not understandable or abnormal aside from slight slurring
- Evidence of other substance abuse

**Clinical Intoxication Signs**

- Ataxic or unsteady gait
- Slurred Speech
- Slow Motor Response

**Clinical Intoxication Signs**

- Always consider alternative diagnoses: see universal altered mental status protocol

**Bystander Administered Naloxone:**

- Refer to naloxone protocol regarding bystander administered naloxone and patient refusal.

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- Patient can be released to responsible person in a safe environment?
- Determine LOC and assess ABCs
  - Obtain vital signs, including SpO2
  - Consider EtCO2 and cardiac monitor as indicated
  - Perform head-to-toe exam
  - Determine medical history, medications
  - Check BGL unless mild symptoms. If considering release, must check BGL.
- BGL < 60 mg/dL or clinical condition suggests hypoglycemia?
- Does patient have evidence of incapacitating intoxication? *
  - Transport to ED
- Does patient have signs of acute illness or injury?
  - Transport to ED
- Can patient be released to responsible person in a safe environment?
  - These findings suggest lower level of intoxication that is low risk. These may decline treatment and/or transport and be released to law enforcement or to a sober friend or family member. Base contact not required
  - Does patient meet criteria to directly transport to detox facility? *All Disp of Acutely Intoxicated Patients*
  - Transport to detox
  - Transport to ED
PPE and decontaminate when appropriate

Obtain specific information:
- Type of ingestion(s)
- What, when and how much ingested?
- Bring the poison, container, all medication and other questionable substances to the ED
- Note actions taken by bystanders or patient (e.g.: induced emesis, "antidotes", etc)
- Supportive Care is key to overdose management

ABCs
IV, oxygen, monitor

Need for airway management?
Yes
Consider Naloxone
See Adult or Pediatric Respiratory Distress protocols

No

Hypotension for age?
Yes
IV fluid bolus per Medical Shock protocol

No

Altered mental status?
Yes
Universal Altered Mental Status protocol

No

Specific ingestion?

Stimulant
Tachycardia, HTN, agitation, sweating, psychosis

Benzodiazepine for severe symptoms
See Agitated/Combative Patient protocol

Tricyclic antidepressant
Wide complex tachycardia, seizure

Sodium Bicarbonate for QRS > 100 msec
If intubated, consider hyperventilation to ETCO₂ 25-30 mmHg
See Seizure protocol

Organophosphate or nerve agent
DUMBELS syndrome

Nerve Agent Antidote Kit
Atropine
Pralidoxime

Calcium Channel Blocker
Bradycardia, heart block, hypotension

Calcium and Vasopressor Infusion for hypotension
Glucagon

β-Blocker
Bradycardia, heart block, hypotension

Fluids per Medical Shock Protocol
Vasopressor Infusion
Glucagon

Calcium Channel Blocker
Bradycardia, heart block, hypotension

Fluids per Medical Shock Protocol
### 4090 ALLERGY AND ANAPHYLAXIS

**Generalized or Systemic Reaction**
Multisystem involvement: skin, mucus membranes, and gastrointestinal symptoms

- Does patient have any of the following signs or symptoms?
  - Hypotension
  - Signs of poor perfusion
  - Bronchospasm, stridor
  - Altered mental status

  **No**
  - Consider diphenhydramine if significant discomfort
  - Transport and reassess for signs of deterioration

  **Yes**
  - Give epinephrine IM, then:
    - Start IV and give IV bolus per medical shock protocol
  - Give diphenhydramine
  - Give methylprednisolone
  - Consider addition of albuterol if wheezing
  - Monitor ABCs, SpO2, cardiac rhythm
  - Reassess for signs of deterioration

  **If persistent signs of severe shock with hypotension not responsive to IM epinephrine and fluid bolus:**
  - Contact Base
  - Consider IV epinephrine drip per vasopressor infusion protocol

  - For pediatrics, consider IV epinephrine bolus

**Localized Reaction**
Including isolated tongue, airway

- Airway involvement?
  - Tongue or uvula swelling, stridor

  **No**
  - Consider diphenhydramine if significant discomfort
  - Transport and reassess for signs of deterioration

  **Yes**
  - Give immediate IM epinephrine & manage airway per Obstructed Airway Protocol
  - Start IV
  - Give diphenhydramine
  - Give methylprednisolone

**Definitions:**
- **Anaphylaxis**: severe allergic reaction that is rapid in onset and potentially life-threatening. Multisystem signs and symptoms are present including skin and mucus membranes.
- **Angioedema**: deep mucosal edema causing swelling of mucus membranes of upper airway. May accompany hives.

**Document:**
- History of allergen exposure, prior allergic reaction and severity, medications or treatments administered prior to EMS assessment
- Specific symptoms and signs presented: itching, wheezing, respiratory distress, nausea, weakness, rash, anxiety, swelling of face, lips, tongue, throat, chest tightness, etc.
Non-traumatic abdominal pain and/or vomiting

- Assess ABCs
- Give oxygen
- Complete set of vital signs
- Consider life-threatening causes

If signs of poor perfusion AND/OR hypotension for age, see Medical Shock protocol and begin fluid resuscitation

- Consider IV
- If GI bleed, start 2nd IV
- Transport in position of comfort

Consider antiemetic for vomiting
Consider opioid for severe pain

Cardiac monitor and 12 lead ECG for any of the following:
- Diabetic
- Age > 50
- Upper abdominal pain concerning for ACS
- Unstable vital signs in the adult patient

- Monitor and transport
- Frequent reassessment for deterioration and response to treatment

EMT
Paramedic

Life-threatening causes:
- Cardiac etiology: MI, ischemia
- Vascular etiology: AAA, dissection
- GI bleed
- Gynecologic etiology: ectopic pregnancy

History:
- Onset, location, duration, radiation of pain
- Associated sx: vomiting, bilious emesis, GU sx, hematemesis, coffee ground emesis, melena, rectal bleeding, vaginal bleeding, known or suspected pregnancy, recent trauma

Pediatric Patients:
- Life-threatening causes vary by age. Consider occult or non-accidental trauma, toxic ingestion, button battery ingestion, GI bleed, peritonitis
- For most pediatric patients without signs of shock, no IV is required and pharmacologic pain management should be limited

Elderly Patients:
- Much more likely to have life-threatening cause of symptoms
- Shock may be occult, with absent tachycardia in setting of severe hypovolemia

TABLE OF CONTENTS
**General Guidelines:**

- **Signs and Symptoms of CO exposure include:**
  - Headache, dizziness, coma, altered mentation, seizures, visual changes, chest pain, tachycardia, arrhythmias, dyspnea, N/V, “flu-like illness”
- The absence or low readings of COHb is not a reliable predictor of toxicity of other fire byproducts
- In smoke inhalation victims, consider cyanide treatment with Hydroxocobalamin as per indications
- The fetus of a pregnant woman is at higher risk due to the greater affinity of fetal hemoglobin to CO. With CO exposure, the pregnant woman may be asymptomatic while the fetus may be in distress. In general, pregnant patients exposed to CO should be transported.

<table>
<thead>
<tr>
<th>COHb</th>
<th>Severity</th>
<th>Signs and Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15-20%</td>
<td>Mild</td>
<td>Headache, nausea, vomiting, dizziness, blurred vision</td>
</tr>
<tr>
<td>21-40%</td>
<td>Moderate</td>
<td>Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness</td>
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<tr>
<td>41-59%</td>
<td>Severe</td>
<td>Dysrhythmias, hypotension, cardiac ischemia, palpitations, respiratory arrest, pulmonary edema, seizures, coma, cardiac arrest</td>
</tr>
<tr>
<td>&gt;60%</td>
<td>Fatal</td>
<td>Death</td>
</tr>
</tbody>
</table>
4120 ADRENAL INSUFFICIENCY PROTOCOL

**Patient at risk for adrenal insufficiency (Addisonian crisis):**
- Identified by family or medical alert bracelet
- Chronic steroid use
- Congenital Adrenal Hyperplasia
- Addison's disease

**EMT**

**Assess for signs of acute adrenal crisis:**
- Pallor, weakness, lethargy
- Vomiting, abdominal pain
- Hypotension, shock
- Congestive heart failure

**Paramedic**

**All symptomatic patients:**
- Check blood glucose and treat, hypoglycemia, if present
- Start IV and give oxygen
- If signs of poor perfusion AND/OR hypotension for age, see Medical Shock protocol and begin fluid resuscitation

**Give corticosteroid**

- Continue to monitor for development of hypoglycemia
- Contact base for consult if patient not responding to treatment
- Monitor 12 lead ECG for signs of hyperkalemia

- Chronic corticosteroid use is a common cause for adrenal crisis, carefully assess for steroid use in patients with unexplained shock.
- Administration of steroids are life-saving and necessary for reversing shock or preventing cardiovascular collapse
- Patients at risk for adrenal insufficiency may show signs of shock when under physiologic stress which would not lead to cardiovascular collapse in normal patients. Such triggers may include trauma, dehydration, infection, myocardial ischemia, etc.
- If no corticosteroid is available during transport, notify receiving hospital of need for immediate corticosteroid upon arrival
- Under Chapter 2 Rule: specialized prescription medications to address an acute crisis may be given by all levels with a direct VO, given the route of administration is within the scope of the provider. This applies to giving hydrocortisone for adrenal crisis, for instance, if a patient or family member has this medication available on scene. Contact base for direct verbal order
**Active nosebleed**

- ABCs
  - Tilt head forward
  - Have patient blow nose to expel clots

- Spray both nares with **phenylephrine**
- Compress nostrils with clamp or fingers, pinching over fleshy part of nose, not bony nasal bridge
- Transport in position of comfort, usually sitting upright

- IV access and IV fluid bolus if signs of hypoperfusion, **shock**

---

**General Guidelines:**

- Most nose bleeding is from an anterior source and may be easily controlled.
- Avoid **phenylephrine** in pts with known CAD.
- Anticoagulation with aspirin, clopidogrel (Plavix), warfarin (Coumadin) will make epistaxis much harder to control. Note if your patient is taking these, or other, anticoagulant medications.
- Posterior epistaxis is a true emergency and may require advanced ED techniques such as balloon tamponade or interventional radiology. Do not delay transport. Be prepared for potential airway issues.
- For patients on home oxygen via nasal cannula, place the cannula in the patient’s mouth while nares are clamped or compressed for nosebleed.
Evaluate and identify potential sepsis – is there suspected or confirmed infection?

- ABCs
- Complete set of vital signs
- Cardiac monitoring including SpO2 and waveform capnography
- O2 as appropriate

Evaluate potential SIRS Criteria:
- Temp < 36C (96.8F) or > 38C (100.4F)
- HR > 90 (or tachycardic for age)
- RR > 20 or mechanical ventilation (or tachypneic for age)

Are there two or more SIRS criteria? No

Is there evidence of hypoperfusion? (ANY ONE OF THE FOLLOWING):
- Hypotension for age
- Altered mental status (excluding simple febrile seizure)
- Delayed capillary refill AND mottling
- Systolic BP < 90 mmHg
- MAP < 65 mmHg
- Sustained EtCO2 < 25 mmHg

No

Yes

- IV fluid bolus @ 30mL/kg, frequently assess vitals & lung sounds for edema
- 2 large bore IV’s
- Transport to closest appropriate hospital

NOTIFY HOSPITAL of Prehospital Sepsis Alert

For ongoing hypotension, poor perfusion or pulmonary edema, consider Vasopressor Infusion (adult patients only)

Pediatric Fluid Administration
- For children <40 kg or not longer than length-based tape, hand pull/push fluid with a 60L syringe utilizing a 3 way stop cock.
- The treatment of compensated shock requires aggressive fluid replacement, may need to repeat fluid bolus up to 60mL/kg.
- Goal of therapy is normalization of vital signs within the first hour.
- Hypotension is a late sign in pediatric shock patients.

Principles of Sepsis
- Multiple studies demonstrate the benefit of early recognition and treatment of sepsis, including in the prehospital setting.
- Early hospital notification of sepsis may lead to shorter time to IV fluid and IV antibiotics and increase survival.
- Patients with septic shock require aggressive IV fluid resuscitation. Starting dose should be 30mL/kg of IV fluid.
- EtCO2 has been demonstrated to correlate with serum lactate levels and predictive of severity of sepsis. A sustained EtCO2 <25 mmHg may indicate hypoperfusion.

Common Infection Sites with Severe Sepsis
- Respiratory
- Bacteremia (unspecified site)
- Genitourinary (more prevalent with females)
- Abdominal
- Device-related
- Soft tissue/wound
- Central nervous system
- Endocarditis
5000 DROWNING

**ABCs**

- Spinal precautions before moving patient if trauma suspected

**Specific Information Needed:**
- Length of submersion
- Degree of contamination of water
- Water temperature
- Diving accident and/or suspected trauma

**Assess mental status**

- Remove wet garments, dry and insulate patient
- Transport, even if initial assessment normal
- Monitor ABC, VS, mental status
- If respiratory distress develops, consider CPAP as delayed pulmonary edema may occur after drowning.

**Awake and alert**

- Remove wet garments, dry and insulate patient
- Transport, even if initial assessment normal
- Monitor ABC, VS, mental status
- If respiratory distress develops, consider CPAP as delayed pulmonary edema may occur after drowning.

**Awake but altered LOC**

- Remove wet garments, dry and insulate patient
- Suction as needed
- Start IV, obtain BGL and give oxygen
- Transport
- Monitor ABC, VS, mental status
- Monitor cardiac rhythm

**Comatose or unresponsive**

- Remove wet garments, dry and insulate patient
- Heimlich maneuver NOT indicated
- Consider all causes of Altered Mental Status
- Suction as needed
- Start IV, obtain BGL and give oxygen
- Transport
- Monitor ABC, VS, mental status, waveform capnography
- Consider advanced airway especially if suspected pulmonary edema
- Monitor cardiac rhythm
- BLS airway preferred in pediatrics

**Emergency Medical Technician (EMT)**

- Start CPR with manual ventilations
- Attach AED/monitor/defibrillator
- Single defibrillation attempt only if hypothermic
- Treat per Medical Arrest Algorithm with following changes if hypothermic:
  - Handle very gently
  - Start IV with warm IV fluid
  - Insulate patient
  - For asystole, v-fib, or pulseless v-tach, single dose epinephrine IV/IO
- Consider advanced airway especially if suspected pulmonary edema
- Monitor cardiac rhythm, waveform capnography
- BLS airway preferred in pediatrics

**Paramedic**

- Remove wet garments, dry and insulate patient
- Heimlich maneuver NOT indicated
- Consider all causes of Altered Mental Status
- Suction as needed
- Start IV, obtain BGL and give oxygen
- Transport
- Monitor ABC, VS, mental status, waveform capnography
- Consider advanced airway especially if suspected pulmonary edema
- Monitor cardiac rhythm
- BLS airway preferred in pediatrics

**Drowning/submersion commonly associated with hypothermia.**
- Even profound bradycardias may be sufficient in setting of severe hypothermia and decreased O2 demand
- Good outcomes after even prolonged hypothermic arrest are possible, therefore patients with suspected hypothermia should generally be transported to the hospital.
- BLS: pulse and respirations may be very slow and difficult to detect if patient is severely hypothermic. If no definite pulse, and no signs of life, begin CPR
- If not breathing, start rescue breathing
- ALS: advanced airway and resuscitation medications are indicated
Hypothermia and Frostbite

**Localized cold injury**
- Frostbite, frostnip
- Remove wet garments, dry and insulate patient
- Transport, even if initial assessment normal
- Monitor ABC, VS, mental status
- Dress injured area lightly in clean cloth to protect from further injury
- Do not rub, do not break blisters
- Do not allow injured part to refreeze. Repeated thaw freeze cycles are especially harmful
- Monitor for signs of systemic hypothermia

**Systemic hypothermia**
- Presumed to be primary problem based on clinical scenario
- High flow $O_2$
- ABCs

**Awake but altered LOC**
- Remove wet garments, dry and insulate patient
- Suction as needed
- Start IV, check BGL, give oxygen
- Transport
- Monitor ABC, VS, mental status
- Monitor cardiac rhythm

**Comatose or unresponsive**
- Pulse Present?
- No
- Yes

- Remove wet garments, dry and insulate patient
- Suction as needed
- Start IV, obtain BGL and give oxygen
- Transport
- Monitor ABC, VS, mental status
- Waveform capnography
- Monitor cardiac rhythm

**Consider advanced airway especially if suspected pulmonary edema**
- BLS airway preferred in pediatrics

**Consider advanced airway especially if suspected pulmonary edema**
- BLS airway preferred in pediatrics

- Even profound bradycardias may be sufficient in setting of severe hypothermia and decreased $O_2$ demand
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- If not breathing, start rescue breathing
- ALS: advanced airway and resuscitation medications are indicated

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5020 HYPERTERMIA

Hyperthermia
- Classify by clinical syndrome
- Consider non-environmental causes (see below)

Heat Cramps
- Normal or slightly elevated body temperature
- Warm, moist skin
- Generalized weakness
- Diffuse muscle cramping

Administer IV/IO fluids 20 mL/kg up to 1 L of cool saline; reassess and repeat if needed

Monitor VS and transport

Heat Exhaustion
- Elevated body temperature
- Cool, diaphoretic skin
- Generalized weakness
- Anxiety
- Headache
- Tachypnea
- Possible syncope

Heat Stroke
- Altered mental status
- Very high core body temperature
- Hot, dry skin
- Hypotension
- Seizure
- Coma

Rapid transport indicated

Adequate airway and breathing?

No
- Assist ventilations and manage airway as needed

Yes
- Administer O₂
- Administer IV/IO fluids 20 mL/kg up to 1 L of cool saline; reassess and repeat if needed

- Remove excess clothing
- For heat stroke, consider external cooling measures if prolonged transport
- Treat seizures, cardiac arrhythmias per protocol
- Monitor and transport

General Guidelines:
- People can sweat through heat stroke right up until they die depending on their level of acclimatization.
- Heat stroke has mortality that exceeds trauma, STEMI, and Stroke and should be treated accordingly

Other causes of hyperthermia besides environment exposure:
- Neuroleptic malignant syndrome (NMS): patients taking antipsychotic medications
- Sympathomimetic overdose: cocaine, methamphetamine
- Anticholinergic toxidrome: overdose ("Mad as a hatter, hot as a hare, blind as a bat, red as a beet") common w. ODs on psych meds, OTC cold medications, Benadryl, Jimson weed, etc.
- Infection: fever (sepsis)
- Thyrotoxicosis: goiter (enlarged thyroid)
5030 HIGH ALTITUDE ILLNESS

Symptoms of illness at altitude

- ABCs
- IV, oxygen
- Cardiac monitor

Head to toe assessment
- Complete history:
  - Rate of ascent, prior altitude illness, rapidity of sx onset
  - Consider non-altitude-related illness

- Never assume that symptoms at altitude are necessary due to altitude illness.
- Acute exacerbations of chronic medical illness at altitude are more common than altitude illness.

EDMT 
Paramedic

Acute mountain sickness (AMS): headache, insomnia, anorexia, nausea, fatigue

High-altitude pulmonary edema (HAPE): dyspnea, cough, headache, nausea, fever

High-altitude cerebral edema (HACE): ataxia, confusion, neuro deficits, seizure, coma, and headache

AMS

Consider antiemetic for vomiting

If signs of poor perfusion AND/OR hypotension for age, see Medical Shock protocol and begin fluid resuscitation

HAPE

O₂ NRB facemask
- Consider CPAP
- Assist ventilations as needed
- Airway management as indicated

- Do NOT give diuretic

HACE

- Descent from altitude
- O₂ NRB facemask
- Assist ventilations as needed
- Airway management as indicated
- Elevate head of bed

HACE is rare at elevations in Colorado; always consider alternative cause of altered mental status

Special Notes:
- There are no specific factors that accurately predict susceptibility to altitude sickness, but symptoms are worsened by exertion, dehydration, and alcohol ingestion.
- Acute Mountain Sickness (AMS) can begin to appear at around 6,500 ft above sea level, although most people will tolerate up to 8000 ft without difficulty. Altitude illness should not be suspected below 6,500 ft. AMS is the most frequent type of altitude sickness encountered. Symptoms often manifest themselves six to ten hours after ascent and generally subside in one to two days, but they occasionally develop into the more serious conditions.
- High altitude pulmonary edema (HAPE) and cerebral edema (HACE) are the most severe forms of high altitude illness. The rate of ascent, altitude attained, exertion, and individual susceptibility are contributing factors to the onset and severity of high-altitude illness.
- Mild HAPE may be managed with high-flow oxygen and supportive care, and does not necessarily require descent from altitude.
- More severe forms of HAPE and all forms of HACE require descent.
5040 INSECT/ARACHNID STINGS AND BITES PROTOCOL

Initiate general care for bites and stings

Assess for localized vs. systemic signs and symptoms and depending on animal involved

Localized Symptoms:
• Pain, warmth and swelling

Consider opioid for severe pain (e.g.: black widow spider) and/or diphenhydramine if needed for itching

Systemic Symptoms:
• Hives, generalized erythema, swelling, angioedema
• Hypotension
• Altered mental status
• Other signs of shock

• Administer oxygen
• Start IV

Treat per allergy & anaphylaxis protocol

General Care
• For bees/wasps:
  o Remove stinger mechanism by scraping with a straight edge. Do not squeeze venom sac
• For spiders:
  o Bring in spider if captured or dead for identification

Specific Information Needed:
• Timing of bite/sting
• Identification of spider, bee, wasp, other insect, if possible
• History of prior allergic reactions to similar exposures
• Treatment prior to EMS eval: e.g. EpiPen, diphenhydramine, etc

Specific Precautions:
• For all types of bites and stings, the goal of prehospital care is to prevent further envenomation and to treat allergic reactions
• Anaphylactoid reactions may occur upon first exposure to allergen, and do not require prior sensitization
• Anaphylactic reactions typically occur abruptly, and rarely > 60 minutes after exposure
5050 SNAKE BITE PROTOCOL

Assess ABCs, mental status
- Administer oxygen
- Start IV
- Monitor VS

Initiate general care for snake bites

Assess for localized vs. systemic signs and symptoms

Localized Symptoms:
- Pain and swelling
- Numbness, tingling to bitten part
- Bruising/ecchymoses

Systemic Symptoms:
- Metallic or peculiar taste in mouth
- Hypotension
- Altered mental status
- Widespread bleeding
- Other signs of shock

General Care:
- Remove patient from proximity to snake
- Remove all constricting items from bitten limb (e.g.: rings, jewelry, watch, etc.)
- Immobilize bitten part
- Initiate prompt transport
- Do NOT use ice, refrigerants, tourniquets, scalpels or suction devices
- Mark margins of erythema and/or edema with pen or marker and include time measured

Opioid for severe pain

Be prepared to manage airway if signs of airway obstruction develop

Opioid for severe pain and if not contraindicated by hypotension

If there is hypotension for age and/or definite signs of shock, treat per Shock Protocol

Obtain specific information:
- Appearance of snake (rattle, color, thermal pit, elliptical pupils)
- Appearance of wound: location, # of fangs vs. entire jaw imprint
- Timing of bite
- Prior 1st aid
- To help with identification of snake, photograph snake, if possible. Include image of head, tail, and any distinctive markings.
- Do not bring snake to ED

Specific Precautions:
- The prairie rattlesnake is native to Denver Metro region and is most common venomous snake bite in the region.
- Exotic venomous snakes, such as pets or zoo animals, may have different signs and symptoms than those of pit vipers. In case of exotic snake bite, contact base and consult zoo staff or poison center for direction.
- Take a picture of the snake, including images of head and tail. If an adequate photo can be taken, it is not necessary to bring snake to ED.
- Never pick up a presumed-to-be-dead snake by hand. Rather, use a shovel or stick. A dead snake may reflexively bite and envenomate.
- > 25% of snake bites are “dry bites”, without envenomations.
- Conversely, initial appearance of bite may be deceiving as to severity of envenomation.
- Fang marks are characteristic of pit viper bites (e.g. rattlesnakes).
- Jaw prints, without fang marks, are more characteristic of non-venomous species.
Scene Safety
A. Scene safety should be assured prior to initiating care. Consider police contact if scene safety is a concern.
B. Refer to restraint protocol as needed, especially as it relates to A.

Specific Information Needed
A. Obtain history of current event from patient, bystanders, family, or other first responders; inquire about recent crisis, toxic exposure, drugs, alcohol, emotional trauma, and suicidal or homicidal ideation.
B. Obtain past history; inquire about previous psychiatric and medical problems, medications.

Specific Objective Findings
A. Evaluate general appearance. Be aware that implicit bias may influence and effect your care. All patient regardless of appearance, age, sex, or ethnicity deserve equal and consistent care and compassion.
B. Evaluate vital signs: Is a particular toxidrome suggested, e.g.: sympathomimetic?
C. Note medic alert tags, breath odors suggesting intoxication.
D. Consider known predictors of violence: Intoxicated, history of mental illness, seizure disorder, males 15-35 years old, paranoid, aggressive, or threatening behavior.
E. Assess for evidence of delirium
   1. Acute confusional state
      • Disoriented to person, place, and/or time
      • Disorganized thinking, rambling speech, hallucinations, responding to internal stimuli
   2. Unaware or unable to respond to environment/ surroundings
      • Is the patient aware of your presence and know why you are there?

Treatment
A. If patient agitated or combative, see Agitated/Combative Patient Protocol
B. Attempt to establish rapport
C. If agitated, attempt verbal calming and de-escalation techniques
D. Assess ABCs. If unstable vital signs, refer to appropriate treatment protocol.
E. Transport to closest appropriate Emergency Department, or the Walk-In Clinic if appropriate per the Alternate Disposition Of Behavioral Health Patients protocol.
F. Be alert for possible elopement, all patient transports should occur with seatbelt in place and visible to provider at all times
G. Consider organic causes of abnormal behavior (trauma, overdose, intoxication, hypoglycemia)
H. If patient restraint considered necessary for patient or EMS safety, refer to Restraint Protocol.
I. Check blood glucose, vital signs, and assess for signs of toxidrome.
   1. If altered mental status or unstable vital signs, refer to Universal Altered Mental Status Protocol.

Transporting Patients Who Have a Behavioral Health Complaint
A. Maintaining patient respect and dignity is important. Attempt to conduct assessment, treatment, and transport in the safest and least restrictive manner possible.
B. Coordination with law enforcement in managing these delicate situations is vital for safety of the patient, scene, and first responders. Authority to make all medical and treatment decisions lies solely with EMS and not law enforcement. Sedation is entirely the responsibility and decision of EMS on scene. There may be certain situations in which a collaborative effort may need to occur between law enforcement and EMS for the safe management of a patient, however, all medical decisions will be made by EMS in these circumstances.
C. If a patient has an isolated mental health complaint (e.g., suicidality), and does not have a medical complaint or need specific medical intervention, then that patient may be appropriately transported by law enforcement according to their protocols or alternative means per agency specific guidelines.
D. If a patient has a psychiatric complaint with associated illness or injury (e.g., overdose, altered mental status, chest pain, etc.), then the patient should be transported by EMS.
E. It is sufficient to assume the patient lacks decision-making capacity if there is a reasonable concern when any person appears to have a mental illness and, as a result of such mental illness, appears to be an imminent danger to others or to himself or herself or appears to be gravely disabled. Effort should be made to obtain consent for transport from the patient, and to preserve the patient’s dignity throughout the process. However, the patient may be transported over his or her objections and treated under involuntary consent if the patient does not comply. A patient being transported for psychiatric evaluation may be transported to any appropriate receiving emergency department.

F. The medical directors feel strongly that the risk of abandonment of a potentially suicidal or otherwise gravely impaired patient far outweighs the likelihood of accusations of patient abduction. Be sure to document your reason for taking the patient over their objections; that you believe that you are acting in the patient's best interests; and be sure to Contact Base if there are concerns.

G. Documentation supports your decision making, therefore document thoroughly.

**Specific Precautions**

A. Patients presenting with acute delirium often have an organic etiology. Rapid and thorough assessment of the patient is essential to potentially identify reversible causes of delirium. Be suspicious for hypoglycemia, hypoxia, head injury, intoxication, or toxic ingestion.

B. Providers transporting a patient over his or her objections should reassure the patient. The provider should strongly consider whether the patient may need restraint and/or sedation for safety. Beware of weapons. These patients can become combative.

**Transporting Patients on a Mental Health Hold**

A. By law, patients detained on a mental health hold may not refuse transport. Similarly, by law, patients on a mental health hold are required to be evaluated by a physician or psychologist and must be transported.

B. Although it is commonly believed that the original copy of the mental health hold form is required to accompany the patient, a legible copy of the mental health hold form is also sufficient.

C. The form documenting the mental health hold should be as complete as possible, including the correct date and time that the patient was detained. The narrative portion should be completed. A signature and license or badge number is also required. Assure that the form is complete before departing.

D. The mental health hold does not need to be started on patients who are intoxicated on drugs and/or alcohol. Nor is it required for patients who are physically incapable of eloping from care, such as those who are intubated, or physically unable.

E. The patient rights form does not need to accompany the patient. The receiving facility may complete this form if there are concerns.

F. If possible, seek direction from the sending facility regarding whether the patient may require sedation and restraint. Consider ALS transport if this is the case.

G. Recall that patients who are a danger to self/others or gravely disabled due to mental illness may be transported by EMS without a mental health hold, under involuntary consent.
6010 AGITATED/COMBATIVE PATIENT PROTOCOL

**A Patient is agitated and cooperative**
- Attempt to reasonably address patient concerns and verbally deescalate
  - IMC-RASS +1 or +2

Patient responds to verbal de-escalation techniques

Assume the patient has a medical cause of agitation. Evaluate for and treat reversible causes, see altered mental status protocol

If patient escalates during treatment (IMC-RASS +3 or +4), refer to box B

**B Patient is agitated and disruptive/dangerous**
- Continue to address patient concerns and verbally deescalate
- Assemble personnel and resuscitation equipment
  - IMC-RASS +3 or +4

**Patient is agitated and cooperative**
- Attempt to reasonably address patient concerns and verbally deescalate
  - IMC-RASS +1 or +2

**Patient agitated and danger to self/providers**

Sedate and Restrain
- Consider cause of agitation
  - Options: benzodiazepine
  - Restraint protocol

**Patient EXTREMELY agitated posing serious, probable, and imminent bodily harm to self/providers**

See hyperactive delirium with severe agitation protocol

**General Guideline**
Emphasis should be placed on patient and provider safety and dignity as well as appropriate use of sedation and restraints in treatment of agitation.

**Documentation**
Include specifics on actions or behaviors that put patient and/or provider safety at risk. Document IMC-RASS scale.

**Pre-Sedation Checklist**
1. Calculate IMC-RASS score
2. Proper medication chosen for clinical presentation
3. Patients' weight estimated per protocol
4. Draw up correct dose of medication according to protocol
5. Cardiac monitor with pulse oximeter and capnography available for immediate use post sedation
6. Airway management equipment, suction, and oxygen available for immediate use post sedation

**Consider Cause of Agitation:**
Both benzodiazepines and butyrophenones (e.g., haloperidol or droperidol) are acceptable options for agitated patients. In certain clinical scenarios individual medications may be preferred
- EtOH (butyrophenone)
- Sympathomimetic (benzodiazepines)
- Psych (butyrophenone)
- Head injury (butyrophenone)

**Adequate Sedation**
- The goal of sedation is to ensure safety to patient and provider and allow for adequate evaluation and treatment of underlying causes
- Agitation that does not compromise patient/provider safety or interfere with evaluation and treatment does not require additional sedation

**Continue Assessment**
- Capnography and SpO2 must be initiated as soon as possible to do so
- Cardiac monitor
- Transport to appropriate Emergency Department

- If patient still agitated and disruptive 5 minutes after first sedation dose, repeat the sedation dose
  - IMC-RASS +3 or +4

- If still agitated and disruptive 5 minutes after 2nd dose sedative
  - IMC-RASS +3 or +4

- Contact Base

Complete post sedation protocol

Assume the patient has a medical cause of agitation. Evaluate for and treat reversible causes, see altered mental status protocol
### Improved Montgomery County Richmond Agitation Sedation Scale (IMC-RASS)

<table>
<thead>
<tr>
<th>Score</th>
<th>Term</th>
<th>Description</th>
<th>EMS Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>+4</td>
<td>Combative</td>
<td>Overtly combative, violent, immediate danger to staff</td>
<td>Unsafe to care for patient without maximal assistance, require law enforcement assistance</td>
</tr>
<tr>
<td>+3</td>
<td>Very agitated</td>
<td>Pulls or removes tubes and catheters, aggressive</td>
<td>Struggles aggressively and forcefully against care. Routine EMS care impossible.</td>
</tr>
<tr>
<td>+2</td>
<td>Agitated</td>
<td>Frequent, non-purposeful movements, fights interventions</td>
<td>Resists EMS care, requires gentle physical redirection to allow for routine EMS care.</td>
</tr>
<tr>
<td>+1</td>
<td>Restless</td>
<td>Anxious but movements are not aggressive or vigorous</td>
<td>Verbally redirectable, follows commands, routine EMS care possible.</td>
</tr>
<tr>
<td>0</td>
<td>Alert and Calm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>Drowsy</td>
<td>Not fully alert but has sustained awakening and eye contact to voice (&gt;10 seconds)</td>
<td>Awakens to voice.</td>
</tr>
<tr>
<td>-2</td>
<td>Light sedation</td>
<td>Briefly awakens with eye contact to voice (&lt;10 seconds)</td>
<td>Awakens to bumps/potholes in roadway during transport or application of oxygen via NC or NRB</td>
</tr>
<tr>
<td>-3</td>
<td>Moderate Sedation</td>
<td>Movement or eye opening to voice (no eye contact)</td>
<td>Eyes open to physical exam, venous tourniquet application and/or BP cuff inflation</td>
</tr>
<tr>
<td>-4</td>
<td>Deep Sedation</td>
<td>No response to voice but movement or eye opening to physical stimulation</td>
<td>Responds to insertion of NPA or IV start</td>
</tr>
<tr>
<td>-5</td>
<td>Unarousable</td>
<td>No response to voice or physical stimulation</td>
<td>No response to insertion of OPA/NPA or IV start</td>
</tr>
</tbody>
</table>
Hyperactive Delirium with Severe Agitation

Agitated patients who pose serious probable and imminent bodily harm to self/others. They will have some or all the following symptoms: paranoia, disorientation, hyper-agression, hallucination, tachycardia, diaphoresis, increased strength, hyperthermia.

Sedate and Restrain

- Administer:
  - 10 mg midazolam IM
- Goal is rapid tranquilization in order to minimize threat to patient and provider safety
- Restraint protocol

Initiate Resuscitation

- Maintain airway
- High flow oxygen
- Capnography and SpO2 monitoring
- Start 2 large bore IVs
- Administer 2 L NS bolus
- Check blood glucose
- Cardiac monitoring
- Rapid transport

If still significantly agitated 5 minutes after medication, Contact Base

Complete post sedation protocol

Assume the patient has a medical cause of agitation. Evaluate for and treat reversible causes, see altered mental status protocol.

Special Considerations

- Give sodium bicarbonate if QRS>120 or cardiac arrest

Adequate Sedation

- The goal of sedation is to ensure safety to patient and provider and allow for adequate evaluation and treatment of underlying causes
- Agitation that does not compromise patient/provider safety or interfere with evaluation and treatment does not require additional sedation
### Post Sedation Resuscitation and Monitoring
- Maintain airway
- Administer oxygen
- Monitor capnography: Maintain respiratory rate >8 breaths per minute
- Monitor SpO2: Goal of 100%
- Establish IV access, if not already in place
- Cardiac monitoring

Continue patient assessment

Initiate immediate transport to appropriate Emergency Department

Complete restraint protocol and maintain restraints through to Emergency Department

---

#### Adequate Sedation
- The goal of sedation is to ensure safety to patient and provider and allow for adequate evaluation and treatment of underlying causes
- Agitation that does not compromise patient/provider safety or interfere with evaluation and treatment does not require additional sedation

---

#### General Guidelines
- Patients receiving sedative medications have a broad range of responses both from the medication given and the underlying etiology of the agitation. They should be treated as high risk for respiratory or cardiovascular compromise.
- Goal is to initiate resuscitation/monitoring as soon as possible.
- Each individual element of post-sedation resuscitation/monitoring should be initiated as soon as possible to do so.
Purpose:

1. Guideline for transport of patients in handcuffs placed by law enforcement

Guideline:

1. Handcuffs are only to be placed by law enforcement. EMS personnel are not permitted to use handcuffs.
2. If the patient was placed in handcuffs by law enforcement due to agitation/combativeness, altered mental status or a similar process, the patient should be evaluated for an underlying life-threatening emergency.
3. Request that law enforcement remain with the patient in the ambulance, if possible. If not possible, request that police ride behind ambulance so as to be readily available to remove handcuffs if needed in an emergency situation to facilitate medical care of the patient.
4. EMS personnel are not responsible for the law enforcement hold on these patients.
5. Handcuffs should only be removed for a medical emergency. EMS should assess the need for ongoing physical restraint for patient or provider safety.
6. Handcuffed patients will not be placed in the prone position.
7. Handcuffs may be used with spinal motion restriction. Medical priorities should take priority in the positioning of the handcuffs.
### 7000 CHILDBIRTH PROTOCOL

#### Overview:
- EMS providers called to a possible prehospital childbirth should determine if there is enough time to transport expectant mother to hospital or if delivery is imminent
- If imminent, stay on scene and immediately prepare to assist with the delivery

#### Imminent Delivery
*Delivery is imminent if there is crowning or bulging of perineum*

1. **Emergency Childbirth Procedure**
   - If there is a prolapsed umbilical cord or apparent breech presentation, go to, [obstetrical complications protocol](#) and initiate immediate transport
   - For otherwise uncomplicated delivery:
     - Position mother supine on flat surface, if possible
     - Do not attempt to impair or delay delivery
     - Support and control delivery of head as it emerges
     - Protect perineum with gentle hand pressure
     - Check for cord around neck, gently remove from around neck, if present
     - Suction mouth and nose only if signs of obstruction by secretions
     - If delivery not progressing, baby is “stuck”, see [obstetrical complications protocol](#) and begin immediate transport
     - As shoulders emerge, gently guide head and neck downward to deliver anterior shoulder. Support and gently lift head and neck to deliver posterior shoulder
     - Rest of infant should deliver with passive participation – get a firm hold on baby
     - Dry baby and place skin-to-skin on the mother. Assess breathing, tone, and activity.

#### Postpartum Care Infant
- Suction mouth and nose only if signs of obstruction by secretions
- Respirations should begin within 15 seconds after stimulating reflexes. If not, begin artificial ventilations at 40-60 breaths/min
- If apneic, cyanotic or HR < 100, begin [neonatal resuscitation](#)
- Healthy term babies should be managed skin-to-skin with their mothers. After birth, the baby should dried and directly placed skin-to-skin on mother with attention to warm coverings and maintenance of normal temperature.
- Clamp the cord after the infant is quickly dried, placed on mother, and assessed for breathing and activity. Double clamp 6” from infant abdominal wall and cut between clamps with sterile scalpel. If no sterile cutting instrument available, lay infant on mother and do not cut clamped cord.
- Document 1 and 5 minute APGAR scores
- Keep the baby covered, including cap over the head.

#### Critical Thinking:
- If there is an infant in distress, call for additional EMS units to provide care for 2 patients
- Normal pregnancy is accompanied by higher heart rates and lower blood pressures
- Shock will be manifested by signs of poor perfusion
- Labor can take 8-12 hours, but as little as 5 minutes if high PARA
- The higher the PARA, the shorter the labor is likely to be
- High risk factors include: no prenatal care, drug use, teenage pregnancy, DM, htn, cardiac disease, prior breech or C section, pre eclampsia, twins
- Note color of amniotic fluid for meconium staining

#### Postpartum Care Mother
- Placenta should deliver in 20-30 minutes. If delivered, collect in plastic bag and bring to hospital. Do not pull cord to facilitate placenta delivery and do not delay transport awaiting placenta delivery
- If the perineum is torn and bleeding, apply direct pressure with sanitary pads
- Postpartum hemorrhage – see [obstetrical complications protocol](#)
- Initiate transport once delivery of child is complete and mother can tolerate movement

#### Specific Information Needed:
- Obstetrical history:
  - Number of pregnancies (gravida)
  - Live births (PARA)
  - Expected delivery date
  - Length of previous labors
  - Narcotic use in past 4 hours

#### Obtain obstetrical history (see adjacent)

- **ABCs**
  - O₂ 15 liters via NRB
  - IV access

- **Overview**
  - EMS providers called to a possible prehospital childbirth should determine if there is enough time to transport expectant mother to hospital or if delivery is imminent
  - If imminent, stay on scene and immediately prepare to assist with the delivery

- **EMT**
  - Paramedic

- **Delivery not imminent**
  - Transport in position of comfort, preferably on left side to patient’s requested hospital if time and conditions allow
  - Monitor for progression to imminent delivery
# 7010 Obstetrical Complications

### For All Patients with Obstetrical Complications

- Do not delay: immediate rapid transport
- Give high-flow oxygen
- Start IV en route if time and conditions allow. Treat signs of shock w. IV fluid boluses per [Medical Hypotension/Shock Protocol](#)

### Possible Actions for Specific Complications (Below)

- The following actions may not be feasible in every case, nor may every obstetrical complication be anticipated or effectively managed in the field. These should be considered “best advice” for rare, difficult scenarios. In every case, initiate immediate transport to definitive care at hospital

## Complications of Late Pregnancy

### 3rd Trimester Bleeding (6-8 months)

- High flow O₂ via NRB, IV access
- Suspect placental abruption or placenta previa
- Initiate rapid transport
- Position patient on left side
- Note type and amount of bleeding
- IV NS bolus for significant bleeding or shock

### Pre-Eclampsia/Eclampsia

- High flow O₂ via NRB, IV access
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort
- Treat seizures with Magnesium Sulfate
- See [seizure protocol](#)

### Prolapsed Umbilical Cord

- Discourage pushing by mother
- Position mother in Trendelenberg or supine with hips elevated
- Place gloved hand in mother’s vagina and elevate the presenting fetal part off of cord until relieved by physician
- Feel for cord pulsations
- Keep exposed cord moist and warm

### Breech Delivery

- Never attempt to pull infant from vagina by legs
- IF legs are delivered gently elevate trunk and legs to aid delivery of head
- Head should deliver in 30 seconds. If not, reach 2 fingers into vagina to locate infant’s mouth. Press vaginal wall away from baby’s mouth to access an airway
- Apply gentle abdominal pressure to uterine fundus
- IF infant delivered see [childbirth protocol](#) – Postpartum care of infant and mother

### Shoulder Dystocia

- Support baby’s head
- Suction oral and nasal passages
- DO NOT pull on head
- May facilitate delivery by placing mother with buttocks just off the end of bed, flex her thighs upward and gentle open hand pressure above the pubic bone
- IF infant delivered see [childbirth protocol](#) – Postpartum care of infant and mother

### Postpartum Hemorrhage

- Massage abdomen (uterine fundus) until firm
- Initiate rapid transport
- Note type and amount of bleeding
- Treat signs of shock with IV fluid boluses

---

**TABLE OF CONTENTS**
8000 GENERAL TRAUMA CARE

**BSI**
- Scene safety
- Consider mechanism
- Consider need for additional resources

**Control Exsanguinating Hemorrhage:**
- Apply direct pressure
- Pack wounds with hemostatic agent or roller gauze as available
- **Tourniquet protocol** if indicated

**General impression**
- ABCs and LOC
- Rapid Trauma Assessment
- Pelvic stabilization if suspected unstable pelvis based on physical exam
- Prepare for immediate transport
- SAMPLE history

**Give high flow oxygen**
- Assist ventilations and manage airway as indicated
- **Spinal motion restrictions** if indicated
- IV access

**Assess Disability and Limitation:**
- Brief neuro assessment
- Extremity splinting if indicated

**Rapid transport to appropriate Trauma Center**
- Keep patient warm
- Consider pain management

If unstable see **Traumatic Shock Protocol**

---

**Prolonged Entrapment:**
- Crush syndrome can occur after cells have been under pressure from prolonged immobilization or crush injury for >4 hours when skeletal muscles can no longer survive from ischemia.
- After release, intracellular potassium can be released into the systemic circulation causing life-threatening hyperkalemia and generating cardiac arrythmias. 12-lead and continuous ECG monitoring are used to assess for hyperkalemia.
- Consider prior to release placing 1-2 large bore IVs or IOs and initiating a crystalloid fluid bolus.
- Prepare to administer treatment for hyperkalemia if patient develops signs of dysrhythmia or hemodynamic instability. Treatment should include IV calcium and sodium bicarbonate as well as nebulized albuterol.

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8010 SPECIAL TRAUMA SCENARIOS PROTOCOL
Coordinate transport destination with law enforcement

See General Trauma Care protocol

Sexual Assault

Confine history to pertinent medical needs

- Provide same-sex provider if possible
- Respect patient’s emotional needs

Don’t judge, accuse or confront victim

Protect evidence:
No washing or changing clothes

Coordinate transport destination with law enforcement

Abuse/neglect

Observe pt’s behavior around caregivers

Watch out for:
- Injury inconsistent with stated mechanism
- Delayed treatment
- Spreading blame
- Conflicting stories
- Prior/healing injuries

Don’t judge, accuse or confront victim or suspected assailant

Transport patient if suspected abuse or neglect, no matter how apparently minor the injury

Report to law enforcement or per agency guidelines (See General Guidelines Mandatory Reporting)

Mandatory Reporters:
- EMS providers provide a critical layer of protection to vulnerable adults and children who have been abused.
- C.R.S. 19-3-304 passed in 2014 extends the role of mandated reporters to EMS providers in Colorado
- Mandated reporters are to report their “suspicion” of abuse. This is not considered a direct accusation if acting in good faith.
- Informing providers at the receiving facility of suspicions for DOES NOT meet the requirements of a mandated reporter. EMS providers ARE REQUIRED to register their suspicion with the appropriate authorities per General Guidelines Mandatory Reporting or agency guidelines. For children, the Colorado Child Abuse and Neglect Hotline is 1-844-CO-4-KIDS (844-264-5437)
Estimated Gestational Age (EGA)

If EGA > 20 weeks, consider two patients: mother and fetus. Estimation of gestational age may be made based on fundal height by palpating for top of uterus:

If uterus is at umbilicus then EGA > 20 weeks

Estimation by Last Menstrual Period:
Due Date = LMP + 9 months + 7 days
EGA = current date - date of last menstrual period
If available, utilize pregnancy wheel to determine EGA.

Interpret VS with caution. Pregnant patient has:
- Increased heart rate
- Decreased blood pressure
- Increased blood volume

- Avoid supine position:
  - Place in left lateral recumbent position if possible
  - If immobilized tilt backboard 15 to 30 degrees to the left side

- Priority is mother.
- Transport all patients with any thoracic, abdominal, pelvic injury or complaint.
- Ensure hospital is aware of pregnancy and EGA

Patients with any thoracic, abdominal, or pelvic complaint or injury may require prolonged fetal monitoring in hospital, even if asymptomatic at time of evaluation, and even for seemingly minor mechanism

- Priority is mother.
- Transport all patients with any thoracic, abdominal, pelvic injury or complaint.

See General Trauma Care protocol
8030 TRAUMATIC ARREST

Consider mechanism of injury. If medical cause of arrest suspected, treat per Medical Pulseless Arrest Algorithm

Blunt (include isolated GSW to head)

Penetrating

If arrest suspected to be >10 minutes, refer to Field Pronouncement for Traumatic Arrest

Yes

• Rapid transport to appropriate trauma center.
• Identify and treat reversible life threats
  o Control Exsanguinating Hemorrhage
  o Advanced airway
  o Bilateral Needle Chest Decompression if any trauma to trunk
• 2 IVs preferred IV NS bolus 20 mL/kg up to 1 L (IO if no IV access)
• Hypothermia prevention
• Consider pelvic stabilization
• Initiate BLS CPR and ventilations at age appropriate rate
• Pull/push for pediatric fluid administration

No

Refer to Field Pronouncement for Traumatic Arrest

Signs of Life? (any of the following)
• Spontaneous movement
• Pulses
• Breathing
• Reactive pupils

Non-survivable Injuries
• Decapitation
• Massive burns without signs of life
• Evidence of massive blunt head, chest, abdominal trauma
• Decomposition
• Dependent lividity or rigor mortis

Exceptions to Traumatic Arrest Protocol:
• Hypothermia
• Drowning
• Pregnant with estimated gestational age ≥20 weeks
• Lightning strike or electrocution
• Avalanche victim

For non-survivable injury refer to field pronouncement for traumatic arrest

Traumatic Arrest
For trauma patients with hypotension for age or signs of shock:
- Initiate rapid transport to appropriate trauma center.
- Treat and stabilize in route to hospital.

Identify and treat reversible causes of shock:
- Control exsanguinating hemorrhage.
- Treat suspected tension pneumothorax with needle decompression.
- Apply pelvic compression device for suspected unstable pelvic fracture.

Complete General Trauma Care
- Correct hypoxia and manage the airway if needed.
- Keep patient warm.

IV Fluid Resuscitation
- Use IV fluid sparingly.
- Titrate small boluses of crystalloid to presence of peripheral pulses.
- **However**, hypotension is particularly harmful to patients with severe TBI. In patients with TBI, more aggressive fluid resuscitation is justified to maintain a normal blood pressure.

- Most pediatric trauma mortality is from TBI, therefore fluid resuscitation to normal BP is recommended.
- Use push/pull technique to administer IV fluid boluses in children.

**Shock** is defined as impaired tissue perfusion and may be manifested by any of the following:
- Altered mental status
- Tachycardia
- Poor skin perfusion
- Low blood pressure

Traditional signs of shock may be absent early in the process, therefore, maintain a high index of suspicion and be vigilant for subtle signs of poor perfusion.

Do not use Trendelenburg’s position routinely to treat hypotension. It is unnecessary and may impair respirations and/or aggravate injuries. Supine position preferred.

### Hypotension for Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>&lt;70 mmHg</td>
</tr>
<tr>
<td>1-10 years</td>
<td>&lt;70 + (2 x age in years)</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>&lt;90 mmHg</td>
</tr>
</tbody>
</table>

### Tachycardia for Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Heart Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>&gt;160 bpm</td>
</tr>
<tr>
<td>1-2 years</td>
<td>&gt;150 bpm</td>
</tr>
<tr>
<td>2-5 years</td>
<td>&gt;140 bpm</td>
</tr>
<tr>
<td>5-12 years</td>
<td>&gt;120 bpm</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>&gt;100 bpm</td>
</tr>
</tbody>
</table>

### Minimum Blood Pressure with TBI

<table>
<thead>
<tr>
<th>Age</th>
<th>MAP (mmHg)</th>
<th>Minimum SBP (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-23 months</td>
<td>50-70</td>
<td>75</td>
</tr>
<tr>
<td>2-5 years</td>
<td>60-80</td>
<td>80</td>
</tr>
<tr>
<td>6-8 years</td>
<td>65-85</td>
<td>85</td>
</tr>
<tr>
<td>9-12 years</td>
<td>70-95</td>
<td>90</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>≥80</td>
<td>≥110</td>
</tr>
</tbody>
</table>

**Pediatric Fluid Administration**
- For children <40 kg or not longer than length-based tape, hand pull/push fluid with a 60 mL syringe utilizing a 3 way stop cock.
- Hypotension is a late sign in pediatric shock patients.

**Pediatric Shock**

**Signs of Compensated Shock**
- Normal mental status
- Normal systolic blood pressure
- Tachycardia
- Prolonged (>2 seconds) capillary refill
- Tachypnea
- Cool and pale distal extremities
- Weak peripheral pulse

**Signs of Decompensated Shock**
- Decrease mental status
- Weak central pulses
- Poor color
- Hypotension for age
8050 AMPUTATIONS

General Trauma Care Protocol

Complete Amputation

Apply tourniquet without delay

- Large bore IV
- If hypotensive for age, treat per Traumatic Shock Protocol
- Document neurovascular exam

Amputated part:
- Wrap in moist, sterile dressing
- Place in sealed plastic bag
- Place bag in ice water
- Do not freeze part

Stump:
- Cover with moist sterile dressing covered by dry dressing

Partial Amputation:
- Cover with moist sterile dressing
- Splint near-amputated part in anatomic position

Consider pain management

- Monitor and transport to appropriate Trauma Center
- Treat other injuries per protocol

Partial Amputation

Life-threatening bleeding

- Control with direct pressure to bleeding area or vessel
- Apply tourniquet if bleeding not controlled with direct pressure

- Cover with moist sterile dressing
- Splint near-amputated part in anatomic position

Non-Life-threatening bleeding

- Large bore IV
- If hypotensive for age, treat per Traumatic Shock Protocol
- Document neurovascular exam

- Large bore IV
- If hypotensive for age, treat per Traumatic Shock Protocol
- Document neurovascular exam

- Apply tourniquet if bleeding not controlled with direct pressure

- Cover with moist sterile dressing
- Splint near-amputated part in anatomic position

- Monitor and transport to appropriate Trauma Center
- Treat other injuries per protocol

TABLE OF CONTENTS
8060 HEAD TRAUMA PROTOCOL

**General Trauma Care** protocol

Yes

**GCS < 8 or comatose?**

No

**Open airway and assist ventilations**

Consider advanced airway if adequate ventilation and oxygenation cannot be achieved with basic airway maneuvers

BLS airway preferred in pediatrics

**Assess for hypotension and/or signs of shock and treat per Traumatic Shock protocol en route**

Support ventilations & maintain ETCO₂ 35-45 mmHg

- Titrate oxygen to maintain SpO₂ > 92%
- Treat hypotension
- Decrease ICP by elevating head 30° if possible. Use reverse Trendelenburg if spinal precautions needed
- Complete Rapid Trauma Assessment en route to hospital
- Treat other injuries per protocol

**Glasgow Coma Score (GCS)**

(Minimum 3, Maximum 15)

**Eyes:**
1. Does not open eyes
2. Opens eyes to pain
3. Opens eyes to voice
4. Opens eyes spontaneously

**Verbal:**
1. No sounds
2. Incomprehensible sounds
3. Inappropriate words
4. Confused, disoriented
5. Oriented

**Motor:**
1. No movement
2. Extension to painful stimuli
3. Flexion to painful stimuli
4. Withdrawal to painful stimuli
5. Localizes to painful stimuli
6. Obeying commands

**Pediatric GCS**

(Minimum 3, Maximum 15)

**Eyes:**
1. Does not open eyes
2. Opens eyes to pain
3. Opens eyes to voice
4. Opens eyes spontaneously

**Verbal:**
1. No vocal response
2. Inconsolable, agitated
3. Inconsistently consolable, moaning
4. Cries but consolable, inappropriate interactions
5. Smiles, oriented to sounds, follows objects, interacts

**Motor:**
1. No motor response
2. Extension to pain
3. Flexion to pain
4. Withdrawal from pain
5. Localizes pain
6. Obeying Commands

**Transport to Children’s Hospital Colorado-Anschutz Campus for GCS < 8**

**Monitor:**
- ABCs, VS, mental status, ETCO₂
- Rapid transport to appropriate trauma center
- Monitor cardiac rhythm

**TABLE OF CONTENTS**
**General Trauma Care Protocol**

- Clear airway
- Rapid trauma assessment
- **Spinal Precautions Protocol**
- Assess for need for airway management

**Spinal precautions not routinely indicated for penetrating neck injury**

*Penetrating injury is very rarely associated with unstable spinal column*

**Laryngeal trauma***

- Yes
  - Avoid intubation if patient can be oxygenated by less invasive means
- No

**Severe airway Bleeding?**

- Yes
  - Direct pressure if appropriate
  - Consider advanced airway if adequate ventilation and oxygenation cannot be achieved with basic airway maneuvers
  - BLS airway preferred in pediatrics
- No

**Regarding Nasal Intubation:**

- Contraindicated in pediatrics
- *Relatively contraindicated with mid-face trauma.*
- Avoid if mid-face grossly unstable

**Consider opioid** for pain control as needed

**Monitor ABCs, VS, mental status, SpO₂, ETCO₂**

*Suspect laryngeal trauma with:*

- Laryngeal tenderness, swelling, bruising
- Voice changes
- Respiratory distress
- Stridor
Patient with signs of traumatic acute spinal cord injury

**General Trauma Care** protocol

- Full spinal precautions if any neurological signs and symptoms consistent with a spine injury are present
- Document neuro assessments before and after immobilization

Rapid transport to appropriate Trauma Center

Large bore IV and consider 2nd line

If hypotension and/or signs of shock, resuscitate per **Traumatic Shock** protocol

- Complete patient assessment
- Treat other injuries per protocol
- Monitor for status changes

Monitor ABCs, VS, mental status, SpO2, waveform capnography

Consider **opioid** for pain control

**EMT**

**Paramedic**

**Signs of Spinal Cord Injury:**
- Sensory loss, weakness and/or paralysis
- Typically bilateral, but may be asymmetrical
- Sensory changes typically have a level, corresponding to the level of the injury
- Numbness, tingling or painful burning in arms, legs
- **Central cord syndrome** is an incomplete spinal cord injury and causes painful burning or sensory changed in shoulders and upper extremities bilaterally and spares the lower extremities. It may be subtle

**Spinal Immobilization not routinely indicated for penetrating neck injury**

*Penetrating injury is very rarely associated with unstable spinal column*


**Does patient have any of the following after traumatic injury:**

- Midline C/T/L spine tenderness on palpation.
- Neurologic complaints or deficits. This includes sensory changes or motor weakness.
- Other injuries which are potentially distracting.
- Alteration in mentation or under influence of drugs or EtOH.
- Barrier to evaluate for spinal injury (e.g. language or developmental barrier).
- The provider feels there is a potential spinal injury (see Notes section)

**Notes:**

- If for any reason you suspect the patient has a spinal injury, then take measures to prevent inadvertent movement of the spine: spinal motion restriction.
- Patients over 65 years old are at higher risk of spinal injuries, even from ground-level falls.
- Use caution when assessing for spinal injury in elderly patients, who are at much higher risk and may have minimal or even no symptoms of neck pain despite C-spine injury.
- Communicate to receiving facility spinal motion restriction is in place.
- Neurological exam documentation is **MANDATORY** in **ALL** patients with potential spinal trauma.
- Cervical collar is not indicated in isolated penetrating neck trauma.
- If a standard cervical collar device cannot be used for some reason, consider use of alternative devices for cervical motion restriction (e.g. foam, towels, etc.)

**Pediatric Considerations**

- Age alone should not be a factor in decision-making for prehospital spinal care, both for the young child and the child who can reliably provide a history.
- Spinal motion restriction should be applied if the patient has any of the following in addition to the algorithm:
  - Patient not moving neck
  - High impact diving injury
  - Numbness and weakness after traumatic injury
  - Torso injury or pelvic instability
- Additional padding under the shoulders is needed for infants and young children up to age 8 to avoid flexion of the neck.
- A car seat is not acceptable for spinal motion restriction. If spinal motion restriction is deemed necessary, the child should be removed from the car seat and placed supine.

**Is there an objective neurological deficit?**

- **Yes**
  - Place c-collar on patient and ask them to not move neck
- **No**
  - If **NONE** of above criteria, and you think patient is not likely to have a spinal injury, no spinal precautions required

**Is the patient ambulatory on scene at time of EMS arrival?**

- **Yes**
  - Transport patient in a position of comfort on gurney with cervical collar
- **No**

**Is the patient able to comfortably lay still and comply with instructions?**

- **Yes**
- **No**

**Full spinal immobilization**

**TABLE OF CONTENTS**
Suspected Spinal Injury

Yes

Do helmet and pads allow for neutral alignment of spine?

Yes

Are helmet and pads properly fitted and snug?

No

Remove helmet and pads prior to transport

No

Are helmet and pads in place?

Yes

Immobilize/Transport with helmet and pads in place

No

Standard immobilization techniques

Is facemask removable in timely manner?

Yes

Is airway accessible with helmet in place?

No

Immobilize/Transport with helmet and pads in place

No

Remove helmet and pads prior to transport

Overview

Do not remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life threatening injuries.

The helmet and pads should be considered one unit. Therefore, if one is removed, then the other should be removed as well so as to assure neutral spine alignment.

All athletic equipment is not the same. Athletic Trainers on scene should be familiar with equipment in use and be able to remove facemask prior to, or immediately upon, EMS arrival.
**8110 CHEST TRAUMA**

- General Trauma Care protocol
- Rapid transport to Trauma Center

Are you able to oxygenate and ventilate effectively?

Yes

- Consider advanced airway if adequate ventilation and oxygenation cannot be achieved with basic airway maneuvers
- BLS airway preferred in pediatrics
- Consider tension pneumothorax and Chest Needle Decompression

No

Penetrating trauma?

Yes

- Rapid transport & stabilize in route
- Apply approved vented occlusive dressing over wounds

No

Large bore IV, consider 2nd line

Flail Chest?

Yes

- Splint with bulky dressing
- Assess need for assisted ventilations

No

Hypotension for age?

Yes

- Treat per Traumatic Shock protocol enroute

No

Consider opioid for pain control

Monitor ABCs, VS, mental status, SpO2, waveform capnography

**Tension pneumothorax** should be suspected with presence of the following:
- Unilateral absent breath sounds AND: JVD, hypotension, difficult/unable to ventilate
- Needle decompression is NEVER indicated for simple pneumothorax
8120 ABDOMINAL TRAUMA

- General Trauma Care protocol
- Rapid transport to Trauma Center

- IV access
- Consider 2nd line if MOI significant

Penetrating trauma?

Yes
- Cover wounds, viscera with saline moistened gauze dressing

No
- Do not attempt to repack exposed viscera

Hypotension for age?

Yes
- Resuscitate per Traumatic Shock protocol

No
- Consider opioid for pain control

Monitor ABCs, VS, mental status, $\text{SpO}_2$, waveform capnography

Documentation
- MOI
- Time of injury
- Initial GCS
- Penetrating trauma
  - Weapon/projectile/trajectory
- Blunt vehicular trauma
  - Condition of vehicle
  - Speed
  - Ejection
  - Airbag deployment
  - Restraints, helmets

EMT Paramedic

TABLE OF CONTENTS
**8130 BURNS**

- **General Trauma Care** protocol
- Rapid transport to Trauma Center

**Stop burning process:**
- Remove clothes if not adhered to patient's skin
- Flood with water only if flames/smoldering present

**Respiratory Distress**
- **hoarseness or stridor?**
  - Yes
    - **O₂ NRB 15 Lpm**
    - Manage airway and assist ventilations as indicated
    - Consider CO, CN
  - No

**Evaluate degree and body surface area involved**

**Critical Burn**?
- Yes
  - Start 2 large-bore IVs
  - Fluids per ABA recommendations (chart below)**
- No

**IV NS TKO**

- Remove rings, jewelry, constricting items
- Dress burns with dry sterile dressings
- Treat other injuries per protocol
- Cover patient to keep warm

**Consider opioid** for pain control

**Monitor ABCs, VS, mental status, SpO₂, waveform capnography**

---

**Document:**
- Type and degree of burn(s)
- % BSA
- Respiratory status including any voice changes (hoarseness)
- Singed nares, soot in mouth
- SpO₂
- PMH
- Confined space (assume CO)

***Critical Burn:***
- **2º > 30% BSA**
- **3º > 10% BSA**
- Respiratory injury, facial burn
- Associated injuries, electrical or deep chemical burns, underlying PMH (cardiac, DM), age < 10 or > 50 yrs.

**Types of Burns:**
- Thermal: remove from environment, put out fire
- Chemical: brush off or dilute chemical. Consider HAZMAT
- Electrical: make sure victim is de-energized and suspect internal injuries
- Assume CO if enclosed space
- Consider cyanide poisoning (CN) if unconscious or pulseless arrest

**Designated Regional Burn Centers**
*Consider direct transport of isolated burns if time and conditions allow*
- Children's Hospital Colorado: Age ≤ 14
- University of Colorado Hospital: Age ≥ 15
- Swedish Medical Center: Any age

---

**ABA Recommended Prehospital Fluid Therapy**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Fluid Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 and older</td>
<td>500 mL/hr NS or LR</td>
</tr>
<tr>
<td>5 - 13 years</td>
<td>250 mL/hr NS or LR</td>
</tr>
<tr>
<td>Younger than 5</td>
<td>125 mL/hr D5W, NS or LR</td>
</tr>
</tbody>
</table>

If no signs of clinical hypovolemia or shock, large volume of IV fluid not needed. For typical 30 minute prehospital time, give 250 mL bolus for patient age ≥ 14.
9000 GENERAL GUIDELINES: MEDICATION ADMINISTRATION

Purpose

A. Provide guidance to EMS providers in the principles of administration, delivery, and safety of approved medications

General Principles

A. The appropriate procedure for safe medication administration includes:
   1. Verification of the “Six Rights” of medication administration (right patient, right drug, right dose, right route, right time, right documentation)
   2. Medication administration cross-check with practice partner verifying the Six Rights prior to drug administration. This should include verbal repeat-back of the order by the practice partner.
   3. Obtain repeat vital signs after any intervention.

B. The risk of dosing error is high in children, and we recommend the use of a standardized system to decrease the rate of error. This can include age-based, weight-based, or length-based systems that has standardized precalculated volume-based medication dosing and equipment. These should be utilized on every pediatric patient to guide medication dosing and equipment size. In the Aurora EMS system, we utilize the Pediatric Field Guide.

C. When administering a drug that has weight-based dosing, it is important to be as accurate as you can in weight estimation. If a patient or family member is unable to give you a weight, crews will need to estimate the weight of the patient. In pediatrics, we use the Broselow tape and Pediatric Field Guide for this purpose. In adults, it can be helpful to use your own size and weight in comparison to your patient to help determine an estimated weight. Several crew members should each determine their own independent weight estimation to see if the estimations are in agreement. If there is discrepancy in weight estimation among the crew members, the lead medic should discuss the weight estimations with the crew and choose the lower weight estimate if the discrepancy persists.

D. Optional routes of medication administration are vast, and appropriateness given the clinical situation should be considered. Specific considerations include:
   1. Especially in children, intranasal (IN) administration may be faster and more efficacious with less pain compared to IV or intramuscular (IM) administration
   2. IM drug absorption and onset of action is erratic and unpredictable.

E. Ideally, expired medications should never be utilized for patient care. However, the nation is increasingly faced with the challenge of critical or potentially life-saving medication shortages. As such, the Denver Metro EMS Medical Directors have issued guidelines for the appropriate response to a national medication crisis. Approved medications required for potentially emergent conditions and for which no reasonable substitution is available may be used after the posted expiration date with the following restrictions:
   1. Medication should be approved for use by the agency’s EMS Medical Director.
   2. Expired medications will be used only after the supply of non-expired medications have been exhausted
   3. Standard medication storage, inspection and delivery practices should be maintained

F. EMS agencies should work to establish a system of Just Culture. This is an approach to work place safety that assumes humans, despite their best intentions to do the right thing, will make errors. Change and care improvement does not happen without accurate, honest reporting of error. A report of error should be treated with respect and examination of root cause, and not punitive action.
ACETAMINOPHEN (TYLENOL)

Description
Acetaminophen elevates the pain threshold and readjusts hypothalamic temperature-regulatory center.

Onset & Duration
- Onset: 20 minutes
- Duration: 4 hours

Indications
- Mild pain

Contraindications
- Known hypersensitivity
- Known or suspected chronic liver disease

Adverse Reactions
- Acetaminophen has a wide therapeutic window. Recommended maximum therapeutic doses are less than half the toxic dose.
  - Single toxic dose in a 70 kg adult is greater than 7 gm.
  - Single toxic dose in a child is greater than 150 mg/kg.
  - Chronic supratherapeutic acetaminophen poisoning is possible as many medications contain acetaminophen.

Drug Interactions
- Avoid concomitant administration with other acetaminophen-containing medication, such as many prescription opioids (e.g. Percocet) or OTC cough and cold medications.

Dosage and Administration

<table>
<thead>
<tr>
<th>Weight</th>
<th>Age</th>
<th>Dose (160 mg/5 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>&lt; 6 months</td>
<td>BASE CONTACT</td>
</tr>
<tr>
<td>5-8kg</td>
<td>6 months - 12 months</td>
<td>2.5ml (80mg)</td>
</tr>
<tr>
<td>9-11kg</td>
<td>1-2 years</td>
<td>4ml (128mg)</td>
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<tr>
<td>12-16kg</td>
<td>2-3 years</td>
<td>5ml (160mg)</td>
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<tr>
<td>17-21kg</td>
<td>4-5 years</td>
<td>7.5ml (240mg)</td>
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<tr>
<td>22-27kg</td>
<td>6-8 years</td>
<td>10ml (320mg)</td>
</tr>
<tr>
<td>28-33kg</td>
<td>9-10 years</td>
<td>12.5ml (400mg)</td>
</tr>
<tr>
<td>34-43kg</td>
<td>11-12 years</td>
<td>15ml (480mg)</td>
</tr>
</tbody>
</table>

Protocol
- Pain management
**ADENOSINE (ADENOCARD)**

**Description**
Adenosine transiently blocks conduction through the AV node thereby terminating reentrant tachycardias involving the AV node. It is the drug of choice for AV nodal reentrant tachycardia (AVNRT, often referred to as “PSVT”). It will not terminate dysrhythmias that do not involve the AV node as a reentrant limb (e.g. atrial fibrillation).

**Onset & Duration**
- Onset: almost immediate
- Duration: 10 sec

**Indications**
- Narrow-complex supraventricular tachyarrhythmia after obtaining 12 lead ECG (This may be the only documented copy of the AVRNT rhythm)
- Pediatric administration requires call in for direct verbal order

**Contraindications**
- Any irregular tachycardia. Specifically never administer to an irregular wide-complex tachycardia, which may be lethal
- Heart transplant

**Adverse Reactions**
- Chest pain
- Shortness of breath
- Diaphoresis
- Palpitations
- Lightheadedness

**Drug Interactions**
- Methylxanthines (e.g. caffeine) antagonize adenosine, a higher dose may be required
- Dipyridamole (persantine) potentiates the effect of adenosine; reduction of adenosine dose may be required
- Carbamazepine may potentiate the AV-nodal blocking effect of adenosine

**Dosage and Administration**

**Adult:**
- 12 mg IV bolus, rapidly, followed by a normal saline flush.
- Additional dose of 12 mg IV bolus, rapidly, followed by a normal saline flush.
- Contact medical control for further considerations

**Pediatric:**
- Children who are stable with AVNRT generally remain so and transport is preferred over intervention.
- **CONTACT BASE** 0.1 mg/kg IV bolus (max 6 mg), rapidly followed by normal saline flush.
- Additional dose of 0.2 mg/kg (max 12 mg) rapid IV bolus, followed by normal saline flush.
Protocol

- **Tachyarrhythmia with Poor Perfusion**

Special Considerations

- Reliably causes short lived but very unpleasant chest discomfort. Always warn your patient of this before giving medication and explain that it will be a very brief sensation
- May produce bronchospasm in patients with asthma
- Transient asystole and AV blocks are common at the time of cardioversion
- Adenosine is not effective in atrial flutter or fibrillation
- Adenosine is safe in patients with a history of Wolff-Parkinson-White syndrome if the rhythm is regular and QRS complex is **narrow**
- A 12-lead EKG should be performed and documented, when available
- Adenosine requires continuous EKG monitoring throughout administration
ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

Description
- Albuterol is a selective β-2 adrenergic receptor agonist. It is a bronchodilator and positive chronotrope.
- Because of its β agonist properties, it causes potassium to move across cell membranes inside cells. This lowers serum potassium concentration and makes albuterol an effective temporizing treatment for unstable patients with hyperkalemia.

Onset & Duration
- Onset: 5-15 minutes after inhalation
- Duration: 3-4 hours after inhalation

Indications
- Bronchospasm
- Known or suspected hyperkalemia with ECG changes (i.e.: peaked T waves, QRS widening)
- Crush Syndrome for possible hyperkalemia

Contraindications
- Severe tachycardia is a relative contraindication

Adverse Reactions
- Tachycardia
- Palpitations
- Dysrhythmias

Drug Interactions
- Sympathomimetics may exacerbate adverse cardiovascular effects.
- β-blockers may antagonize albuterol.

How Supplied
- MDI: 90 mcg/metered spray (17-g canister with 200 inhalations)
- Pre-diluted nebulized solution: 2.5 mg in 3 ml NS (0.083%)

Dosage and Administration

Adult and Pediatric:

Single Neb dose
- Albuterol sulfate solution 0.083% (one unit dose bottle of 3.0 ml), by nebulizer, at a flow rate (6-8 lpm) that will deliver the solution over 5 to 15 minutes. May be repeated twice (total of 3 doses).

Continuous Neb dose
- In more severe cases, place 3 premixed containers of albuterol (2.5 mg/3ml) for a total dose of 7.5 mg in 9 ml, into an oxygen-powered nebulizer and run a continuous neb at 6-8 lpm.
Protocol

- Adult Wheezing
- Pediatric Wheezing
- Allergy and Anaphylaxis
- General Trauma Care

Special Considerations

- Consider inline nebs for patients requiring endotracheal intubation or CPAP.
- May precipitate angina pectoris and dysrhythmias
- Should be used with caution in patients with suspected or known coronary disease, diabetes mellitus, hyperthyroidism, prostatic hypertrophy, or seizure disorder
- Wheezing associated with anaphylaxis should first be treated with epinephrine IM.
- During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.
AMIODARONE (CORDARONE)

**Description**
Class III antiarrhythmic agent which inhibits adrenergic stimulation, decreases AV conduction and sinus node function, and prolongs the action potential and refractory period in myocardial tissue.

**Indications**
- Pulseless arrest in patients with shock-refractory or recurrent VF/VF
- Wide complex tachycardia not requiring immediate cardioversion due to hemodynamic instability

**Precautions**
- Wide complex irregular tachycardia
- Sympathomimetic toxidromes, i.e. cocaine or amphetamine overdose
- NOT to be used to treat ventricular escape beats or accelerated idioventricular rhythms

**Contraindications**
- 2nd or 3rd degree AV block
- Cardiogenic shock

**Adverse Reactions**
- Hypotension
- Bradycardia

**Dosage and Administration**
**Adult:**
- **Pulseless Arrest (Refractory VT/VF):**
  - 300 mg IV bolus.
  - Administer additional 150 mg IV bolus in 3-5 minutes if shock refractory or recurrent VF/VF.
- **Symptomatic VT and undifferentiated wide complex tachycardia with a pulse:**
  - CONTACT BASE 150 mg IV bolus infusion over 10 minutes.

**Pediatric:**
- **Pulseless Arrest (Refractory VT/VF):**
  - 5mg/kg IV bolus.
  - CONTACT BASE for additional doses.

**Protocol**
- Medical Pulseless Arrest Algorithm
- Tachycardia with Poor Perfusion

**Special Considerations**
- A 12-lead EKG should be performed and documented, when available.
- Amiodarone is preferred to adenosine for treatment of undifferentiated WCT with a pulse.
ANTIEMETICS: ONDANSETRON (ZOFRAN)

Description
- Ondansetron is a selective serotonin 5-HT3 receptor antagonist antiemetic.

Indications
- Nausea and vomiting

Contraindications
- Ondansetron: No absolute contraindication. Should be used with caution in first trimester of pregnancy and should be reserved for only those patients with severe dehydration and intractable vomiting

Adverse Effects:
- Ondansetron: Very low rate of adverse effects, very well tolerated.

Dosage and Administration

Ondansetron

Adult:
4 mg IV/IM/PO/ODT. May repeat x 1 dose as needed.

Pediatric ≥ 4 years old:
4 mg IV/PO/ODT

Pediatric 6 months to 4 years old:
2 mg IV/PO/ODT

Pediatric < 6 months:
BASE CONTACT

Protocol
- Abdominal Pain/Vomiting
- Altitude Illness
# ASPIRIN (ASA)

## Description
Aspirin inhibits platelet aggregation and blood clotting and is indicated for treatment of acute coronary syndrome in which platelet aggregation is a major component of the pathophysiology. It is also an analgesic and antipyretic.

## Indications
- Suspected acute coronary syndrome

## Contraindications
- Active gastrointestinal bleeding
- Aspirin allergy

## How Supplied
Chewable tablets 81mg

## Dosage and Administration
- 324mg PO

## Protocol
- Chest Pain

## Special Considerations
- Patients with suspected acute coronary syndrome taking warfarin (Coumadin), clopidogrel (Plavix) or novel oral anticoagulants may still be given aspirin.
ATROPINE SULFATE

Description
Atropine is a naturally occurring antimuscarinic, anticholinergic substance. It is the prototypical anticholinergic medication with the following effects:
- Increased heart rate and AV node conduction
- Decreased GI motility
- Urinary retention
- Pupillary dilation (mydriasis)
- Decreased sweat, tear and saliva production (dry skin, dry eyes, dry mouth)

Indications
- Symptomatic bradycardia
- 2nd and 3rd degree heart block
- Organophosphate poisoning

Precautions
- Should not be used without medical control direction for stable bradycardias
- Closed angle glaucoma

Adverse Reactions
- Anticholinergic toxidrome in overdose, think "blind as a bat, mad as a hatter, dry as a bone, red as a beet"

Dosage and Administration
Hemodynamically Unstable Bradycardia

**Adult:**
0.5 mg IV/IO bolus.
Repeat if needed at 3-5 minute intervals to a maximum dose of 3 mg. (Stop at ventricular rate which provides adequate mentation and blood pressure)

**Pediatric:**
0.02 mg/kg IV/IO bolus. Minimum dose is 0.1 mg, maximum single dose 0.5 mg
May repeat once

Poisoning/Overdose

**Adult:**
40kg and up: 2mg IV/IM for signs of moderate/severe toxicity. Contact base for additional doses.

**Pediatric:**
Under 40kg: 0.02mg/kg IV/IM for moderate/severe toxicity. Minimum dose is 0.1mg. Contact base for additional doses.

Protocol
- Bradycardia with poor perfusion
- Poisoning/Overdose

Special Considerations
- Atropine causes pupil dilation, even in cardiac arrest settings
BENZODIAZEPINES (MIDAZOLAM)

Description
- Benzodiazepines are sedative-hypnotics that act by increasing GABA activity in the brain. GABA is the major inhibitory neurotransmitter, so increased GABA activity inhibits cellular excitation. Benzodiazepine effects include anticonvulsant, anxiolytic, sedative, amnestic and muscle relaxant properties. Each individual benzodiazepine has unique pharmacokinetics related to its relative lipid or water solubility.
- Selection of specific agent as preferred benzodiazepine is at individual agency Medical Director discretion.

Onset & Duration
- Any agent given IV will have the fastest onset of action, typical time of onset 2-3 minutes
- Intranasal administration has slower onset and is less predictable compared to IV administration, however, it may still be preferred if an IV cannot be safely or rapidly obtained. Intranasal route has faster onset compared to intramuscular route.
- IM administration has the slowest time of onset.

Indications
- Status epilepticus
- Sedation of the severely agitated/combative patient
- Hyperactive delirium with severe agitation
- Sedation for cardioversion or transcutaneous pacing (TCP)

Contraindications
- Hypotension
- Respiratory depression

Adverse Reactions
- Respiratory depression, including apnea
- Hypotension
- Consider ½ dosing in the elderly for all benzodiazepines

Dosage and Administration

**MIDAZOLAM:**

Seizure or sedation for cardioversion or transcutaneous pacing:

**Adult:**
- **IV/IO route:** 2 mg
  - Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses
- **IN/IM route (intranasal preferred):** 5 mg
  - Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses

**Pediatric:**
- **IV/IO route** 0.1 mg/kg
9070 MEDICATIONS

- Maximum single dose is 2 mg IV. Dose may be repeated x 1 after 5 minutes if still seizing. Contact Base for more than 2 doses.
  IN/IM route (intranasal preferred): 0.2 mg/kg.
- Maximum single dose is 5 mg IN or IM. Dose may be repeated x 1 after 5 minutes if still seizing. Contact Base for more than 2 doses.

Sedation of severely agitated or combative patient

**Adult:**
- **IV route**: 2 mg
- **IN/IM route**: 5 mg
  - Dose may be repeated x 1 after 5 minutes. Contact base for additional sedation orders if needed after 2 doses.

**Pediatric:**
- CONTACT BASE before any consideration of sedation of severely agitated/combative child

Hyperactive delirium with severe agitation

**IM route**: 10 mg. Contact Base for additional sedation orders.

---

**Protocol**
- Synchronized Cardioversion
- Transcutaneous Pacing
- Seizure
- Agitated/Combative Patient
- Hyperactive Delirium with Severe Agitation
- Poisoning/Overdose

---

**Special Considerations**
- All patients receiving benzodiazepines must have cardiac, pulse oximetry monitoring during transport. Continuous waveform capnography required.
- Sedative effects of benzodiazepines are increased in combination with opioids, alcohol, or other CNS depressants.
- In elderly patients > 65 years old or small adults < 50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.
CALCIUM

Description
- Cardioprotective agent in hyperkalemia.
- Calcium chloride contains 3 times the amount of elemental calcium contained in the same volume of calcium gluconate. Therefore, 1 g (10 mL) vial of calcium chloride 10% solution contain 273 mg of elemental calcium, whereas 1 g (10 mL) of 10% calcium gluconate contains 90 mg of elemental calcium. For this reason, larger doses of calcium gluconate are required.
- Doses below refer to dose of calcium solution, not elemental calcium.

Indications
- Pulseless arrest associated with any of the following clinical conditions:
  - Known or suspected hyperkalemia
  - Renal failure with or without hemodialysis history
  - Calcium channel blocker overdose
  - Not indicated for routine treatment of pulseless arrest
- Renal failure with known of suspected hyperkalemia
- Crush syndrome or suspension injury
- Calcium channel blocker overdose with hypotension and bradycardia

Contraindications
- Known or suspected hypercalcemia
- Known or suspected digoxin toxicity (i.e. digoxin overdose)

Side Effects/Notes
- Extravasation of calcium chloride solution may cause tissue necrosis.
- Because of the risk of medication error, if calcium chloride is stocked, consider limiting to 1 amp per medication kit to avoid accidental overdose. Calcium gluconate solution will require 3 amp supply for equivalent dose.
- Must give in separate line from IV sodium bicarb to prevent precipitation/formation of calcium carbonate.
- In setting of digoxin toxicity, may worsen cardiovascular function.

Dosage and Administration

**Calcium Gluconate 10% Solution**

**Adult:**
- **Pulseless arrest assumed due to hyperkalemia:**
  - 3 gm (30 mL) slow IV/IO push
- **Renal failure with known or suspected hyperkalemia**
  - 3 gm (30 mL) IV/IO over 5 minutes

**Pediatric:**
- **Calcium channel blocker overdose with hypotension and bradycardia:**
  - 60 mg/kg (0.6 mL/kg), not to exceed 1 g IV/IO over 5 minutes.
  - May repeat every 10 minutes for total of 3 doses

**Calcium Chloride 10% Solution**

**Adult:**
- **Pulseless arrest assumed due to hyperkalemia:**
  - 1 gm (10 mL) slow IV/IO push

**Pediatric:**
- **Calcium channel blocker overdose with hypotension and bradycardia:**
  - Contact Base for order. 3 g (30 mL) IV/IO over 5 minutes. Dose may be repeated every 5 minutes for total of 3 doses
• **Calcium channel blocker overdose with hypotension and bradycardia:**
  - **Contact Base** for order. 1 g (10 mL) IV/IO over 5 minutes. Dose may be repeated every 5 minutes for total of 3 doses

**Pediatric:**
• **Calcium channel blocker overdose with hypotension for age and bradycardia:**
  - **Contact Base** for order. 20 mg/kg (0.2 mL/kg), **not to exceed 1 g** IV/IO over 5 minutes. May repeat every 5 minutes for total of 3 doses.

---

**Protocol**
- [Medical Pulseless Arrest](#)
- [Poisoning/Overdose](#)
- [General Trauma Care](#)
**DEXTROSE**

**Description**
Glucose is the body’s basic fuel and is required for cellular metabolism. A sudden drop in blood sugar level will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose from the blood stream, and glucagon, which mobilizes stored glucose into the blood stream.

**Indications**
- Hypoglycemia
- The unconscious or altered mental status patient with an unknown etiology.

**Precautions**
- None

**Dosage and Administration**
**Adult:**
- 25 gm (250 mL of a 10% solution) IV/IO infusion
  - Alternative: 25 gm (50 mL of a 50% solution) IV/IO bolus

**Pediatric:**
- 5 mL/kg of 10% solution (maximum of 250 mL) IV/IO

**Protocol**
- Hypoglycemia
- Universal Altered Mental Status
- Seizures
- Poisoning/Overdose
- Psych/Behavioral

**Special Considerations**
- The risk to the patient with ongoing hypoglycemia is enormous. With profound hypoglycemia and no IV access consider IO insertion.
- Draw blood sample before administration, if possible.
- Use glucometer before administration, if possible.
- Extravasation may cause tissue necrosis when utilizing concentrations above D12.5; use a large vein and aspirate occasionally to ensure route patency.
- Dextrose can be irritable to the vein and the vein should be flushed after administration.
DIPHENHYDRAMINE (BENADRYL)

Description
Antihistamine for treating histamine-mediated symptoms of allergic reaction. Also anticholinergic and antiparkinsonian effects used for treating dystonic reactions caused by antipsychotic and antiemetic medications (e.g.: haloperidol, droperidol, reglan, compazine, etc).

Indications
- Allergic reaction
- Dystonic medication reactions or akathisia (agitation or restlessness)

Precautions
- Asthma or COPD, thickens bronchial secretions
- Narrow-angle glaucoma
- Patients over 65 years old are at greater risks of serious side effects including confusion, urinary retention, and dizziness that lead to fall risk. For these reasons, half dosing is recommended.

Side effects
- Drowsiness
- Dilated pupils
- Dry mouth and throat
- Flushing

Drug Interactions
- CNS depressants and alcohol may have additive effects.
- MAO inhibitors may prolong and intensify anticholinergic effects of antihistamines.

Dosage and Administration
Adults: 50 mg slow IV/IO/IM. For patients over 65 years old, administer half-dose of 25 mg IV/IO/IM.
Pediatrics: 1 mg/kg slow IV/IO/IM. Max (not to exceed 50 mg)

Protocol
- Allergy/Anaphylaxis
**DuoDote™ (NERVE AGENT ANTIDOTE KIT)**

**Description**

Nerve agents can enter the body by inhalation, ingestion, and through skin. These agents are absorbed rapidly and can produce injury or death within minutes. The DuoDote™ Nerve Agent Antidote kit consists of one auto-injector for self and/or buddy administration. One Injector contains 2.1mg atropine and 600mg pralidoxime chloride (2-PAM).

**Indications**

- Suspected nerve agent exposure accompanied with signs and symptoms of nerve agent poisoning

**Injection sites**

- Outer thigh- mid-lateral thigh (preferred site)
- Buttocks- upper lateral quadrant of buttock (gluteal) in thin individuals

**Instructions**

- Place the auto-injector in the dominate hand. Firmly grasp the center of the auto injector with the green tip (needle end) pointing down.

- With the other hand, pull off the gray safety release. The DuoDote™ auto-injector is now ready to be administered.
The injection site is the mid-outer thigh. The DuoDote™ auto-injector can inject through clothing. However, make sure pockets at the injection site are empty.

Swing and firmly push the green tip at a 90-degree angle against the mid-outer thigh. Continue to firmly push until you feel the auto injector trigger.

No more than three (3) sets of antidotes should be administered.

Special Considerations
- Presence of tachycardia is not a reliable indicator of effective treatment due to potential nicotinic effects of nerve agent exposure. The end-point of treatment is clear dry lung sounds.
- Attempt to decontaminate skin and clothing between injections.

Protocol:
- Overdose and Acute Poisoning
EPINEPHRINE (ADRENALIN)

Description

Endogenous catecholamine alpha, beta-1, and beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation.

Indications

- Pulseless Arrest
- Anaphylaxis
- Asthma
- Bradycardia with poor perfusion

Adverse Reactions

- Tachycardia and tachydysrhythmia
- Hypertension
- Anxiety
- May precipitate angina pectoris

Drug Interactions

- Should not be added to sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.

Dosage and Administration

Adult:

**Pulseless Arrest**

1 mg (10 ml of a 1:10,000 solution), IV/IO bolus.

Repeat every 3-5 minutes up to maximum of 3 doses. May administer 1 additional dose for recurrent arrest after ROSC or narrow complex PEA.

**Bradycardia with hypotension and poor perfusion refractory to other interventions**

Continuous infusion titrated to effect: see [Vasopressor infusion](#)

**Asthma**

0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

**Systemic allergic reaction**

0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

**Severe systemic allergic reaction (Anaphylaxis) refractory to IM epinephrine**

Continuous infusion titrated to effect: see [Vasopressor infusion](#)

**ALTERNATIVE to racemic epinephrine: (for stridor at rest)**

5 mL of 1:1,000 epinephrine via nebulizer x 1

**Epinephrine Auto-Injector:**

**Systemic allergic reaction:**

- Adult: 0.3 mg IM with autoinjector (adult EpiPen)
- Pediatric: 0.15 mg IM with autoinjector (EpiPen Jr)

**Pediatric:**

**Pulseless arrest:**

0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution).

Subsequent doses repeated every 3-5min: 0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution)

**Bradyarrhythmia (CONTACT BASE)**

0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO
**Pediatric Wheezing 1-12 years old**

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM. May repeat dose x1 after 20 minutes.

Alternative: 0.15 mg (0.15 mL of 1:1,000) for <25 kg and 0.3 mg (0.3 mL of 1:1,000) for >25 kg. May repeat dose x1 after 20 minutes.

**Moderate to Severe Allergic Reactions**

**4 months to 12 years**

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM. May repeat dose x 1 after 10 minutes.

Alternative: 0.15 mg (0.15 mL of 1:1,000) for <25 kg and 0.3 mg (0.3 mL of 1:1,000) for >25 kg. May repeat dose x1 after 10 minutes.

**Term to 4 months**

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM. May repeat dose x 1 after 10 minutes.

Alternative: 0.1 mg (0.1 mL of 1:1,000). May repeat dose x1 after 10 minutes.

**Severe systemic allergic reaction (Anaphylaxis) refractory to IM epi (Contact Base):**

0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO

**ALTERNATIVE to racemic epinephrine:** (for stridor at rest)

5 mL of 1:1,000 epinephrine via nebulizer x 1

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**Protocol**

- Medical Pulseless Arrest Algorithm
- Bradyarrhythmia with poor perfusion
- Neonatal Resuscitation
- Allergy and Anaphylaxis Protocol
- Adult Wheezing
- Pediatric Wheezing
- Vasopressor Infusion

---

**Special Considerations**

- May increase myocardial oxygen demand and angina pectoris. Use with caution in patients with known or suspected CAD
- Intramuscular injection into the thigh is preferred route and site of administration. Intramuscular injection of epinephrine in the thigh results in higher concentrations of medication versus intramuscular or subcutaneous injection in the upper arm.
GLUCAGON

Description
Increases blood sugar concentration by converting liver glycogen to glucose. Glucagon also causes relaxation of smooth muscle of the stomach, duodenum, small bowel, and colon.

Onset & Duration
• Onset: variable

Indications
• Altered level of consciousness where hypoglycemia is suspected and IV access is unavailable.
• Hypotension, bradycardia from beta-blocker or calcium channel overdose.

Side Effects
• Tachycardia
• Headache
• Nausea and vomiting

Dosage and Administration
Adult:
• Hypoglycemia: 1 mg IM
• Beta Blocker/Calcium Channel overdose with hypotension and bradycardia: 2 mg IV/IO bolus

Pediatric:
• Hypoglycemia:
  • < 25 kg: 0.5 mg IM.
  • > 25 kg: 1 mg IM
• Beta Blocker/Calcium Channel overdose with hypotension for age, signs of poor perfusion and bradycardia:
  • 0.1 mg/kg IV/IO. Max 1mg

Protocol
• Hypoglycemia
• Poisoning/Overdose
HEMOSTATIC AGENT (QuickClot, Celox, Bloodstop, Actcel, HemCon, ChitoGauze)

Description
QuickClot Combat Gauze is a standard roller or Z-fold gauze impregnated with a clotting agent such as kaolin (a clay containing the active ingredient aluminum silicate) which works on contact with blood to initiate the clotting process (intrinsic pathway) by activating factor XII. This reaction leads to the transformation of factor XII to its’ activated form XIIa, which triggers the clotting cascade.

Mucoadhesive agents such as HemCon, ChitoGauze and Celox utilize a granular chitosan salt derived from the shells of marine arthropods (which are positively charged) to react with and bind to negatively charged red blood cells rapidly forming a cross-linked barrier clot to seal the injured vessels.

Used in conjunction with direct pressure and wound packing these products lead to hemostasis.

Onset and Duration
- Onset of action is 3-5 minutes after wound exposure and clotting action remains unless the dressing and/or the clot is disturbed.

Indications
- Active bleeding from open wounds with that cannot be controlled with direct pressure. Most often involving wounds to the scalp, face, neck, axilla, groin or buttocks.

Contraindications
- Not to be used to treat internal bleeding such as intra-abdominal, intra-thoracic or vaginal bleeding.
- Not to be used for minor bleeding that can be controlled by direct pressure.

Precautions
- Bleeding control is achieved via combination of direct pressure and hemostatic gauze packing for a minimum of 3-5 minutes.
- Stabilize patient per General Trauma Care Protocol.
- If a tourniquet is indicated (refer to Tourniquet Protocol), it should be applied first, before application of hemostatic agent.
- DO NOT USE LOOSE GRANULAR OR POWDERED HEMOSTATIC AGENTS. These are out date and will produce exothermic reactions that may cause burns and additional tissue damage.

Procedure
1. Manufacturers may have different recommendations on application of their products. Follow specific manufacturer guidelines for the particular product carried.
HYDROXOCOBALAMIN (CYANOKIT)

Description
- Cyanide inhibits cytochrome oxidase, thereby arresting cellular respiration and forcing anaerobic metabolism, which leads to lactate production and acidosis and ultimately death. Hydroxocobalamin binds cyanide ions to form cyanocobalamin which is excreted in urine.

Indications
- Adult or pediatric patient with suspected cyanide poisoning from any route, including smoke inhalation in an enclosed space, with any of the following clinical signs:
  - Pulseless arrest
  - Coma/unresponsiveness
  - Signs of shock

Precautions
- Administer only after basic life support measures have been initiated and always in conjunction with other supportive treatment modalities.

Adverse Reactions
- Hypertension
- Allergic reaction/anaphylaxis

Dosage and Administration
- Dosing
  - Adult dose is 5 gm IV
  - Pediatric dose is 70 mg/kg up to 5 gm IV

<table>
<thead>
<tr>
<th>Average Weight by Group</th>
<th>Grey 4 kg</th>
<th>Pink 6.5 kg</th>
<th>Red 8.5 kg</th>
<th>Purple 10.5 kg</th>
<th>Yellow 13 kg</th>
<th>White 16.5 kg</th>
<th>Blue 21 kg</th>
<th>Orange 26.5 kg</th>
<th>Green 33 kg</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>275mg (11mL)</td>
<td>450mg (18mL)</td>
<td>600mg (24mL)</td>
<td>725mg (29mL)</td>
<td>900mg (36mL)</td>
<td>1150mg (46mL)</td>
<td>1475mg (59mL)</td>
<td>1850mg (74mL)</td>
<td>2300mg (92mL)</td>
<td>5000mg (200mL)</td>
</tr>
</tbody>
</table>

- 5 gm vial instructions:
  1. The Cyanokit consists of a 5 gm vial of hydroxocobalamin
  2. Reconstitute: Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride Injection* to the vial using the transfer spike. Fill to the line. *0.9% Sodium Chloride Injection is the recommended diluent (diluent not included in the kit). Lactated Ringer’s Solution and 5% Dextrose Injection have also been found to be compatible with hydroxocobalamin.
  3. Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
  4. Infuse Vial: Use vented intravenous tubing, hang and infuse desired dose over 15 minutes.

Special Considerations
- It is understood that Cyanokit may not be available to all agencies at all times and therefore is not considered standard of care. Notify receiving facility if Cyanokit used.

Protocols
- Carbon Monoxide Exposure
- Burns
**IBUPROFEN (ADVIL, MOTRIN)**

**Description**
Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) that inhibits synthesis of prostaglandins in body tissues by inhibiting at least 2 cyclo-oxygenase (COX) isoenzymes, COX-1 and COX-2.

**Onset & Duration**
- **Onset:** 30-60 minutes
- **Duration:** 6-8 hours

**Indications**
- Mild pain

**Contraindications**
- Allergy to NSAIDs including aspirin and naproxen (Naprosyn, Aleve)
- Pregnancy or breast feeding
- History of GI bleeding or active stomach ulcer
- History of chronic kidney disease or kidney transplant
- Anticoagulation (patient taking blood thinners) or history of a blood clotting disorder
- Acute head trauma or suspected intracranial bleed
- Severe dehydration

**Adverse Reactions**
- Allergic reactions: anaphylaxis, urticaria, angioedema, bronchospasm, rash, hypotension, etc.
- Nausea and vomiting
- GI bleeding with chronic use
- Acute kidney injury

**Drug Interactions**
- Avoid concomitant administration with other NSAIDs or anticoagulant/antiplatelet medications such as apixaban (Eliquis), aspirin, dabigatran (Pradaxa), enoxaparin (Lovenox), heparin, rivaroxaban (Xarelto), warfarin (Coumadin)

**Dosage and Administration**

<table>
<thead>
<tr>
<th>Weight</th>
<th>Age</th>
<th>Dose (100 mg/5 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>&lt; 6 months</td>
<td>DO NOT GIVE</td>
</tr>
<tr>
<td>5-8kg</td>
<td>6 months-12 months</td>
<td>3 mL (60 mg)</td>
</tr>
<tr>
<td>9-11kg</td>
<td>1-2 years</td>
<td>4 mL (80 mg)</td>
</tr>
<tr>
<td>12-16kg</td>
<td>2-3 years</td>
<td>5 mL (100 mg)</td>
</tr>
<tr>
<td>17-21kg</td>
<td>4-5 years</td>
<td>7.5 mL (150 mg)</td>
</tr>
<tr>
<td>22-27kg</td>
<td>6-8 years</td>
<td>10 mL (200 mg)</td>
</tr>
<tr>
<td>28-33kg</td>
<td>9-10 years</td>
<td>15 mL (300 mg)</td>
</tr>
<tr>
<td>34-43kg</td>
<td>11-12 years</td>
<td>20 mL (400 mg)</td>
</tr>
</tbody>
</table>

**Protocol**
- Pain management
IPRATROPIUM BROMIDE (ATROVENT)

Description
Ipratropium is an anticholinergic bronchodilator chemically related to atropine.

Onset & Duration
- Onset: 5-15 minutes.
- Duration: 6-8 hours.

Indications
- Bronchospasm

Contraindications
- Soy or peanut allergy is a contraindication to the use of Atrovent metered dose inhaler, not the nebulized solution, which does not have the allergen contained in propellant.

Adverse Reactions
- Palpitations
- Tremors
- Dry mouth

How Supplied
- Premixed Container: 0.5 mg in 2.5ml NS

Dosage and Administration

Adult
Bronchospasm:
0.5 mg along with albuterol in a nebulizer

Child (1 year – 12 years)
Mod and Severe Bronchospasm
- 2-12 years: 0.5 mg along with albuterol in a nebulizer
- 1 – <2 years: 0.25mg along with albuterol in a nebulizer
  Not indicated for repetitive dose or continuous neb use

Child (< 1 year)
Contact Base

Protocol
- Adult Wheezing
- Pediatric Wheezing

Special Considerations
During the COVID-19 pandemic, there is increased risk of spreading viral particles in the air during aerosolizing procedures. These procedures include nebulization, suctioning, CPAP, intubation, and manual ventilation. Maximal PPE precautions (N95 masks, gloves, eye protection, gowns) are mandatory. Inline viral filters should also be used with CPAP and manual ventilation with an advanced airway to decrease the spread of viral particles.
Description

NSAIDs decrease pain and inflammation by several mechanisms. Their primary action is to inhibit the family of cyclooxygenase (COX) enzymes resulting in blockade of prostaglandin synthesis. COX inhibition also impacts renal blood flow and stomach acid secretion. NSAIDs may also inhibit chemotaxis, alter lymphocyte activity, decrease proinflammatory cytokine activity, and inhibit neutrophil aggregation; further contributing to anti-inflammatory activity.

Onset & Duration

- Onset of analgesia: IV within 5 minutes
- Peak effect: 1 hour
- Duration: 4 hours

Indications

- Moderate to severe pain.
- Pain due to suspected kidney stones, acute exacerbations of chronic pain, musculoskeletal pain

Contraindications

- Allergy to NSAIDs including aspirin, ibuprofen, and naproxen (Naprosyn, Aleve)
- Pregnancy or breast feeding
- History of GI bleeding or active stomach ulcer
- History of chronic kidney disease or kidney transplant
- Anticoagulation (patient taking blood thinners) or history of a blood clotting disorder
- Acute head trauma or suspected intracranial bleed
- Ages less than 12-years-old and over 65-years-old
- Severe dehydration

Adverse Reactions

- Allergic reactions: anaphylaxis, urticaria, angioedema, bronchospasm, rash, hypotension, etc.
- Nausea and vomiting
- GI bleeding with chronic use
- Acute kidney injury

Drug Interactions

- Avoid concomitant administration with other NSAIDS or anticoagulant medications such as apixaban (Eliquis), dabigatran (Pradaxa), enoxaparin (Lovenox), heparin, rivaroxaban (Xarelto), warfarin (Coumadin).

Dosage and Administration

**Adult:**

15mg IV or IM

**Pediatric:**

Not indicated

Protocol

- Pain Management
**LIDOCAINE 2% SOLUTION**

**Description**
Local anesthetic for relief of pain during intraosseous fluid administration.

**Indications**
- Analgesic for intraosseous infusion

**Side Effects**
- Seizures
- Drowsiness
- Tachycardia
- Bradycardia
- Confusion
- Hypotension

**Precautions**
- Lidocaine is metabolized in the liver. Elderly patients and those with liver disease or poor liver perfusion secondary to shock or congestive heart failure are more likely to experience side effects.

**Dosage and Administration**
**Adult:**
- 50 mg slow IO push

**Protocol**
**Intraosseous Procedure**

**Special Notes**
- Seizure from lidocaine toxicity likely to be brief and self-limited. If prolonged, or status epilepticus, treat per Seizure protocol
- Treat dysrhythmias according to specific protocol

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**Lidocaine Jelly 2%:**
- Indication – Anesthetic lubricant for Nasotracheal Intubation
- Contraindication – Known history of hypersensitivity to local anesthetics
- Dosage and Administration
  - Apply a moderate amount of jelly to the endotracheal tube shortly before use.
  - Avoid introducing the jelly into the lumen of the tube
  - If jelly has dried before insertion, reapply
MAGNESIUM SULFATE

Description
Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. In cardiac patients, it stabilizes the potassium pump, correcting repolarization. It also shortens the Q-T interval in the presence of ventricular arrhythmias due to drug toxicity or electrolyte imbalance. In respiratory patients, it may act as a bronchodilator in acute bronchospasm due to asthma or other bronchospastic diseases. In patients suffering from eclampsia, it controls seizures by blocking neuromuscular transmission and lowers blood pressure as well as decreases cerebral vasospasm.

Indications
- Antiarrhythmic
  - Torsade de pointes associated with prolonged QT interval
- Respiratory
  - Severe bronchospasm unresponsive to continuous albuterol, ipratropium, and IM epinephrine.
- Obstetrics
  - Eclampsia: Pregnancy ≥20 weeks gestational age or up to 6 weeks post-partum with seizures

Precautions
- Bradycardia
- Hypotension
- Respiratory depression

Adverse Reactions
- Bradycardia
- Hypotension
- Respiratory depression

Dosage and Administration
- Torsades de Pointes suspected caused by prolonged QT interval:
  - Adult
    - 2 gm, IV bolus
  - Pediatric
    - Not indicated
- Refractory Severe Bronchospasm:
  - Adult
    - 2 gm, IV bolus, over 3-4 minutes.
  - Pediatric
    - Not indicated
- Eclampsia:
  - 2 gm, IV/IO over 2 minutes, then mix 4 gm diluted in 50 ml of Normal Saline (0.9 NS), IV/IO drip over 15 minutes.

Protocol
- Medical Pulseless Arrest Algorithm
- Adult wheezing
- Obstetric Complications
METHYLPREDNISOLONE (SOLU-MEDROL)

Description
Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation and may alter the immune response. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

Indications
- Anaphylaxis
- Severe asthma
- COPD
- Suspected Addisonian crisis (cardiovascular collapse in patient at risk for adrenal insufficiency)

Contraindications
- Evidence of active GI bleed

Adverse Reactions
Most adverse reactions are a result of long-term therapy and include:
- Gastrointestinal bleeding
- Hypertension
- Hyperglycemia

Dosage and Administration
Adult:
125 mg, IV/IO bolus, slowly, over 2 minutes

Pediatric:
2 mg/kg, IV/IO bolus, slowly, over 2 minutes to max dose of 125 mg

Protocol
- Adult Wheezing
- Pediatric Wheezing
- Allergy and Anaphylaxis
- Medical Hypotension/shock
- Adrenal Insufficiency

Special Considerations
- Must be reconstituted and used immediately
- The effect of methylprednisolone is generally delayed for several hours.
- Methylprednisolone is not considered a first line drug. Be sure to attend to the patient’s primary treatment priorities (i.e. airway, ventilation, beta-agonist nebulization) first. If primary treatment priorities have been completed and there is time while in route to the hospital, then methylprednisolone can be administered. Do not delay transport to administer this drug
NALOXONE (NARCAN)

Description
Naloxone is a competitive opioid receptor antagonist

Onset & Duration
Onset: Within 5 minutes
Duration: 1-4 hours

Indications
• For reversal of suspected opioid-induced CNS and respiratory depression
• Coma of unknown origin with impaired airway reflexes or respiratory depression

Adverse Reactions
• Tachycardia
• Nausea and vomiting
• Pulmonary Edema

Dosage and Administration
Adult:
0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total
In cases of severe respiratory compromise or arrest, 2 mg bolus IV/IO/IM is appropriate, otherwise drug should be titrated

With some newer synthetic opioid formulations, higher doses of naloxone may be required. In rare cases of confirmed or strongly suspected opioid overdose with insufficient response to 2mg, higher doses may be used, titrate up to a maximum of 10mg. Routine use of high dose naloxone should be avoided.

Pediatrics:
0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total

Protocol
• Universal Altered Mental Status
• Drug/Alcohol Intoxication
• Poisoning/Overdose

Special Considerations
• Not intended for use unless respiratory depression or impaired airway reflexes are present. Reversal of suspected mild-moderate opioid toxicity is not indicated in the field as it may greatly complicate treatment and transport as narcotic-dependent patients may experience violent withdrawal symptoms
• Patients receiving EMS administered naloxone should be transported to a hospital.
• In the State of Colorado, bystanders, law enforcement, and other first responders can administer naloxone if they feel a person is experiencing an opiate-related drug overdose event (Colorado Revised Statutes §12-36-117.7).

(continued next page)
There are significant concomitant inherent risks in patients who have received naloxone, including:

- Recurrent respiratory/CNS depression given short half-life of naloxone
- Co-existing intoxication from alcohol or other recreational or prescription drugs
- Acetaminophen toxicity from combination opioid/acetaminophen prescriptions
- Non-cardiogenic pulmonary edema associated with naloxone use
- Acute psychiatric decompensation, overdose, SI/HI or psychosis requiring ED evaluation
- Sudden abrupt violent withdrawal symptoms which may limit decision making capacity

Given the above risks, it is strongly preferred that patients who have received naloxone be transported and evaluated by a physician. However, if the patient clearly has decision-making capacity, he/she does have the right to refuse transport. If adamantly refusing, patients must be warned of the multiple risks of refusing transport.

If the patient is refusing transport contact base. If any concerns or doubts about decision-making capacity exist, err on the side of transport.
NITROGLYCERIN (NITROSTAT, NITROQUICK, etc)

Description
Short-acting peripheral venodilator decreasing cardiac preload and afterload

Onset & Duration
Onset: 1-3 min.
Duration: 20-30 min.

Indications
- Pain or discomfort due to suspected Acute Coronary Syndrome
- Pulmonary edema due to congestive heart failure

Contraindications
- Suspected right ventricular ST-segment elevation MI (Inferior STEMI pattern plus ST elevation in right sided-precordial leads)
- Hypotension SBP < 100
- Recent use of erectile dysfunction (ED) medication (e.g. sildenafil (Viagra, Revatio), tadalafil (Cialis, Adcirca), vardenafil (Levitra, Staxyn), avanafil (Stendra))

Adverse Reactions
- Hypotension
- Headache
- Syncope

Dosage and Administration
- **Chest Pain**: 0.4 mg (1/150 gr) sublingually, every 5 minutes PRN up to a total of 3 doses for persistent CP
- **Pulmonary Edema**: 0.4 mg (1/150 gr) sublingually, every 5 minutes PRN titrated to symptoms and blood pressure

Protocol
- **Chest Pain**
- **CHF/Pulmonary Edema**
OPIOIDS (FENTANYL)

Description
Opioid analgesics with desired effects of analgesia, euphoria and sedation as well as undesired effects of respiratory depression and hypotension. A synthetic opioid, fentanyl is 100 times more potent than morphine, and is less likely to cause histamine release.

Indications
- Treatment of hemodynamically stable patients with moderate to severe pain due to traumatic or medical conditions.

Contraindications
- Fentanyl - Hemodynamic instability or shock
- Respiratory depression

Caution/Comments:
- Opioids should only be given to hemodynamically stable patients and titrated slowly to effect.
- The objective of pain management is not the removal of all pain, but rather, to make the patient's pain tolerable enough to allow for adequate assessment, treatment and transport
- Respiratory depression, including apnea, may occur suddenly and without warning, and is more common in children and the elderly. Start with ½ traditional dose in the elderly.
- Chest wall rigidity has been reported with rapid administration of fentanyl
- If showing signs of CNS depression after medication administration, pulse oximetry and waveform capnography should be monitored to assess for respiratory depression.

Dosage and Administration

FENTANYL:
- Adult doses may be rounded to nearest 25 mcg increment
- Initial dose in adults typically 100 mcg
- Strongly consider ½ typical dosing in elderly or frail patient

Adult:
- IV/IO route: 1-2 mcg/kg.
  - Dose may be repeated after 5 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg
  - Additional dosing requires BASE CONTACT

- IN route: 1-2 mcg/kg.
  - Administer a maximum of 1 ml of fluid per nostril
  - Dose may be repeated after 10 minutes after initial IN dose to a maximum cumulative dose of 4 mcg/kg. IV route is preferred for repeat dosing.
  - Additional dosing requires BASE CONTACT

Pediatric (1-12 years):
- IV/IO/IM route: 1-2 mcg/kg.
  - Dose may be repeated after 5 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg.
  - Additional dosing requires BASE CONTACT
**IN route:** 2 mcg/kg.
- Administer a **maximum of 1 ml of fluid** per nostril
- Dose may be repeated after 10 minutes after initial IN dose to a maximum cumulative dose of 4 mcg/kg. IV route is preferred for repeat dosing.

**Pediatric < 1 year: BASE CONTACT**

NOTE: IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect. IO/IN/IM are acceptable alternatives when IV access is not readily available. Repeat doses of IN Fentanyl can be given if IV access cannot be established. Continuous pulse oximetry monitoring is mandatory when any opioid is administered. Frequent evaluation of the patient’s vital signs is also indicated. Emergency resuscitation equipment and naloxone must be immediately available.

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**Protocol**
- Chest Pain
- Post Resuscitation Care with ROSC
- Abdominal Pain
- Amputations
- Burns
- Bites/Stings
- Snake Bites
- Face and Neck Trauma
- Chest Trauma
- Abdominal Trauma
- Spinal Trauma
- Pain Management
**ORAL GLUCOSE (GLUTOSE, INSTA-GLUCOSE)**

**Description**
Glucose is the body’s basic fuel and is required for cellular metabolism

**Indications**
- Known or suspected hypoglycemia and able to take PO

**Contraindications**
- Inability to swallow or protect airway
- Unable to take PO meds for another reason

**Administration**
All ages: One full tube 15 gm buccal. If the tube contains more than 15gm, it is still acceptable to use the full tube.

**Protocol**
- Universal Altered Mental Status
- Hypoglycemia
**OXYGEN**

**Description**
Oxygen added to the inspired air increases the amount of oxygen in the blood, and thereby increases the amount delivered to the tissue. Tissue hypoxia causes cell damage and death. Conversely, hyperoxia has been linked with worsened outcomes in acute coronary syndromes and stroke. Therefore, oxygen should not be viewed as a harmless drug where more is better. EMS personnel should add additional oxygen when hypoxia, shock or respiratory distress are present titrating to a normal pulse oximetry reading above 90%.

**Indications**
- Hypoxemia or respiratory distress
- Hypotension/shock states
- Suspected carbon monoxide poisoning
- Obstetrical complications, childbirth
- Pre-intubation oxygenation

**Precautions**
- If the patient is not breathing adequately, the treatment of choice is assisted ventilation, not just oxygen.
- Do not withhold oxygen from any patient in respiratory distress, incl...

**Administration**
- Use the appropriate oxygen delivery method and flow rate to achieve SpO2 of 90-96% when oxygen therapy is indicated

**Special Notes**
- Do not use permanently mounted humidifiers. If the patient warrants humidified oxygen, use a single patient use device.
- Adequate oxygenation is assessed clinically and with the SpO2 while adequate ventilation is assessed clinically and with waveform capnography.
**PHENYLEPHRINE (INTRANASAL)**

**Description**
- Phenylephrine is an alpha adrenergic agonist. When administered intranasally, it causes vasoconstriction in the nasal mucosa and subsequently decreased bleeding and nasal decongestion.

**Indications**
- Prior to nasotracheal intubation to induce vasoconstriction of the nasal mucosa
- Nosebleed (epistaxis).

**Precautions**
- Avoid administration into the eyes, which will dilate pupil.

**Dosage and Administration**
- Instill two drops of 1% solution, or 2 sprays, in the nostril prior to attempting nasotracheal intubation.
- For patients with active nosebleed, first have patient blow nose to expel clots. Then, administer 2 sprays into affected naris(es).

**Protocol**
- [Nasotracheal intubation](#)
- [Epistaxis](#)
# RACEMIC EPINEPHRINE

## Description
Racemic epinephrine 2.25% is an aqueous solution that delivers 11.25 mg of racemic epinephrine per 0.5mL for use by **inhalation only**. Inhalation causes local effects on the upper airway as well as systemic effects from absorption. Vasoconstriction may reduce swelling in the upper airway, and ß effects on bronchial smooth muscle may relieve bronchospasm.

## Onset & Duration
- **Onset:** 1-5 minutes
- **Duration:** 1-3 hours

## Indications
- Stridor at rest

## Side Effects
- Tachycardia
- Palpitations
- Muscle tremors

## Dosage and Administration
0.5 ml racemic epinephrine (acceptable dose for all ages) mixed in 3 mL saline, via nebulizer at 6-8 LPM to create a fine mist and administer over 15 minutes.

## Protocol
- [Pediatric Stridor/Croup](#)

## Special Considerations
- Racemic epi is heat and photo-sensitive
- Once removed from the refrigerator, the unopened package is stable at room temperature until the expiration date stated on the package.
- Do not confuse the side effects with respiratory failure or imminent respiratory arrest.
- If no racemic epinephrine is available, consider 5 mL of 1:1,000 epinephrine x 1 via nebulizer at 6-8 LPM to create a fine mist and administer over 15 minutes.
**SODIUM BICARBONATE**

**Description**
Sodium bicarbonate is an alkalinizing solution used to treat metabolic acidosis, sodium channel poisoning and hyperkalemia. Sodium bicarbonate is no longer recommended for routine use in prolonged cardiac arrest.

**Indications**
- Sodium bicarbonate therapy is indicated in patients with tricyclic antidepressant (TCA) poisoning who develop widening of the QRS interval >120 msec, hypotension due to the TCA poisoning, or a ventricular arrhythmia.
- Suspected hyperkalemic pulseless arrest: consider in patients with known renal failure/dialysis.
- Hyperactive delirium with severe agitation that develops widening of QRS interval >120 msec or pulseless arrest
- Crush or suspension injury with known or suspected hyperkalemia

**Contraindications**
- Metabolic and respiratory alkalosis
- Hypocalcemia
- Hypokalemia

**Adverse Reactions**
- Metabolic alkalosis
- Paradoxical cerebral intracellular acidosis
- Sodium bolus can lead to volume overload

**Drug Interactions**
- May precipitate in calcium solutions.
- Alkalization of urine may increase half-lives of certain drugs.
- Vasopressors may be deactivated.

**Dosage and Administration: 8.4% sodium bicarbonate solution**

**Adults and Pediatric:**
- **Pulseless arrest suspected due to hyperkalemia** (typically in patient with dialysis, end-stage renal disease, hyperactive delirium with severe agitation)
  - 1 mEq/kg slow IV push. Repeat if needed x 2 every 5 minutes.
- **TCA poisoning with wide QRS > 120 msec or ventricular arrhythmia**
  - Hyperactive delirium with severe agitation that develops wide QRS >120 msec
  - Crush syndrome or suspension injury with known or suspected hyperkalemia
  - 1 mEq/kg slow IV push. Repeat if needed x 2 every 5 minutes or until QRS is narrowed.

**Protocol**
- [Medical Pulseless Arrest](#)
- [Poisoning/Overdose](#)
- [General Trauma Care](#)
- [Hyperactive Delirium with Severe Agitation](#)
TOPICAL OPHTHALMIC ANESTHETICS

Description
Proparacaine and tetracaine are local anesthetics approved for ocular administration for relief of eye pain caused by corneal abrasion or chemical injury.

Indications
- Pain secondary to eye injuries and corneal abrasions.
- Topical anesthetic to facilitate eye irrigation.

Contraindications
- Known allergy to local anesthetics.
- Globe lacerations or rupture.

Precautions
- Transient burning/stinging when initially applied.

Dosage and Administration
- Instill 2 drops into affected eye. Contact Base for repeat dosing.

Special Considerations
- This is single patient use. Unused portions should be discarded and only new bottles may be used.
- Do not administer until patient consents to transport and transport has begun.
- Topical ophthalmic anesthetics should never be given to a patient for self-administration.
VASOPRESSOR CONTINUOUS INFUSION – ADULT PATIENTS ONLY

Description:

**Epinephrine:** Preferred vasopressor for all indications.
- Endogenous catecholamine alpha, beta-1, and beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation

Indications:

**Epinephrine:**
- Severe Allergic Reaction/Anaphylaxis
- Hypotension with poor perfusion refractory to adequate fluid resuscitation (typically 30 mL/kg crystalloid)
- Bradycardia with signs of poor perfusion

Contraindications:

- Do not use vasopressor infusion in PEDIATRIC patients (age less than 12 years)

Adverse Reactions

- Dysrhythmia
- Hypertension
- Anxiety
- Angina

Drug Interactions

- Do not add to sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.

Dosage and Administration:

**Epinephrine:**
- **Mix:** Inject 1 mg epinephrine into 1000 mL Normal Saline bag to achieve 1mcg/mL concentration (This means 1 mL of 1:1000 or 10 mL of 1:10,000 – either way 1 mg of drug). Use macro drip set.
- **Adult IV/IO:** Begin IV/IO infusion wide open to gravity to give small aliquots of fluid. **Typical volumes are less than 100 mL of total fluid,** as typical doses are expected to be < 100 mcg.
  Titrated to desired hemodynamic effect with goal BP of > 90 mmHg systolic, improved respiratory status (bronchodilation), and improved perfusion/mentation.
Protocol

- Post-Resuscitation Care with ROSC
- Bradycardia with Poor Perfusion
- Allergy and Anaphylaxis
- Medical Hypotension/Shock
- Overdose and Acute Poisoning
- Sepsis

Special Considerations

- May increase myocardial oxygen demand and angina pectoris. Use with caution in patients with known or suspected CAD
The purpose of this addendum is to provide guidance and best practice principles for care of patients in a tactical environment. These concepts are based on Tactical Combat Casualty Care (TCCC) principles developed by the US military. This addendum applies to ASHER incidents as defined by departmental policy. This addendum is meant to augment the Aurora EMS Protocols, and will reference the applicable protocol. Any exceptions to an indication for a procedure in this addendum will be noted.

**HOT ZONE (AREA NOT SECURED OR SAFE)**
- Treatment priority is to have the patient move or move the patient to an area of cover and relative safety. Crews should utilize rescue techniques that minimize their exposure to potential threats.
- Treatment Priorities:
  1. Hemorrhage control (tourniquet only. If patient is conscious, crews can facilitate self-application of a tourniquet. Apply tourniquet “High and Tight”, which means as proximal as possible, unless injury site is visible and apparent.
  2. Airway management does not occur in this phase of care
  3. Ideally, only SWAT medics operate in this zone. However, any WARM ZONE can become HOT and AFR crews should always be aware of this.

**WARM ZONE (AREA SECURED BUT NOT SAFE)**
- Primary triage using SALT triage method if multiple casualties
- Assess any previous interventions and address if not adequate
- Treatment Priorities:
  1. Hemorrhage control (tourniquet and hemostatic gauze)
  2. Basic airway management (NPA or OPA, place in recovery position, no ALS airway)
  3. If penetrating chest wounds, apply vented chest seal.
  4. Assess/treat for tension pneumothorax (auscultation of lung sounds not practical usually in WARM ZONE. Assess and treat if respiratory distress, penetrating chest trauma, and shock (absent peripheral pulses, pale, cool, and diaphoretic)
  5. If delay in extraction, consider hypothermia prevention and IV/IO if situation allows.
- Pain control and spinal immobilization not indicated in this phase of care.
- Extraction teams should evacuate casualties to CCP

**COLD ZONE (AREA SECURED AND SAFE)**
- Secondary triage of casualties arriving at CCP
- Assess any previous interventions and address if not adequate
- Refer to General Trauma Care protocol and complete full physical exam
- Treatment Priorities:
  1. Hemorrhage control (tourniquet and hemostatic gauze)
  2. Airway management (NPA or OPA, ALS airway if indicated, Oxygen)
  3. Assess/treat for tension pneumothorax
  4. IV/IO access. Ref Traumatic Shock protocol for IV fluid management
  5. Keep patient warm to prevent hypothermia
  6. Spinal immobilization if indicated
  7. Pain Control per protocol
- Transport casualties to appropriate trauma centers per protocol
**Adult Medical Cardiac Arrest – LEAD PARAMEDIC**

<table>
<thead>
<tr>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skills Demonstration</strong></td>
</tr>
<tr>
<td>Check patient’s responsiveness, breathing and pulse – verify pt is in medical arrest</td>
</tr>
<tr>
<td>Delegates a rescuer to begin uninterrupted chest compressions</td>
</tr>
<tr>
<td>Delegates two rescuers to insert appropriately sized OPA and begin two-person BVM, utilizing ETCO2, ventilations are administered once every six seconds.</td>
</tr>
<tr>
<td>Turn on the ZOLL monitor / defibrillator and apply CPR Stat-padz</td>
</tr>
<tr>
<td>If arrest witnessed by EMS and Stat-padz are already applied, correctly interpret and treat rhythm</td>
</tr>
<tr>
<td>Verifies appropriate compressions (rate, depth and recoil) and ventilations</td>
</tr>
<tr>
<td>At 1 minute and 30 seconds plan rotation of personnel</td>
</tr>
<tr>
<td>At 1 minute and 45 seconds charge monitor</td>
</tr>
<tr>
<td>At 2 minutes ensures hands-off patient for rhythm check</td>
</tr>
<tr>
<td>5-10 second pre-shock pause for rhythm identification and pulse check</td>
</tr>
<tr>
<td>Correctly interpret and treat rhythm</td>
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</table>

| **2-4 MINUTES (IV/IO access)** |
| Directs resumption of uninterrupted compressions and ventilations |
| Delegates or places IV/IO |
| Verifies appropriate compressions and ventilations (1 breath every 6 seconds) |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |

| **4-6 MINUTES (Medication administration)** |
| Directs resumption of uninterrupted compressions and ventilations |
| Delegates or administers indicated medication(s) |
| Verifies appropriate compressions and ventilations (1 breath every 6 seconds) |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |

<p>| <strong>6-8 MINUTES (Advanced airway)</strong> |
| Directs resumption of uninterrupted compressions and ventilations, if needed |
| Delegates or places ETT utilizing the Air-traq |
| If 2 ETT attempts have failed, delegates or places l-gel airway |
| Verifies that endotracheal tube placement using EtCO2 and breath sounds |
| Verifies appropriate compressions and ventilations (1 breath every 6 seconds) |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |</p>
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</tr>
<tr>
<td></td>
<td>Delegates a rescuer to begin chest compressions</td>
</tr>
<tr>
<td></td>
<td>Delegates two rescuers to begin 2-person BVM at appropriate ratio (15:2 for children or 3:1 for newly born infants)</td>
</tr>
<tr>
<td></td>
<td>Measure patient with Length Based Tape – Determine patient’s color category</td>
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<tr>
<td></td>
<td>Use AFR Pediatric Field Guide for appropriate interventions, therapies, etc.</td>
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<td>Turn on the ZOLL monitor / defibrillator and apply CPR Stat-padz</td>
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**2-4 MINUTES (IV/IO ACCESS)**

| Directs resumption of compressions and ventilation at correct ratio (15:2 or 3:1) |
| Delegates or places IV/IO |
| Verifies appropriate compressions and ventilations are being performed |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |

**4-6 MINUTES (Medication Administration)**

| Directs resumption of compressions and ventilations at correct ratio (15:2 or 3:1) |
| Delegates or administers medications as indicated |
| Verifies appropriate compressions and ventilations are being performed |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |

**6-8 MINUTES (Advanced Airway)**

| Directs resumption of uninterrupted compressions and ventilations if needed |
| Delegates or places i-Gel airway device with EtCO2 device as indicated in AFR Pediatric Field Guide |
| Verify appropriate airway placement by assessing ventilations and capnography waveform |
| Verifies switch to continuous compressions and ventilations given at 1 breath every 6 seconds |
| At 1 minute and 30 seconds plan rotation of personnel |
| At 1 minute and 45 seconds charge monitor |
| At 2 minutes ensures hands-off patient for rhythm check |
| 5-10 second pre-shock pause for rhythm identification and pulse check |
| Correctly interpret and treat rhythm |