

# Denver Metropolitan Prehospital Protocols



These protocols are considered the property of the Denver Metro EMS Medical Directors and the contributors listed on the acknowledgements page. Any edits or alterations of this protocol will be the sole responsibility of the Agency Medical Director and should adhere to the Colorado State Rule 6 CCR 1015-3 - Emergency Medical Services Chapter Two.

The DMEMSMD protocols are collaboratively written and constantly revised to provide the most ideal and up to date EMS care for our community. We recognize that any new protocol version necessitates training and implementation at the level of the individual agency. Careful training and implementation of these changes are strongly encouraged. It is appropriate to allow up to 6 months for any agency to implement protocol changes with each new revision.

The DMEMSMD group should be credited and asks to be informed of any such edits or alteration to the most current version of the DMEMSMD protocols. The DMEMSMD group may be notified at their website <https://dmemsmd.org> through the [contact](#) tab.

The process that has been initiated in the construction of this revised set of protocols will remain in place. The authors will continue to edit and revise the protocols to reflect the dynamic role of emergency medical services within the medical care community. The authors would like to acknowledge the following for their contribution, talent, and time in this revision of the Denver Metro EMS protocols.

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The Denver Metro EMS Medical Directors would also like to recognize the ongoing contributions by our agency EMS representatives and local EMS educators whose continued input into the protocol document and revisions is essential to its success.

The Denver Metro EMS Medical Directors share a rich history of collaborative efforts to establish a regional standard of care for the Denver metropolitan area and beyond. We extend our sincere gratitude to the physicians who, though no longer active in the committee, have dedicated their time and expertise to the development of these protocols. While your names may no longer appear in this protocol set, your legacy and invaluable contributions will forever be remembered and appreciated.

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## 0010 GENERAL GUIDELINES: INTRODUCTION

### INTRODUCTION

The following protocols have been developed and approved by the Denver Metro EMS Medical Directors (DMEMSMD) group. These protocols define the standard of care for EMS providers in the Denver Metropolitan area, and delineate the expected practice, actions, and procedures to be followed.

No protocol can account for every clinical scenario encountered, and the DMEMSMD 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. Boxes with orange fill are for actions for intermediate level or higher, and blue-filled boxes are for Paramedic level. When applicable, actions requiring **Base Contact** are identified in the protocol.

EMT	AEMT
Intermediate	Paramedic

#### • 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 Denver Metro EMS Physician Group. 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, 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. This may be of additional importance when training and orienting newly hired providers prior to independent practice.

## 0015 GENERAL GUIDELINES: AGE DEFINITIONS

### 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.

Geriatric Protocol

### PEDIATRICS

Pediatric specific considerations will be noted by a purple box. Pediatric age can be defined in the following categories:

Pediatric Protocol

Age Category	Age Range
Pediatric	<12 years
Neonate	<1 month
Newly born	<48 hours



## 0020 GENERAL GUIDELINES: CONFIDENTIALITY

### 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 your agency'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.

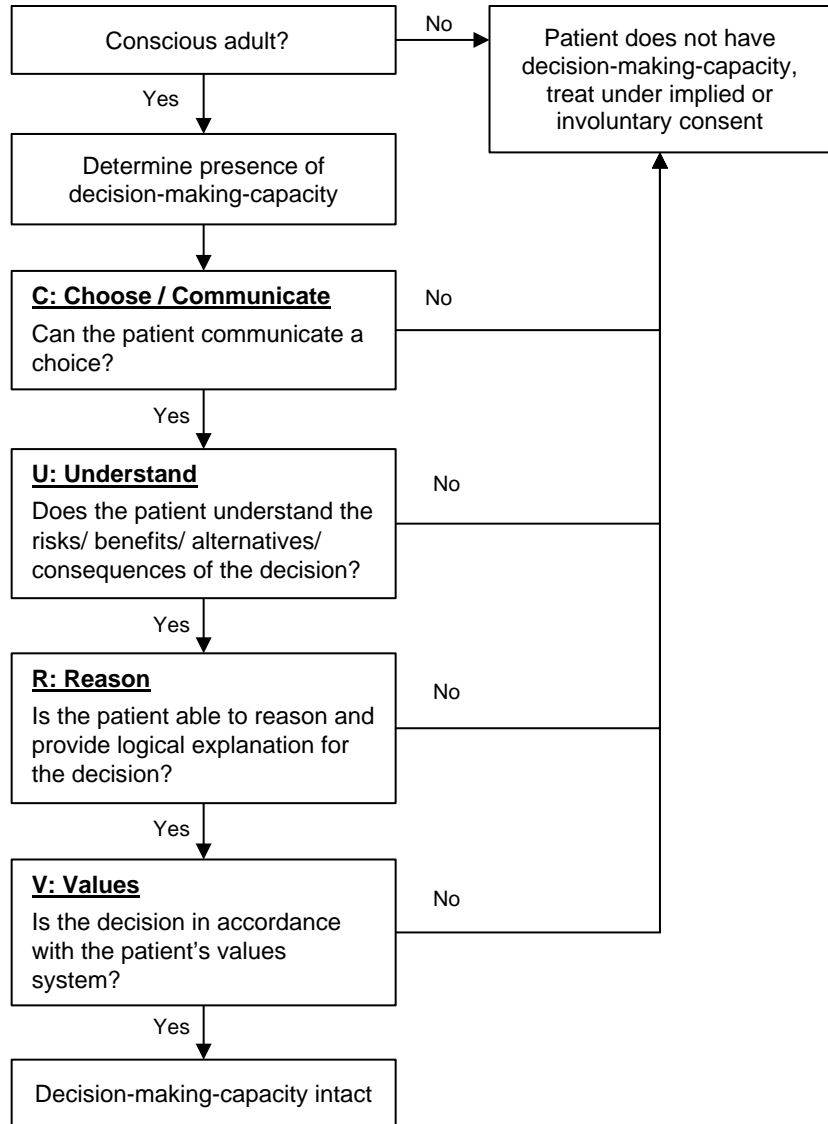
## 0030 General Guidelines: Consent

### 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.

### Values

- Attempt to assess if the patient's decision is in line with how they have approached the other questions they have been asked during assessment
- If possible, obtain collateral from friends or family to determine if the patient's decision is in line with other decisions or conversations
- An example question to assess values: "How did you reach your decision to accept (or reject) care?"



### 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.

## 0030 General Guidelines: Consent

### 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. Minors may seek treatment for medical care related to the intended live birth of a child; contraception; abortion; prevention, diagnosis, and treatment for sexually transmitted infections/HIV; evaluation and/or treatment after sexual assault; and treatment for addiction to or use of drugs, emergency treatment for intoxication, and treatment for alcoholism without consent of parents.
  - 3. Minors 15 years or older may seek treatment for mental health without parents' consent.
  - 4. The consent of a parent is not necessary to authorize hospital or emergency health care when a first responder in good faith relies on a minor's consent, if the minor is at least 15 years or older, and
    - a. Is living separate and apart from his or her parents, and managing his or her own financial affairs; or
    - b. They have contracted a lawful marriage
- 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 medical 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 the extent allowable, notify law enforcement to respond and assist.

## 0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

### **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.

## 0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

### 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.

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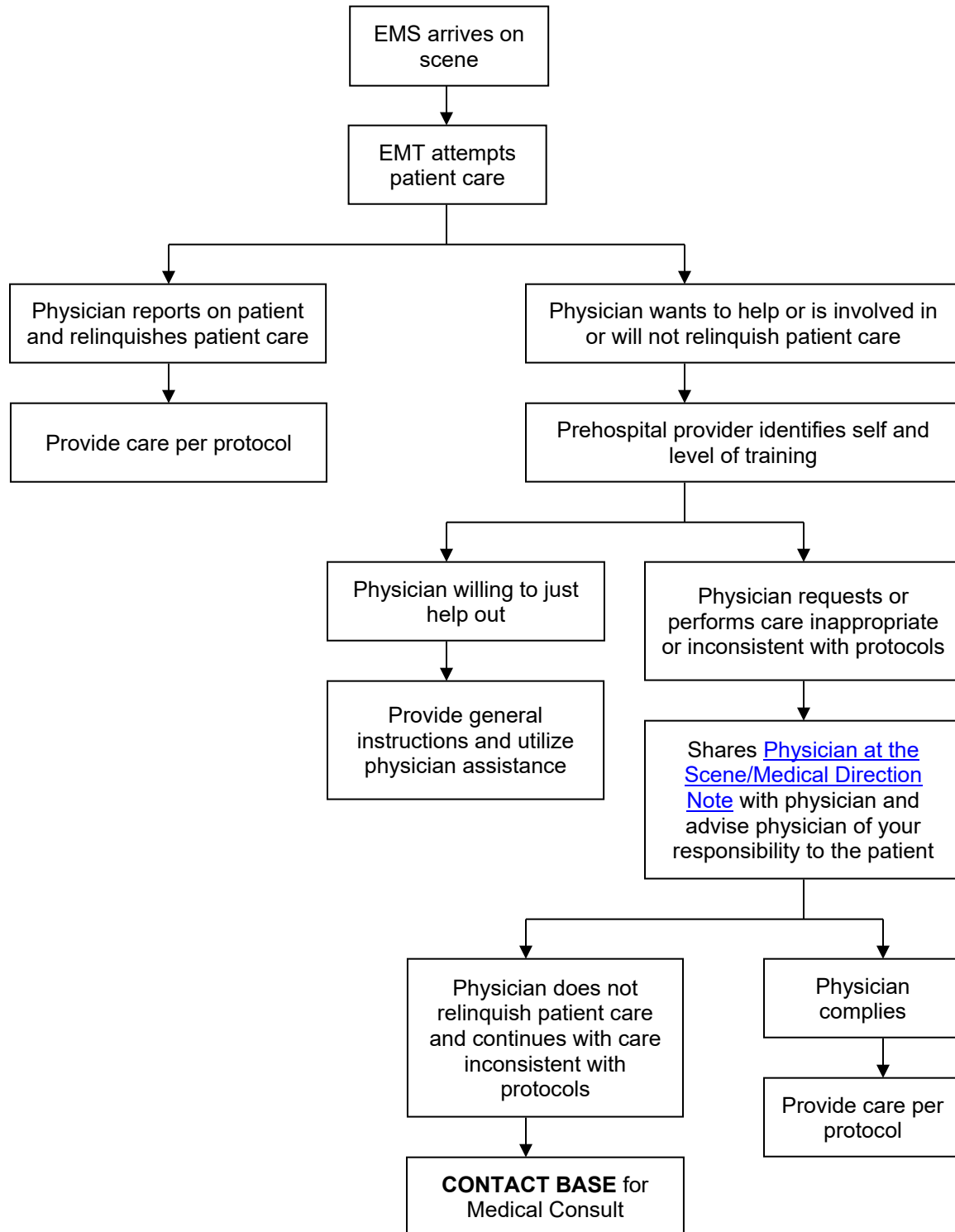
Medical Director

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Agency

0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM



## 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.
- 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. 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

## 0051 GENERAL GUIDELINES: TERMINATION OF RESUSCIATION FOR MEDICAL PULSELESS ARREST

### Purpose

- A. To provide guidelines for termination of resuscitation (TOR) 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.
- B. For termination of efforts of newly born after field delivery, refer to the [Neonatal Resuscitation](#) protocol.

### General Principles

- A. Resuscitate according to [Universal 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  $\geq 20$  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

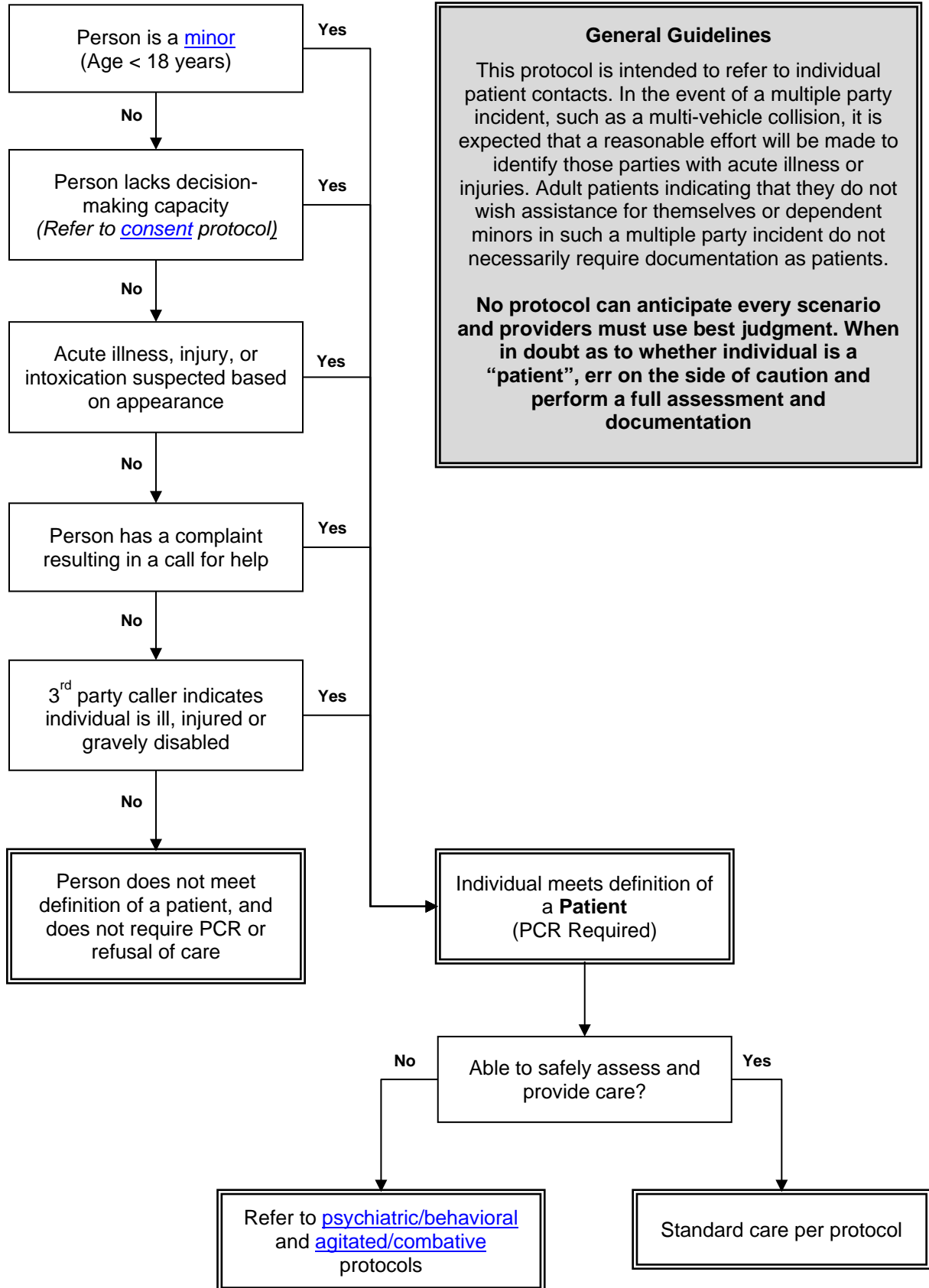
### **General Principles:**

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

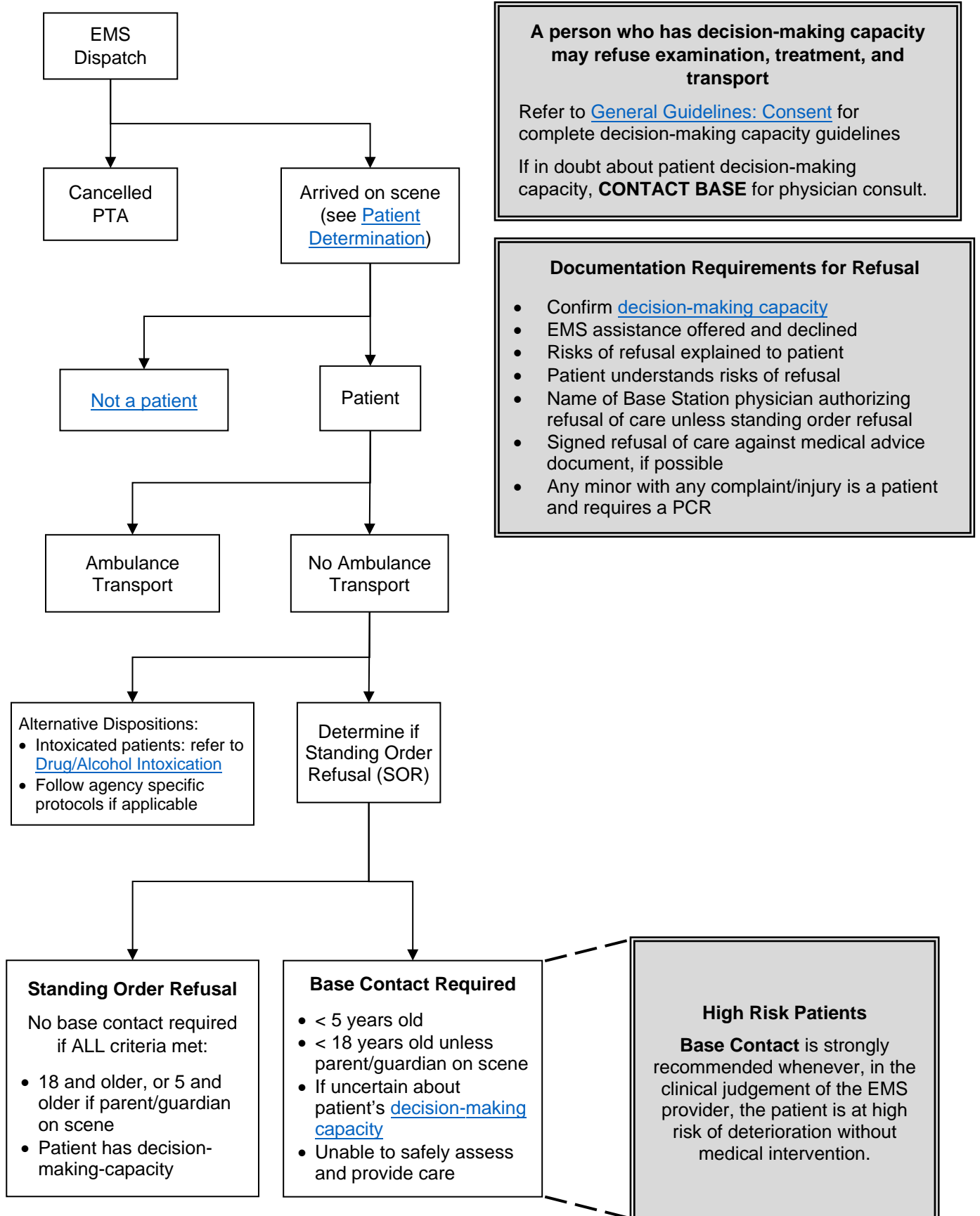
### **Additional Considerations**

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. (See State Trauma Triage Algorithm).
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”**



## 0080 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL



**0090 GENERAL GUIDELINES: EMERGENCY DEPARTMENT ED DIVERT & CAPACITY  
NOTIFICATIONS  
(OPEN, ADVISORY, CRITICAL, ED DIVERT, CLOSED)**

**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. 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.
- 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. 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)
- G. 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.

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

<b>Open</b>	<80% Staffed ED beds occupied
<b>Advisory</b>	80-100% Staffed ED beds occupied
<b>Critical</b>	>100% of staffed ED beds occupied and >1 ESI2 patient unable to be roomed
<b>Divert</b>	>120% of staffed ED beds occupied and >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
<b>Closed</b>	Unable to care for patients due to infrastructure damage, active shooter, etc

**0090 GENERAL GUIDELINES: EMERGENCY DEPARTMENT ED DIVERT & CAPACITY  
NOTIFICATIONS  
(OPEN, ADVISORY, CRITICAL, ED DIVERT, CLOSED)**

**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.

# EMResource Hospital ED Load Leveling Board Instructions

## 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"

Click on "View"

Region	Hospital	NCR - ED Status	Comment	Last Update
Boulder County	Good Samaritan Medical Center* II	Open		05 Dec 06:37
	Foothills Hospital, BCH* II	Advisory	Psych	03 Dec 15:52
	Avista Adventist Hospital Centura* III	Critical	ICU, STEMI, Stroke	05 Dec 06:32
	Longmont United Hospital* III	Divert	ED (Emergency Department staffed beds)	05 Dec 06:38
	UCHealth Longs Peak Hospital III	Critical	ED (Emergency Department staffed beds)	05 Dec 06:38
	UCHealth Broomfield Hospital	Critical	ED (Emergency Department staffed beds)	05 Dec 06:38
	Community Medical Center ED - BCH	Divert	Psych, STEMI	05 Dec 06:38
Central Metro	Denver Health Medical Center* I	Critical		03 Dec 15:48
	Porter Adventist Hospital Centura* III	Divert		03 Dec 15:52
	Presbyterian/St Luke's Med Center* IV	Critical		03 Dec 15:52
	Rose Medical Center* IV	Divert		03 Dec 15:53
	St. Joseph Hospital* IV	Critical		03 Dec 15:53
	VA - Eastern Colorado	No ER		03 Dec 15:53



# EMResource

## Hospital ED Load Leveling Board

### Instructions

2. Scroll down the list and find the “Hospital ED Load Leveling” and click.

The screenshot shows the EMResource web application interface. On the left, there is a sidebar menu with various options. A blue arrow points to the 'Hospital ED Load Leveling' option under the 'Region Default (Copy-Testing)' section. The main content area displays a table with columns: NCR - ED Status, Comment, and Last Update. The table lists various hospitals and their current ED status, such as 'Critical', 'Divert', 'Open', and 'Advisory'.

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.

The screenshot shows the EMResource web application interface, specifically the 'Hospital ED Load Leveling Board'. A blue arrow points to the 'Hospital Next' column, which contains numbers or dashes. The table lists various hospitals and their current ED status, such as 'Critical', 'Divert', 'Open', and 'Advisory'. The 'Hospital Next' column shows the number of patients assigned to each hospital.

## EMResource Hospital ED Load Leveling Board Instructions

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.

The screenshot shows the 'Update Status' form for 'Centura - West Littleton Emergency Room'. A blue arrow points to the 'Hospital Next' field, which currently contains the number '1'. A text box overlay says 'Enter the next consecutive number and then hit save.' Below the field is a 'Comment' field and 'Save' and 'Cancel' buttons.

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.

Hospital Rotation Board					
	NCR - ED Status	Hospital Next	Comment	Last Update	By User
*Central Metro					
Porter Adventist Hospital Centura <sup>®</sup> III	Divert	0		03 Dec 16:29	System
Presbyterian/St Luke's Med Center <sup>®</sup> IV	Critical	0		03 Dec 16:29	System
VA -Eastern Colorado	No ER	0		03 Dec 16:29	System
Denver Health Medical Center <sup>®</sup> I	Critical	1		03 Dec 17:11	Kevin Schmidt
St. Joseph Hospital <sup>®</sup> IV	Critical	1			
Rose Medical Center <sup>®</sup> IV	Divert	4			
Summary	N/A	6			
*South Metro					
Castle Rock Adventist Hosp Centura III	Advisory	0	ED (Emergency Department staffed beds)	05 Dec 13:13	Kevin Schmidt
Littleton Adventist Hospital Centura <sup>®</sup> II	Critical	0		03 Dec 16:29	System
Sky Ridge Medical Center <sup>®</sup> II	Critical	0		03 Dec 16:29	System
Swedish Medical Center <sup>®</sup> I	Divert	0		03 Dec 16:29	System
Summary	N/A	0			

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



## 0100 GENERAL GUIDELINES: MANDATORY REPORTING OF ABUSE PATIENTS

### Purpose

- A. To provide guidelines for the reporting of suspected abuse patients.

### Definition of Abuse and Reporting Requirements:

- 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 (e.g. sex trafficking)

### 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 (follow agency specific guidelines).
- 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 – if known
- 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. Protecting patient confidentiality does not legally justify a failure to report.
- B. There is established immunity for reporters “acting in good faith”.
- C. For children, the Colorado Child Abuse and Neglect Hotline is 1-844-CO-4-KIDS (844-264-5437).

## 0110 GENERAL GUIDELINES: FREE-STANDING EMERGENCY DEPARTMENTS AS EMS DESTINATION

### 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. An independent freestanding emergency centers (IFECs).
- B. The number of FSEDs is rapidly increasing in the setting of an ever-changing regulatory and health care environment. These facilities have variable capabilities and capacities.
- C. Utilization of these facilities as an ambulance destination should be at the discretion of the local agency and agency medical director with consideration of the guidance given below.

### 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 post-cardiac arrest patients with ROSC unless uncontrolled airway
  - 5. No neonates <29 days of age
  - 6. Children with Medical Complexity (CMC) – Refer to pediatric considerations
  - 7. Elderly patients often require hospitalization for conditions such as falls, generalized weakness, dehydration, syncope.
- B. 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.
- C. When time and conditions allow, patients whom pre-hospital providers presume to require inpatient management should be transported to a hospital emergency department to avoid subsequent patient transfers.

#### **Pediatric Considerations:**

- Given the limited capacity of some facilities to care for children, to reduce likelihood of secondary transfers, certain pediatric conditions should be transported to a hospital or pediatric specific facility. These include:
  - Pediatrics with an emergency related to a known condition previously treated at a specific facility
  - Child ≤ 2 years with altered mental status and no known seizure disorder
  - Shock/sepsis
  - DKA/hyperglycemia with altered mental state
  - Seizure patient requiring benzodiazepine
  - Severe respiratory distress
  - BRUE (Brief Resolved Unexplained Events, formerly ALTE)
  - Suspected child abuse
  - Suspected neck injury with paresthesia, weakness, or other neurologic deficits
  - Significant soft-tissue injury/complex wound

## 0120 GENERAL GUIDELINES: BASE CONTACT FOR PHYSICIAN CONSULTATION

### Purpose

- A. To explain the DMEMS 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 DMEMSMD 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 DMEMSMD 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 DMEMSMD and reflect critical decision points in care where communication with physician support is expected.

### Preferred Base Contact Times.

- A. The DMEMSMD group 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 addressed in the protocols and outside an area of familiar care by the 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.

## 0130 GENERAL GUIDELINES: TRANSPORTATION OF THE PEDIATRIC PATIENT

### 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 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 motion restriction 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

## 0130 GENERAL GUIDELINES: TRANSPORTATION OF THE PEDIATRIC PATIENT

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.)**

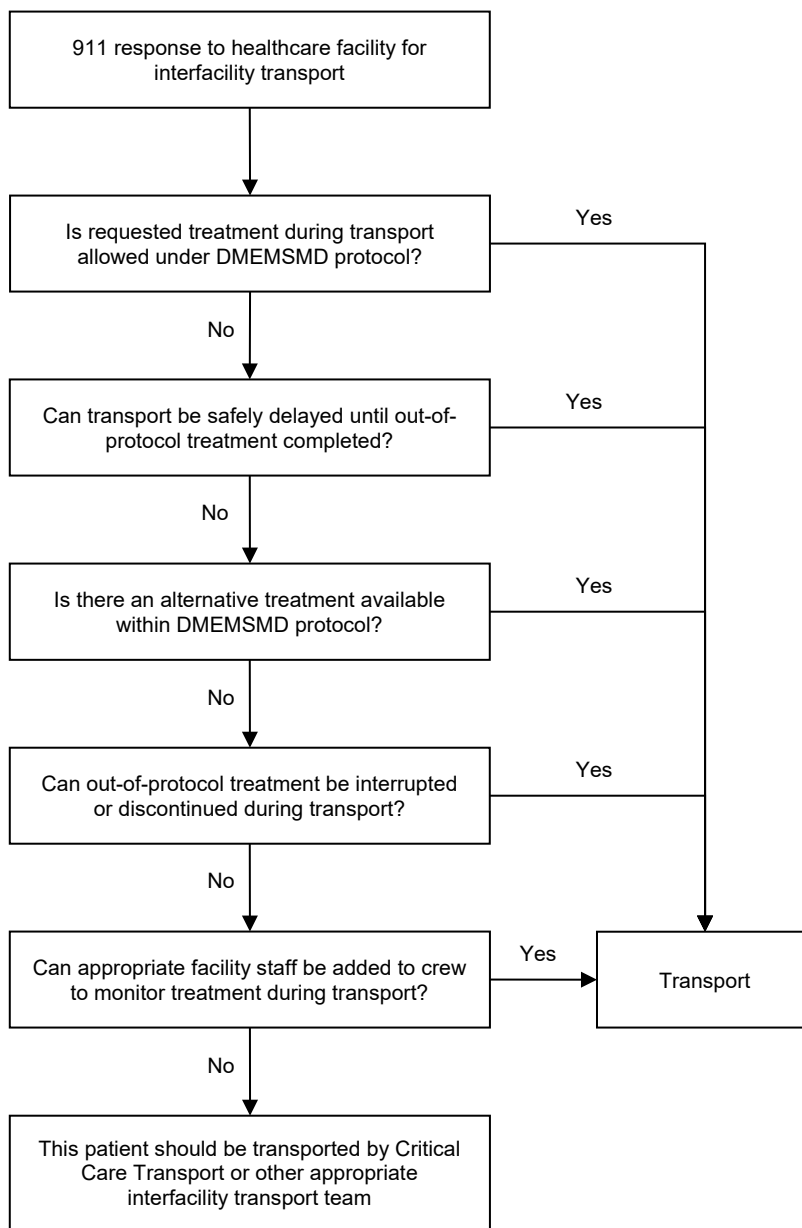
If possible, transport each as a single patient. When available resources prevent single patient transportation, transport patients using safe, designated space available exercising extreme caution and driving at reduced speeds. For mother and newborn, the newborn should be transported in a rear-facing 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 DMEMSMD 911 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 consistent with individual agency and Denver Metro Protocol as well as RETAC Trauma Triage Algorithm.
- 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 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT GUIDELINE**

### **Introduction**

- A. This is a regional guideline for direct transport of pre-hospital patients to a behavioral health unit (including walk-in clinics inclusive of crisis stabilization units) and withdrawal management units
- B. This guideline is considered optional and implementation is dependent upon the specific EMS agency, Medical Director, and appropriate receiving facilities. This is not intended to replace any existing agency specific guidelines.

### **Medical Criteria for Behavioral Health Unit**

- A. The following conditions, if currently present, are absolute contraindications to admission until resolved:
  - 1. Uncontrolled bleeding
  - 2. Severe respiratory distress (increased use of accessory muscles/retractions/nasal flaring, pale and/or cyanotic, hypoxia)
  - 3. Open wounds or sores that cannot be covered
  - 4. Communicable disease that can be transmitted through casual contact
  - 5. Parasitic infestation (bed bugs, lice)
  - 6. Symptoms of shock
  - 7. Active tuberculosis
  - 8. Level of consciousness below client's baseline
  - 9. Any condition warranting an inpatient medical hospital admission
  - 10. Any condition that would cause admission to the crisis stabilization unit (versus self-care at home) to negatively impact the client's physical health status
- B. The following conditions, if currently present, are absolute contraindications to admission until fully evaluated and treated:
  - 1. Unexplained and/or untreated seizures
  - 2. Chest pain
  - 3. GI bleeding
  - 4. Respiratory distress (shortness of breath, wheezing, current asthma attack, exacerbated emphysema)
  - 5. Severe, unexplained pain
  - 6. Suspected fracture
  - 7. Significant open wounds and/or sores
  - 8. Significant allergic reaction (respiratory difficulty, angioedema, hives)
  - 9. Rash consistent with a communicable viral illness, parasitic infestation, or allergic reaction
  - 10. Diabetic with current s/s of hypoglycemia or ketonuria
  - 11. Positive TB test without treatment
  - 12. Untreated elevated blood pressure causing symptoms.
- C. Clients with following conditions will be considered for admission with caution, and admission may be denied based on the individual's presentation:
  - 1. Current cancer treatment with chemo or radiation therapy
  - 2. Feeding tube
  - 3. Urinary catheter (intermittent or indwelling)
  - 4. Colostomy
  - 5. High risk pregnancy
  - 6. Surgery in the past two weeks
  - 7. Unmanaged fecal and/or urinary incontinence, unmanaged enuresis and/or encopresis

**0150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT  
GUIDELINE**

8. Difficulty managing activities of daily living

**Substance Abuse Criteria for Withdrawal Management Units**

- A. The following conditions, if currently present, are absolute contraindications to admission until resolved:
1. The client is on methadone maintenance or buprenorphine for the treatment of an opioid use disorder without the ability to either obtain or administer these medications.
  2. Use of phencyclidine (PCP) within the past 72 hours
  3. Active detoxification from alcohol or opiates.
- B. Clients who have positive recent use history and/or urine toxicology screen for the following substances will be evaluated for admission. The presence/use of these substances is not, in and of itself, a contraindication to admission. However, the impact of the substance use on the client's current health and behavior will be considered as part of the admission decision.
1. Methamphetamine
  2. Amphetamines
  3. Cocaine
  4. Recreational benzodiazepines
  5. Recreational opiates
  6. Recreational barbiturates
- C. The following will be assessed when the above substances are present, and, if present, each presents a contraindication to admission:
1. Client is currently intoxicated/under the influence
  2. Client's use of /withdrawal from the substance potentially complicate a co-occurring medical condition and places the client at significant risk of morbidity or mortality over the next five days
  3. Client has a history of violence when withdrawing from the substance, and this reaction is likely to recur
  4. Client is unable to participate in programming due to withdrawal.
- D. Clients who have a positive recent use history and/or urine toxicology screen for the following substances will be evaluated for admission. The presence/use of these substances is not a contraindication to admission unless client is currently under the influence.
1. THC
  2. Lysergic acid diethylamide (LSD/Acid)
  3. Methylenedioxymethamphetamine (MDMA/Ecstasy/Molly)

**Clinical Considerations:**

- A. The following are a contraindication to admission until resolved:
1. The client has been in physical restraints within the past 4 hours if a child, 6 hours if an adult
  2. The client has received a benzodiazepine or other medication for behavioral control in the past 6 hours
  3. The client is unable to safely participate in treatment
  4. The client is unable to respond to verbal redirection.



**0150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT  
GUIDELINE**

**Walk-in Clinic Behavioral Admit Criteria Checklist Form**

<b>Indications:</b>			
Patient with an expressed or suspected behavioral health condition needing an evaluation at a behavioral health facility.			
<b>Inclusions/Exclusions:</b>			
If the patient meets all of the following criteria ("yes" to every question), they are appropriate for transport to a behavioral walk-in clinic (WIC). Law enforcement transport of the patient is an acceptable option if available, able to do so, and present on scene.			
<b>Medical:</b>			
• Blood Pressure: systolic of 90-180, diastolic of 50-100	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Pulse: 60-120	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Respiratory Rate: 12-25	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Oxygen Saturation: 90% or above on room air or prescribed oxygen	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Blood Glucose: 60-125 if diabetic	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No acute medical conditions warranting emergency medical treatment	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No injuries needing medical attention beyond basic first aid	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No change in LOC, neurologically intact	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Substance:</b>			
• Blood alcohol level <0.05 (not mandatory, only if law enforcement performs prior to arrival)	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Not under the influence of/impaired by recreational substance use	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Psychiatric:</b>			
• Agrees to WIC level of care and understands that transfer to an emergency department may be necessary prior to placement in a higher level of care (if applicable).	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No physically aggressive behavior	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No verbally aggressive behavior not responsive to redirection	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Able to engage in a coherent exchange of information	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Can maintain safety without active intervention	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Personnel Conducting Patient Assessment</b>			
Assessment Date: _____ Assessment Time: _____			
Patient Name: _____ Date of Birth: _____			
EMS Provider (if involved): _____		Signature: _____	
Law Enforcement Officer (if involved): _____		Signature: _____	
Other Licensed Provider (if involved): _____		Signature: _____	

**0150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT  
GUIDELINE**

**Withdrawal Management Unit Admit Criteria Checklist Form**

<b>Indications:</b>			
A patient with a substance abuse condition that would benefit from an evaluation at a withdrawal management unit.			
<b>Inclusions/Exclusions:</b>			
<ul style="list-style-type: none"> <li>• If the patient meets all the following criteria ("yes" to every question), they are appropriate for transport to a withdrawal management unit.</li> <li>• These are general guidelines to help assess the initial placement of a person (18 years of age and older) under the influence of alcohol and/or other drugs, or in any stage of withdrawal from alcohol or drugs. <b>Each organization/withdrawal management program will complete a secondary screening on site which may result in a denied admission.</b></li> </ul>			
<b>Vitals (if known):</b>			
• Blood Pressure: systolic of 90-180, diastolic of 50-100	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Pulse: 60-100	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Respiratory Rate: 10-26	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Oxygen Saturation: 88% or above on room air	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Blood Glucose: 60-250	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Blood alcohol level $\leq 0.400$ (not mandatory, only if law enforcement performs prior to arrival)	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Other Medical:</b>			
• No history of withdrawal seizure or seizure disorder	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Ability or willingness to perform self-care (includes medical devices)	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No respiratory difficulties	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No injuries needing medical attention	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No change in level of consciousness	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Other:</b>			
• No aggressive or combative behavior	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• No bizarre behavior not explained by intoxication	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Not on a mental health hold	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
• Patient in a pregnant woman with atypical symptoms	YES	<input type="checkbox"/>	NO <input type="checkbox"/>
<b>Personnel Conducting Patient Assessment</b>			
Assessment Date: _____ Assessment Time: _____			
Patient Name: _____ Date of Birth: _____			
EMS Provider (if involved): _____		Signature: _____	
Law Enforcement Officer (if involved): _____		Signature: _____	
Other Licensed Provider (if involved): _____		Signature: _____	

## 0160 GENERAL GUIDELINES: EXTENDED CARE PROTOCOL SUPPLEMENTS

### **Purpose**

- A. The purpose of this protocol supplement is to create a standard set of EMS protocols for prolonged transports, whether rural or urban that more appropriately fits their community's needs. However, these supplemental items will also apply in many situations outside the rural environment.
- B. The intention of these supplements are to augment the existing Denver Metro EMS protocols, not to supersede, replace, or otherwise contradict them. Extended care is not defined as a specific time, but rather as prolonged patient contact, which for our purposes we will define as longer than typical urban transport times. Examples include, but are not limited to:
- Rural scene transport to hospital
  - Urban EMS transport during major incidents like snowstorms
  - Backcountry rescue
  - Multi-patient incident with delayed transport
- C. These supplements are not intended to be used for scheduled interfacility transports or typical urban area 911 response. The individual medical director will determine how to apply these supplements to their agencies.
- D. Protocols with extended care supplements will be noted under the provider level color index which will provide a link to the supplemental page.

EMT	AEMT	EMT-I	Paramedic
<a href="#">Extended Care Supplement</a>			

### **General Principles**

- A. Below are guiding principles of extended care, which are the foundation for this supplement:
- Frequent reassessment:
    - Tertiary survey of trauma patients
    - Repeat vital signs to document trends and response to interventions
    - Early recognition of deterioration from clinical stability
  - Management of pain
    - Splinting, additional pain medication, padding for scoops/backboards or use of full body vacuum splints for spinal motion restriction
  - Alternative medication dosing schedules
    - Additional indicated medications and redosing
    - Waivered medications
  - Alternative general management techniques for specific groups
    - Pregnancy
    - Pediatric
    - Geriatric
  - Consider request for additional resources (e.g., critical care rendezvous, mutual aid for personnel) or need to pause/divert transport
  - Documentation of "extended care" in the narrative of PCR. This may be beneficial for CQI
- B. We recognize that these supplements are not exhaustive of all scenarios and encourage base contact whenever possible for unique and complex situations.

## 0990 QUICK REFERENCE FOR PROCEDURES AND MEDICATIONS ALLOWED BY PROTOCOL

This list does not include Medical Director specific waivers or base contact requirements. It is assumed that not all agencies will necessarily stock all medications.

Abbreviations	S = Standing order		B = Base contact		
<b>Airway Procedures</b>	<b>B</b>	<b>BIV</b>	<b>AEMT</b>	<b>I</b>	<b>P</b>
Capnography	S	S	S	S	S
Public health related oral/nasal swab sample collection	S	S	S	S	S
Supraglottic airway	S	S	S	S	S
Continuous positive airway pressure (CPAP)	S	S	S	S	S
Orotracheal intubation				S	S
Nasotracheal intubation					S
Percutaneous cricothyrotomy					S
Bougie assisted surgical cricothyrotomy					S
Pediatric needle cricothyrotomy					S
Needle thoracostomy for tension pneumothorax decompression				S	S
Orogastric tube insertion with advanced airway					S
Tracheobronchial suctioning			S	S	S
Tracheostomy maintenance – Airway management only	S	S	S	S	S
Tracheostomy maintenance – Including replacement					S
<b>Cardiovascular Procedures</b>	<b>B</b>	<b>BIV</b>	<b>AEMT</b>	<b>I</b>	<b>P</b>
ECG - Acquire (including 12-lead)	S	S	S	S	S
ECG - Interpretation (including 12-lead)				S	S
Blood glucose monitoring	S	S	S	S	S
IV – Peripheral		S	S	S	S
IV – External jugular			S	S	S
IO					
• Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness		S	S	S	S
• Utilization of IO access for all other patients			B	B	B
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)				S	S
Automated / semi-automated external defibrillator (AED)	S	S	S	S	S
Defibrillation – Manual				S	S
Valsalva maneuver					S
Synchronized cardioversion					S
Transcutaneous cardiac pacing					
• Adult				S	S
• Pediatric				B	B
<b>Other Procedures</b>	<b>B</b>	<b>BIV</b>	<b>AEMT</b>	<b>I</b>	<b>P</b>
Bleeding control/wound packing	S	S	S	S	S
Tourniquet	S	S	S	S	S
Spinal motion restriction	S	S	S	S	S
Splinting (including traction)	S	S	S	S	S
Pelvic binding	S	S	S	S	S
Soft restraints for combative patient	S	S	S	S	S
Emergency childbirth	S	S	S	S	S
<b>Medications</b>	<b>B</b>	<b>BIV</b>	<b>AEMT</b>	<b>I</b>	<b>P</b>
Specialized prescription medications to address an acute crisis given the route of administration is within the scope of the provider	B	B	B	B	B
Acetaminophen (Tylenol)					
• PO	S	S	S	S	S
• Adult – IV			S	S	S
Adenosine (Adenocard)					
• Adult				B	S
• Pediatric				B	B
Albuterol sulfate - MDI and nebulizer	S	S	S	S	S
Amiodarone					
• Pulseless arrest				B	S
• Tachyarrhythmia with poor perfusion				B	B
Antiemetic					
• Ondansetron (Zofran) ODT	S	S	S	S	S
• Ondansetron (Zofran) IV /IM		S	S	S	S
• Ondansetron (Zofran) IO			S	S	S

# 0990 QUICK REFERENCE FOR PROCEDURES AND MEDICATIONS ALLOWED BY PROTOCOL

Medications	B	BIV	AEMT	I	P
• Promethazine (Phenergan)				B	S
• Metoclopramide (Reglan)				B	S
• Droperidol – Adult only				B	S
Aspirin	S	S	S	S	S
Atropine sulfate					
• Hemodynamically unstable bradycardia				B	S
• Organophosphate poisoning				B	S
Benzodiazepines (midazolam, diazepam, lorazepam)					
• Seizure – Midazolam IN			S	S	S
• Seizure – All medications and routes in protocol				S	S
• Sedation for transcutaneous pacing or cardioversion				S	S
• Sedation for severely agitated or combative patient – Adult				S	S
• Sedation for severely agitated or combative patient – Pediatric (8-11 years old)				S	S
• Adjunctive agent for treatment of severe anxiety with extrication, packaging, or transport in adults that is uncontrolled by other interventions				B	B
Butyrophenones (droperidol, haloperidol)					
• Sedation for severely agitated or combative patient – Adult				S	S
• Sedation for severely agitated or combative patient – Pediatric (8-11 years old)				S	S
• Droperidol for nausea/vomiting – Adult Only				B	S
Calcium					
• Pulseless arrest assumed due to hyperkalemia					S
• Renal failure with known or suspected hyperkalemia					S
• Known or suspected hyperkalemia with ECG changes					S
• Crush or suspension injury with known or suspected hyperkalemia					S
• Calcium channel blocker overdose					B
Crystalloids (D <sub>5</sub> W, LR, NS) – Initiation/Maintenance		S	S	S	S
Dextrose					
• Oral glucose	S	S	S	S	S
• IV		S	S	S	S
• IO – In extremis		S	S	S	S
Diphenhydramine (Benadryl)			S	S	S
Dopamine					S
DuoDote™ / Mark I Kits	S	S	S	S	S
Epinephrine					
• Adult pulseless arrest – IV/IO				S	S
• Adult hypotension and poor perfusion refractory to other interventions					S
• Adult wheezing					S
• Adult systemic allergic reactions – IM	S	S	S	S	S
• Adult systemic allergic reaction – IV/IO push dose or infusion					S
• Pediatric pulseless arrest – IV/IO				S	S
• Pediatric bradycardia with poor perfusion – IV/IO				B	S
• Pediatric wheezing 1 to 12 years old – IM					S
• Adult systemic allergic reactions – IM	S	S	S	S	S
• Pediatric severe systemic allergic reaction (Anaphylaxis) refractory to IM epinephrine AND 60 mL/kg NS – IV/IO push dose				B	B
• Alternative to racemic epinephrine (for stridor at rest)				B	S
• Epinephrine auto-injector	S	S	S	S	S
Glucagon					
• Hypoglycemia			S	S	S
• Calcium channel blocker and β-blocker overdose			B	B	S
Hemostatic agents	S	S	S	S	S
Hydroxocobalamin (Cyanokit)				S	S
Ipratropium Bromide (Atrovent) – MDI or nebulizer	S	S	S	S	S
Lidocaine 2% Solution – Anesthetic for IO needle insertion in adults			S	S	S
Magnesium sulfate					
• Torsades de pointes associated with prolonged QT interval					S
• Refractory severe bronchospasm					S
• Eclampsia				S	S
Methylprednisolone (Solu-Medrol)				S	S
Naloxone (Narcan)	S	S	S	S	S
Nitroglycerin (Nitrostat, Nitroquick)					
• Sublingual, patient assisted	B	B	S	S	S
• Sublingual, agency supplied			S	S	S

# 0990 QUICK REFERENCE FOR PROCEDURES AND MEDICATIONS ALLOWED BY PROTOCOL

Medications	B	BIV	AEMT	I	P
• Nitroglycerin paste			B	B	S
NSAIDS					
• Ibuprofen	S	S	S	S	S
• Ketorolac (Toradol)					S
Opioids – Administration for cardiac chest pain				S	S
Opioids – Moderate to severe pain due to traumatic and medical conditions (excluding cardiac chest pain)					
• Fentanyl – Adult and pediatric 1 year and older			B	S	S
• Fentanyl – <1 year old			B	B	B
• Morphine – Adult and pediatric 1 year and older			B	S	S
• Morphine – <1 year old			B	B	B
• Hydromorphone – Adult only					S
Oral glucose (Glucose, Insta-glucose)	S	S	S	S	S
Oxygen	S	S	S	S	S
Phenylephrine (Intranasal)					
• Epistaxis	S	S	S	S	S
• Prior to nasotracheal intubation					S
Racemic epinephrine (Vaponephrine)				S	S
Sodium bicarbonate					
• Pulseless arrest assumed due to hyperkalemia				B	S
• Renal failure with known or suspected hyperkalemia					S
• Known or suspected hyperkalemia with ECG changes					S
• Crush or suspension injury with known or suspected hyperkalemia					S
• Sodium channel blocker poisoning					S
Topical ophthalmic anesthetics				S	S

# 1000 PROCEDURE PROTOCOL: OROTRACHEAL INTUBATION

## Indications:

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

EMT-I	Paramedic
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## 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.

## Technique:

1. Initiate BLS airway sequence and confirm ETCO<sub>2</sub> production at this time.
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. 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
4. Perform laryngoscopy
  - a. To improve laryngeal view, use right hand to manipulate larynx, or have assistant apply backwards, upwards, rightward pressure (BURP)
5. 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)
6. Confirm and document tracheal location by:
  - a. Continuous waveform capnography
  - b. Presence and symmetry of breath sounds
  - c. Rising SpO<sub>2</sub>
7. Ventilate with BVM. Assess adequacy of ventilations
8. During transport, continually reassess ventilation, oxygenation and tube position with continuous waveform capnography and SpO<sub>2</sub>

## Precautions:

- 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
- 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.

## 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

Paramedic

### Contraindications:

- Apnea
- Severe mid-face trauma

### Technique:

1. Initiate BLS airway sequence and confirm ETCO<sub>2</sub> 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 SpO<sub>2</sub>
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 with, 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.



## 1030 PROCEDURE PROTOCOL: CRICOTHYROTOMY

Paramedic

### 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 and submitted for review to the EMS Medical Director within 24 hours. Surgical cricothyrotomy is to be performed only by paramedics trained in this procedure.
- An endotracheal tube introducer ("bougie") facilitates this procedure and has the advantage of additional confirmation of tube position and ease of endotracheal tube placement. If no bougie is available, the procedure may be performed without a bougie by introducing endotracheal tube or tracheostomy tube directly into cricothyroid membrane.
- Given the rarity and relative unfamiliarity of this procedure it may be helpful to have a medical consult on the phone during the procedure. Consider contacting base for all cricothyroidotomy procedures. Individual Medical Directors may mandate base contact before initiating the procedure. Individual agency policy and procedures apply and providers are responsible for knowing and following these policies.
- If using a commercially available cricothyrotomy kit, perform cricothyrotomy according to manufacturer's instructions.

### Indications:

- A life-threatening condition exists AND advanced airway management is indicated **AND** you are unable to establish an airway or ventilate the patient by any other means. ("Cannot intubate/cannot ventilate")

### Contraindications:

- Surgical cricothyrotomy is contraindicated in patients less than 12 years of age for anatomic reasons.

### Technique:

1. Position the patient supine, with in-line spinal motion restriction if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.
2. Clean skin per agency approved aseptic technique.
3. Stabilize the larynx with the thumb and middle finger of your non dominant hand, and identify the cricothyroid membrane with your index finger, typically 4 fingerbreadths below mandible
4. Using a scalpel, make a 3 cm centimeter vertical incision 0.5 cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make a horizontal incision through the cricothyroid membrane with the scalpel blade oriented caudal and away from the cords. Remove scalpel blade and insert finger.
6. Insert the bougie curved-tip first through the incision and angled towards the patient's feet guided by the finger.
  - a. If no bougie available, use tracheal hook instrument to lift caudal edge of incision to facilitate visualization and introduction of ETT directly into trachea and skip to # 9.
7. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hang-up" when it cannot be advanced any further. This confirms tracheal position.
8. Advance a 6-0 endotracheal tube over the bougie and into the trachea. It is very easy to place tube in right mainstem bronchus, so carefully assess for symmetry of breath sounds. Remove bougie while stabilizing ETT ensuring it does not become dislodged
9. Ventilate with BVM and 100% oxygen
10. Confirm and document tracheal tube placement as with all advanced airways: Waveform capnography as well as clinical indicators e.g.: symmetry of breath sounds, rising pulse oximetry, etc.
11. Secure tube with ties.
12. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
13. 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.

# 1040 PROCEDURE PROTOCOL: PEDIATRIC NEEDLE CRICOTHYROTOMY

Paramedic

## Introduction:

- Needle cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The rationale for this procedure must be documented in the patient care report and submitted for review to the EMS Medical Director within 24 hours.
- 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 syringe chamber
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:
  - a. Waveform capnography
  - b. 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.

## 1050 PROCEDURE PROTOCOL: SUPRAGLOTTIC AIRWAY

### 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
- Primary airway in pulseless arrest, when attempts at intubation are likely to interrupt CPR
- Designated advanced airway for EMTs
- Preferred advanced airway in the pediatric patient

EMT	AEMT
EMT-I	Paramedic

### Contraindications:

- Intact gag reflex
- Caustic ingestion

### Technique:

1. Initiate BLS airway sequence
2. Select proper size supraglottic airway based on manufacturer's specifications
3. Assemble equipment, note correct volume for inflation marked on tube itself, test balloon for leaks, lubricate posterior aspect distal tip with water-soluble lubricant
4. Suction airway and maximize oxygenation with BVM ventilations
5. If trauma: have assistant hold in-line spinal immobilization in neutral position
6. If no trauma, sniffing position or slight cervical hyperextension is preferred
7. Place supraglottic airway utilizing device-specific technique
8. Inflate cuff balloon with correct volume of air (marked on device)
9. Confirm tube placement by auscultation, chest movement, and waveform capnography
10. Continuously monitor waveform capnography, SpO<sub>2</sub>, vital signs

### 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 broken teeth, which may lacerate balloon.
5. 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), rhonchi, or wheezes
  - Dyspnea with hypoxia (SpO<sub>2</sub> less than 90% despite O<sub>2</sub>)
  - Dyspnea with inability to speak full sentences
  - Accessory muscle use
  - Respiratory rate greater than 24/minute despite O<sub>2</sub>
  - Diminished tidal volume

EMT	AEMT
EMT-I	Paramedic

### 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

### Technique:

1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR, SpO<sub>2</sub>, and ETCO<sub>2</sub>)
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:
  - a. Reduced dyspnea
  - b. Reduced verbal impairment, respiratory rate and heart rate
  - c. Increased SpO<sub>2</sub>
  - d. Stabilized blood pressure
  - e. Appropriate ETCO<sub>2</sub> values and waveforms
  - f. Increased tidal volume
8. Observe for signs of deterioration or failure of response to CPAP:
  - a. Decrease in level of consciousness
  - b. Sustained or increased heart rate, respiratory rate or decreased blood pressure
  - c. Sustained low or decreasing SpO<sub>2</sub> readings
  - d. Rising ETCO<sub>2</sub> levels or other ETCO<sub>2</sub> evidence of ventilatory failure
  - e. 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 FiO<sub>2</sub> adjustment and will only administer up to 30% oxygen. If no improvement in oxygenation with a fixed pressure CPAP device, consider adding supplemental oxygen.

## 1070 PROCEDURE PROTOCOL: CAPNOGRAPHY

EMT	AEMT	EMT-I	Paramedic
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### **Indications:**

- A. MANDATORY: To evaluate and confirm placement of ANY advanced airway, and particularly to exclude esophageal intubation in all intubated patients.
- B. To identify late endotracheal tube or advanced airway dislodgement
- C. To monitor ventilation and perfusion in any ill or injured patient
- D. After sedation of the agitated/combatative patient
- E. Consider monitoring when patient receives respiratory depressants, like opioids or sedating medications

### **Contraindications:**

- A. None

### **Technique:**

- A. In patient with endotracheal intubation or advanced airway: place end-tidal carbon dioxide (EtCO<sub>2</sub>) detector in-line between airway adaptor and bag-valve after airway positioned and secured
- B. Patients without endotracheal intubation or advanced airway in place: place EtCO<sub>2</sub> cannula on patient. May be placed under CPAP, bag-valve, or non-rebreather facemask
- C. Assess and document both capnography waveform and EtCO<sub>2</sub> value

### **Precautions:**

- A. To understand and interpret capnography, remember the 3 determinants of EtCO<sub>2</sub>:
  - 1. Alveolar ventilation
  - 2. Pulmonary perfusion
  - 3. Metabolism
- B. Sudden loss of EtCO<sub>2</sub>:
  - 1. Tube dislodged
  - 2. Circuit disconnected
  - 3. Cardiac arrest
- C. High EtCO<sub>2</sub> (> 45 mmHg)
  - 1. Hypoventilation/CO<sub>2</sub> retention
- D. Low EtCO<sub>2</sub> (< 25 mmHg)
  - 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 EtCO<sub>2</sub> is blood flow, so EtCO<sub>2</sub> is a good indicator of quality of CPR
  - 2. If EtCO<sub>2</sub> is dropping, change out person doing chest compressions
  - 3. In cardiac arrest, if EtCO<sub>2</sub> not >10 mmHg after 20 minutes of good CPR, this likely reflects very low CO<sub>2</sub> production and is associated with poor outcome
  - 4. Sudden rise in EtCO<sub>2</sub> may be an indicator of return of spontaneous circulation

# 1080 PROCEDURE PROTOCOL: NEEDLE THORACOSTOMY FOR TENSION PNEUMOTHORAX DECOMPRESSION

EMT-I	Paramedic
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## 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.

## Adult/Child Technique:

- A. Expose entire chest.
- B. Clean skin overlying site with available skin prep
- C. Insert angiocath either at 2<sup>nd</sup> intercostal space at midclavicular line, or 5<sup>th</sup> intercostal space at midaxillary line.
  - 1. Either approach is acceptable, generally the site with the least soft tissue overlying ribs is preferred.
- D. For adult, use largest, longest available angiocath. For children measuring Red or greater on a length-based tape, use 14g or 16g angio catheter.
- E. Notify receiving hospital of needle decompression attempt.

### **Pediatric specific chest decompression needle size:**

- If patient fits on length-based tape (LBT) and measures Red (6 month) or higher: 14g or 16g angiocath
- Gray (preemie) or Pink (4 month) on LBT: 22g angiocath
- Newly born: 24g butterfly needle

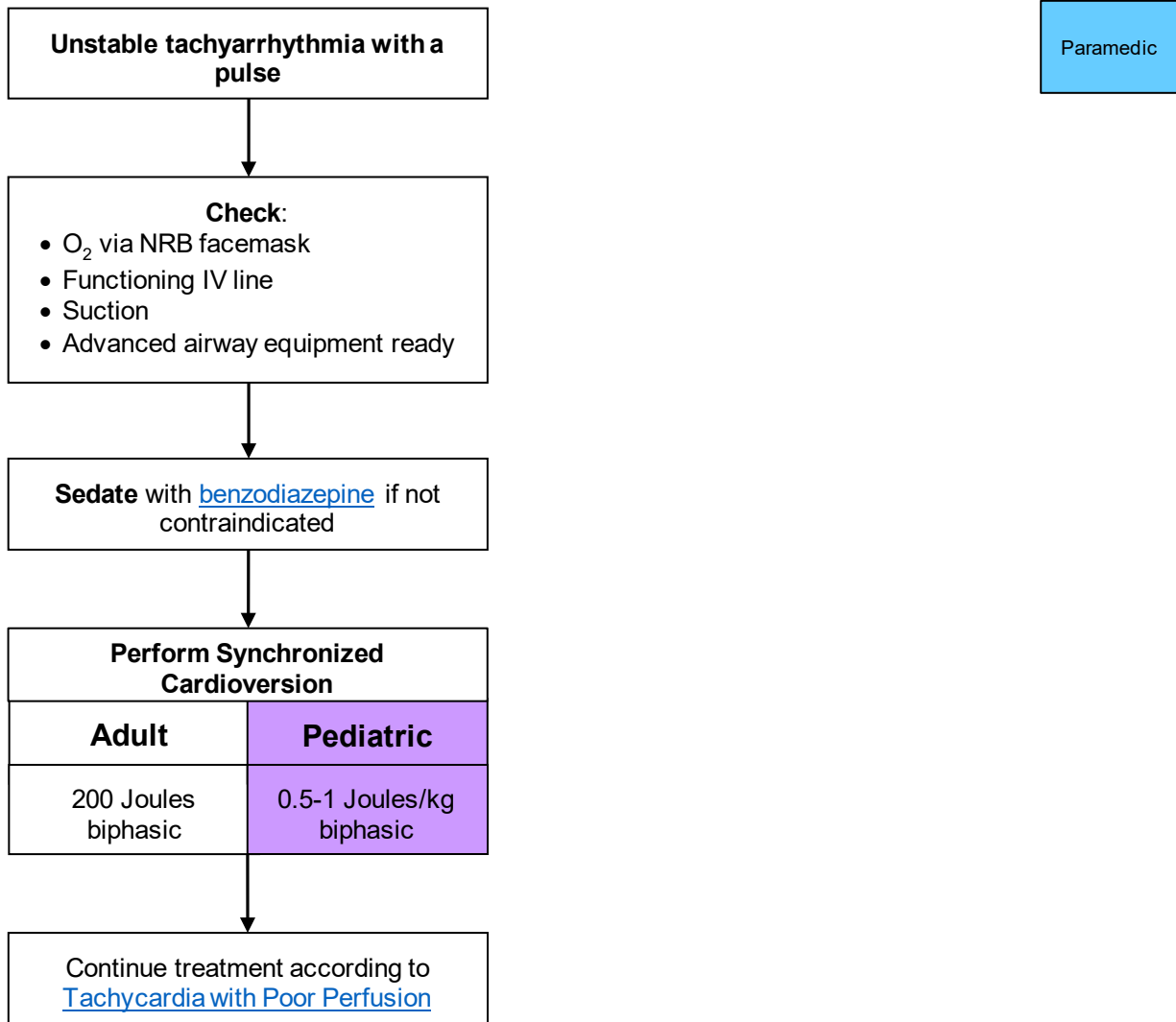
## Neonatal/Young Infant Technique:

- A. Expose entire chest
- B. Clean skin overlying site with available skin prep
- C. Assemble appropriate needle (see box), 3-way stopcock, 20-30 mL syringe
- D. Identify 3<sup>rd</sup> rib at midclavicular line, keeping index finger of non-dominant hand on rib. Insert assembled needle system into the 2<sup>nd</sup> intercostal space above.
  - a. Alternate approach at 4<sup>th</sup> or 5<sup>th</sup> intercostal space at midaxillary line
- E. When release of resistance is felt, stop needle insertion.
- F. If air is present, there is free withdrawal. Continue withdrawal until resistance is met. If syringe is filled with air, turn stopcock off to patient, remove syringe and expel air to repeat process.
- G. Once all air expelled, remove the needle while maintaining suction on the syringe. Cover site with gauze and 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.

## 1090 PROCEDURE PROTOCOL: SYNCHRONIZED CARDIOVERSION



### 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

EMT-I

Paramedic

### 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.
2. Turn pacer unit on.
3. Set initial current to 80 mAmps.
4. Select pacing rate at 80 beats per minute (BPM)
5. Start pacing unit.
6. Confirm that pacer senses intrinsic cardiac activity by adjusting ECG size.
7. If no initial capture, increase current 10 mAmps every 10-15 seconds until capture or 200 mAmps (usually captures around 100 mAmps).
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.



# 1110 PROCEDURE PROTOCOL: INTRAOSSEOUS CATHETER PLACEMENT

## Indications:

EMT -IV ONLY	AEMT	EMT-I	Paramedic
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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 (**NOT** indicated for EMT-IV)

## Technique:

1. Site of choice – typically proximal tibia. Other sites such as distal femur or humeral head may be considered based on clinical presentation if authorized by agency Medical Director after completion of appropriate training.
2. Clean skin per agency approved aseptic technique.
3. Place intraosseous needle perpendicular to the bone.
  - A. For infants who measure gray or pink on the length-based tape (less than 6 months), insert needle manually. Do not use powered device which increases risk of 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, consider [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.

## 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 (hardware will prevent placement)

## 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.

## 1120 PROCEDURE PROTOCOL: TOURNIQUET PROTOCOL

### Indications

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

EMT	AEMT
EMT-I	Paramedic

### 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 proximal to the wound and not across any joints.
  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 2<sup>nd</sup> can be applied adjacent to the 1<sup>st</sup>.
  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.

## 1130 PROCEDURE PROTOCOL: RESTRAINT PROTOCOL

### 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.
- B. 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](#)
- C. 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 a concern for elopement.

EMT	AEMT
EMT-I	Paramedic

### 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 which 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

- A. Document the following in all cases of restraint:
  - 1. Description of the facts justifying restraint, including [IMC-RASS score](#)
  - 2. Efforts to de-escalate prior to restraint
  - 3. Type of restraints used
  - 4. Condition of the patient while restrained, including reevaluations during transport
  - 5. Condition of the patient at the time of transfer of care to emergency department staff
  - 6. Any injury to patient or to EMS personnel

## 1130 PROCEDURE PROTOCOL: RESTRAINT PROTOCOL

### **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 - Patients may have underlying trauma, hypoxia, hypoglycemia, hyperthermia, hypothermia, drug ingestion, intoxication, or other medical conditions

## 1140 PROCEDURE PROTOCOL: OROGASTRIC TUBE INSERTION WITH ADVANCED AIRWAY

### Indications:

Paramedic

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

### Contraindications:

- Known esophageal varices

### Technique:

1. Determine length of tube for insertion. Measure from tip of nose, to earlobe, then down to xiphoid process
2. Liberally lubricate the distal end of the orogastric tube
3. Suction airway and pre-oxygenate with BVM ventilations, if possible
4. 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.
5. 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.
6. 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, genitals, or close to major neurovascular structures. In such cases, transport patient to an emergency department for removal.

EMT	AEMT
EMT-I	Paramedic

### Technique

1. Be alert for any medical conditions which may ensue following physical struggle. Refer to [agitate/combatative 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 and apply sterile dressing.
9. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever.

# 1160 PROCEDURE PROTOCOL: PAIN MANAGEMENT

## Goal of Pain Management

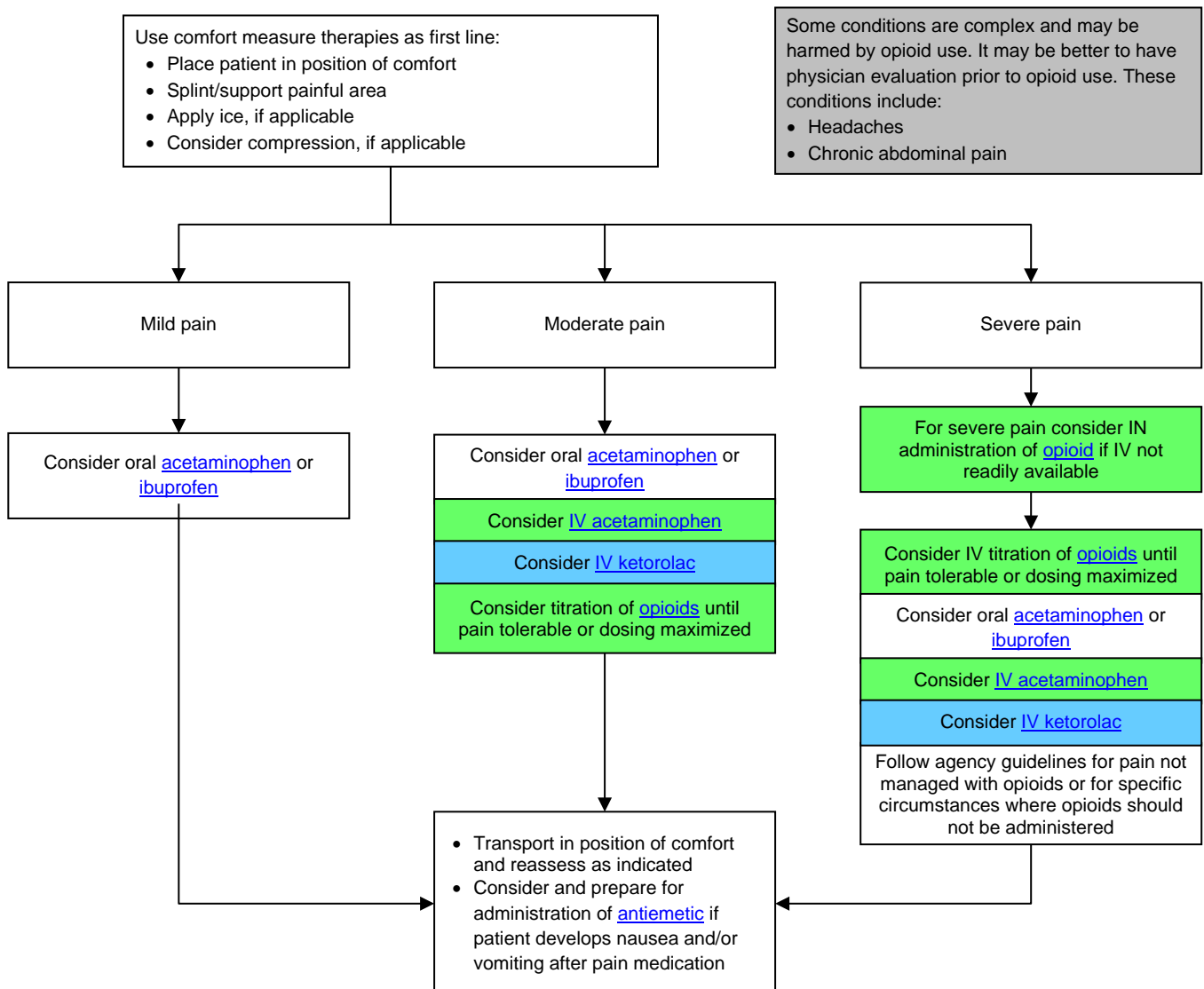
- A. Use comfort measure therapies as first line.
- B. If used, medications should be administered to a point where pain is tolerable. This point is not necessarily pain free.

EMT	AEMT
EMT-I	Paramedic

## 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



## 1160 PROCEDURE PROTOCOL: PAIN MANAGEMENT

### General Information

- A. Document assessment or pain scale before and after administration of pain medications. Reassess pain 5 minutes after IV administration.
- B. Multi-modal analgesia is reasonable with goal of avoiding combinations of sedating agents reducing the overall need for opiates. It is safe to combine acetaminophen or NSAIDS with opioids or other sedating agents.
- C. Strongly consider ½ typical dosing in the elderly or frail patient

### Pediatric Pain Scales

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

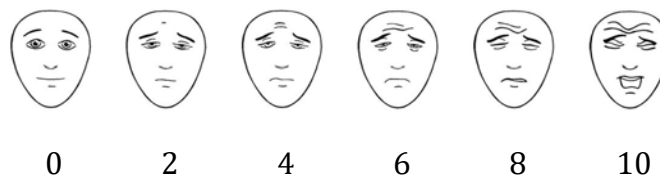
Appropriate age for use (per guideline): less than 4 years

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractible	Difficult to console or comfort
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

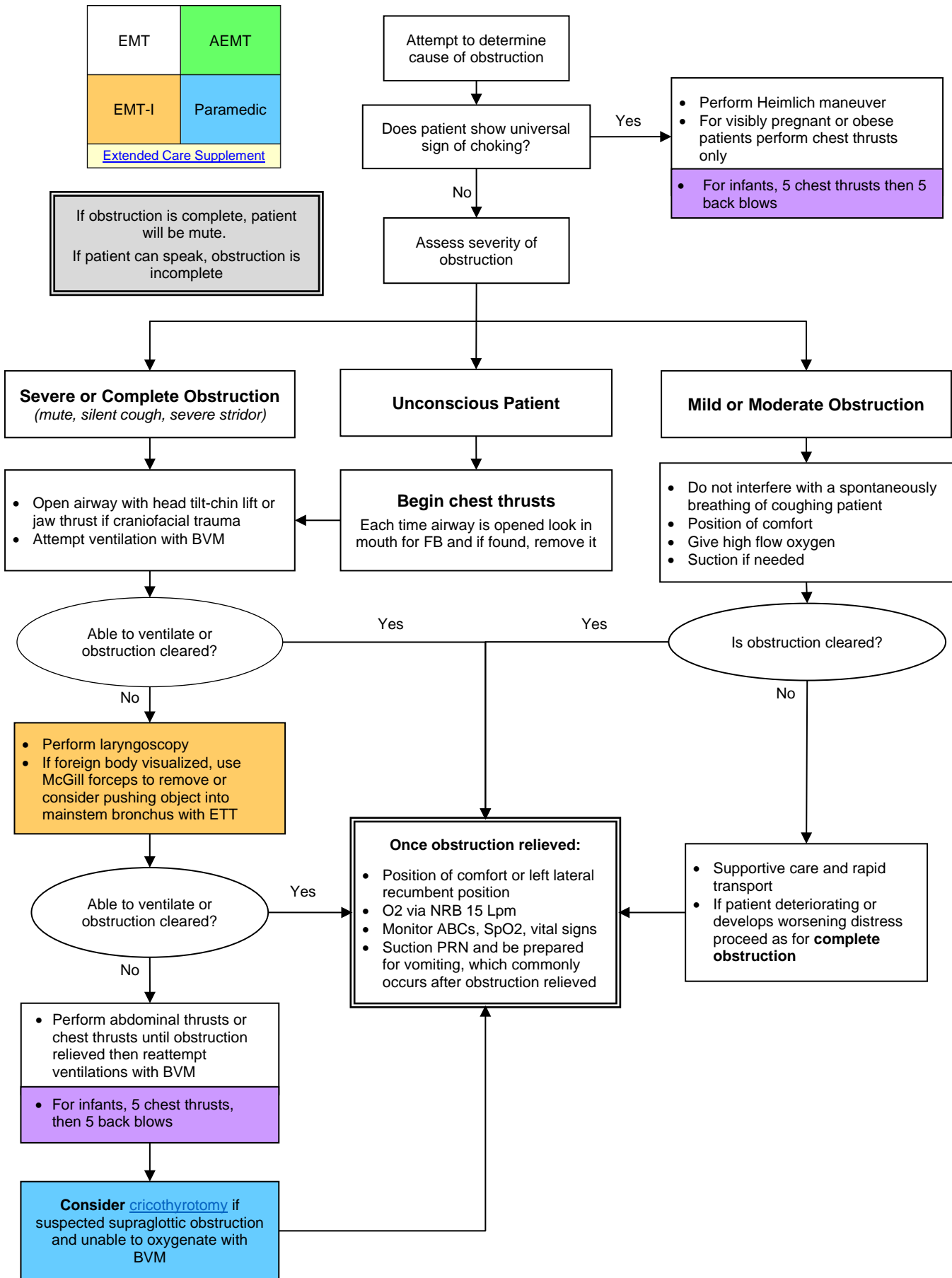
##### Faces Pain Scale – Revised (FPS-R)



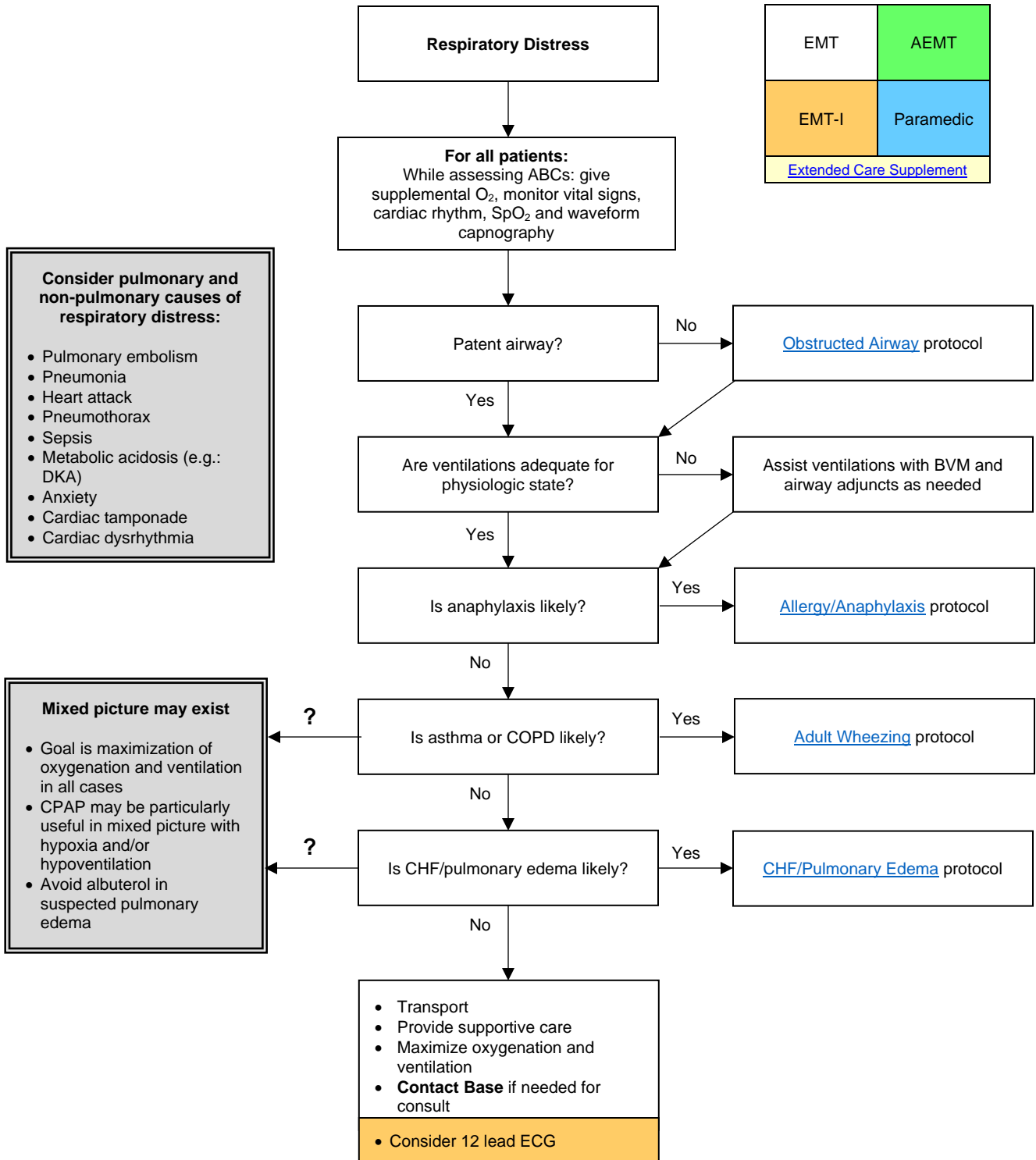
This Faces Pain Scale-Revised has been reproduced with permission of the International Association for the Study of Pain® (IASP). The figure may NOT be reproduced for any other purpose without permission.



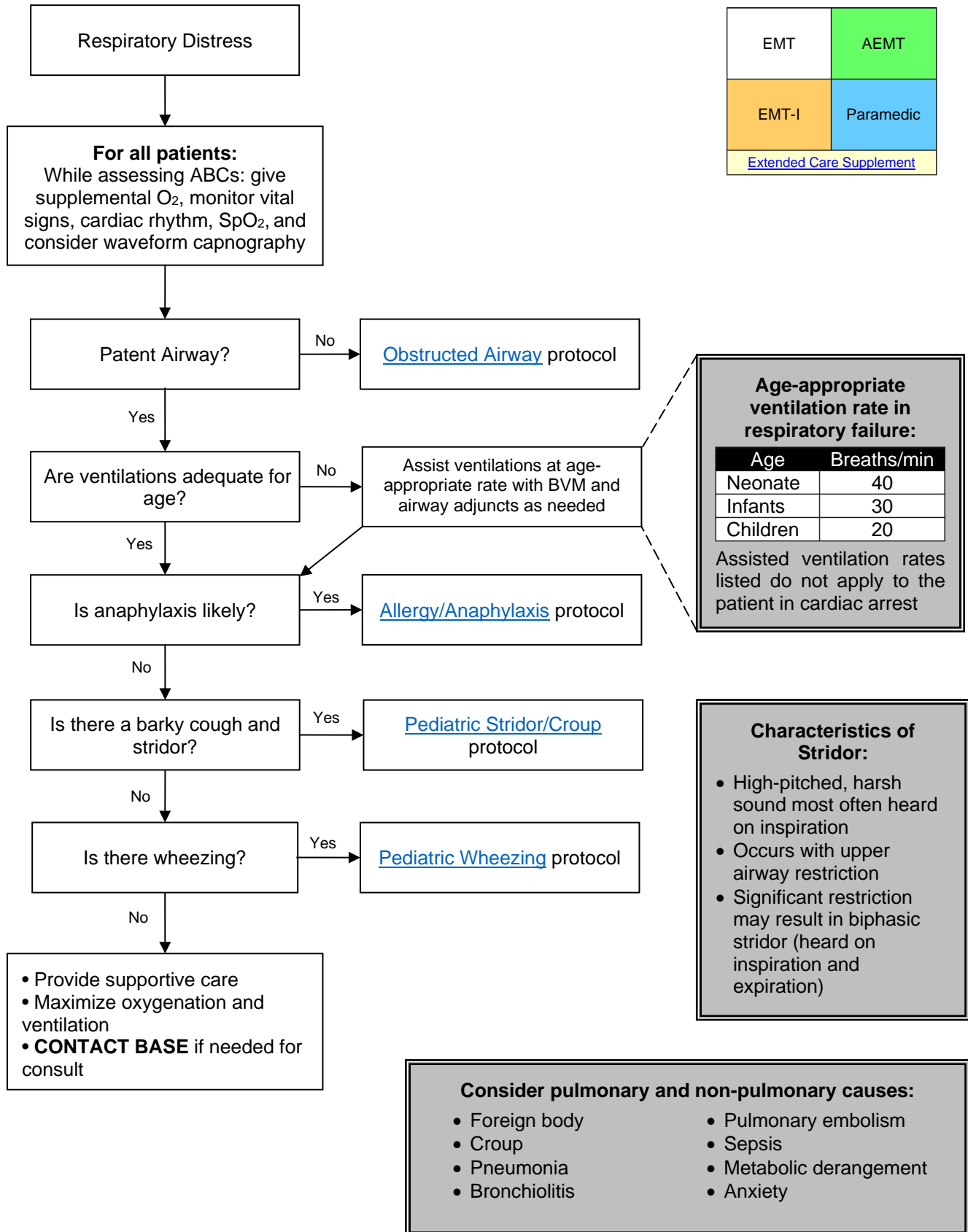
## 2000 OBSTRUCTED AIRWAY



## 2010 ADULT UNIVERSAL RESPIRATORY DISTRESS

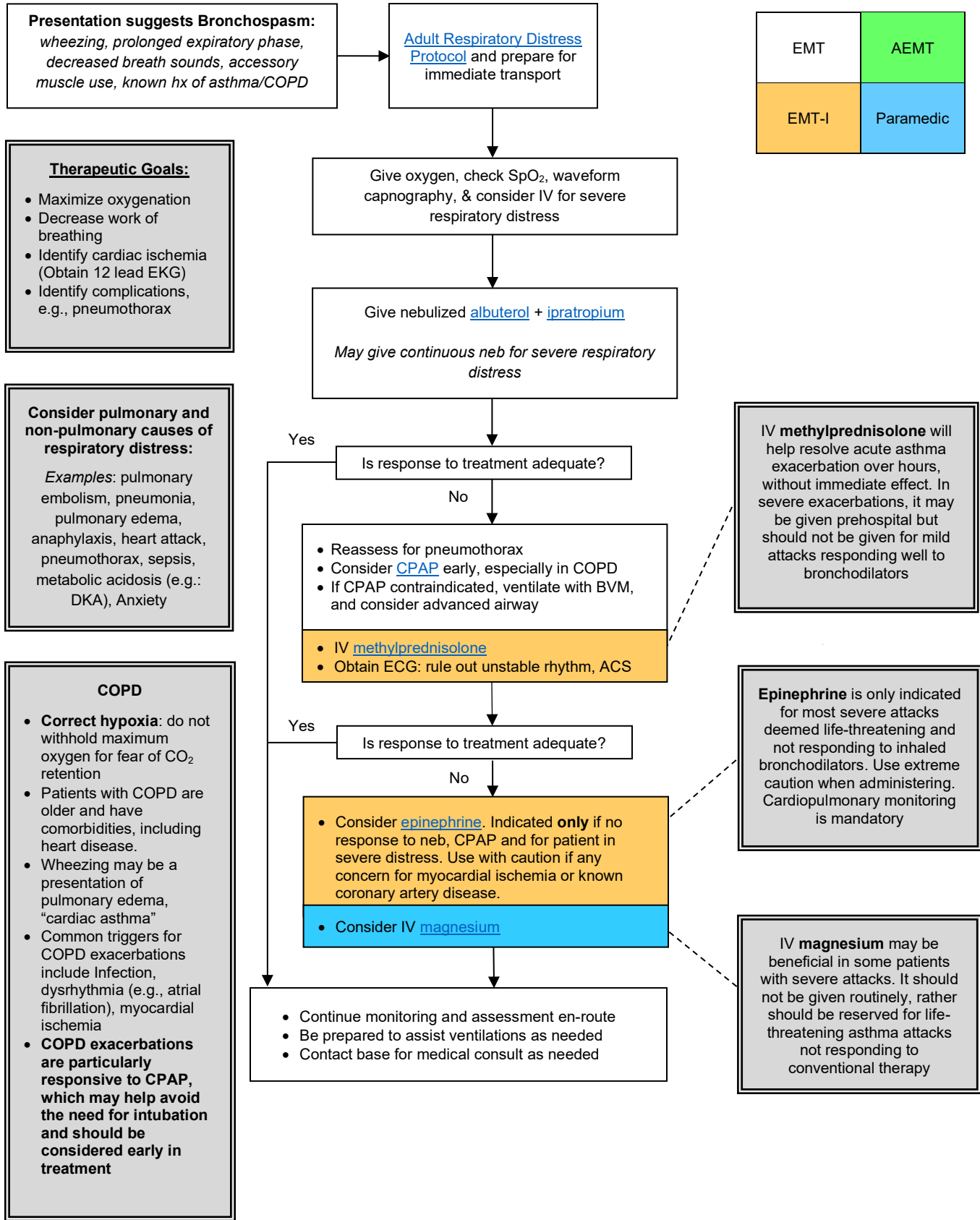


## 2020 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS

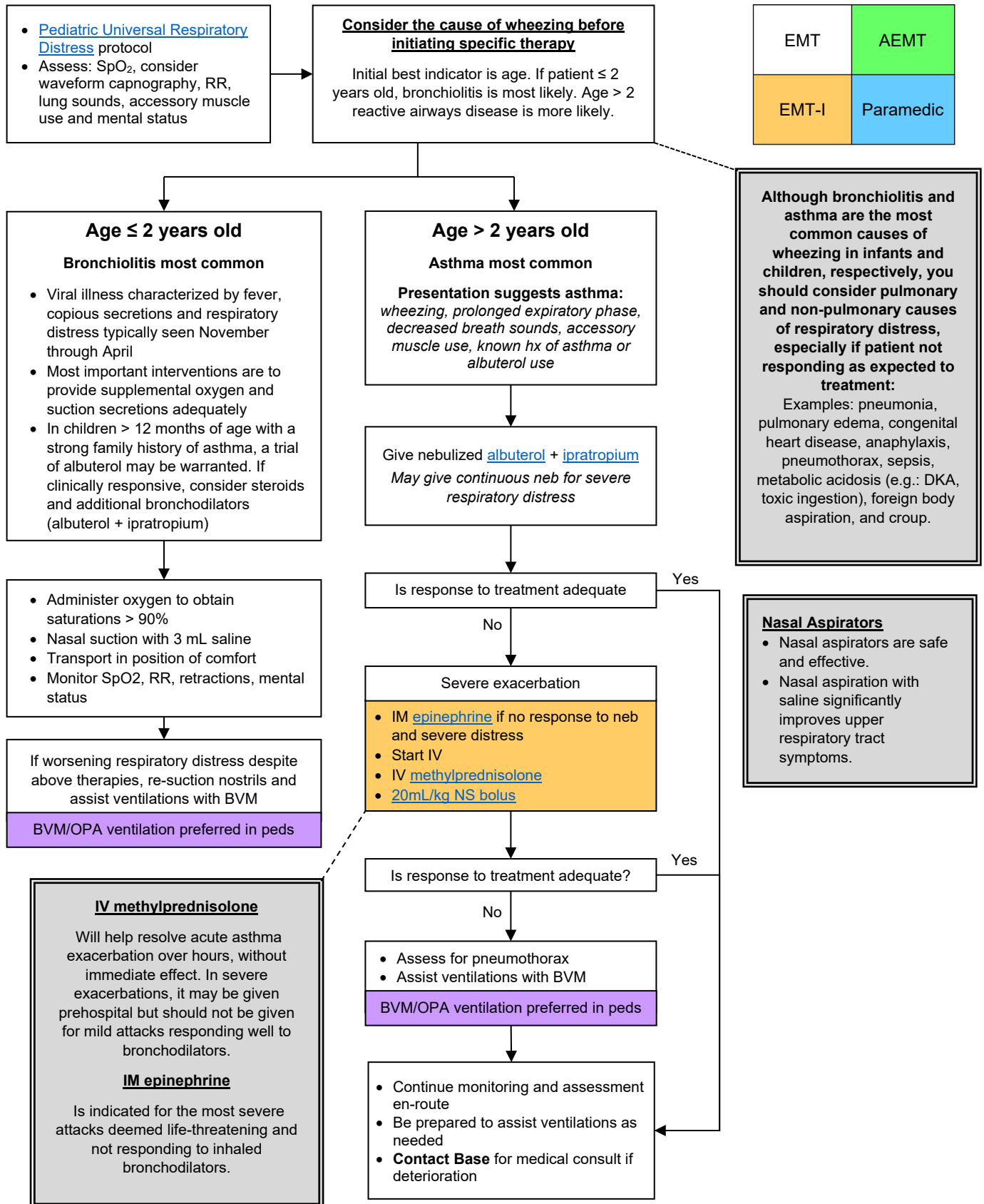


EMT	AEMT
EMT-I	Paramedic
Extended Care Supplement	

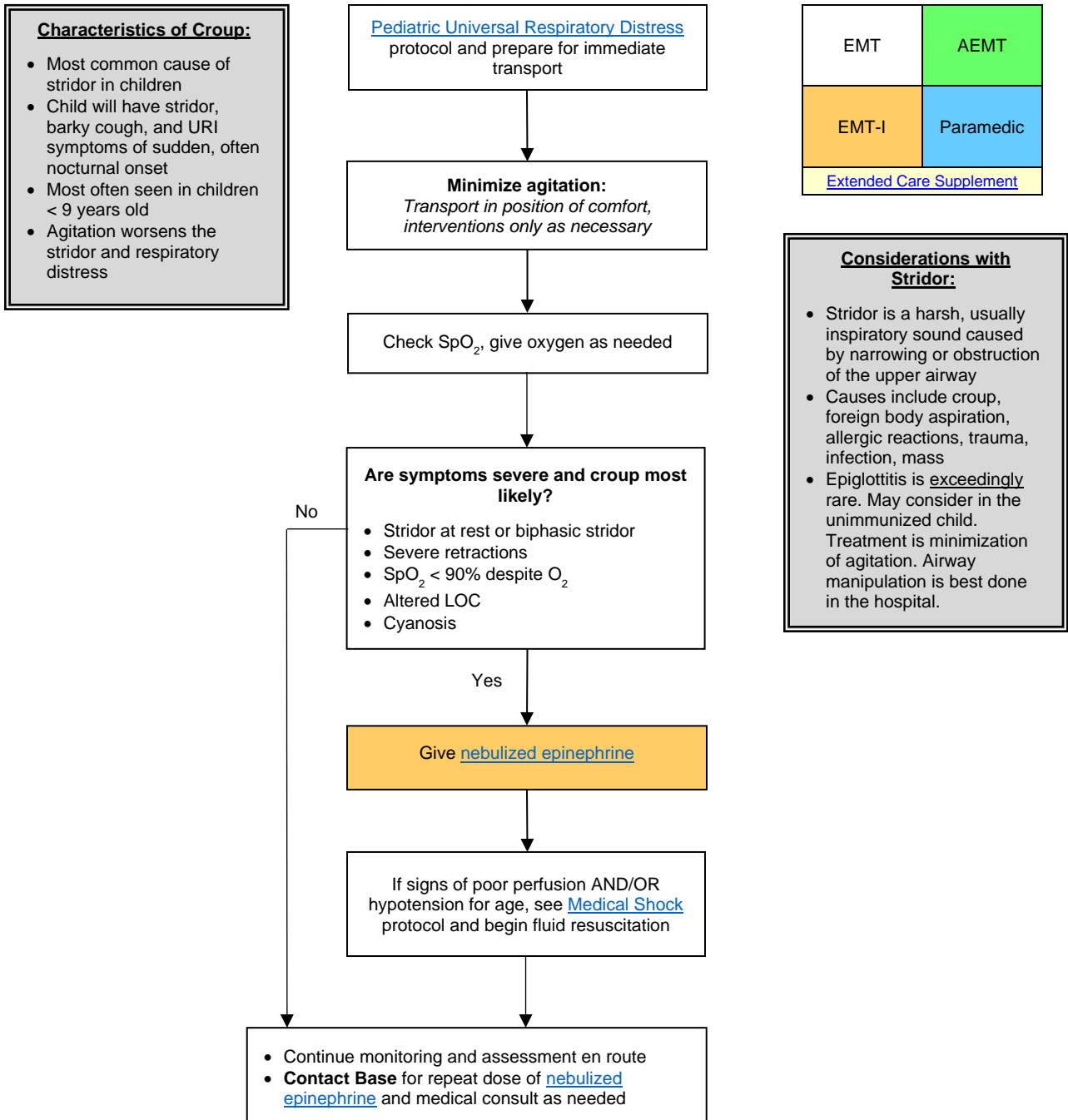
## 2030 ADULT WHEEZING



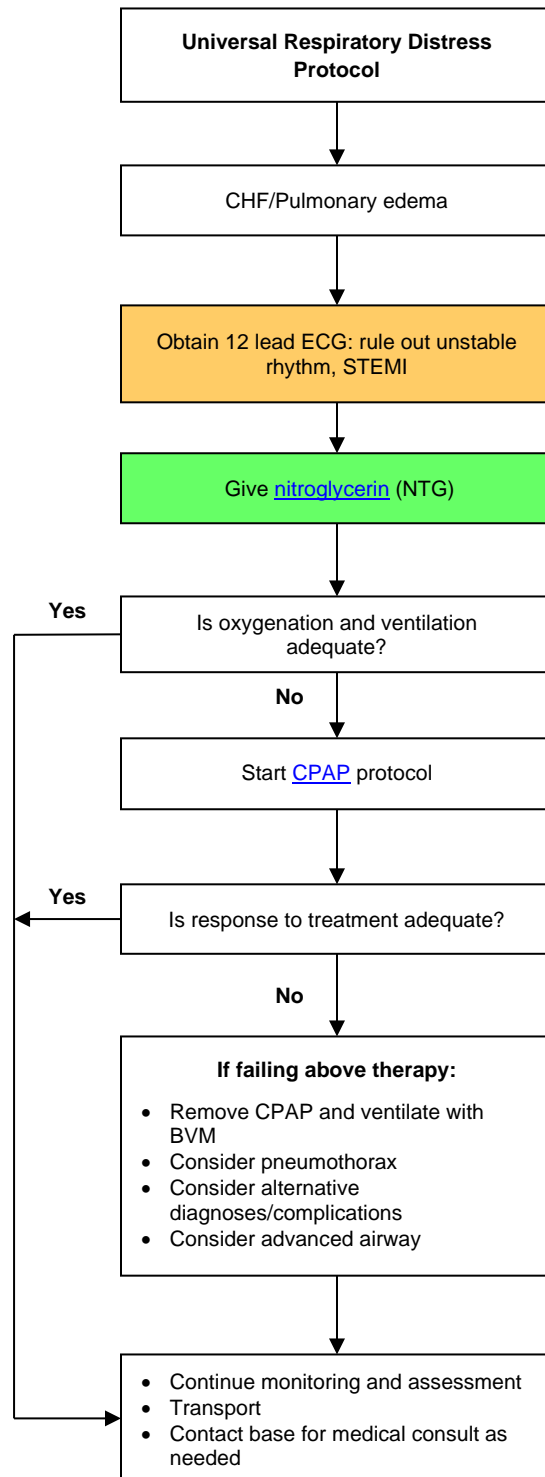
# 2040 PEDIATRIC WHEEZING



## 2050 PEDIATRIC STRIDOR/CROUP



## 2060 CHF/PULMONARY EDEMA



EMT	AEMT
EMT-I	Paramedic

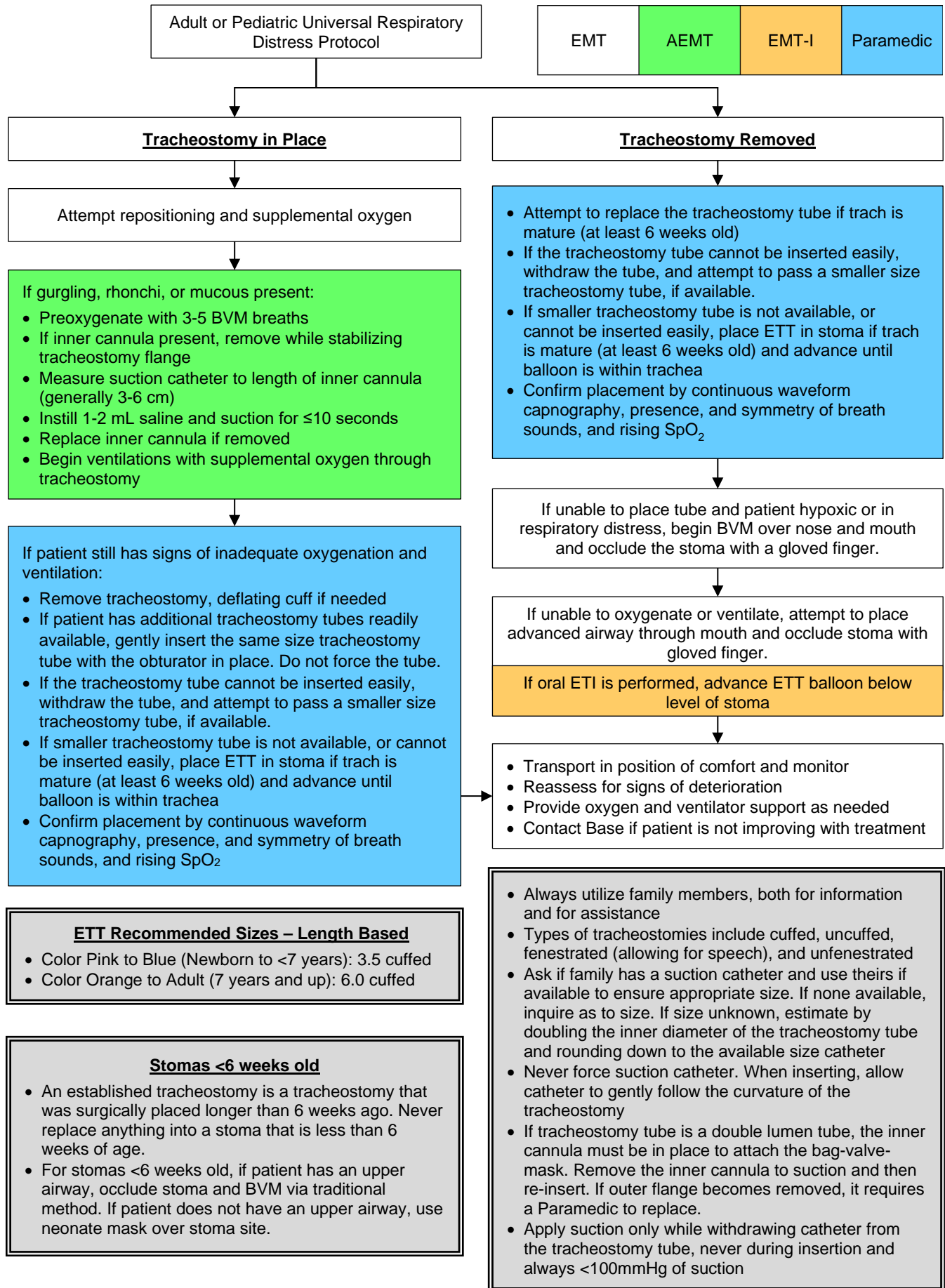
### Therapeutic Goals:

- Maximize oxygenation
- Decrease work of breathing
- Identify cardiac ischemia (Obtain 12 lead ECG)

### Special Notes:

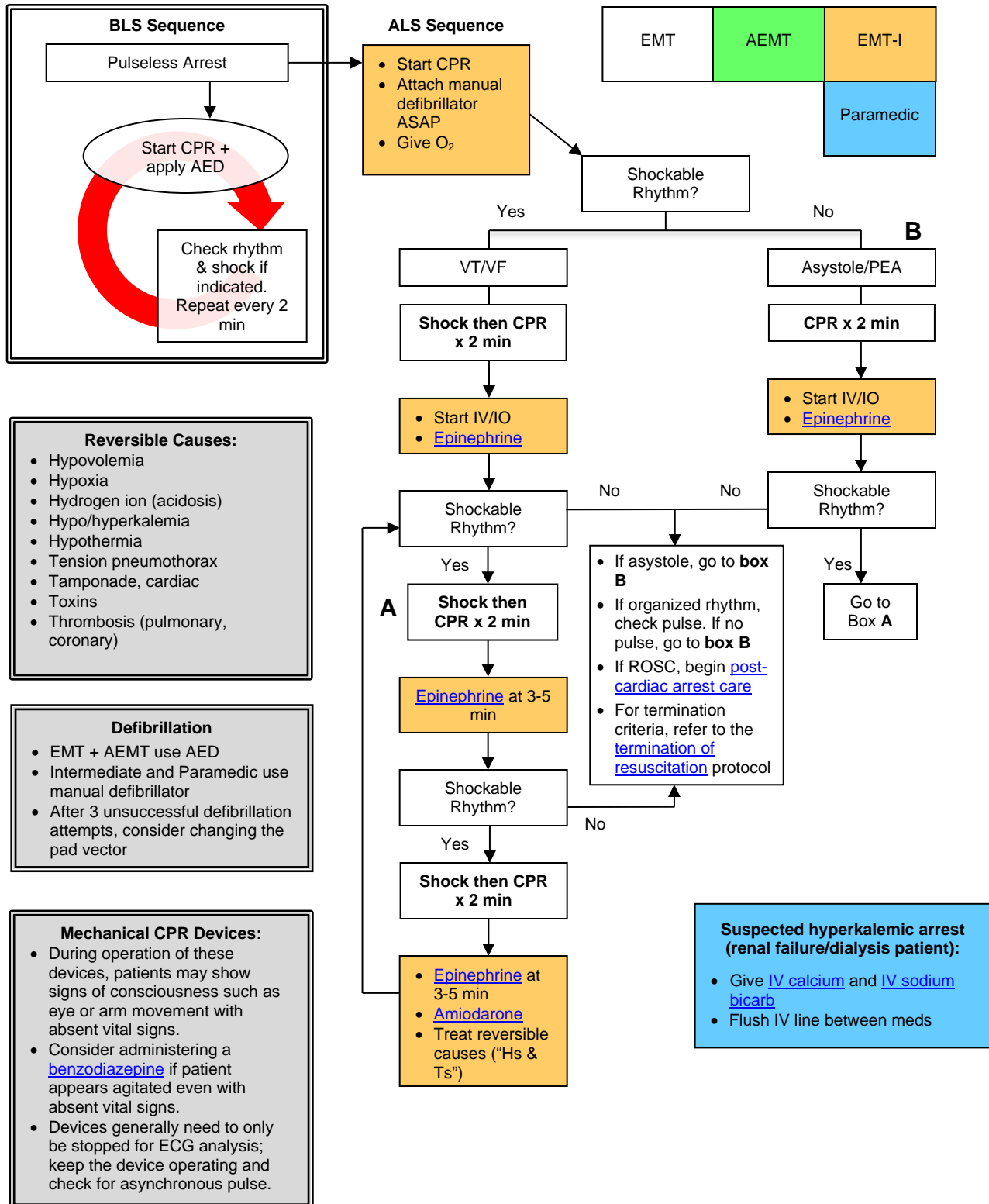
- In general diuretics have little role in initial treatment of acute pulmonary edema and are no longer considered first line therapy.
- Morphine has been associated with worse outcomes in patients with CHF and is no longer indicated

## 2090 TRACHEOSTOMY EMERGENCIES





# 3000 MEDICAL PULSELESS ARREST ALGORITHM



## 3010 MEDICAL PULSELESS ARREST CONSIDERATIONS

### ADULT PATIENT

#### Compressions

- Follow current ACLS guidelines for chest compressions.
- Minimize interruptions, resume compressions immediately after shocks, rhythm checks. Check pulses only if organized rhythm.
- Push hard and fast and allow complete chest recoil.
- Assess quality of CPR with continuous waveform capnography.
- If  $\text{ETCO}_2 < 10$ , improve quality of compressions.
- If using automated CPR devices, use manufacturer's specifications.

#### Defibrillation

- Biphasic: manufacturer recommendation. If unknown, use maximum energy.
- Monophasic: 360 J
- After 3 unsuccessful defibrillation attempts, consider changing the pad vector.

#### Ventilations

- Open the airway, place NPA/OPA, place NRB facemask with  $\text{O}_2$  at 15 L/min for first 4 minutes of chest compressions, unless hypoxic arrest suspected (e.g.: asphyxiation, overdose, status asthmaticus), in which case begin ventilations immediately.
- Do not over ventilate.
- If no advanced airway, 30:2 compressions to ventilation ratio.
- If advanced airway in place ventilate at rate of 10 breaths/min.

#### Airway

- An advanced airway (supraglottic airway, ETT) may be placed at any time after initial 4 minutes of passive oxygenation, if applicable, or as soon as possible if asphyxial arrest suspected, provided placement does not interrupt compressions.

#### ROSC

- Pulse and blood pressure.
- Sustained abrupt rise in  $\text{ETCO}_2$ , typically  $> 40$  mmHg.
- Obtain 12-lead ECG after ROSC and before transport to identify [STEMI 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 ( $\geq 1/3$  of anteroposterior chest diameter) and fast (100-120/min) and allow complete chest recoil.
- Assess quality of CPR with continuous waveform capnography.

#### Defibrillation:

- 1<sup>st</sup> shock 2 J/kg, subsequent shocks 4 J/kg
- EMT + AEMT use AED.
- Intermediate and Paramedic 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

- No intubation for cardiac arrest  $< 12$  years old.
- BVM preferred for all pediatric patients.
- An appropriately sized supraglottic airway may be placed as an alternative if BVM ventilations are inadequate.

#### Medications

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

#### ROSC

- Pulse and blood pressure.
- Sustained abrupt rise in  $\text{ETCO}_2$ , typically  $> 40$  mmHg.

### **Regarding where to work arrest and presence of family members:**

- Manual 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.

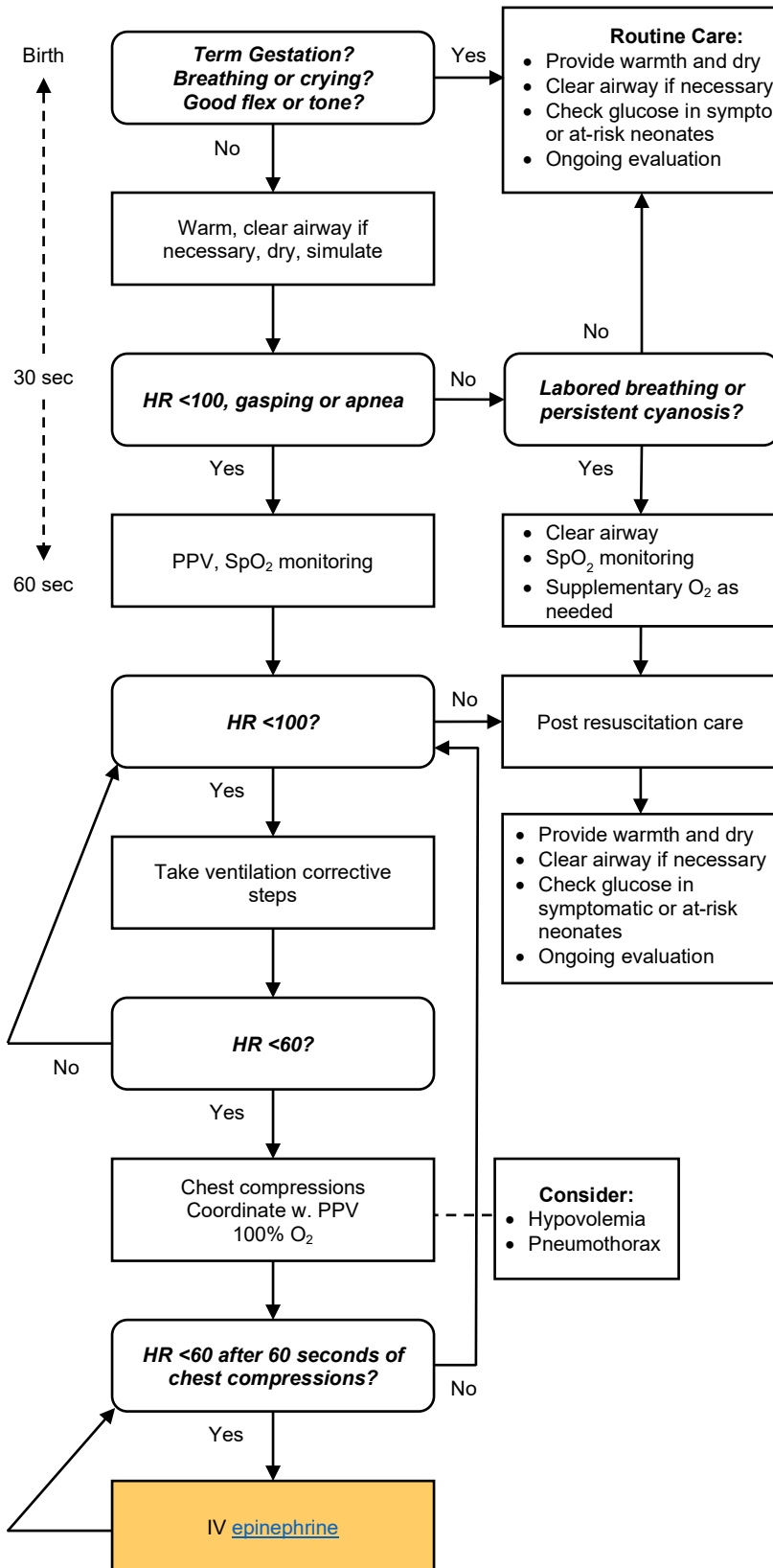
### **Pacing**

- Pacing is not recommended in cardiac arrest.

#### ICD/Pacemaker patients

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

# 3020 NEONATAL RESUSCITATION



EMT	AEMT
EMT-I	Paramedic

## General Considerations

- Providing warmth to newborn could include skin-to-skin contact on mother, body covering, cap on head, increasing ambient temperature.

## Assisting Ventilations

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

## Neonatal Oxygen Recommendations

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

## Target Preductal (R Arm) SpO<sub>2</sub> After Birth

1 minute	60%-65%
3 minutes	60%-75%
5 minutes	80%-85%
10 minutes	85%-95%

## Chest Compressions

- Indicated for HR < 60 despite adequate ventilation w. supplemental O<sub>2</sub> 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

## Termination of Resuscitation

- In newly born babies receiving resuscitation, if there is no heart rate and all the steps of resuscitation have been performed, cessation of resuscitation efforts may be discussed with the team and the family. A reasonable time frame for this change in goals of care are around 30 min after birth.

## Neonatal Hypoglycemia

- Common symptoms include jitters/tremors, sweating, tachypnea, pallor, weakness, irritability, or seizures
- Asymptomatic patients are common and more likely when premature, small or large for gestational age, perinatal stress, or when mother has diabetes
- In the newly born (<48 hours of life), treatment threshold is 50mg/dL
- If neurologically altered and/or unable to feed, treat with 5ml D10W and recheck after 15 min
- In neurologically stable, allow to breast feed, give formula, or 2mL 40% dextrose gel

### 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 ETCO<sub>2</sub> 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

- SpO<sub>2</sub> 92%-98%
- PaCO<sub>2</sub> 35-45 mmHg
- Systolic pressure >90 mmHg or mean arterial pressure >65 mmHg

#### ROSC after cardiac arrest

Perform 12 lead EKG

*Is STEMI Present?*

Yes

Initiate [STEMI Alert](#)

No

- Assess for shock and volume status
- Peripheral access: IO/IV
- Oxygenation/Ventilation
  - Secure advanced airway if indicated
  - Avoid hyperventilation
  - Avoid hyper/hypocapnia (EtCO<sub>2</sub>)
  - Correct hypoxemia
- Elevate head of bed at 30°

*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

EMT

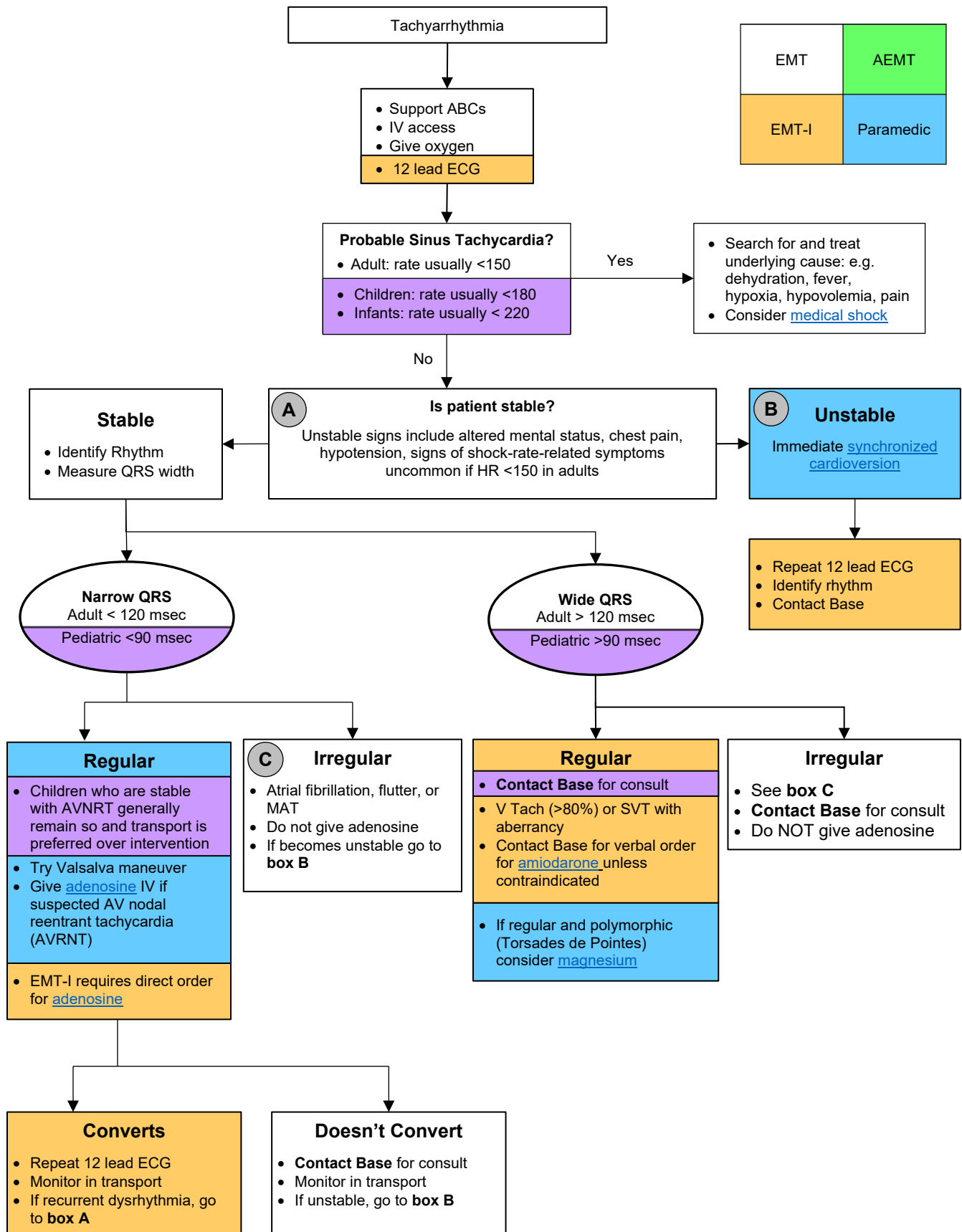
AEMT

EMT-I

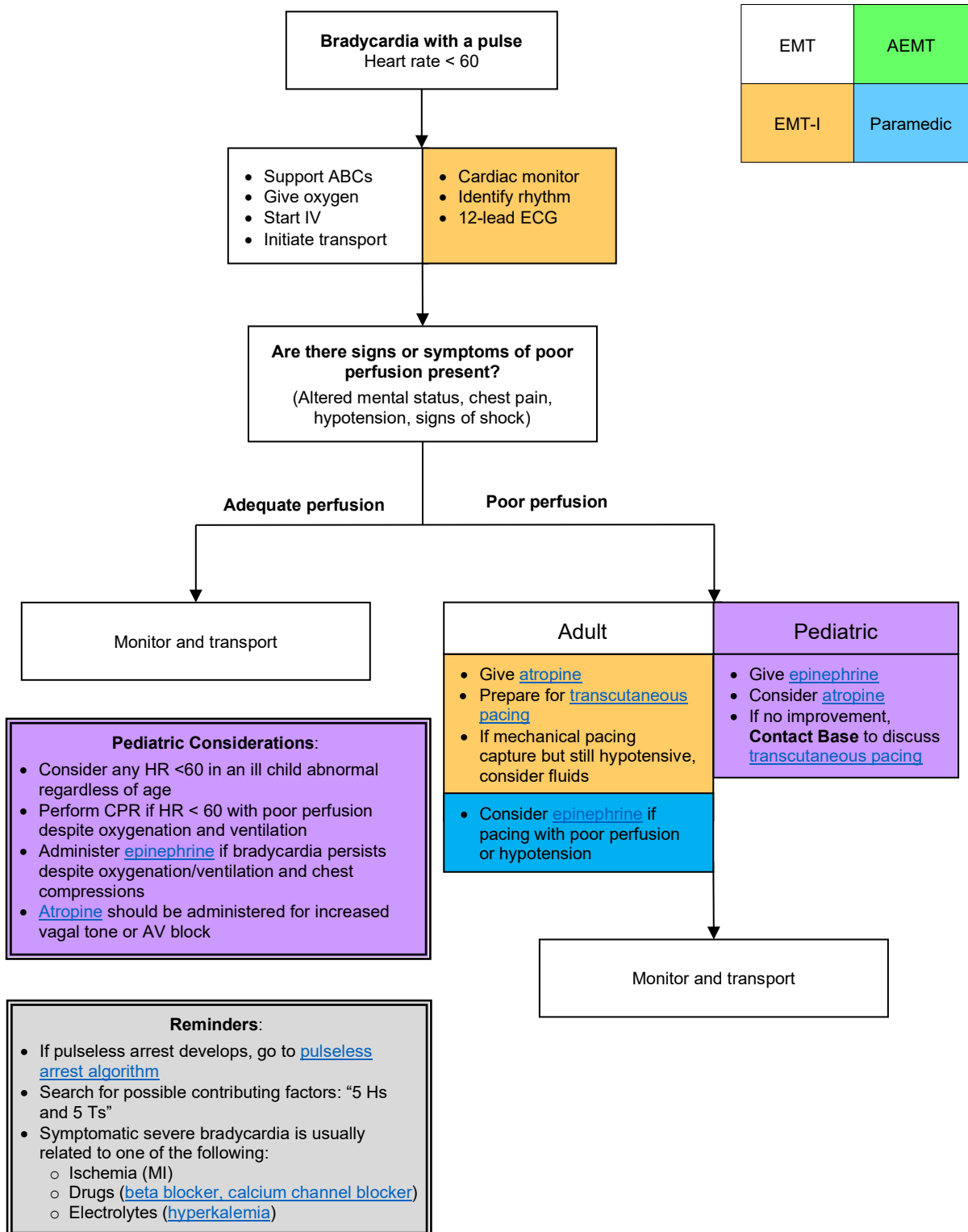
Paramedic

[Extended Care Supplement](#)

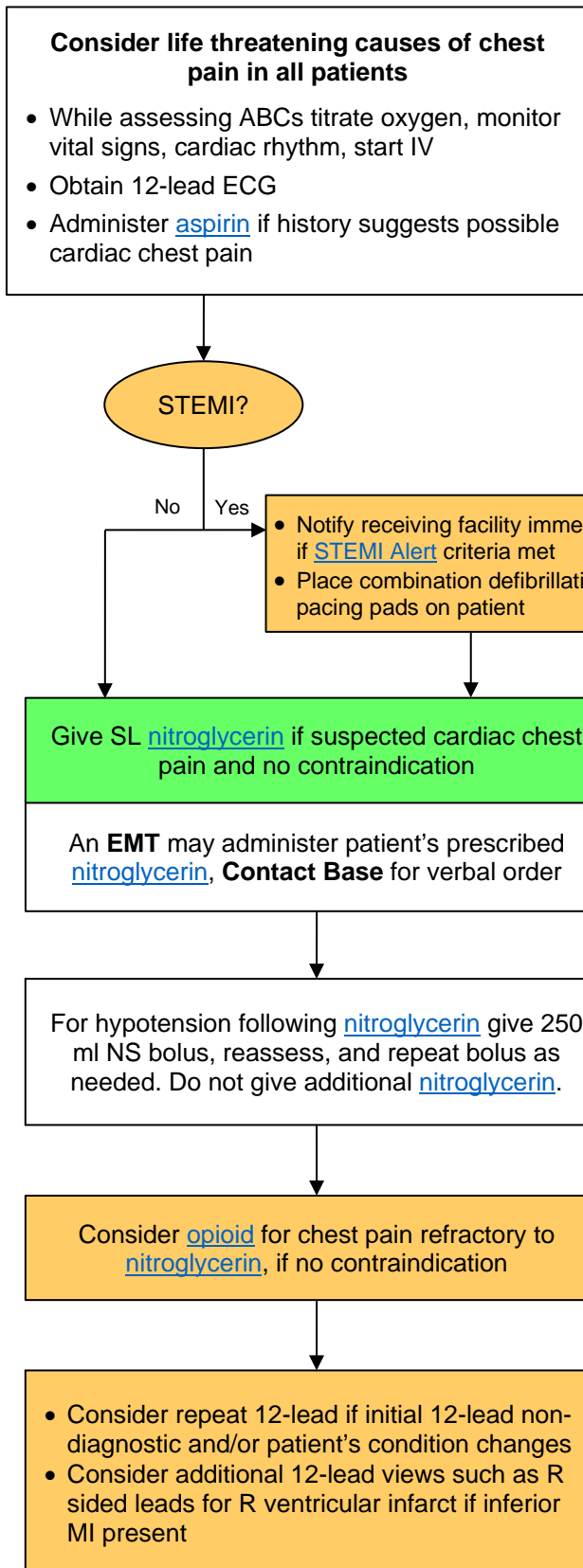
### 3040 TACHYARRHYTHMIA WITH POOR PERFUSION



## 3050 BRADYARRHYTHMIA WITH POOR PERFUSION



## 3060 CHEST PAIN



EMT	AEMT
EMT-I	Paramedic
<a href="#">Extended Care Supplement</a>	

### Life threatening causes of chest pain:

- Acute coronary syndrome (ACS)
  - Unstable angina
  - NSTEMI
  - STEMI
- 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

## 3070 STEMI ALERT

EMT-I	Paramedic
Extended Care Supplement	

### 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)

### STEMI Alert Criteria: *note all 4 criteria must be met for field activation*

1. Chest discomfort consistent with ACS
2. 12-lead ECG showing ST-segment elevation (STE) at least 1 mm in two or more anatomically contiguous leads other than leads V2-V3 where at least 2 mm is required
3. Age 35-85 years old
4. No wide complex QRS (paced rhythm, BBB, other)

If patient does not meet all four STEMI alert criteria yet clinical scenario suggestive of STEMI consult the receiving hospital **Emergency Physician** for override

### Actions:

- Treat according to [chest pain](#) protocol enroute (cardiac monitor, [oxygen](#), [aspirin](#), [nitroglycerin](#), and [opioid](#) as needed for pain control).
- Notify receiving hospital ASAP with ETA and request STEMI ALERT. Do not delay hospital notification. If possible, notify ED before leaving scene.
- Start 2 large bore peripheral IVs – avoid the right wrist or hand, if possible, in the field to avoid interfering with cath lab radial access
- Place combination defibrillation/pacing pads on patient
- Rapid transport

### Additional Documentation Requirements:

- Time of first patient contact
- Time of first ECG



## 3080 HYPERTENSION

AEMT	EMT-I	Paramedic
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### 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.

EMT	AEMT
EMT-I	Paramedic

### 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, SpO<sub>2</sub>, 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

#### Common VAD Complications

- CVA
- TIA
- Arrhythmias
- Infections
- Sepsis
- Obstructions
- Pump Failure

#### 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

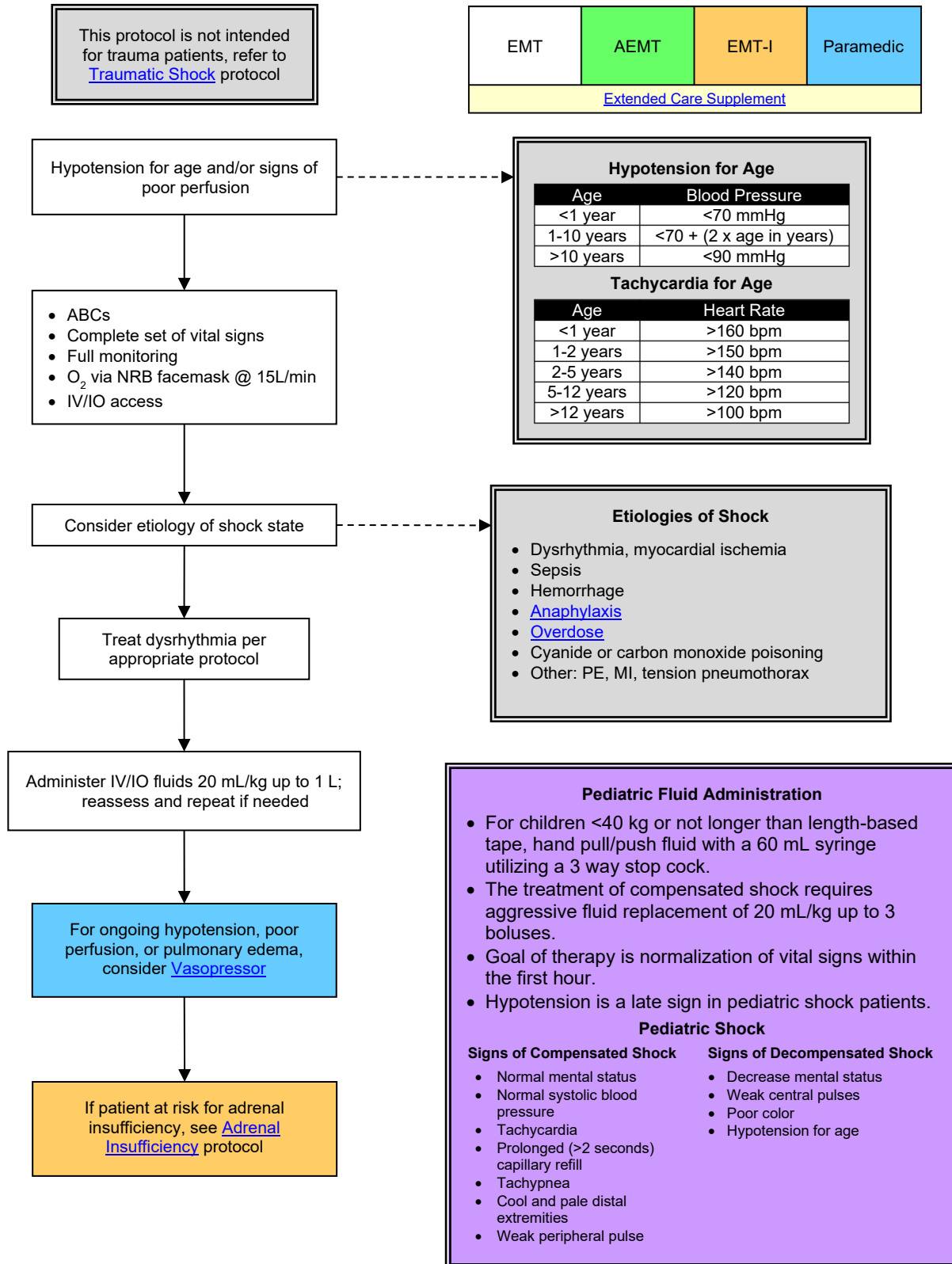
#### VAD NOT RUNNING

- 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)

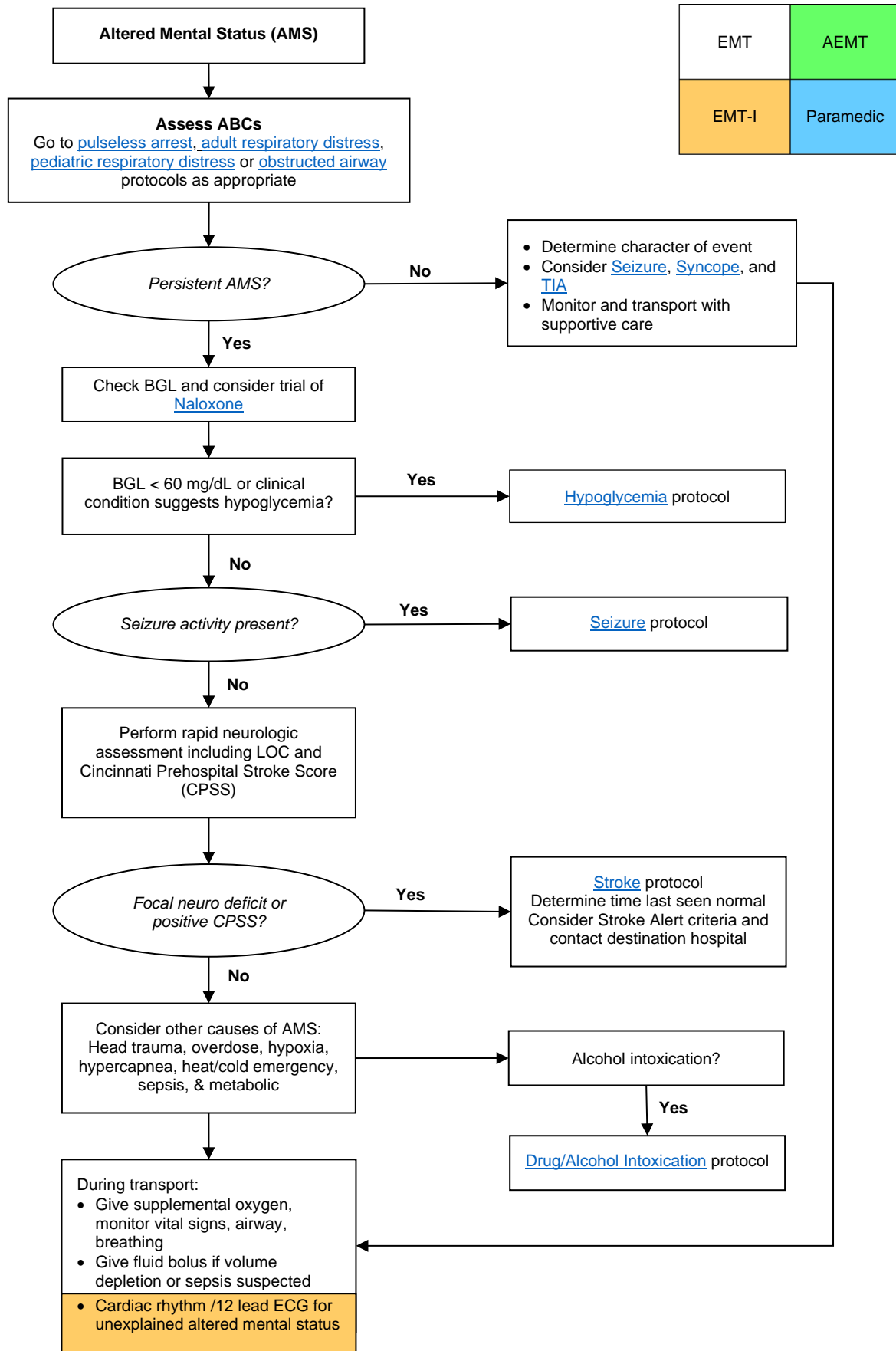
### Key Points

- 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 720-848-LVAD (5823). For pediatric patients contact the Children's Hospital Colorado transplant coordinator 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/resource-library/ems-field-guides>

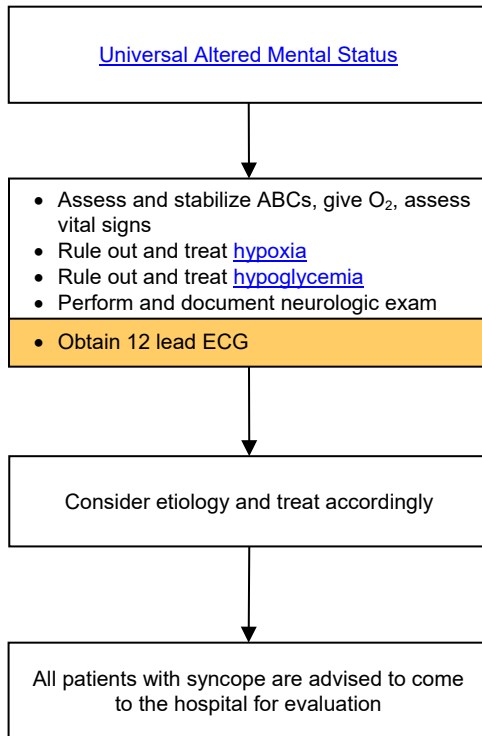
## 4000 MEDICAL SHOCK PROTOCOL



## 4010 UNIVERSAL ALTERED MENTAL STATUS



## 4020 SYNCOPE



EMT	AEMT
EMT-I	Paramedic

### 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

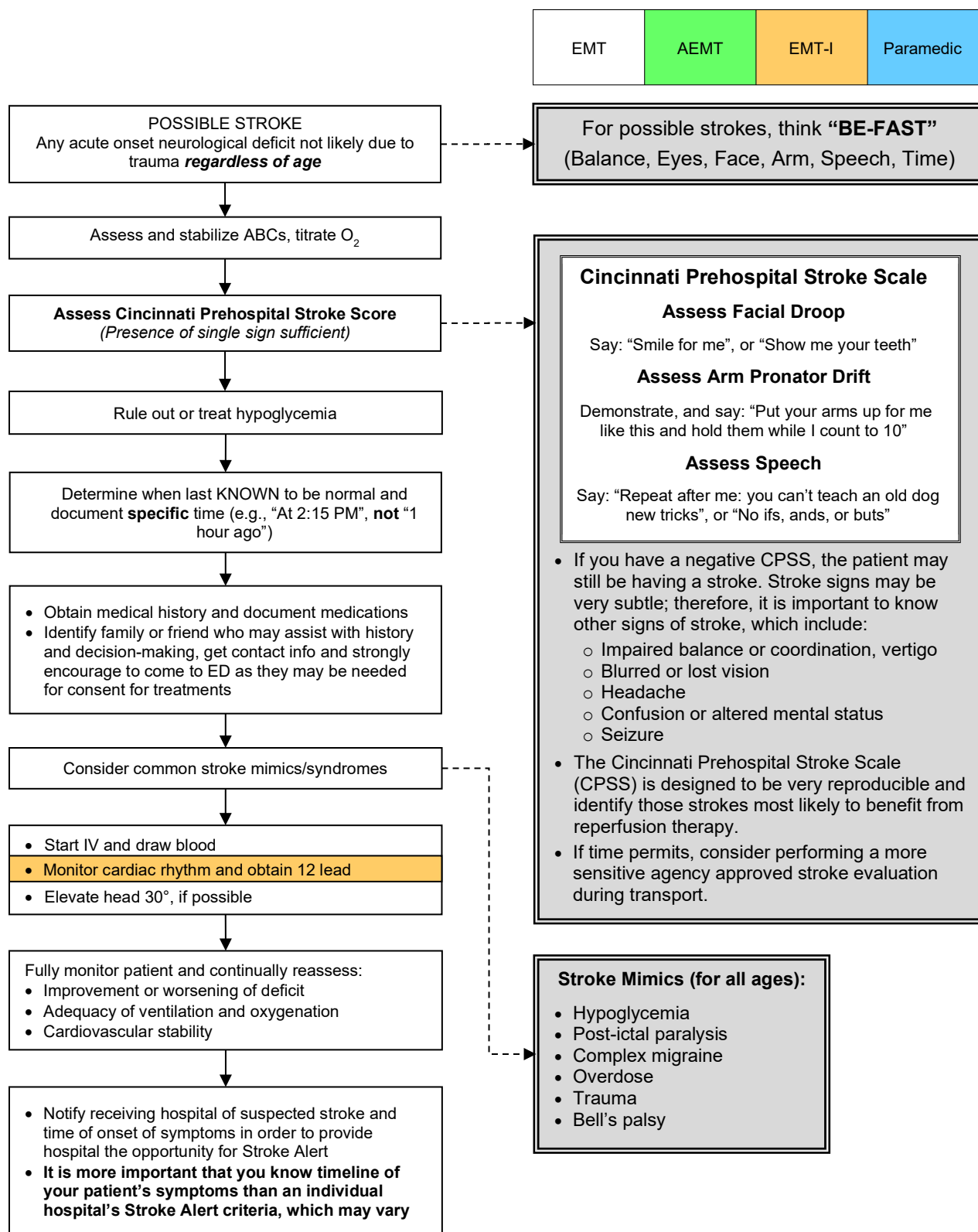
### General Information:

- 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

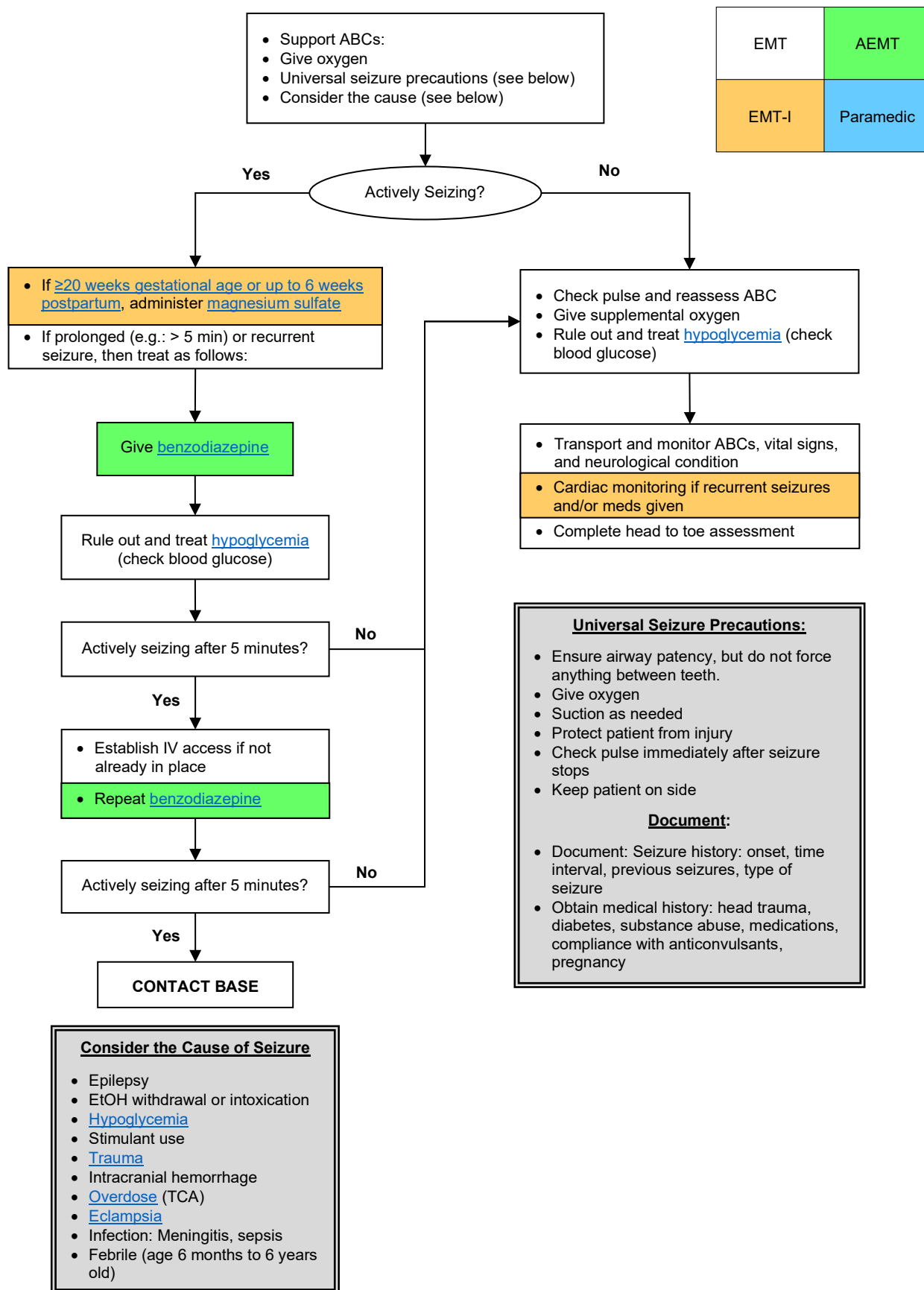
### Pediatric Considerations:

- 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
  - Heat intolerance
  - Breath holding spells
  - BRUE (Brief Resolved Unexplained Events, formerly ALTE)
  - Toxins (marijuana, opioids, cocaine, CO, etc.)
- Important historical features of pediatric syncope include: color change, seizure activity, incontinence, post-ictal state, and events immediately prior to syncope event

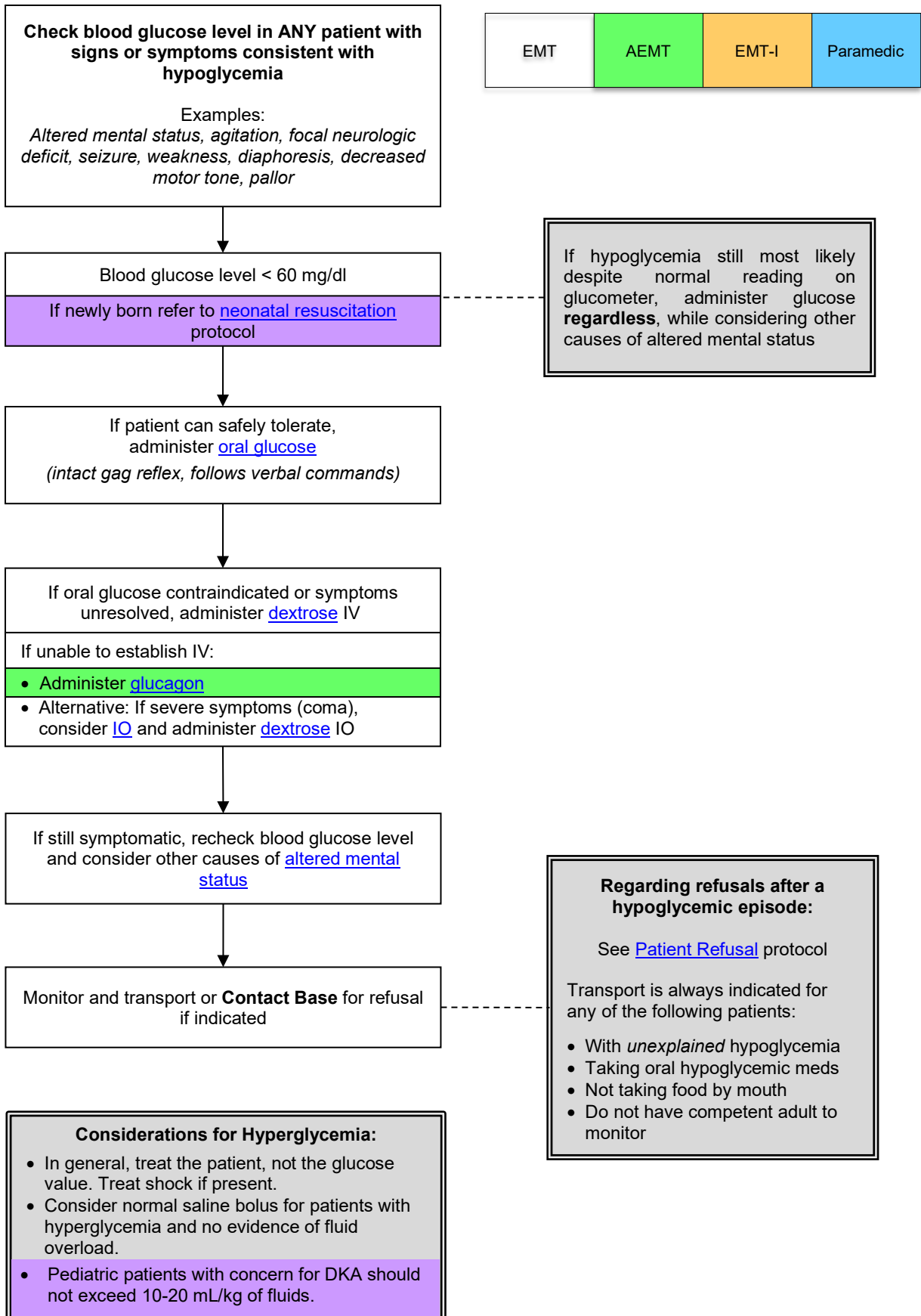
## 4030 STROKE



## 4040 SEIZURE

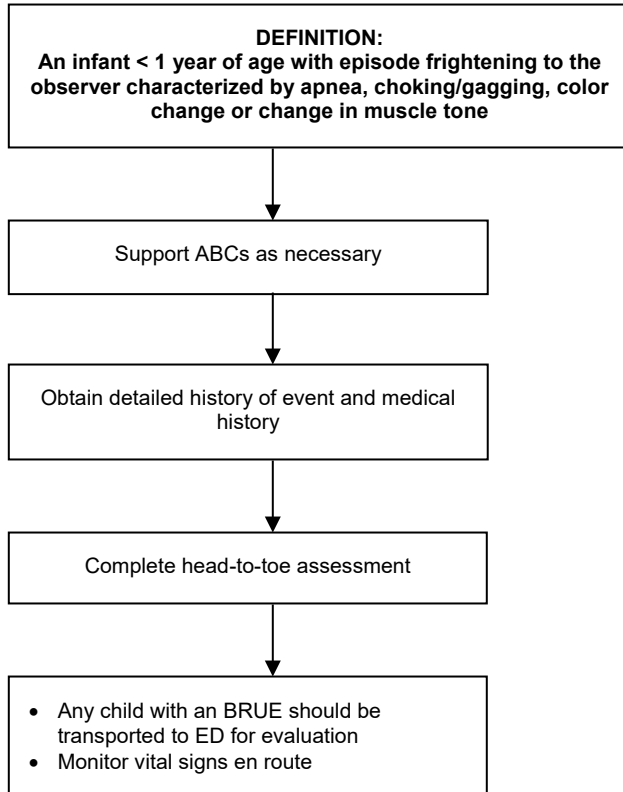


## 4050 HYPOGLYCEMIA





## 4060 PEDIATRIC BRIEF RESOLVED UNEXPLAINED EVENTS (BRUE) (FORMERLY ALTE)



EMT	AEMT
EMT-I	Paramedic

**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?

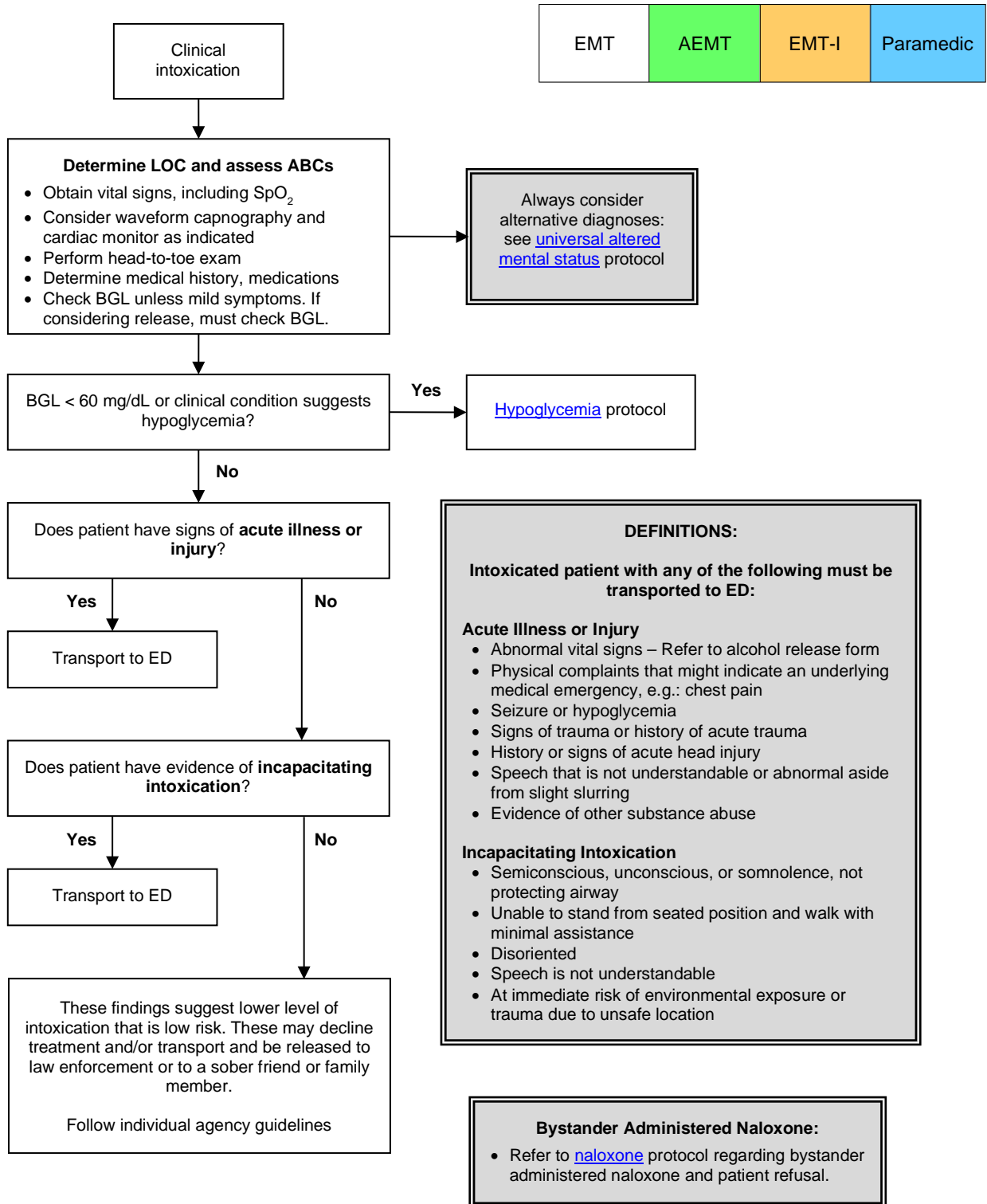
**Past Medical History:**

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

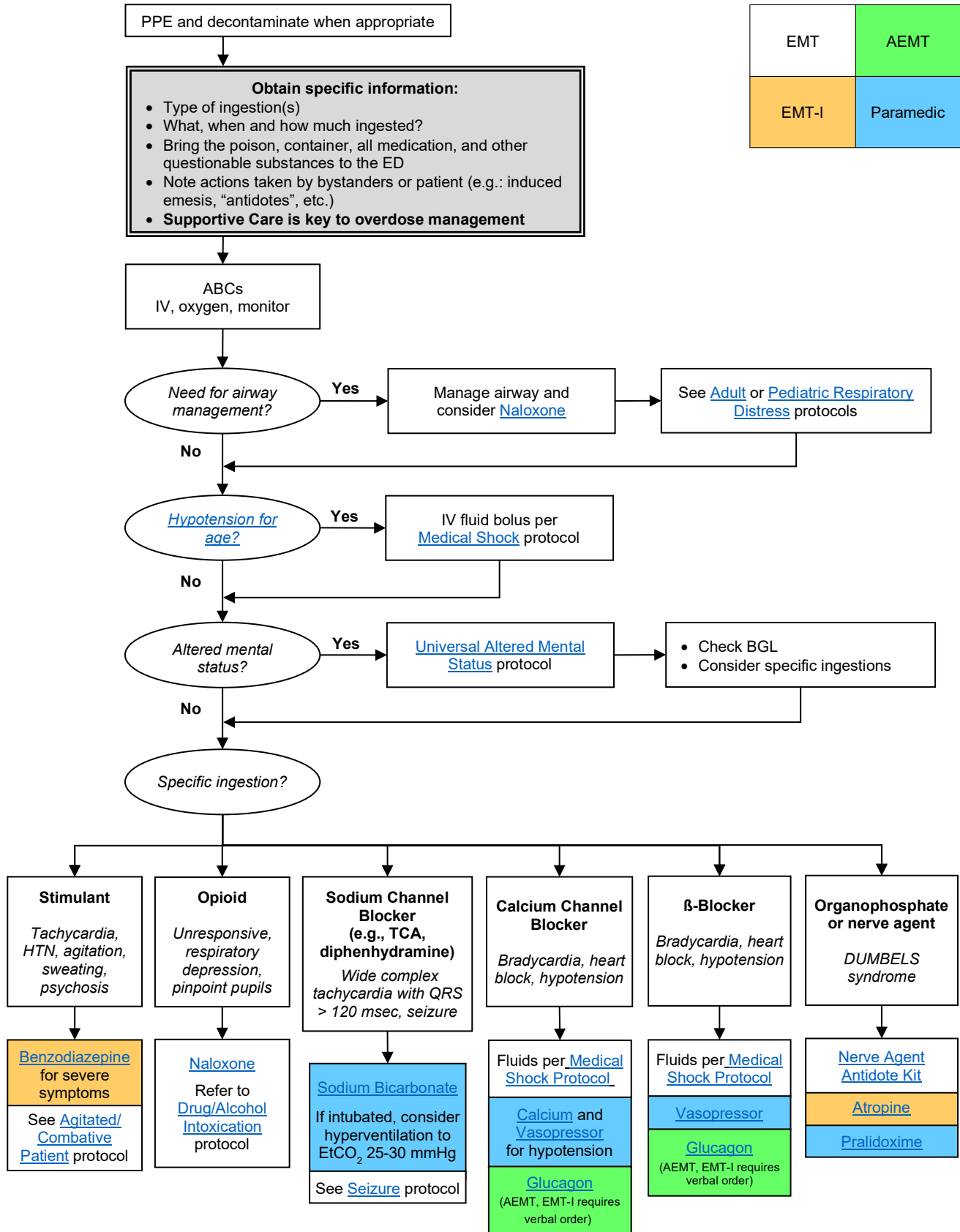
**Examination/Assessment**

- 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

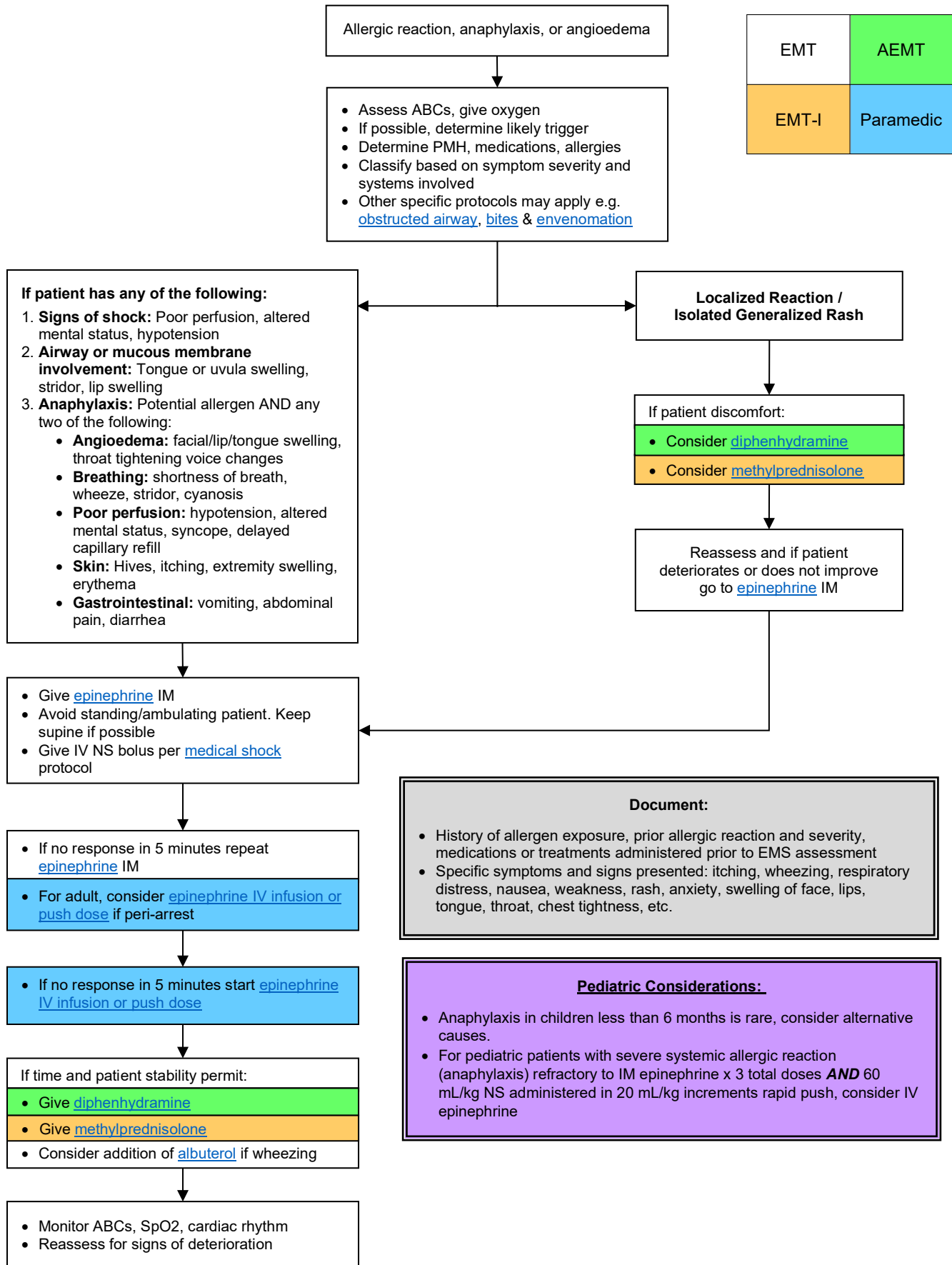
## 4070 DRUG/ALCOHOL INTOXICATION



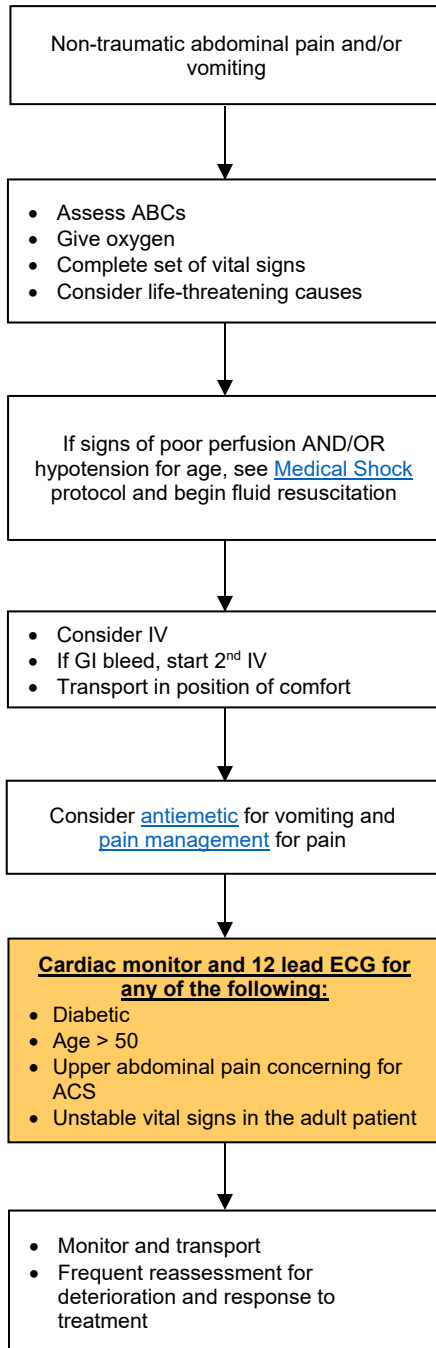
## 4080 OVERDOSE AND ACUTE POISONING



## 4090 ALLERGY AND ANAPHYLAXIS



## 4100 NON-TRAUMATIC ABDOMINAL PAIN/VOMITING



EMT	AEMT	EMT-I	Paramedic
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### 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

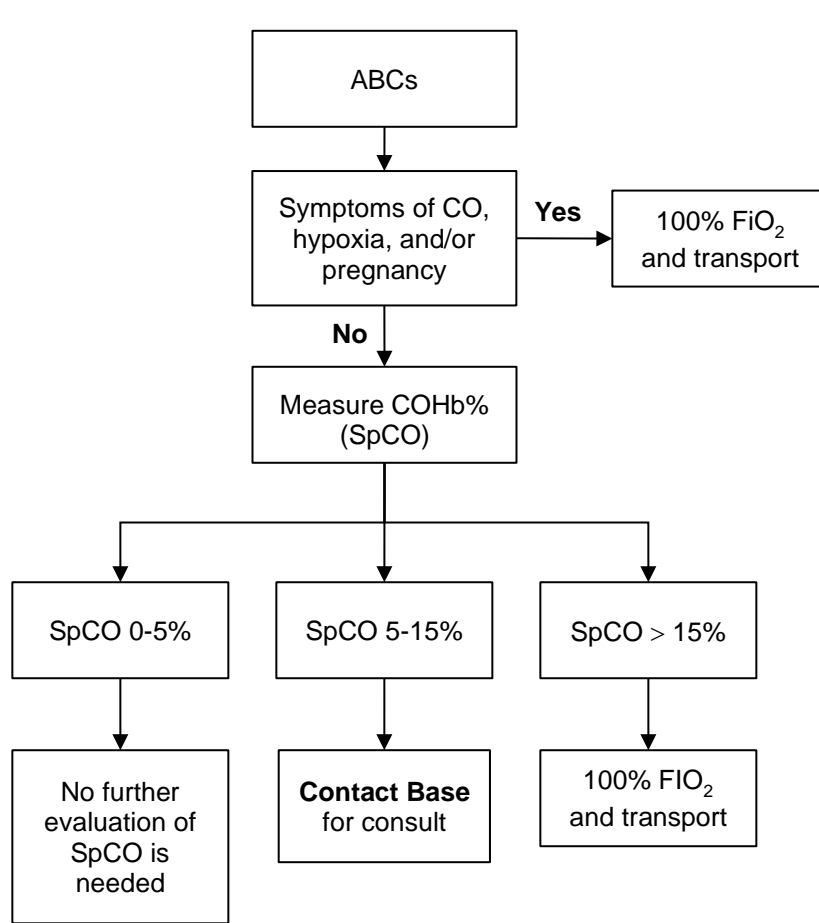
### Pediatric Patients:

- 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

## 4110 SUSPECTED CARBON MONOXIDE EXPOSURE



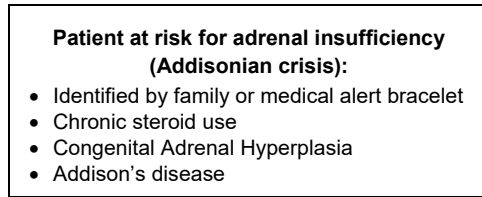
EMT	AEMT
EMT-I	Paramedic

### General Guidelines:

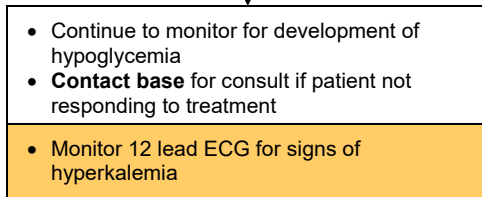
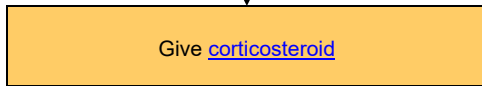
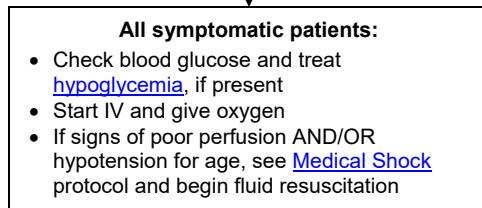
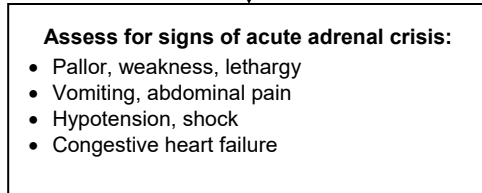
- *Signs and Symptoms of CO exposure include:*  
Headache, dizziness, coma, altered mentation, seizures, visual changes, chest pain, tachycardia, arrhythmias, dyspnea, N/V, “flu-like illness”
- The absence or low readings of COHb is not a reliable predictor of toxicity of other fire byproducts
- In smoke 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.
- People who smoke may have SpCO of up to 10% baseline

COHb	Severity	Signs and Symptoms
5-20%	Mild	Headache, nausea, vomiting, dizziness, blurred vision
21-40%	Moderate	Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness
41-59%	Severe	Dysrhythmias, hypotension, cardiac ischemia, palpitations, respiratory arrest, pulmonary edema, seizures, coma, cardiac arrest
>60%	Fatal	Death

## 4120 ADRENAL INSUFFICIENCY PROTOCOL

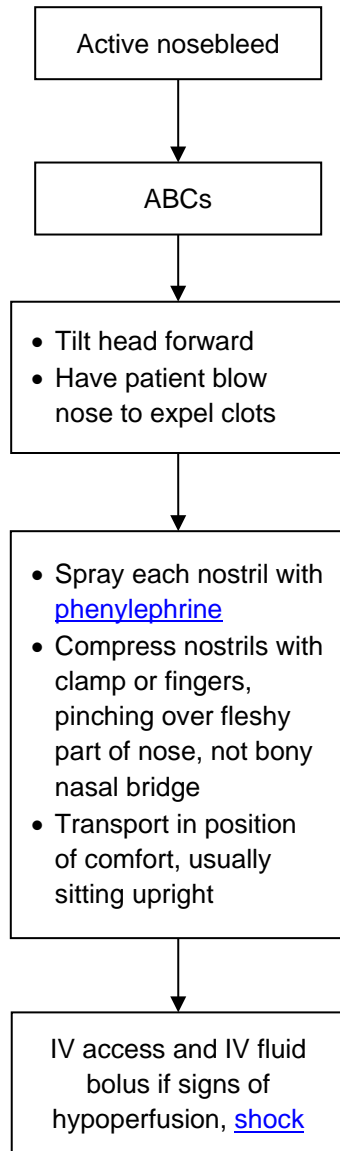


EMT	AEMT
EMT-I	Paramedic



- 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

## 4130 EPISTAXIS MANAGEMENT



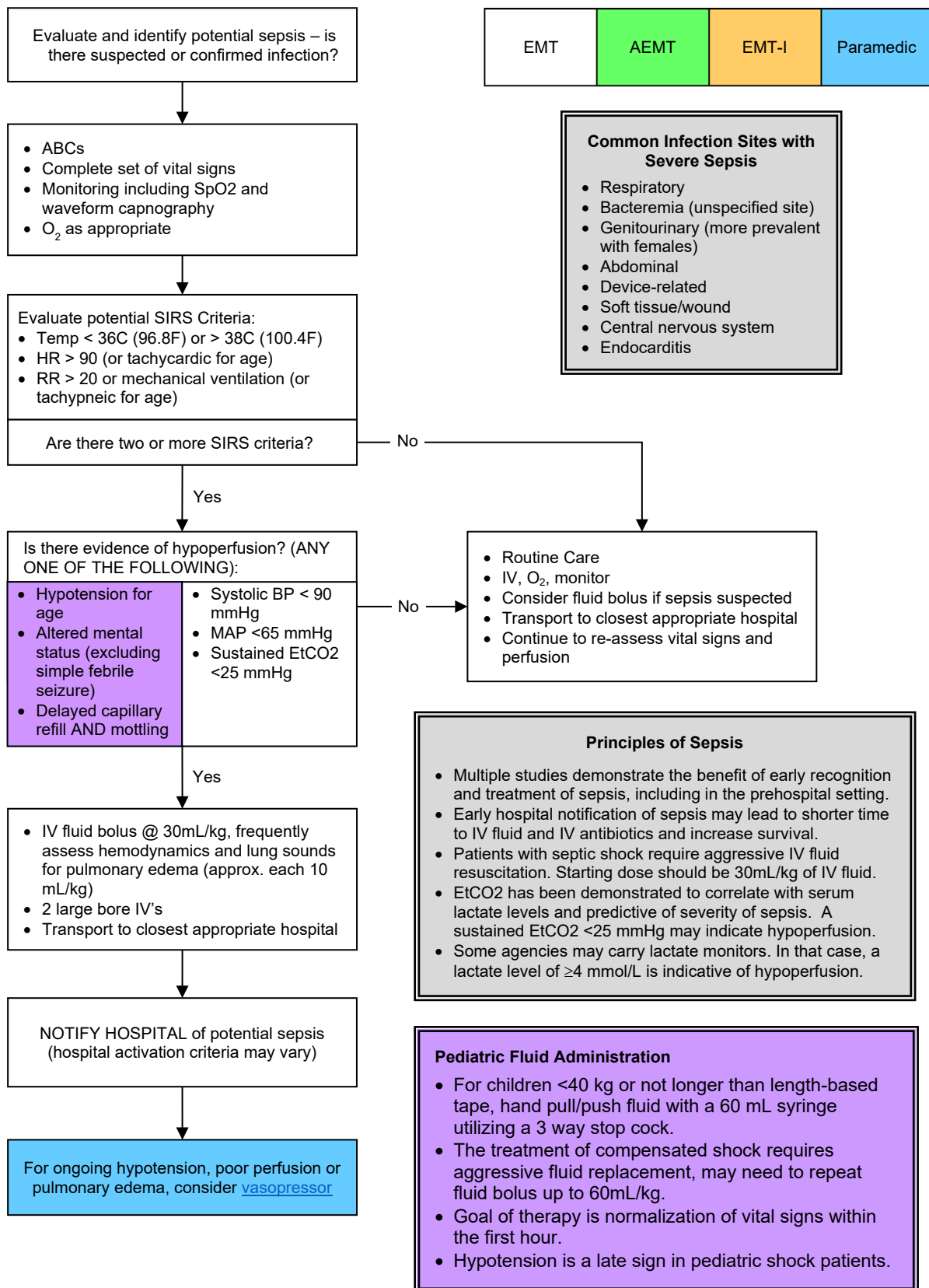
EMT	AEMT	EMT-I	Paramedic
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### General Guidelines:

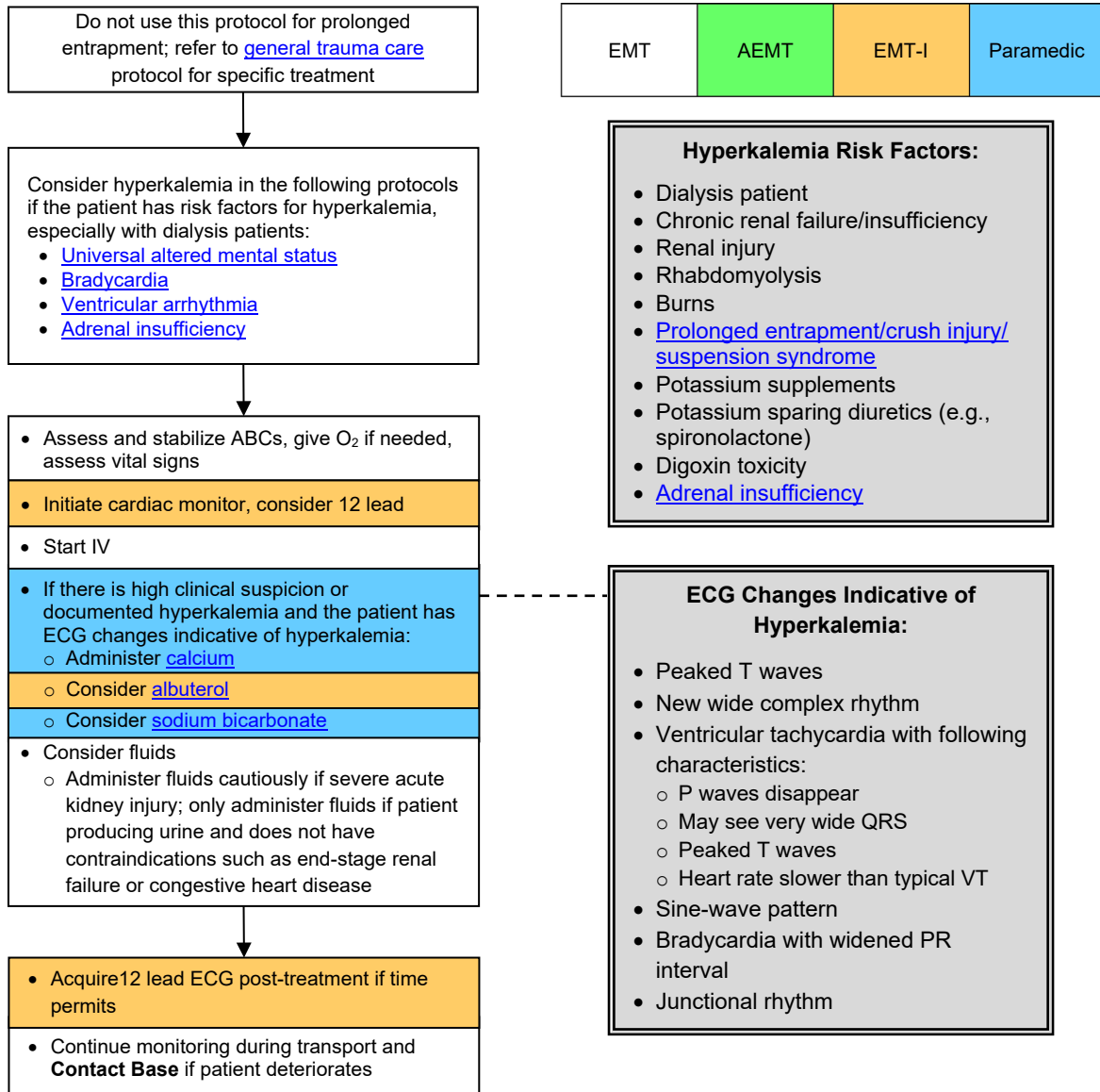
- Most nose bleeding is from an anterior source and may be easily controlled, however, may require up to 30 minutes of constant pressure.
- Avoid [phenylephrine](#) in patients with known CAD.
- Anticoagulant/antiplatelet therapies, e.g., aspirin, clopidogrel (Plavix), warfarin (Coumadin), will make epistaxis much harder to control. Note if your patient is taking these, or other, anticoagulant/antiplatelet 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.



## 4140 SEPSIS PROTOCOL



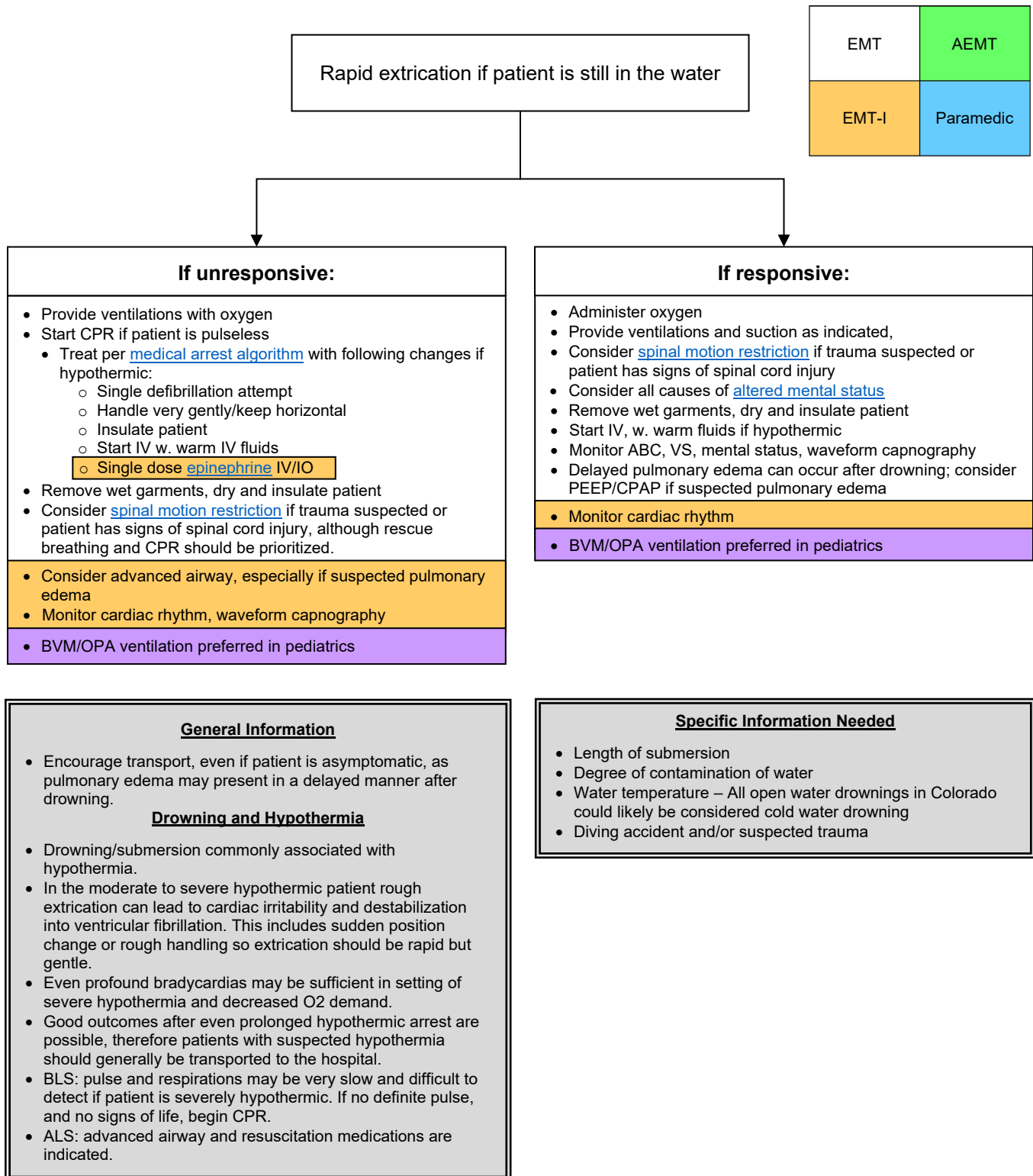
## 4150 HYPERKALEMIA



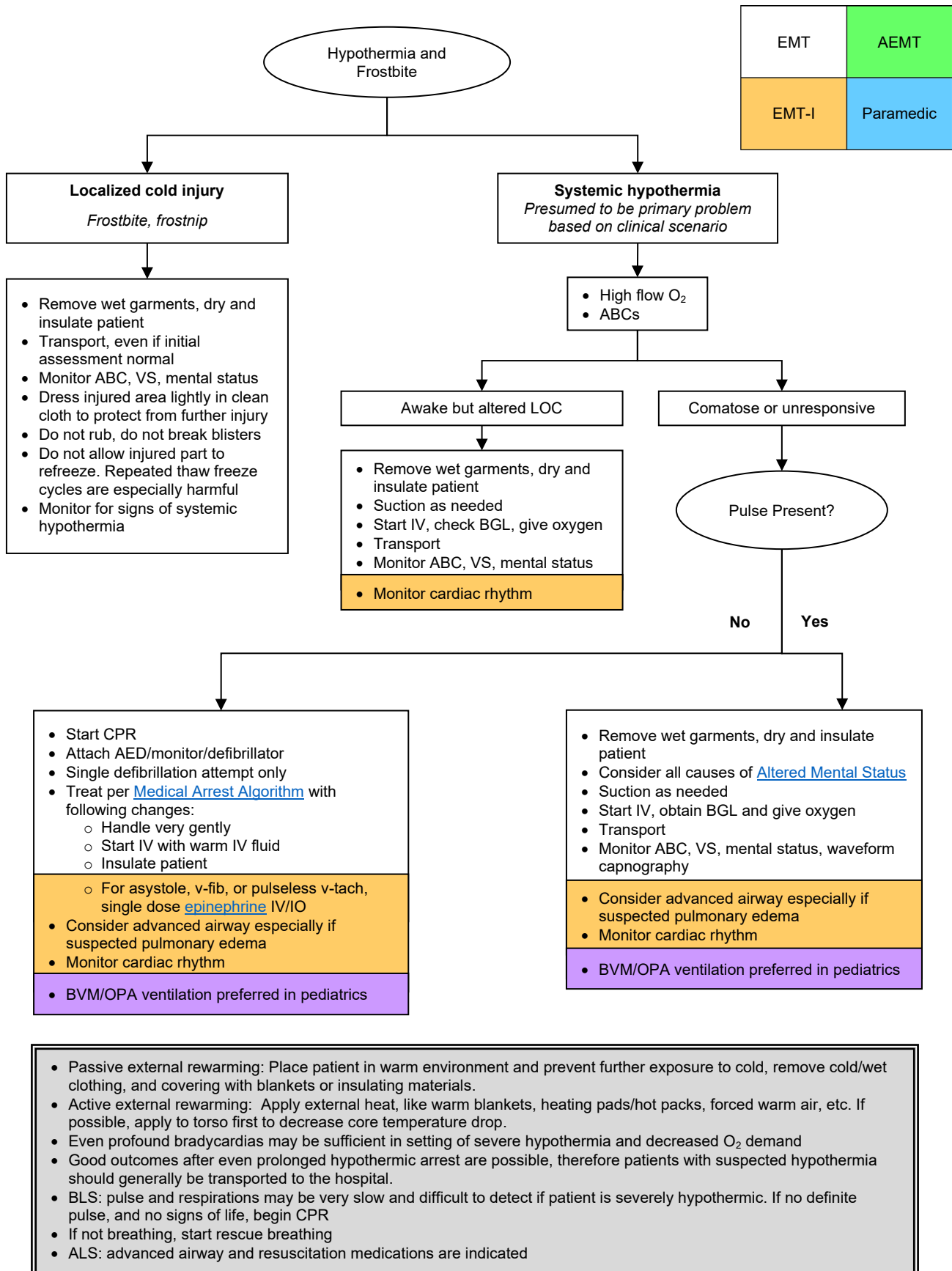
### General Information:

- Hyperkalemia can be present without ECG changes which may not require prehospital treatment in the stable patient.
- ECG changes may not directly correspond to serum potassium levels.
- Calcium is the only medication that will stabilize the cardiac membrane and is the backbone of treatment in prehospital care.
- Calcium must be given in separate line from IV sodium bicarbonate to prevent precipitation/formation of calcium carbonate.
- In setting of digoxin toxicity, calcium administration may worsen cardiovascular function and is contraindicated.

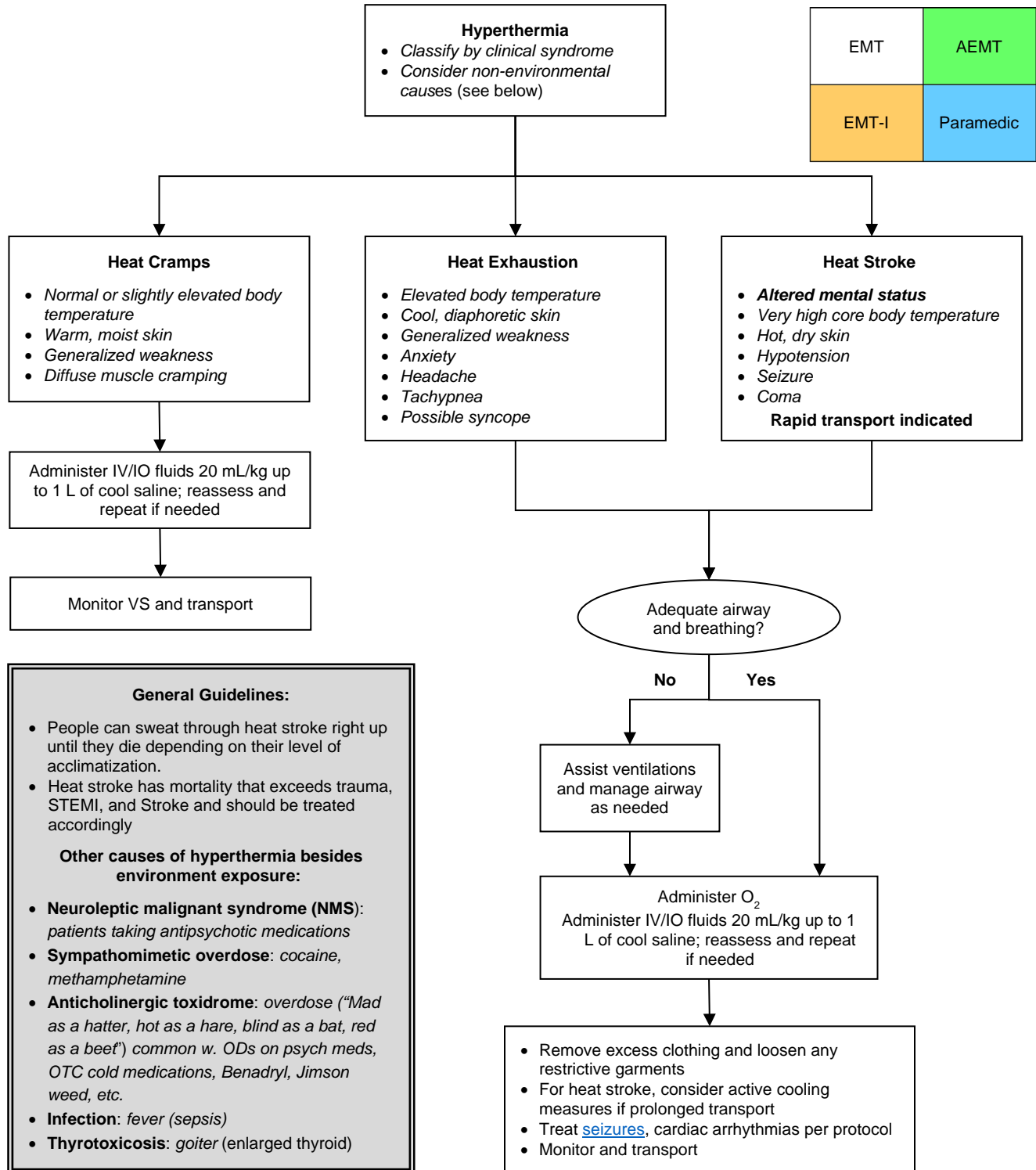
## 5000 DROWNING



## 5010 HYPOTHERMIA



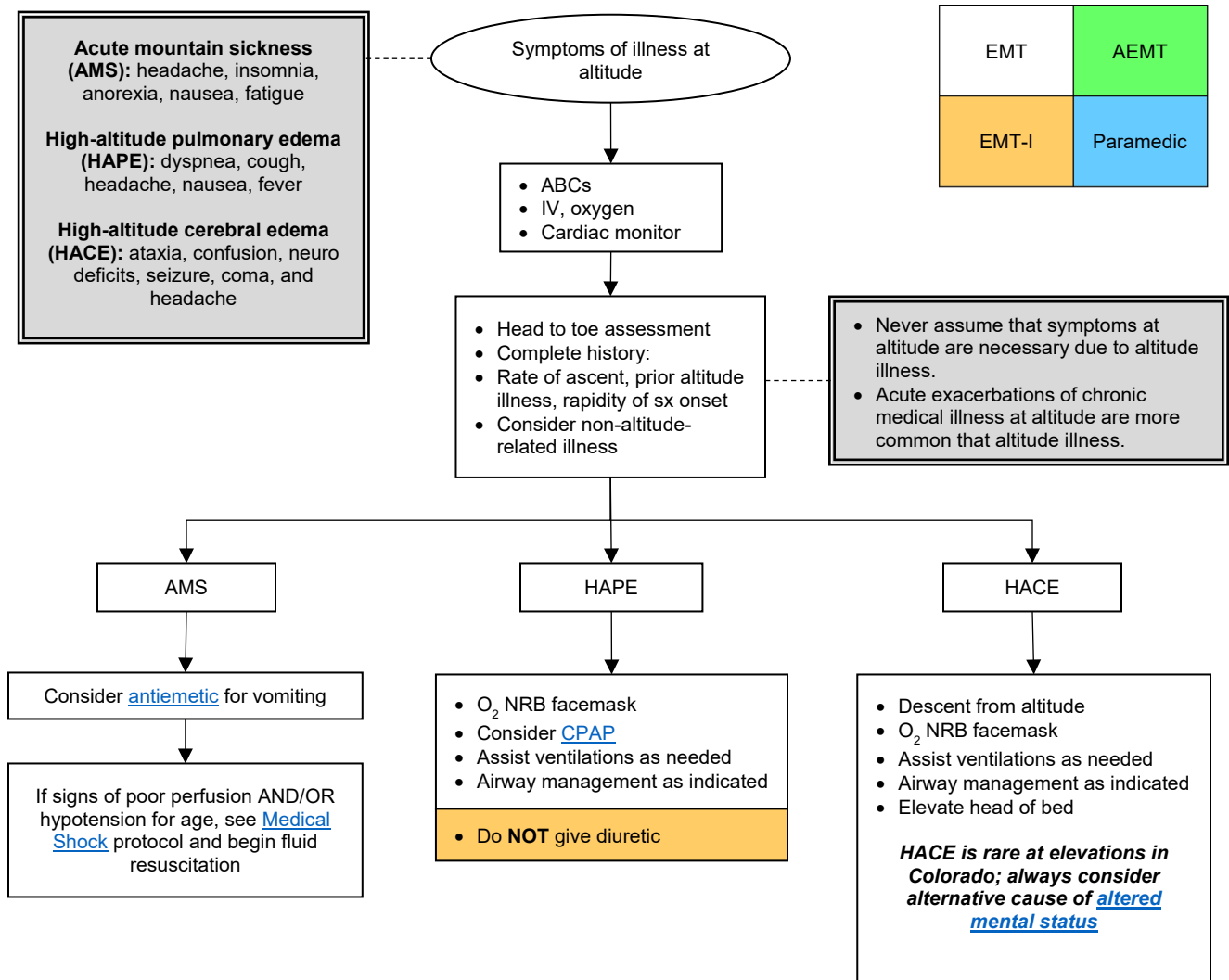
## 5020 HYPERTHERMIA



### Active Cooling Techniques

- If core temperature is greater than 104°F (40°C) or if altered mental status is present, consider starting active cooling.
- Ice bath immersion provides the most rapid cooling mechanism. However, if not available, consider utilizing tarp-assisted cooling with oscillation, rotating ice water-soaked towels or sheets, or continually misting exposed skin with water while fanning the victim. Truncal ice packs may be used but are less effective than evaporation.
- Do not apply wet clothing. This may trap heat and prevent evaporative cooling.

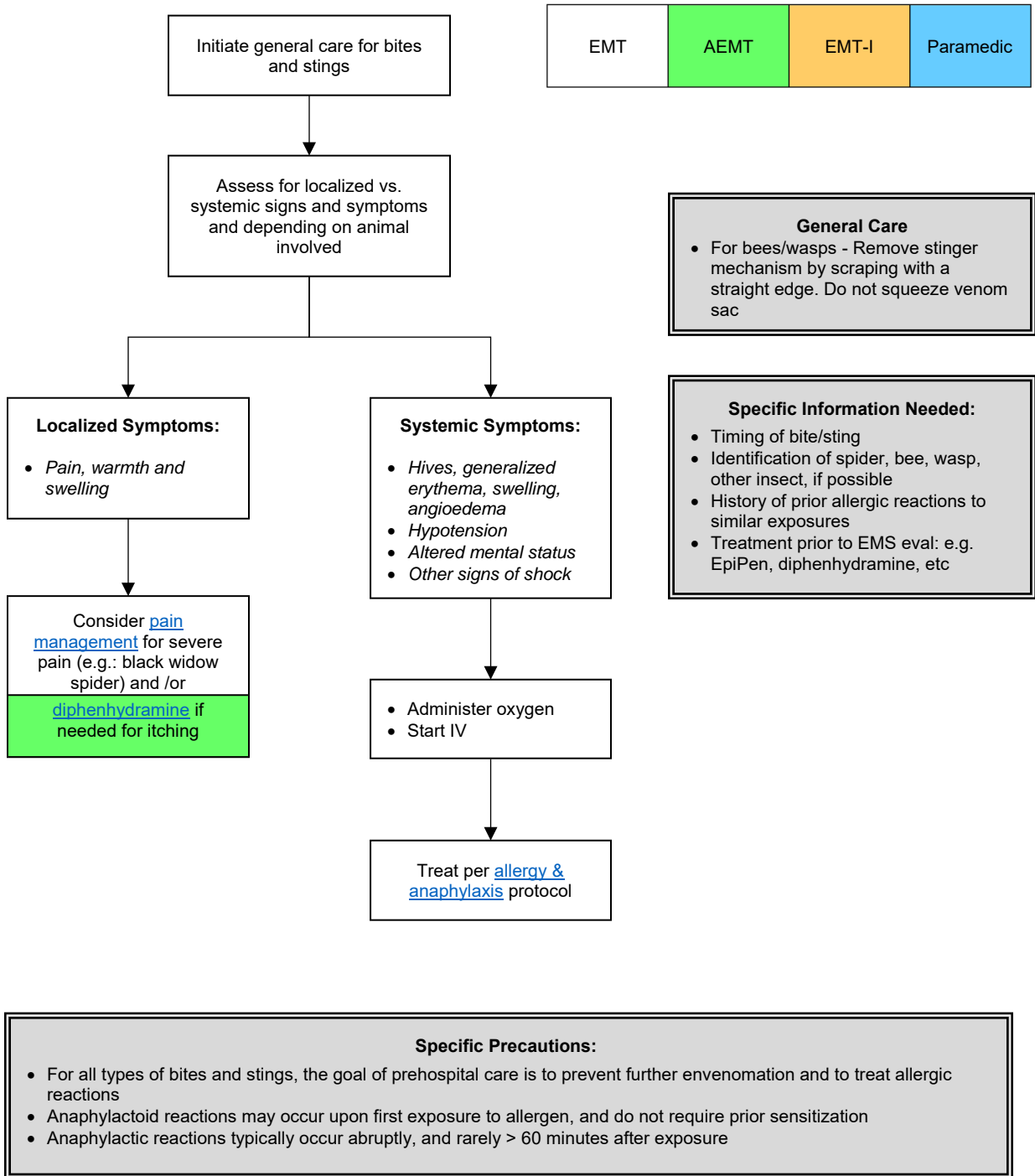
## 5030 HIGH ALTITUDE ILLNESS



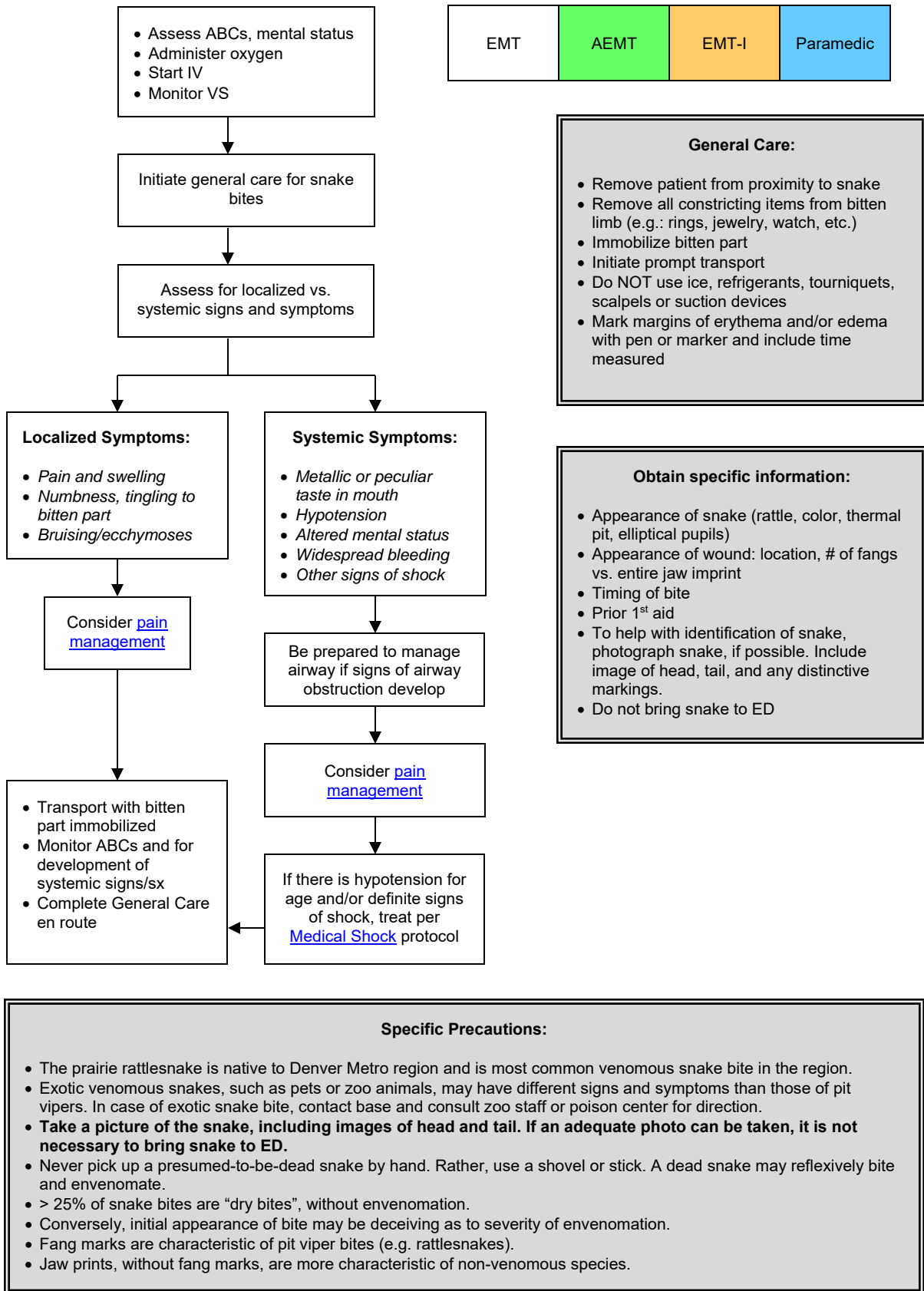
### Special Notes:

- 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



## 5050 SNAKE BITE PROTOCOL





## 6000 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

### 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.

EMT	AEMT
EMT-I	Paramedic

### Specific Information Needed

- A. Obtain history of current event from patient, bystanders, family and 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
    - i. Disoriented to person, place, and/or time
    - ii. Disorganized thinking, rambling speech, hallucinations, responding to internal stimuli
  - 2. Unaware or unable to respond to environment/ surroundings
    - i. 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
- 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 sugar, vital signs, and assess for signs of toxidrome
- J. If altered mental status, 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.

## 6000 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

- 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 Denver Metropolitan EMS 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

### Principles:

While treating patients experiencing agitation, the safety of EMS providers should be maximized while honoring patient dignity and treating the patient's medical condition in a professional manner.

- **EMS Safety.** The safety of field personnel is paramount. Although EMS personnel have a duty to treat patients experiencing emergency medical conditions, they must not take risks that are threats to safety. Risks to personnel or scene safety should be commensurate to the benefit a patient may receive.
- **Patient safety.** Patient safety and the aid they receive from our care is the reason EMS exists. All treatments should be designed to reduce potential harm and maximize potential benefit.
- **Dignity.** All patients and providers deserve dignity and respect. It is essential that EMS professionals recognize our own biases. We owe it to our patients, especially those in disenfranchised groups, to provide equitable care. We strive to maximize the dignity of both patients and providers by practicing with clinical expertise and professionalism.

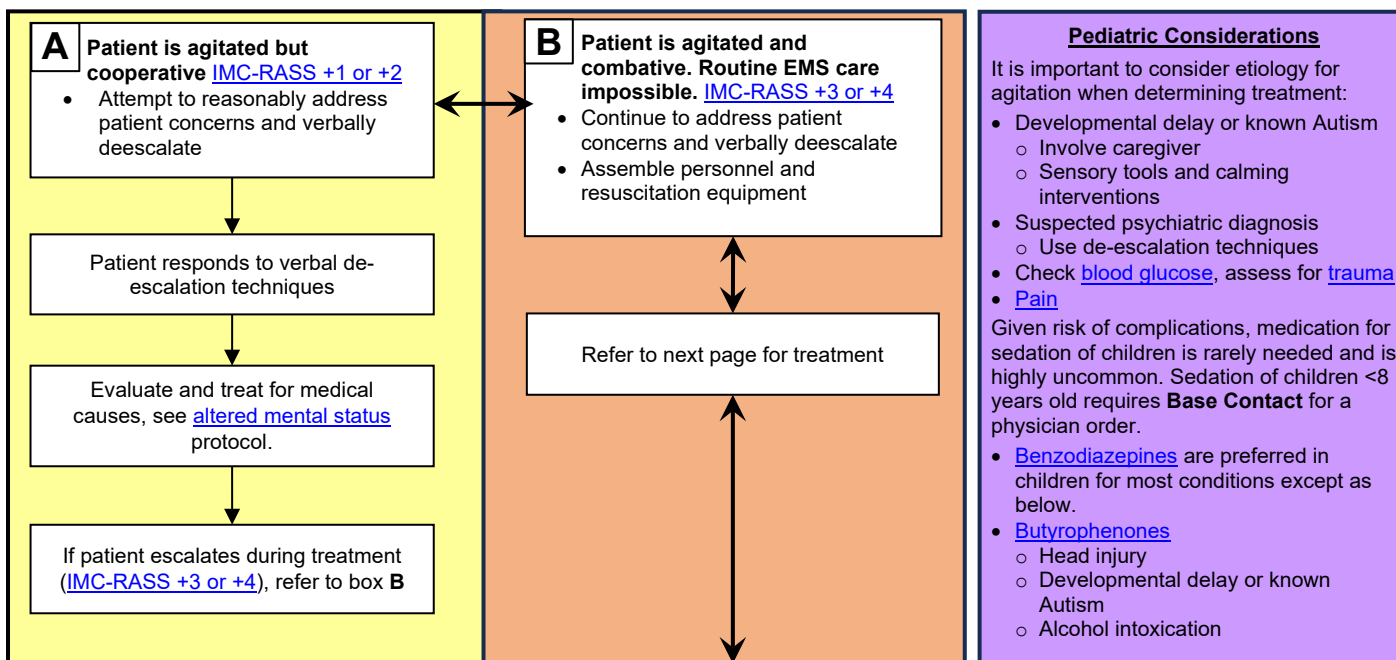
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### Initial Assessment:

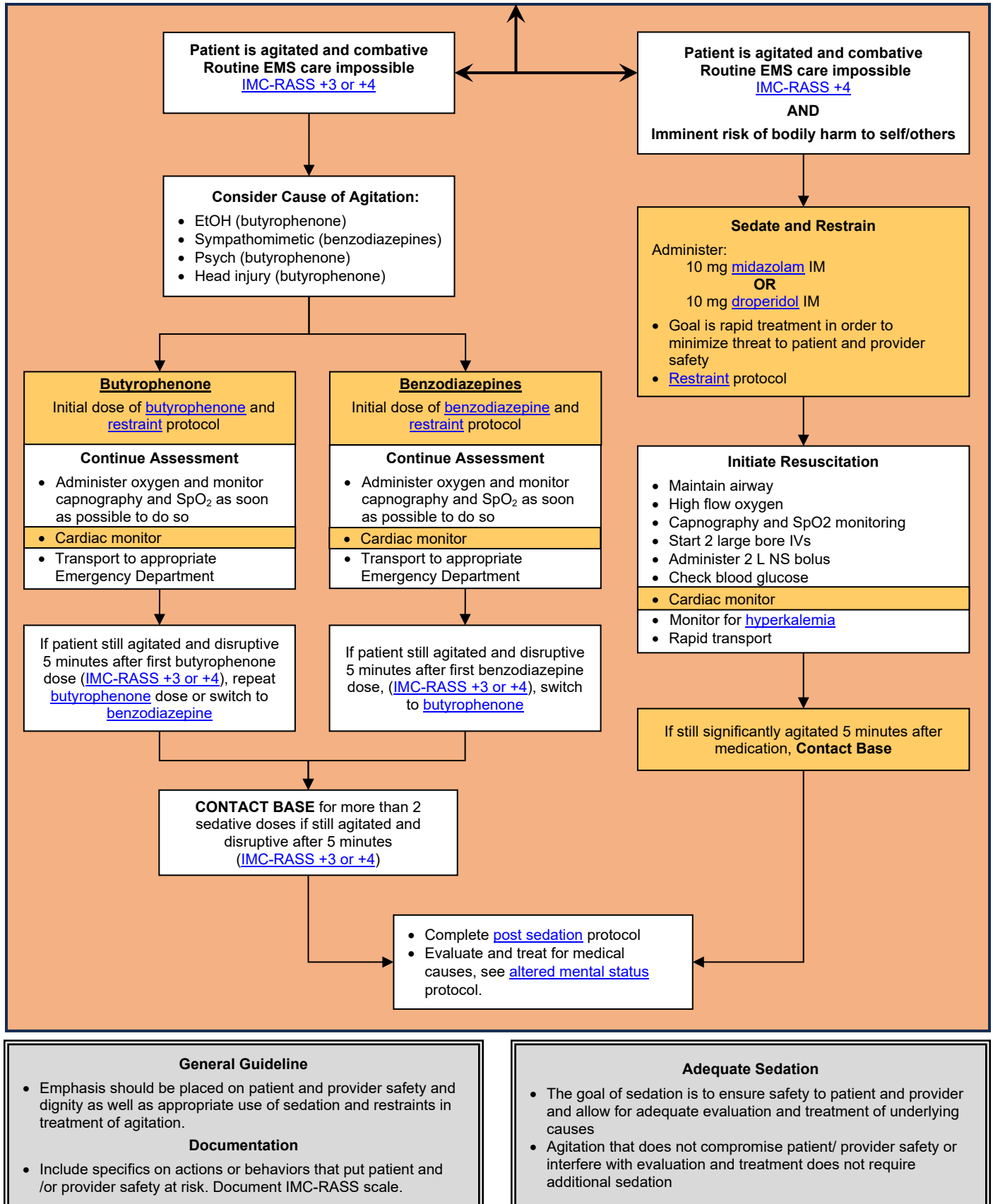
The most critical initial step in managing agitation is the determination of an emergency medical condition.

- Patients assessed as having non-medical agitation do not require emergency medical intervention. EMS should never intervene solely for the support of another 911 function.
- EMS should only intervene in the medical management of agitation when the patient is assessed and suspected to have an emergency medical condition.
- Prior to any physical restraint or medication administration, all patients must first be assessed and suspected to have an emergent medical condition. Depending on the acuity of the situation, some initial assessments must be made in seconds while others may require more time.
- In some situations, it may be appropriate for EMS to stand by in case a person develops a medical emergency.
- Some patients with emergency medical conditions such as trauma or dyspnea may also exhibit agitation. That agitation should only be treated if the paramedic assesses that the patient lacks decision making capacity to care for their illness or injury.
- As soon as safely possible, EMS providers should assess and treat for underlying conditions that may present as agitation.
- EMS safety is paramount. In some uncommon circumstances it may be necessary to separate from an agitated patient in order to protect the patient and personnel on scene.
- When we have tension between the duty to treat and the safety of field personnel, we should apply the principles of EMS safety, patient safety and dignity.

### Treatment: (algorithm color relates to IMC-RASS score)



## 6010 AGITATED/COMBATIVE PATIENT PROTOCOL



# 6010 AGITATED/COMBATIVE PATIENT PROTOCOL

## Improved Montgomery County Richmond Agitation Sedation Scale (IMC-RASS)

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

## 6015 POST SEDATION RESUSCITATION AND MONITORING

### Post Sedation Resuscitation and Monitoring

- Maintain airway
- Administer oxygen
- Monitor capnography: Maintain respiratory rate >8 breaths per minute
- Monitor SpO<sub>2</sub>: 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

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### 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.

## 6020 TRANSPORT OF THE HANDCUFFED PATIENT

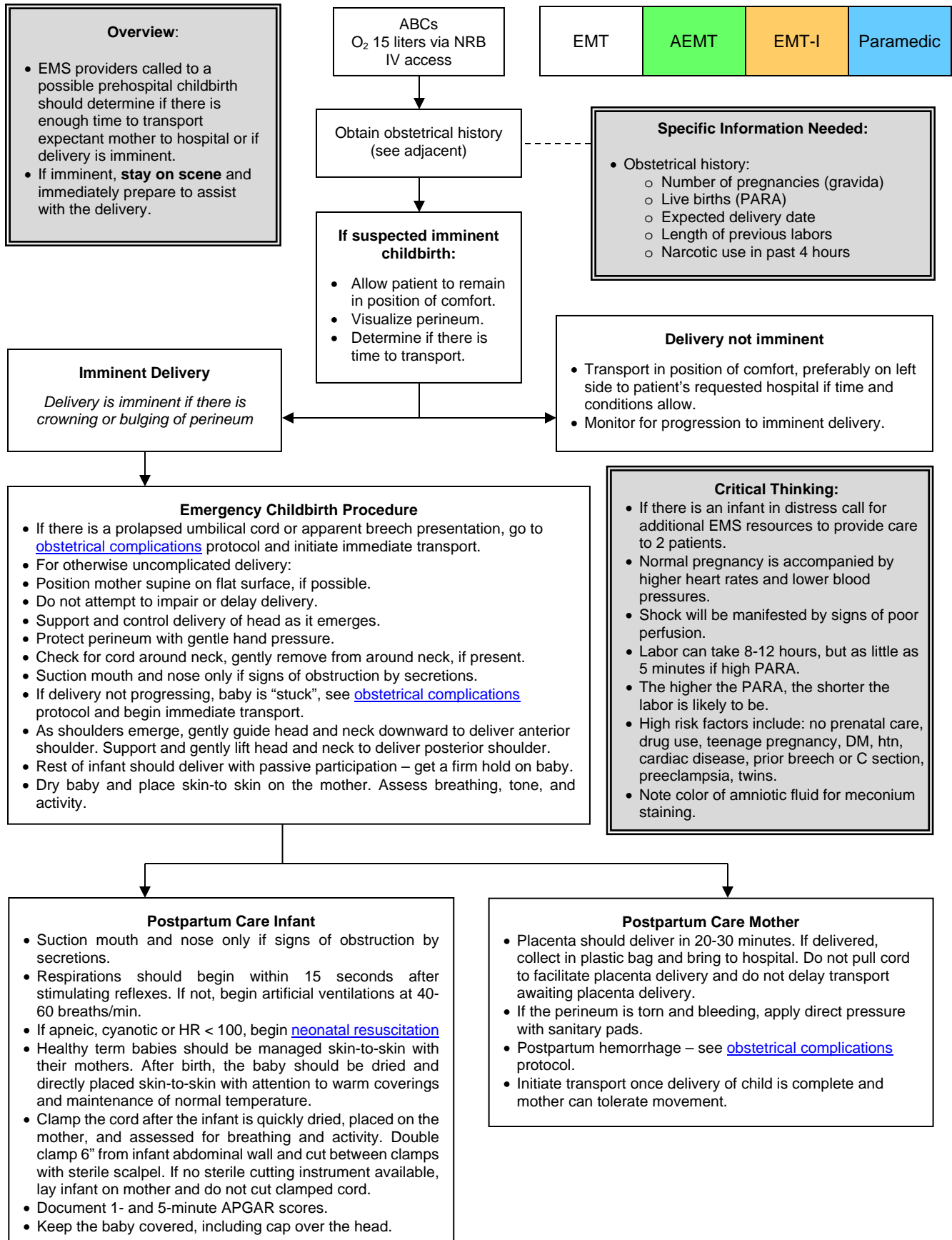
### **Purpose:**

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





## 7010 OBSTETRICAL COMPLICATIONS

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### 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 definite care at hospital

### Prolapsed Umbilical Cord

- Discourage pushing by mother
- Position mother in Trendelenburg 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

### 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

### Complications of Late Pregnancy

#### 3<sup>rd</sup> Trimester Bleeding (6-8 months)

- High flow O<sub>2</sub> 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 O<sub>2</sub> via NRB, IV access
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort

- Treat seizures with [magnesium sulfate](#)

- See [seizure protocol](#)

### 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

## 8000 GENERAL TRAUMA CARE

M

- General impression
- The number one priority is rapid treatment and transport to definitive care
- Trauma expose the patient
- Consider need for additional resources

### Look for massive hemorrhage and stop:

- [Tourniquet](#) extremities
- Wound pack junctional wounds
- Seal truncal injuries

A  
R

### Address airway and support breathing:

- Emergent BLS airway management
- Assist ventilations as indicated
- [Needle decompression](#) for tension pneumothorax
- Semi-occlusive dressing for open chest wound
- Provide high flow oxygen

C

### Assess circulation:

- If pelvis unstable, place binder.
- During transport, establish vascular access and treat hypotension per [traumatic shock](#) protocol

H

### Hypothermia / Head Injury:

- Prevent and treat hypothermia
- Brief neuro assessment
- Minimize secondary injury, refer to [head injury](#) protocol.

- Consider [spinal motion restriction](#)
- Assess vital signs
- Consider advanced airway management

- Ongoing assessment, including full head-to-toe
- Complete other care / interventions according to appropriate trauma protocol
  - [Head](#)
  - [Face/Neck](#)
  - [Spinal](#)
  - [Chest](#)
  - [Abdominal/Pelvic](#)
  - [Extremity](#)
- Re-assess for changes in patient condition and treat accordingly
- Prepare patient for transfer of care

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### Scene Considerations:

- Identify provider safety concerns
- Triage the scene
  - Identify number of patients
  - Request additional resources as needed
  - Determine ingress / egress
  - Set-up ambulance

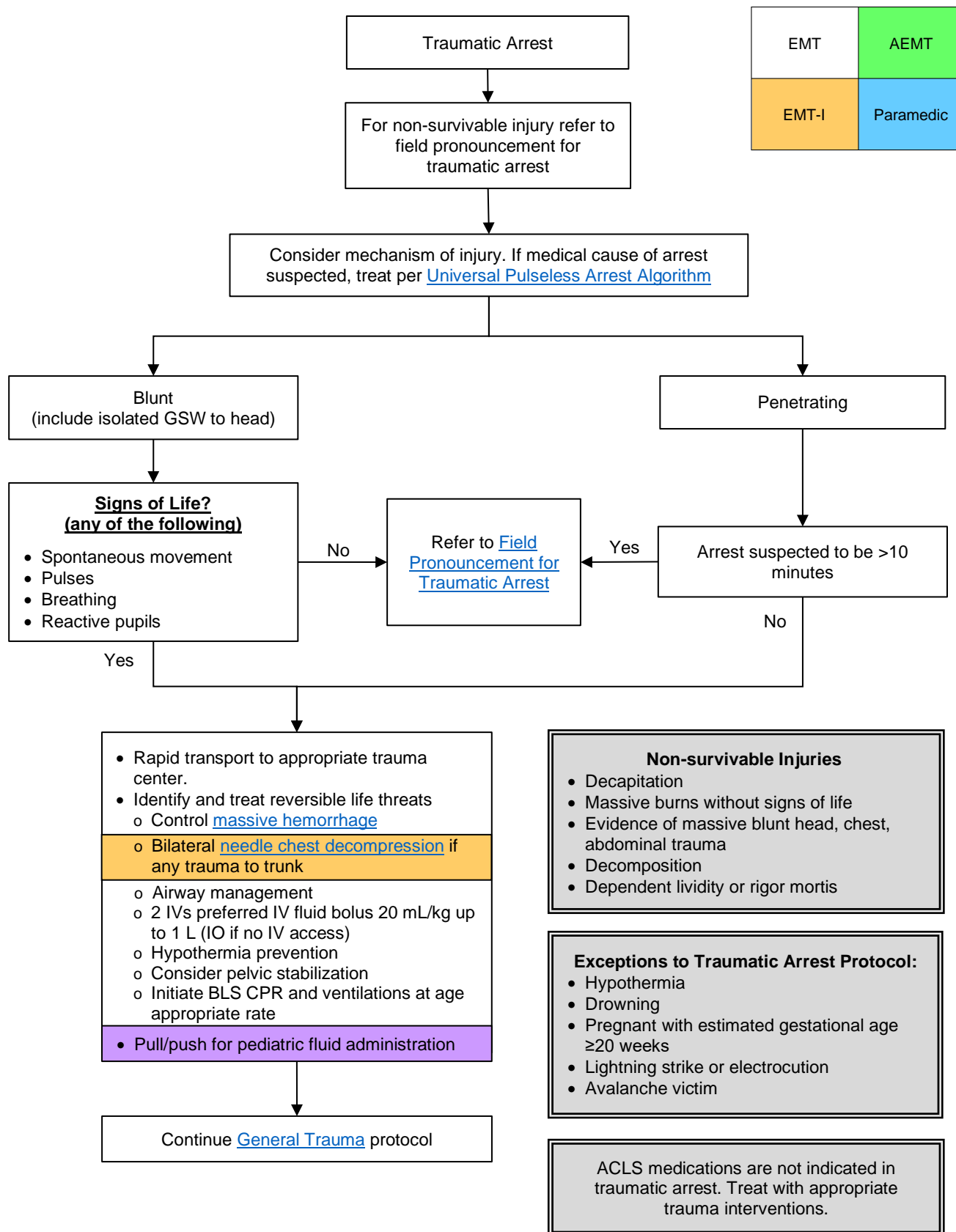
### Airway Management Goals:

- Manage with the simplest method that provides adequate ventilation and oxygenation
- Intubation should be done en route unless there is no other option
- Nasal intubation is relative contraindication with suspicion of head injury
- BVM/OPA ventilation preferred in pediatrics

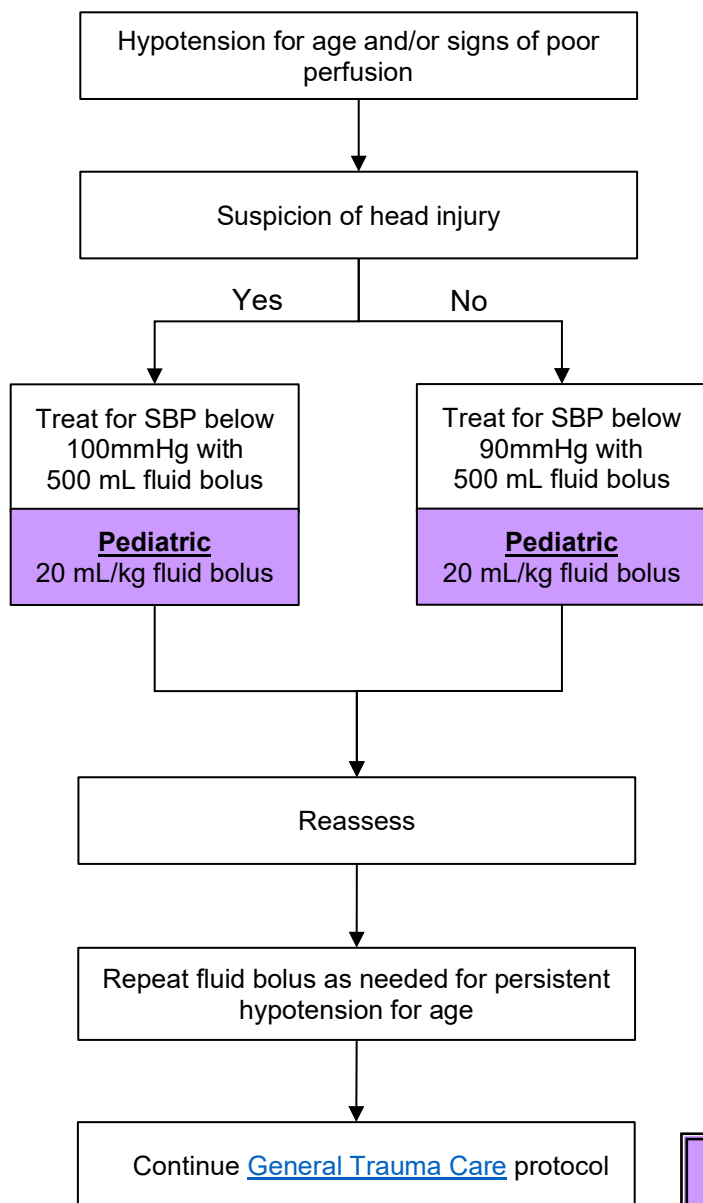
### Prolonged Entrapment:

- 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 arrhythmias. 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](#)

## 8010 TRAUMATIC ARREST



## 8020 TRAUMATIC SHOCK



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### Consider Non-Hypovolemic Causes of Shock

- Other causes of traumatic shock may include:
  - Tension Pneumothorax
  - Pericardial Tamponade
  - Neurogenic
- Treat other causes as indicated (e.g. needle decompression)
- Rapid treatment and transport to a trauma facility remains priority in all cases of traumatic shock

### Hypotension for Age

Age	Blood Pressure
<1 year	<70 mmHg
1-10 years	<70 + (2 x age in years)
>10 years	<90 mmHg
≥65 years	<110 mmHg

### Tachycardia for Age

Age	Heart Rate
<1 year	>160 bpm
1-2 years	>150 bpm
2-5 years	>140 bpm
5-12 years	>120 bpm
>12 years	>100 bpm

### Pediatric Minimum Blood Pressure with TBI

Age	Minimum SBP (mmHg)
0-23 months	75
2-5 years	80
6-8 years	85
9-12 years	90

### 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

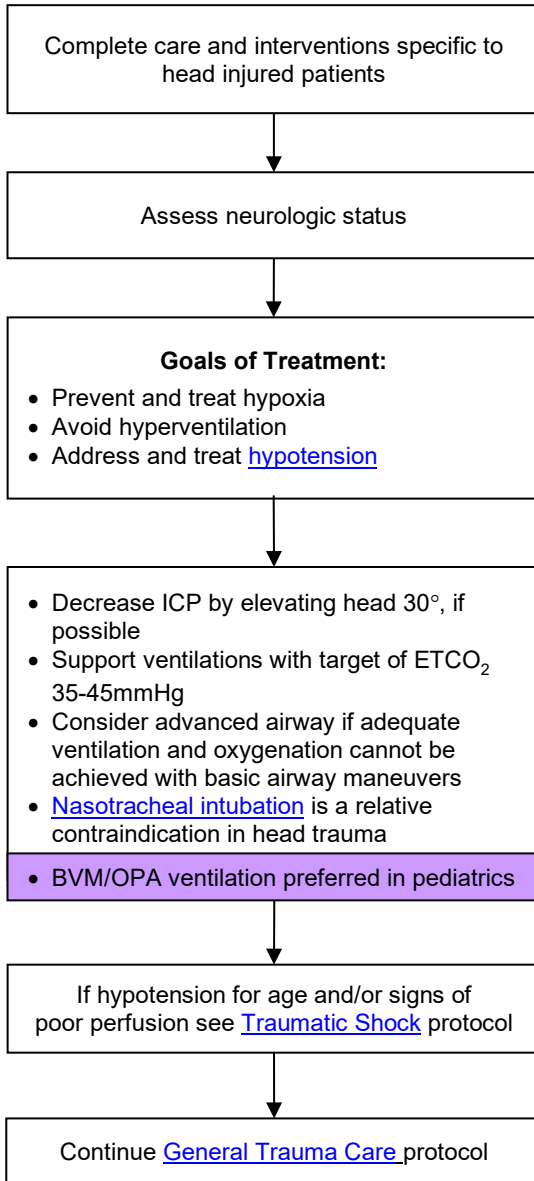
#### Signs of Compensated Shock

- 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

## 8030 HEAD TRAUMA

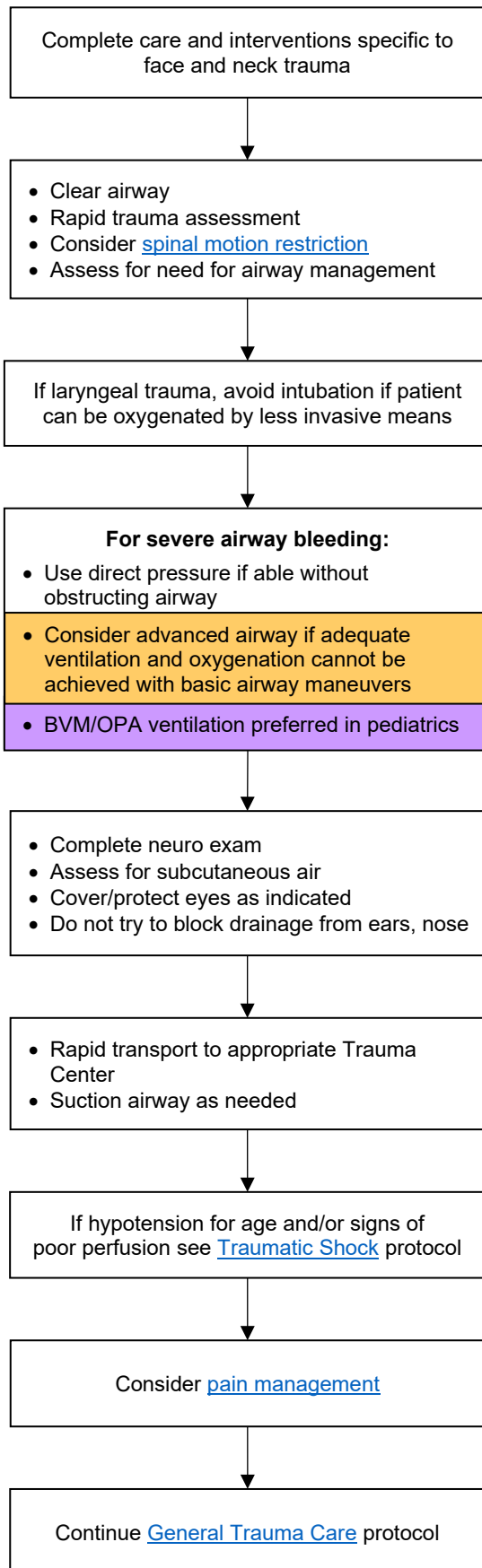


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### Overview of Treatment

- With any suspicion of traumatic brain injury (mechanism, GCS, exam) aggressive treatment to prevent hypoxia, hyperventilation, and hypotension is recommended.
- High flow oxygen on all TBI patients
- Maintain saturation >90%.
- Do not hyperventilate; maintain end tidal CO<sub>2</sub> 35-45 mmHg
- Maintain systolic BP >100 mmHg. Treat early per [traumatic shock](#) protocol.

## 8040 FACE AND NECK TRAUMA



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### Facial Injury Considerations:

- Nasotracheal intubation is a relative contraindication in suspected head trauma or grossly unstable mid-face trauma
- Orbital area fractures should be of high concern for serious ocular injury and sequela
- Save avulsed teeth in moist gauze, if possible
- Be attentive to airway and suctioning, as bleeding, avulsed teeth, or other tissue can become an airway obstruction, especially with supine positioning

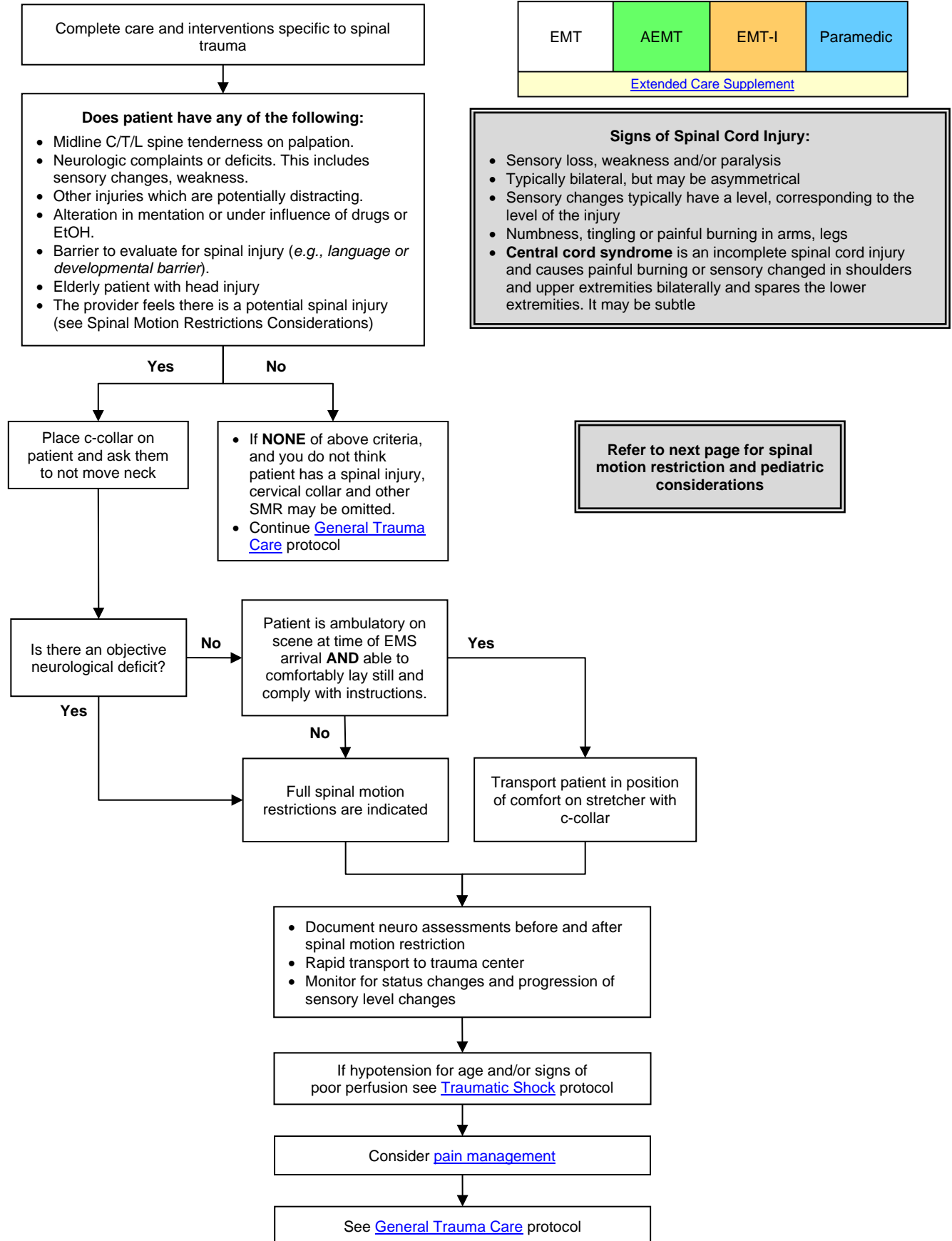
### Eye Injury Considerations:

- Cover and protect eyes as indicated by injury type; do not apply pressure to eyes
- Orbital area fractures should be of high concern as they can result in ocular muscle entrapment and ocular compartment syndrome

### Neck Injury Considerations:

- Spinal motion restriction is not routinely indicated for penetrating neck injury, but should be placed in the presence of neurologic deficit
- Laryngeal trauma should be suspected with the following:
  - Voice changes and stridor
  - Respiratory distress
  - External signs of bruising, swelling, or bleeding

## 8050 SPINAL TRAUMA



## 8050 SPINAL TRAUMA

### Spinal Motion Restriction Considerations

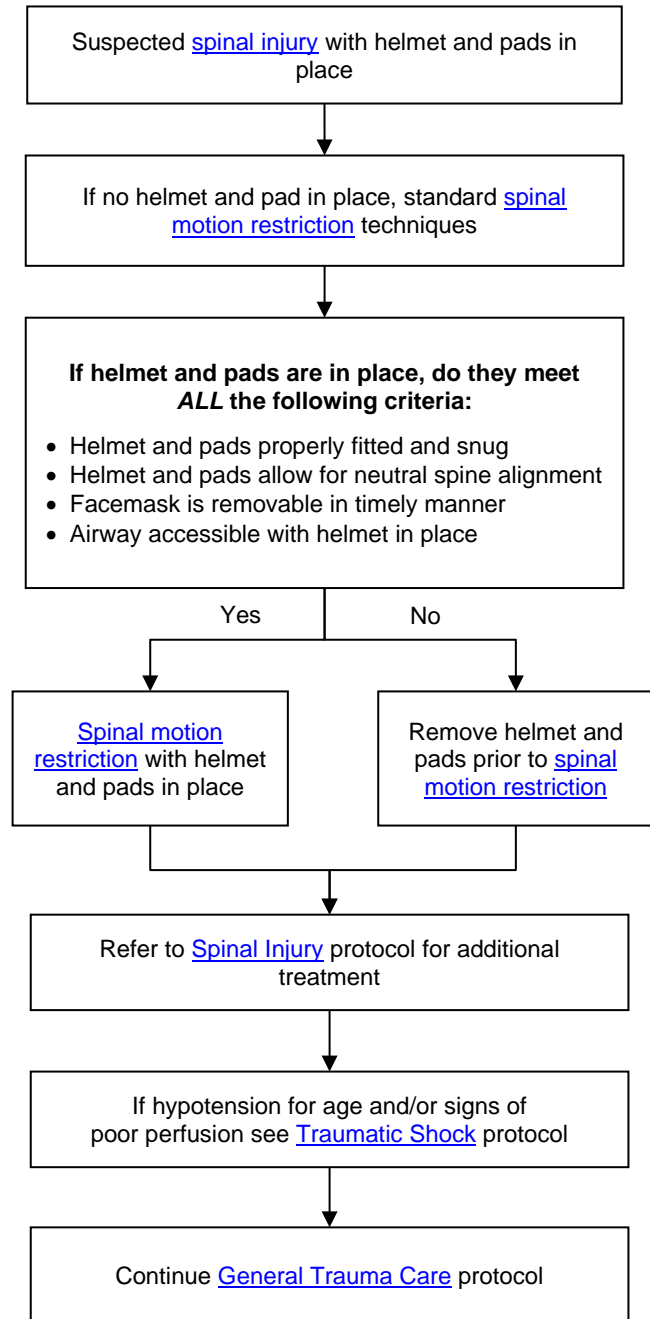
- If patient in athletic safety equipment, refer to [Suspected Spinal Injury with Athletic Equipment](#) protocol
- If for any reason you suspect the patient has a spinal injury, then take measures to prevent inadvertent movement of the spine utilizing spinal motion restriction.
- Patients over the age of 65 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.
- Consider spinal motion restriction for patients with high-risk mechanism.
- 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
  - Torso injury or pelvic instability
  - Numbness and weakness
  - High impact diving injury
- 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.



## 8055 SPINAL TRAUMA WITH ATHLETIC EQUIPMENT

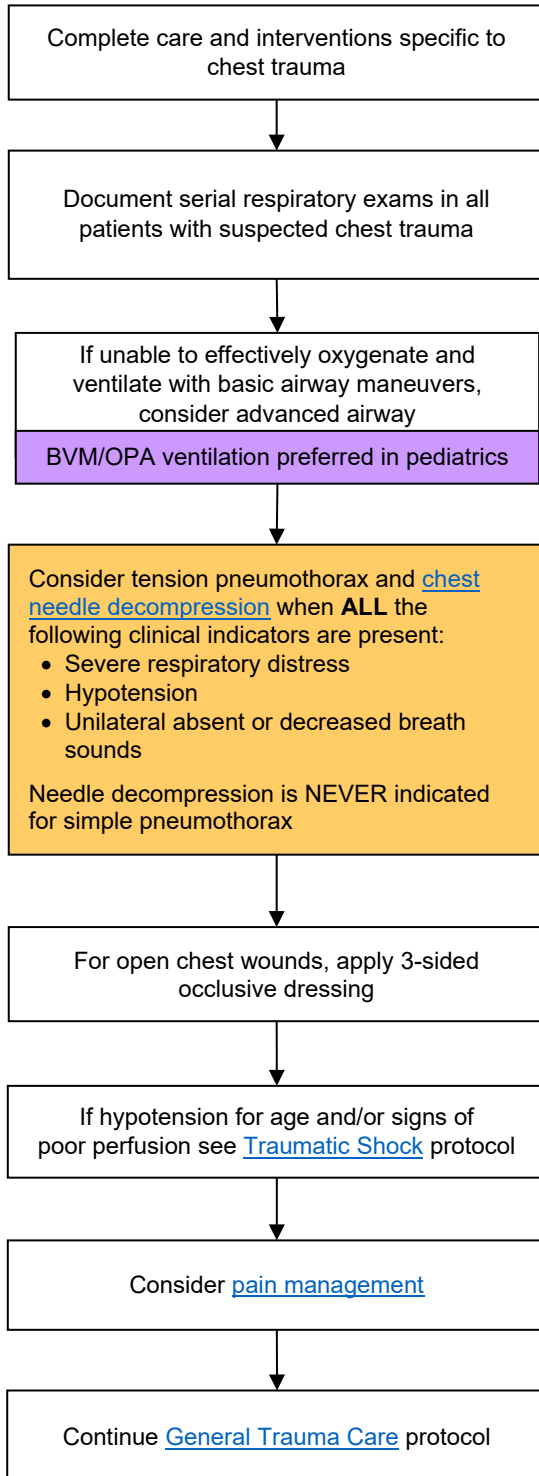


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### Overview

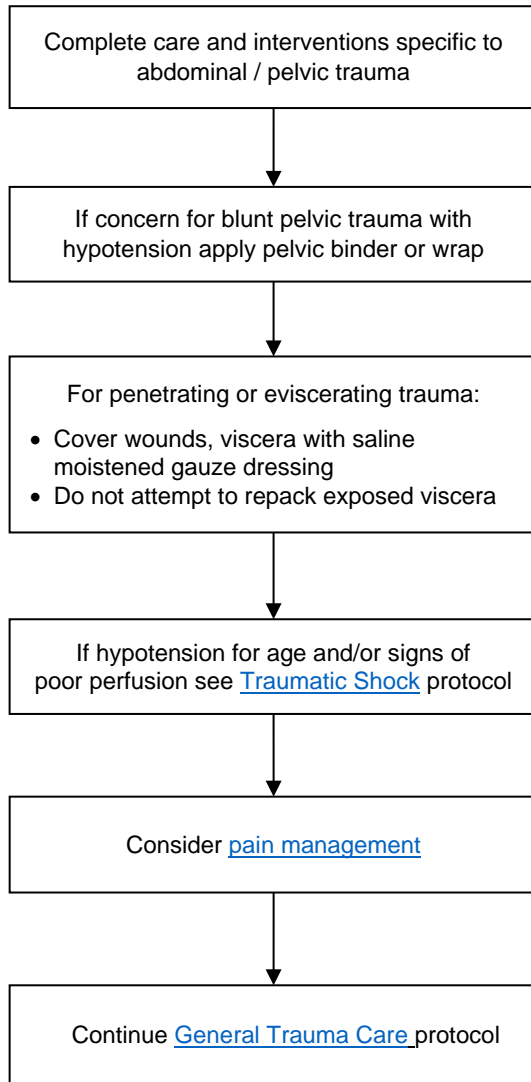
- Do not remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life-threatening injuries.
- The helmet and pads should be considered one unit. Therefore, if one is removed, then the other should be removed as well to assure neutral spine alignment.
- 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.

## 8060 CHEST TRAUMA



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## 8070 ABDOMINAL AND PELVIC TRAUMA



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### **Pediatric patients are more vulnerable to blunt abdominal injury due to:**

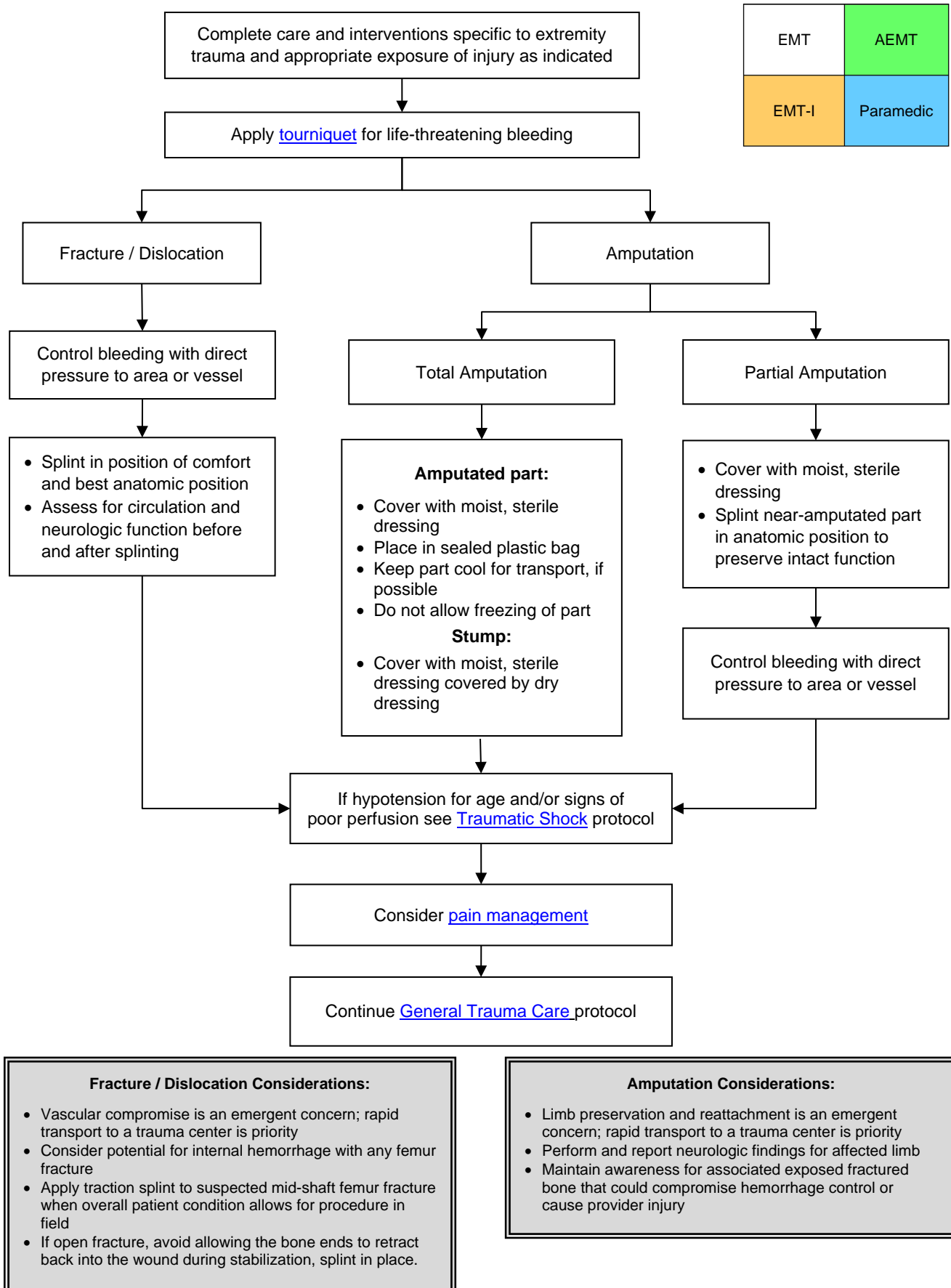
- Relatively compact torsos
- Larger viscera, especially liver and spleen, which extend below the costal margin
- Less overlying fat and weaker abdominal musculature

### **Pelvic Trauma Considerations:**

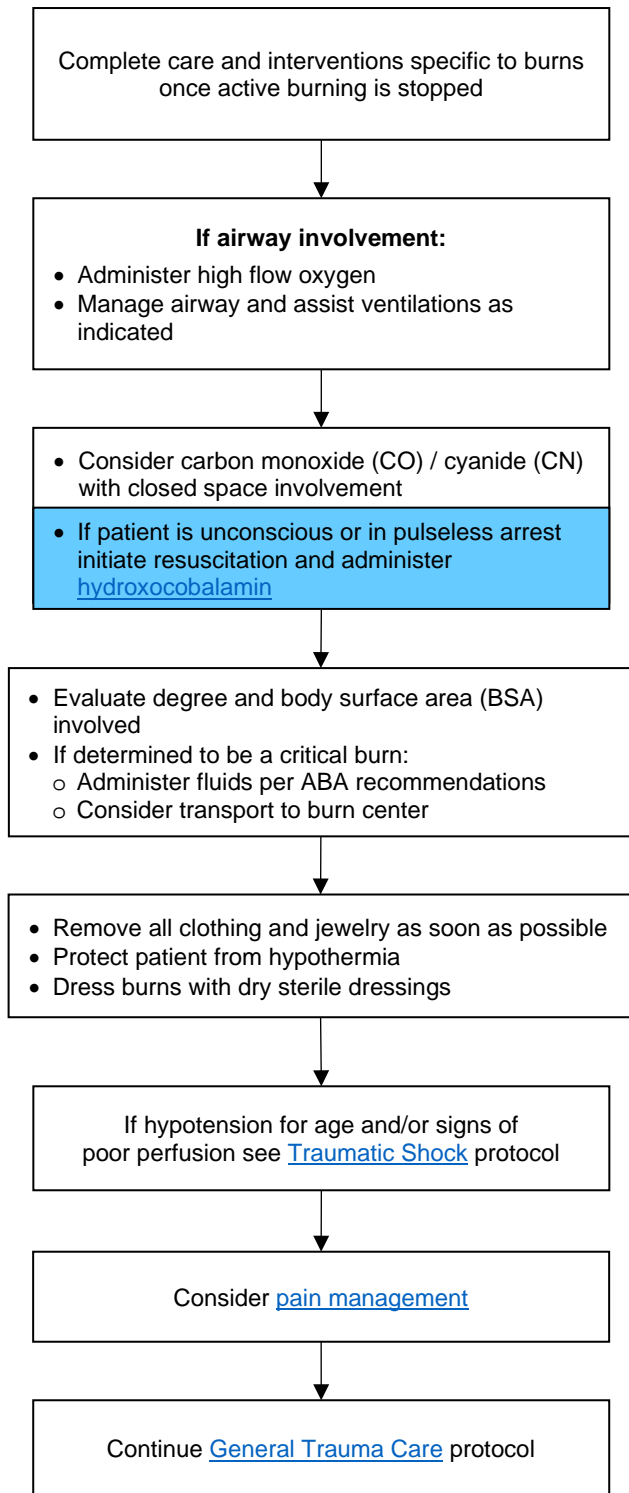
- Pelvic injuries from high-energy trauma can cause concomitant injuries, such as: hemorrhage, intra-abdominal injury, GI/GU injury, and neurologic injury
- Elderly patients may sustain significant pelvic injury from seemingly low-energy trauma
- Unstable pelvic injuries, such as open book fractures, can be associated with severe retroperitoneal hemorrhage
- Providers should have a low threshold to apply a pelvic binder or wrap in hemodynamically unstable blunt trauma patients
- Pelvic binders / wraps should be placed around the greater trochanters; over-tightening can worsen injuries



## 8080 EXTREMITY TRAUMA



## 8090 BURNS



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### Burn Considerations:

#### Critical Burn:

- 2° > 30% BSA
- 3° > 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
- Chemical: brush off or dilute chemical. Consider HAZMAT
- Electrical: make sure patient is de-energized and suspect internal injuries

### ABA Recommended Prehospital Fluid Therapy

Age	Fluid Amount
14 and older	500 mL/hr NS or LR
5 - 13 years	250 mL/hr NS or LR
Younger than 5	125 mL/hr D5W, NS or LR

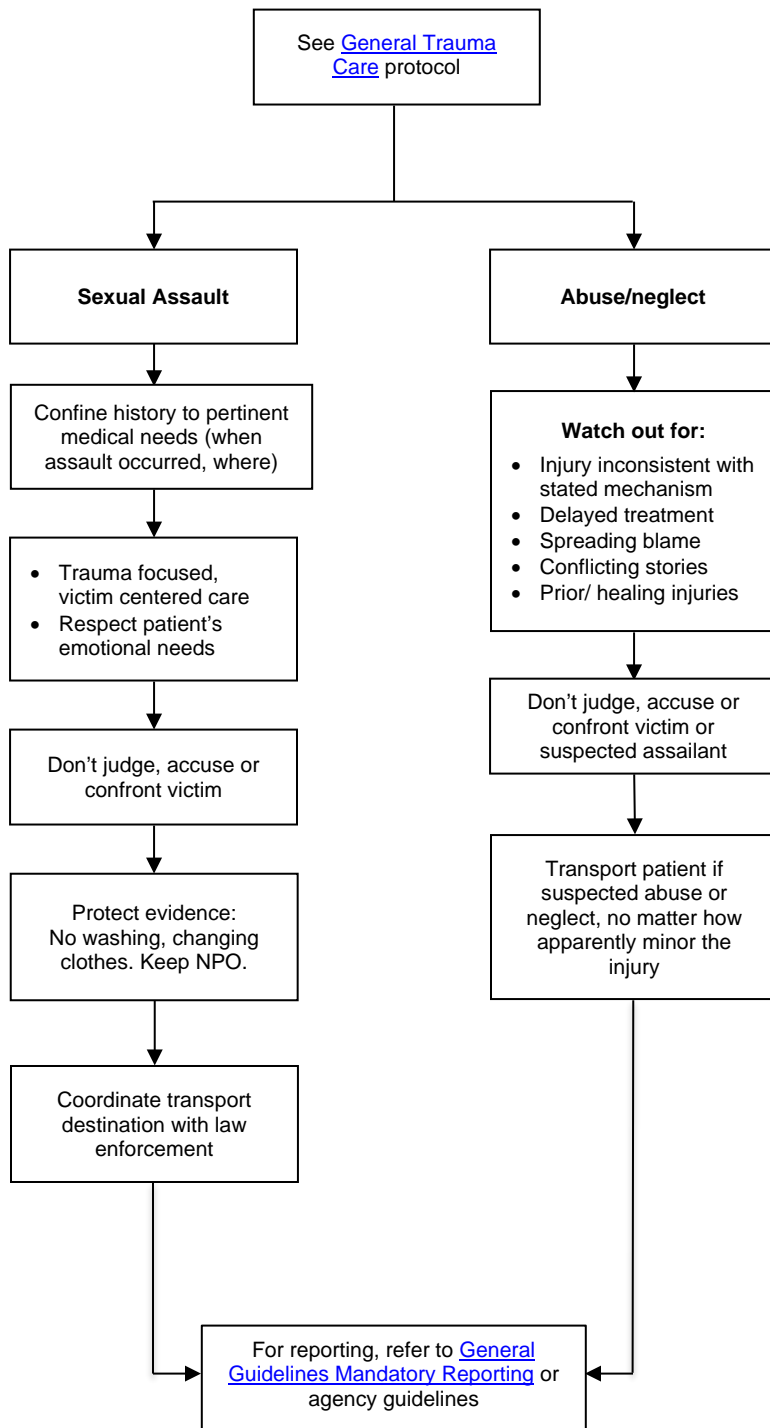
If no signs of clinical hypovolemia or shock, large volume of IV fluid not needed.

### Burn Transport Considerations:

- If there is a higher concern for trauma, transportation to an appropriate trauma center is the priority
- Consider direct transport of isolated burns to designated burn center if time and condition allows

## 8100 SPECIAL TRAUMA SCENARIOS PROTOCOL

Coordinate transport destination with law enforcement

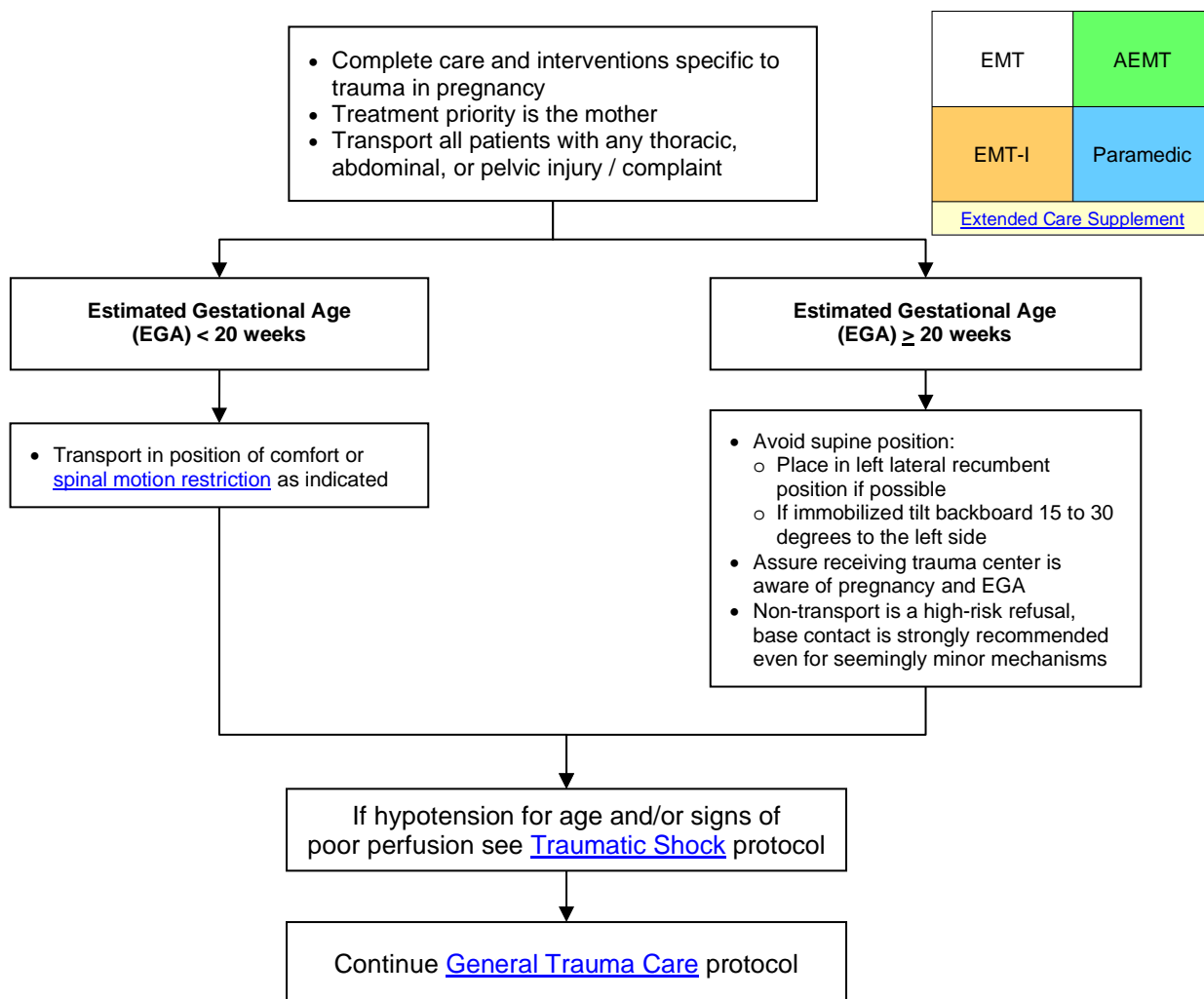


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### Mandatory Reporters:

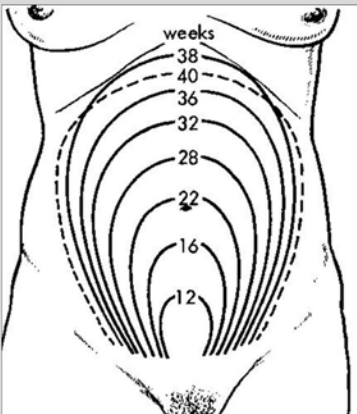
- EMS providers provide a critical layer of protection to vulnerable adults and children who have been abused.
- C.R.S. 19-3-304 passed in 2014 extends the role of mandated reporters to EMS providers in Colorado.
- Mandated reporters are to "report their suspicion" of abuse. This is not considered a 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)

## 8110 TRAUMA IN PREGNANCY



### Estimated Gestational Age (EGA)

If EGA  $\geq 20$  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.

## 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 standardize precalculated volume-based medication dosing and equipment. These should be utilized on every pediatric patient to guide medication dosing and equipment size.
- C. 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.
- D. 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. Reference information regarding shortages may be found at [FDA](#) or [ASHP](#) websites.
- E. EMS agencies should work to establish a system of Just Culture. This is an approach to workplace 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.



## 9005 MEDICATIONS

### ACETAMINOPHEN (TYLENOL)

#### Description

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

#### Onset & Duration

- Onset of analgesia: oral 20-30 minutes; IV within 5 minutes
- Peak effect: 1 hour
- Duration: 4 hours

#### Indications

- Mild, moderate, or severe pain. Consider IV administration for moderate or severe pain.
- Fever ( $>38.3^{\circ}\text{C}/101^{\circ}\text{F}$ ) – PO only

#### Contraindications

- History of allergy to acetaminophen
- Chronic liver disease
- Therapeutic dose of acetaminophen within past 6 hours or greater than 3 gm in last 24 hours.

#### 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.
- Liver injury (hepatotoxicity) can occur from either a single large overdose or repeated supratherapeutic ingestion of acetaminophen. Therefore, it is important to determine if your patient has already taken a therapeutic dose of acetaminophen within past 6 hours before you administer.
- IV acetaminophen may cause headache, nausea, and vomiting.
- Hypersensitivity and allergic reactions have been reported but are rare

#### 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

##### Adult:

1000 mg PO

OR

1000 mg IV infused over 15 minutes

##### Pediatric:

15 mg/kg PO – **SEE CHART**

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

#### Protocol

- [Pain management](#)

## 9010 MEDICATIONS

### 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 AVNRT 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.

## 9010 MEDICATIONS

---

### 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

## 9020 MEDICATIONS

### ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

---

#### Description

- Albuterol is a selective  $\beta$ -2 adrenergic receptor agonist. It is a bronchodilator and positive chronotrope.
  - Because of its  $\beta$  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 or suspension injury with suspected hyperkalemia
- 

#### Contraindications

- [Severe tachycardia](#) is a relative contraindication
- 

#### Adverse Reactions

- Tachycardia
  - Palpitations
  - Dysrhythmias
- 

#### Drug Interactions

- Sympathomimetics may exacerbate adverse cardiovascular effects.
  - $\beta$ -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.

## 9020 MEDICATIONS

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### 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](#).

## 9030 MEDICATIONS

### **AMIODARONE (CORDARONE)**

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#### **Description**

Amiodarone has multiple effects showing Vaughn-Williams Class I, II, III and IV actions with a quick onset. The dominant effect is prolongation of the action potential duration and the refractory period.

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#### **Indications**

- Pulseless arrest in patients with shock-refractory or recurrent VF/VT
  - 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**

- 2<sup>nd</sup> or 3<sup>rd</sup> 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/VT.
- **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](#)
  - [Tachyarrhythmia 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.

## 9040 MEDICATIONS

### **ANTIEMETICS: ONDANSETRON (ZOFTRAN), PROMETHAZINE (PHENERGAN), METOCLOPRAMIDE (REGLAN)**

---

#### **Description**

- Ondansetron is a selective serotonin 5-HT<sub>3</sub> receptor antagonist antiemetic. Ondansetron is the preferred antiemetic, if available.
  - Promethazine is a non-selective central and peripheral H-1 type histamine antagonist with anticholinergic properties resulting in antiemetic and sedative effects.
  - Metoclopramide is a dopamine antagonist that works by blocking the CNS vomiting chemoreceptor trigger zone (CRT).
- 

#### **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
  - Promethazine: age < 2 years, patients with respiratory or CNS depression or allergy to sulfites.
  - Metoclopramide: age < 8 years or suspected bowel obstruction.
- 

#### **Adverse Effects:**

- Ondansetron: Very low rate of adverse effects, very well tolerated.
  - Promethazine: Hypotension, CNS depression, altered mental status, pain on injection, including tissue necrosis with extravasation, extrapyramidal symptoms, urinary retention
  - Metoclopramide: Restlessness, agitation, extrapyramidal symptoms, sedation. Increased GI motility – do not use if suspected bowel obstruction.
- 

#### **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

##### **Promethazine**

###### **Adult:**

12.5 mg IV/IM. May repeat x 1 dose as needed.

###### **Pediatric 2-12 years old:**

1 mg/kg IV/IM to a maximum single dose of 12.5 mg

##### **Metoclopramide**

###### **Adult:**

10 mg IV/IM.

###### **Pediatric 8-12 years old:**

5 mg IV/IM.

##### **Droperidol**

Refer to [droperidol](#) protocol for dosing

---

#### **Protocol**

- [Abdominal Pain/Vomiting](#)
  - [Altitude Illness](#)
- 

#### **Promethazine and Metoclopramide Side effects/Special Notes:**

- Drowsiness, dizziness, dry mouth and blurred or double vision are common.
- If hypotension occurs, administer fluid bolus.
- Dystonia and akathisia may occur and should be treated with [diphenhydramine](#).
- Elderly may become agitated or disoriented. Consider reducing the dose in elderly patients.

## 9050 MEDICATIONS

### 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.

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#### Indications

- Suspected acute coronary syndrome
- 

#### Contraindications

- **Active** gastrointestinal bleeding
  - Aspirin allergy
  - Less than 16 years old
- 

#### How Supplied

Chewable tablets 81mg

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#### Dosage and Administration

- 324 mg PO
- 

#### Protocol

- [Chest Pain](#)
- 

#### Special Considerations

- Patients taking vitamin K antagonists (warfarin), heparins (enoxaparin, etc.), direct oral anticoagulants (Xarelto, Eliquis, etc.) or other anticoagulant medications should still receive aspirin if suspected of having an acute coronary syndrome.



## 9060 MEDICATIONS

### 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:

- 1 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

##### 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 moderate to severe toxicity. Minimum dose is 0.1 mg. Contact base for additional doses.
- 

#### Protocol

- [Bradyarrhythmia with poor perfusion](#)
  - [Poisoning/Overdose](#)
- 

#### Special Considerations

- Atropine causes pupil dilation, even in cardiac arrest settings

## 9070 MEDICATIONS

### ***BENZODIAZEPINES (DIAZEPAM, LORAZEPAM, MIDAZOLAM)***

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#### **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.
    - Diazepam should not be given intranasally as it is not well absorbed.
  - IM administration has the slowest time of onset.
- 

#### **Indications**

- Status epilepticus
  - Sedation for cardioversion or transcutaneous pacing (TCP)
  - Patient is agitated and combative, routine EMS care impossible, and [IMC-RASS +3 or +4](#).
  - Adjunctive agent for treatment of severe anxiety with extrication, packaging, or transport in adults that is uncontrolled by other interventions – **WITH CALL IN ONLY**
- 

#### **Contraindications**

- Hypotension
  - Respiratory depression
- 

#### **Adverse Reactions**

- Respiratory depression, including apnea
  - Hypotension
  - In patients >65 years old or small adults <50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.
- 

#### **Dosage and Administration**

##### **MIDAZOLAM:**

##### **Seizure:**

##### **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): 10 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**

- 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 10 mg IN or IM. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

## 9070 MEDICATIONS

### Sedation for cardioversion or transcutaneous pacing:

#### Adult:

IV/IO route: 2 mg

- Dose may be repeated x 1 after 5 minutes if additional sedation needed. **Contact Base** for more than 2 doses.

IN/IM route: (intranasal preferred) 5 mg

- Dose may be repeated x 1 after 5 minutes if additional sedation needed. **Contact Base** for more than 2 doses.

#### Pediatric:

IV/IO route 0.1 mg/kg

- Maximum single dose is 2 mg IV. Dose may be repeated x 1 after 5 minutes if additional sedation needed. **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 additional sedation needed. **Contact Base** for more than 2 doses.

### Patient is agitated and combative, routine EMS care impossible, and IMC-RASS +3 or +4

#### Adult:

IV/IO/IM route: 5 mg

- If patient still agitated and disruptive 5 minutes after first benzodiazepine dose, (IMC-RASS +3 or +4), switch to [butyrophene](#)
- If additional sedation medication needed **Contact Base**

#### Pediatric 8 to 11 years old:

IV/IO/IM route: 0.1 mg/kg; maximum single dose of 5 mg.

Age (years)	LBT color	Estimated Weight (kg)	Midazolam Dose (mg)
8-9	Orange	27-34	2.5 mg
10	Green	35	2.5 mg
11	Green	40	5 mg

#### Pediatric <8 years old:

- **Contact Base.**

### Adult patient who is agitated and combative, routine EMS care impossible, IMC-RASS +4, AND imminent risk of bodily harm to self/others

#### Adult:

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

### DIAZEPAM:

### Seizure or sedation for cardioversion or transcutaneous pacing:

#### Adult:

IV/IO/IM route: 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

- **Neonate:** Not indicated
- **>Neonate to <5 years:** 0.5 mg, dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.
- **5 to 12 years:** 1 mg, dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

## 9070 MEDICATIONS

### Patient is agitated and combative, routine EMS care impossible, and IMC-RASS +3 or +4

#### Adult:

IV/IO/IM route: 5 mg

- If patient still agitated and disruptive 5 minutes after first benzodiazepine dose, (IMC-RASS +3 or +4), switch to [butyrophenone](#)
- If additional sedation medication needed **Contact Base**

### LORAZEPAM:

#### Seizure:

#### Adult:

IV/IO/IM route: 2 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

- Maximum single dose is 2 mg. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

IM route: 0.1 mg/kg

- Maximum single dose is 2 mg. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Base** for more than 2 doses.

### Sedation for cardioversion or transcutaneous pacing:

#### Adult:

IV/IO route: 1 mg

- Dose may be repeated x 1 after 5 minutes. **Contact Base** for more than 2 doses.

IM route: 2 mg

- Dose may be repeated x 1 after 5 minutes. **Contact Base** for more than 2 doses.

### Patient is agitated and combative, routine EMS care impossible, and IMC-RASS +3 or +4

#### Adult:

IV/IO/IM route: 2 mg

- If patient still agitated and disruptive 5 minutes after first benzodiazepine dose, (IMC-RASS +3 or +4), switch to [butyrophenone](#)
- If additional sedation medication needed **Contact Base**

#### Pediatric 8 to 11 years old:

IV/IO/IM route: 0.05 mg/kg; maximum single dose of 2 mg.

Age (years)	LBT color	Estimated Weight (kg)	Lorazepam Dose (mg)
8-9	Orange	27-34	1 mg
10	Green	35	2 mg
11	Green	40	2 mg

#### Pediatric <8 years old:

- **Contact Base**

---

### Protocol

- [Synchronized Cardioversion](#)
- [Transcutaneous Cardiac Pacing](#)
- [Seizure](#)
- [Overdose and Acute Poisoning](#)
- [Agitated/Combative Patient](#)

## 9070 MEDICATIONS

---

### Special Considerations

- All patients receiving benzodiazepines must have cardiac, pulse oximetry monitoring during transport. Continuous waveform capnography recommended.
- Sedative effects of benzodiazepines are increased in combination with opioids, alcohol, or other CNS depressants.
- Coadministration of opioids and benzodiazepines is discouraged and may only be done with direct physician verbal order.
- In patients >65 years old or small adults <50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.

## 9075 MEDICATIONS

### **BUTYROPHENONES (DROPERIDOL, HALOPERIDOL)**

#### **Description**

Butyrophenones are antipsychotic medications. They produce a dopaminergic blockade, a mild alpha-adrenergic blockade, and causes peripheral vasodilation. Its major actions are sedation and tranquilization. Droperidol also has a potent anti-emetic effect.

#### **Onset & Duration**

- Onset: Within 10 minutes after IM administration. Peak effect within 30 minutes
- Duration: 2-4 hours (may be longer in some individuals)

#### **Indications**

- Patient is agitated and combative, routine EMS care impossible, and IMC-RASS +3 or +4.
- Droperidol specific indications:
  - Second line medication for management of intractable vomiting.
  - Combative head injured patients

#### **Contraindications**

- Suspected acute myocardial infarction/acute coronary syndrome
- Systolic blood pressure under 100 mmHg, or the absence of a palpable radial pulse
- Signs of respiratory depression
- Pregnancy

#### **Side Effects**

- Due to the vasodilation effect, butyrophenones can cause a transient hypotension that is usually self-limiting and can be treated effectively with IV fluids. Droperidol may cause tachycardia which usually does not require pharmacologic intervention.
- Cardiac monitor and establish an IV as soon as possible with all administrations.
- Some patients may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following butyrophenone administration. Extra-pyramidal reactions have been noted hours to days after treatment. This is called akathisia and is treated with [diphenhydramine](#).
- Rare instances of neuroleptic malignant syndrome have been known to occur following treatment using butyrophenones.

#### **Dosage and Administration**

##### **DROPERIDOL:**

**Patient is agitated and combative, routine EMS care impossible, and (IMC-RASS +3 or +4)**

##### **Adult:**

**IV/IM route:** 5 mg slow IV or IM administration.

- If patient still agitated and disruptive 5 minutes after first butyrophenone dose (IMC-RASS +3 or +4), repeat butyrophenone dose or switch to benzodiazepine
- If additional sedation medication needed **CONTACT BASE**

##### **Pediatric 8 to 11 years old:**

**IV/IO/IM route:** 0.025 mg/kg; maximum single dose of 1.25 mg.

Age (years)	LBT color	Estimated Weight (kg)	Droperidol	
			Dose (mg)	2.5 mg/mL Vol (mL)
8-9	Orange	27-34	0.625 mg	0.25 mL
10-11	Green	35-40	1.25 mg	0.5 mL

##### **Pediatric <8 years old:**

- **Not indicated.** Refer to [benzodiazepines](#).

## 9075 MEDICATIONS

**Adult patient who is agitated and combative, routine EMS care impossible, IMC-RASS +4, AND imminent risk of bodily harm to self/others**

### **Adult Only**

- **IM route:** 10 mg IM administration. **CONTACT BASE** for additional sedation orders.

### **Antiemetic**

#### **Adult:**

- **IV/IM route:** 1.25 mg slow push.

#### **Pediatric:**

- **Not indicated** for pediatric.

### **HALOPERIDOL:**

**Patient is agitated and combative, routine EMS care impossible, and IMC-RASS +3 or +4**

#### **Adult:**

**IM route:** 5 mg IM

- If patient still agitated and disruptive 5 minutes after first butyrophenone dose (IMC-RASS +3 or +4), repeat butyrophenone dose or switch to benzodiazepine
- If additional sedation medication needed **CONTACT BASE**

#### **Pediatric 8 to 11 years old:**

**IM route:** 0.05 mg/kg; maximum single dose of 2.5 mg.

Age (years)	LBT color	Estimated Weight (kg)	Haloperidol	
			Dose (mg)	5 mg/mL Vol (mL)
8-9	Orange	27-34	1.5 mg	0.3 mL
10-11	Green	35-40	2.5 mg	0.5 mL

#### **Pediatric <8 years old:**

- **Not indicated.** Refer to [benzodiazepines](#).

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### **Special Considerations**

- Due to butyrophenone's potential effect on QT interval prolongation, all patients receiving them should be placed on the cardiac monitor. Though it is understood that obtaining an ECG on the combative or agitated patient may be difficult, every effort should be made to do so.
- Avoid droperidol in frail or elderly patients due to increased risk of over-sedation as well as increased risk of hypotension and prolonged QT. If it must be given, administer half typical dose.
- For haloperidol, use ½ dose in patients age ≥ 65 who are at increased risk of complications.

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### **Protocol**

- [Agitated/Combative Patient](#)
- [Antiemetics](#)

**CALCIUM**[Extended Care Supplement](#)**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**

- Adult 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 or suspected hyperkalemia
- Known or suspected hyperkalemia with ECG changes
- Crush or suspension injury with known or suspected hyperkalemia
- 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.
- If administering in same IV/IO line with sodium bicarbonate, flush IV/IO line with at least 10 mL of fluid between medications.
- 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**  
**Known or suspected hyperkalemia with ECG changes**  
**Crush or suspension injury with known or suspected hyperkalemia**
  - 3 gm (30 mL) IV/IO over 5 minutes.
- **Calcium channel blocker overdose with hypotension and bradycardia**
  - **Contact Base** for order. 3 gm (30 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. 60 mg/kg (0.6 mL/kg), **not to exceed 1 g**, IV/IO over 5 minutes. May repeat every 5 minutes for total of 3 doses.

**Calcium Chloride 10% Solution****Adult:**

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



## 9080 MEDICATIONS

- **Renal failure with known or suspected hyperkalemia**  
**Known or suspected hyperkalemia with ECG changes**  
**Crush or suspension injury with known or suspected hyperkalemia**
  - 1 gm (10 mL) IV/IO over 5 minutes.
- **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](#)
- [Overdose and Acute Poisoning](#)
- [Hyperkalemia](#)
- [General Trauma Care](#)

## 9090 MEDICATIONS

### 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:

- >Newly born to <50 kg: administer 5 mL/kg of 10% solution (maximum of 250 mL)
  - Newly born
    - If neurologically altered and/or unable to feed, treat with 5ml D10W and recheck after 15 min.
    - In neurologically stable (alert and able to suck), allow to breast feed, give formula, or 2mL 40% dextrose gel
- 

#### Protocol

- [Hypoglycemia](#)
  - [Universal Altered Mental Status](#)
  - [Seizures](#)
  - [Poisoning/Overdose](#)
  - [Psych/Behavioral](#)
  - [Neonatal Resuscitation](#)
- 

#### 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; 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.

## 9100 MEDICATIONS

### **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 could 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 IV/IO/IM. For patients over 65 years old, administer half-dose of 25 mg IV/IO/IM. For mild allergic reactions consider PO administration.

##### **Pediatrics:**

- 1 mg/kg slow IV/IO/IM (not to exceed 50 mg). For mild allergic reactions consider PO administration.
- 

#### **Protocol**

- [Allergy/Anaphylaxis](#)

## 9110 MEDICATIONS

### DOPAMINE

---

- Endogenous catecholamine chemically related to epinephrine and norepinephrine. Increases blood pressure through combination of dopamine, alpha and beta receptor effects leading to increased heart rate, contractility and peripheral vasoconstriction.
  - May be used as an alternative vasopressor for indications of hypotension or bradycardia, but not for anaphylaxis or status asthmaticus.
  - The decision to include this medication and protocol is at the discretion of the individual agency medical director.
- 

#### Indications

- Alternative vasopressor to epinephrine for hypotension with poor perfusion refractory to adequate fluid resuscitation (typically 30 mL/kg crystalloid)
  - Alternative vasopressor to epinephrine for bradycardia with signs of poor perfusion
- 

#### Contraindications

- Do not use in pediatric patients (age less than 12 years)
- 

#### Adverse Reactions

- Dysrhythmia
  - Hypertension
  - Anxiety
  - Angina
- 

#### Drug Interactions

- Do not add sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.
- 

#### Dosage and Administration:

- **Mix:** 400 mg in 250 ml NS or 800 mg in 500 ml NS to produce concentration of 1600 mcg/mL.
  - **Adult IV/IO:** 5-20 mcg/kg/min, start at 5 mcg/kg/min, titrate dose up 5 mcg/kg/min every 5 min to a max of 20 mcg/kg/min to desired hemodynamic effect.
- 

#### Protocol

- [Post-Resuscitation Care with ROSC](#)
  - [Bradycardia with Poor Perfusion](#)
  - [Medical Hypotension/Shock](#)
  - [Overdose and Acute Poisoning](#)
- 

#### Special Considerations

- May increase myocardial oxygen demand and angina pectoris. Use with caution in patients with known or suspected CAD

## 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

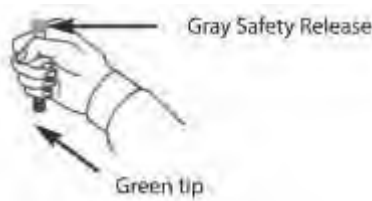
- Suspected nerve agent exposure accompanied with signs and symptoms of nerve agent poisoning

### 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.

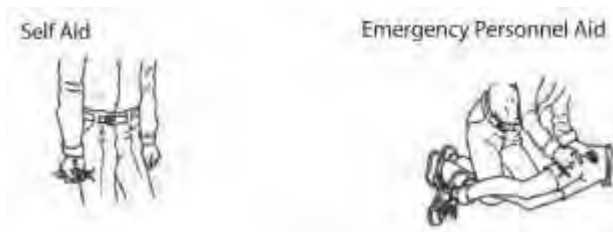


## 9115 MEDICATIONS

- 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)**

Extended Care Supplement

**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
- [Hypotension for age](#) and poor perfusion refractory to fluids or other interventions

**Adverse Reactions**

- Tachycardia, tachypnea, and/or tachydysrhythmia
- Hypertension
- Anxiety
- Increased myocardial oxygen demand, monitor for cardiac ischemia

**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 0.1mg/mL solution), IV/IO bolus.
- Repeat every 3-5 minutes up to maximum of 3 doses. Additional dose may be considered for recurrent arrest after ROSC or narrow complex PEA.

**Hypotension for age and poor perfusion refractory to other interventions:**

- Administer push dose epinephrine or infusion

**Adult Wheezing / Systemic Allergic Reaction:**

- 0.3 mg (0.3 ml of 1mg/mL solution) IM. May repeat dose x 1.
- If refractory, consider push dose epinephrine or infusion

**Severe systemic allergic reaction (Anaphylaxis) refractory to IM epinephrine:**

- Consider push dose epinephrine or infusion

**ALTERNATIVE to racemic epinephrine:** (for stridor at rest)

- 5 mL of 1mg/mL epinephrine via nebulizer x 1

**Adult Push Dose:**

- Refer to agency-specific guideline for mixing instructions, as dosing error is common.
- Administer IV push of 10-20 mcg aliquots every 1-5 minutes as needed

**Adult Infusion:**

- **Mix:** inject 1 mg epinephrine into 1000 mL Normal Saline bag to achieve 1 mcg/mL concentration (This means 1 mL of 1mg/mL or 10 mL of 0.1mg/mL – 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. Titrate to desired hemodynamic effect with goal BP of > 90 mmHg systolic, improved respiratory status (bronchodilation), and improved perfusion/mentation.
- **Label:** Apply label to bag noting epinephrine 1 mcg/mL

## 9120 MEDICATIONS

### Pediatric:

#### **Pulseless Arrest:**

- 0.01 mg/kg IV/IO (0.1 mL/kg of 0.1mg/mL solution).
- Subsequent doses repeated every 3-5 minutes: 0.01 mg/kg IV/IO (0.1 mL/kg of 0.1mg/mL solution)

#### **Bradycardia with Poor Perfusion:**

- 0.01 mg/kg IV/IO (0.1 mL/kg of 0.1mg/mL solution)

#### **Pediatric Wheezing 1 to 12 years old:**

- 0.15 mg (0.15 mL of 1mg/mL solution) IM for <25 kg and 0.3 mg (0.3 mL of 1mg/mL solution) IM for >25 kg. May repeat dose x 2 every 5 minutes.

#### **Moderate to Severe Allergic Reaction:**

##### 4 months to 12 years

- 0.15 mg (0.15 mL of 1mg/mL solution) IM for <25 kg and 0.3 mg (0.3 mL of 1mg/mL solution) IM for >25 kg. May repeat dose x 2 every 5 minutes.

##### Term to <4 months

- 0.1 mg (0.1 mL of 1mg/mL solution) IM. May repeat dose x 2 every 5 minutes.

#### **Severe systemic allergic reaction (Anaphylaxis) refractory to IM epinephrine x 3 total doses AND 60 mL/kg NS (administered in 20 mL/kg increments) rapid push (Contact Base):**

Refer to agency-specific protocol, as dosing error is common. Suggested dosing:

1. Draw up 1 mL of 0.1 mg/mL epinephrine into a 10 mL syringe.
2. Draw up 9 mL of normal saline into the same 10 mL syringe, making a 10 mcg/mL (0.01 mg/mL) solution.
3. Administer slow push of 1 mcg/kg (0.1 mL/kg) aliquots as needed [to maintain minimum systolic blood pressure for age](#).

#### **ALTERNATIVE to racemic epinephrine: (for stridor at rest)**

- 5 mL of 1mg/mL epinephrine via nebulizer x 1. **Contact Base** for repeated dosing.

### Epinephrine Auto-Injector:

#### **Systemic allergic reaction:**

**Adult:** 0.3 mg IM with autoinjector (adult EpiPen, Auvi-Q)

**Pediatric:** 0.15 mg IM with autoinjector (EpiPen Jr., Auvi-Q)

---

### **Protocol**

- |   |  |
|---|--|
| • <a href="#">Medical Pulseless Arrest Algorithm</a>  | • <a href="#">Allergy and Anaphylaxis Protocol</a> |
| • <a href="#">Bradyarrhythmia with poor perfusion</a> | • <a href="#">Adult Wheezing</a>                   |
| • <a href="#">Neonatal Resuscitation</a>              | • <a href="#">Pediatric Wheezing</a>               |
| • <a href="#">Medical Shock</a>                       |  |

---

### **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.
- Optional adult push dose mixing instructions (refer to agency specific mixing instructions):
  1. Draw up 1 mL of 0.1mg/mL in a graduated 1 mL syringe (with 0.1 mL markings)
  2. Each 0.1 mL = 10 mcg
  3. Apply label to syringe noting epinephrine 10 mcg/0.1 mL



## 9120 MEDICATIONS

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### Adult Infusion Drip Rate Chart Reference

Drip Rate Chart (1 mcg/mL)		
Dose (mcg/min)	10 gtt/mL Drip Set	15 gtt/mL Drip Set
2	20 gtt/min	30 gtt/min
3	30 gtt/min	45 gtt/min
4	40 gtt/min	60 gtt/min
5	50 gtt/min	75 gtt/min
6	60 gtt/min	90 gtt/min
7	70 gtt/min	105 gtt/min
8	80 gtt/min	120 gtt/min
9	90 gtt/min	135 gtt/min
10	100 gtt/min	150 gtt/min

## 9130 MEDICATIONS

### 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 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
- 

#### Protocol

- [Hypoglycemia](#)
- [Poisoning/Overdose](#)

## 9150 MEDICATIONS

### **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.

## 9160 MEDICATIONS

### 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.
- When possible, obtain dedicated line for hydroxocobalamin administration, as compatibility with other drugs is unknown. If this is not possible, flush line with 3-5ml NS flush before and after dose administered.

#### Adverse Reactions

- Hypertension
- Allergic reaction/anaphylaxis

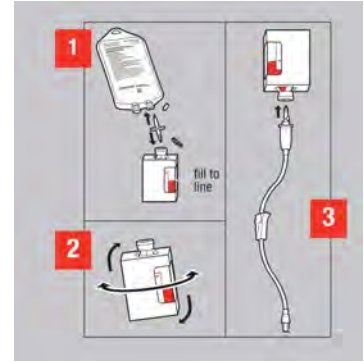
#### Dosage and Administration

- Dosing
  - Adult** dose is 5 gm IV/IO
  - Pediatric** dose is 70 mg/kg up to 5 gm IV/IO

Average Weight by Group	Grey 4 kg	Pink 6.5 kg	Red 8.5 kg	Purple 10.5 kg	Yellow 13 kg	White 16.5 kg	Blue 21 kg	Orange 26.5 kg	Green 33 kg	Adult
Dose	275mg	450 mg	600 mg	725 mg	900 mg	1150 mg	1475 mg	1850 mg	2300 mg	5 gm
Volume	11 mL	18 mL	24 mL	29 mL	36 mL	46 mL	59 mL	74 mL	92 mL	200 mL
Continuous Infusion Rate - Values are drops (gtt.) /min										
10 gtt./mL	7	12	16	19	24	31	39	49	61	133
15 gtt./mL	11	18	24	29	36	46	59	74	92	200
20 gtt./mL	15	24	32	39	48	61	79	99	123	267
Aliquot Administrations - Administer each dose every 3 minutes										
1 <sup>st</sup> Dose	4 mL	6 mL	8 mL	10 mL	12 mL	16 mL	20 mL	25 mL	32 mL	
2 <sup>nd</sup> Dose	3 mL	6 mL	8 mL	10 mL	12 mL	15 mL	20 mL	25 mL	30 mL	
3 <sup>rd</sup> Dose	3 mL	6 mL	8 mL	9 mL	12 mL	15 mL	19 mL	24 mL	30 mL	

## 9160 MEDICATIONS

- Adult infusion instructions:
  1. Draw one tiger top tube, if practical.
  2. Reconstitute: Place the 5 gm vial of hydroxocobalamin 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.
- Pediatric infusion instructions:
  1. Draw one tiger top tube, if practical.
  2. Reconstitute and mix the 5 gm vial of hydroxocobalamin as noted above
  3. Optimal: Continuous Infusion Method. Remove desired volume based on pediatric dosing chart and insert into empty infusion bag. Attach drip set and infuse at rate listed in chart above. Desired dose should be infused over 15 min.
  4. If unable to infuse continuously: Aliquot Method. Divide entire dosing volume by 3 to make 3 separate aliquots. Flush line with 3-5 mL NS, administer 1 aliquot, flush with 3-5 mL NS. Repeat every 3 minutes until entire dosing volume administered.



---

### 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](#)

## 9170 MEDICATIONS

### ***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)**

##### **Moderate and Severe Bronchospasm**

**2-12 years:** 0.5 mg along with albuterol in a nebulizer

**1 to <2 years:** 0.25 mg 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](#)

## 9180 MEDICATIONS

### **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

#### **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  $\geq 20$  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/IO 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 Arrest Algorithm](#)
- [Adult Wheezing](#)
- [Obstetric Complications](#)



## 9200 MEDICATIONS

### 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

## 9210 MEDICATIONS

### NALOXONE (NARCAN)

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#### Description

Naloxone is a competitive opioid receptor antagonist.

---

#### Onset & Duration

Onset: Within 5 minutes

Duration: 1-4 hours

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#### 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/IN 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 to effect. 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)

## 9210 MEDICATIONS

- 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.

## 9220 MEDICATIONS

### NITROGLYCERIN (NITROSTAT, NITROQUICK, etc)

[Extended Care Supplement](#)

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#### Description

Short-acting peripheral venodilator decreasing cardiac preload and afterload

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#### 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](#)
-

## **NONSTEROIDAL ANTI-INFLAMMATORY DRUGS: IBUPROFEN (ADVIL, MOTRIN), KETOROLAC (TORADOL)**

### **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: oral 30-60 minutes, IV within 5 minutes
- Peak effect: 1 hour
- Duration: 4 hours

### **Indications**

- Acute treatment of mild, moderate, or severe pain. Consider IV ketorolac for moderate to severe pain.
- Pain due to suspected kidney stones, acute exacerbations of chronic pain, musculoskeletal pain
- Fever ( $>38.3^{\circ}\text{C}/101^{\circ}\text{F}$ ) – Ibuprofen only

### **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/antiplatelet (patient taking blood thinners) or history of a blood clotting disorder
- In setting of multisystem trauma
- Acute head trauma or suspected intracranial bleed
- Ketorolac is contraindicated for ages less than 8-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/antiplatelet medications such as apixaban (Eliquis), aspirin, dabigatran (Pradaxa), enoxaparin (Lovenox), heparin, rivaroxaban (Xarelto), warfarin (Coumadin).

### **Dosage and Administration**

#### **Ibuprofen**

##### **Adult:**

600 mg PO

##### **Pediatric:**

10 mg/kg PO – **SEE CHART**

#### **Ketorolac**

##### **Adult:**

15 mg IV or IM

##### **Pediatric 8-11 years old:**

10 mg IV or IM

##### **Pediatric <8 years old:**

Not indicated

#### **Ibuprofen Dosing Chart**

Weight	Age	Dose (100 mg/5 mL)
n/a	< 6 months	BASE CONTACT
5-8kg	6 months - 12 months	3 ml (60mg)
9-11kg	1-2 years	4 ml (80mg)
12-16kg	2-3 years	5 ml (100mg)
17-21kg	4-5 years	7.5 ml (150mg)
22-27kg	6-8 years	10 ml (200mg)
28-33kg	9-10 years	15 ml (300mg)
34-43kg	11-12 years	20 ml (400mg)

### **Protocol**

- [Pain management](#)

## 9230 MEDICATIONS

### **OPIOIDS (FENTANYL, MORPHINE, HYDROMORPHONE)**

---

#### **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. (No AEMT administration of opioids for cardiac chest pain)
- 

#### **Contraindications**

- Fentanyl - Hemodynamic instability or shock
  - Morphine and hydromorphone – Hypotension, 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.**
  - Coadministration of opioids and benzodiazepines is discouraged and may only be done with direct physician verbal order.
  - Chest wall rigidity has been reported with rapid administration of fentanyl
- 

#### **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/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:** 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

## 9230 MEDICATIONS

**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**

### **MORPHINE:**

**Adult:**

**IV/IO/IM routes:** 5-10 mg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 10 mg.
- Additional cumulative dosing > 10 mg requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

**Pediatric (1-12 years):**

**IV/IO/IM routes:** 0.1 mg/kg. Maximum single dose is 6 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 0.2 mg/kg or 10 mg.
- Additional cumulative dosing requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

**Pediatric < 1 year: BASE CONTACT**

### **HYDROMORPHONE:**

**Adult:**

**IV/IO/IM routes:** 0.5 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 1.5 mg.
- Additional cumulative dosing requires BASE CONTACT.

**Pediatric:**

Not indicated for pediatric patients

NOTE: IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect. IO/IM for all listed opioids and additionally IN for fentanyl are acceptable alternatives when IV access is not readily available. Repeat doses of IN Fentanyl can be given if IV access cannot be established. However greater volumes and repeat IN administration are associated with greater drug run off and may therefore be less effective. Continuous pulse oximetry monitoring is mandatory. Frequent evaluation of the patient's vital signs is also indicated. Emergency resuscitation equipment and [naloxone](#) must be immediately available.

---

### **Protocol**

[Extremity Injuries](#)

[Spinal Trauma](#)

[Chest Pain](#)

[Post Resuscitation Care with ROSC](#)

[Abdominal Pain](#)

[Amputations](#)

[Burns](#)

[Bites/Stings](#)

[Snake Bites](#)

[Face and Neck Trauma](#)

[Chest Trauma](#)

[Abdominal Trauma](#)

## 9240 MEDICATIONS

### **ORAL GLUCOSE (GLUTOSE, INSTA-GLUCOSE)**

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#### **Description**

Glucose is the body's basic fuel and is required for cellular metabolism

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#### **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 g buccal.

---

#### **Protocol**

- [Universal Altered Mental Status](#)
  - [Hypoglycemia](#)
-



## 9250 MEDICATIONS

### OXYGEN

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#### 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, including COPD patients.
- 

#### Administration

- Use the appropriate oxygen delivery method and flow rate to achieve SpO<sub>2</sub> 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 SpO<sub>2</sub> while adequate ventilation is assessed clinically and with waveform capnography.

## 9260 MEDICATIONS

### ***PHENYLEPHRINE (INTRANASAL)***

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#### **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](#)

## 9270 MEDICATIONS

### ***RACEMIC EPINEPHRINE***

---

#### **Description**

Racemic epinephrine 2.25% is an aqueous solution that delivers 11.25 mg of racemic epinephrine per 0.5 mL 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  $\beta$  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 epinephrine 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 1mg/mL 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**

- Suspected hyperkalemic pulseless arrest: consider in patients with known renal failure/dialysis.
- Renal failure with known or suspected hyperkalemia
- Known or suspected hyperkalemia with ECG changes
- Crush or suspension injury with known or suspected hyperkalemia
- Sodium bicarbonate therapy is indicated in patients with sodium channel blocker poisoning who develop widening of the QRS interval >120 msec, hypotension, or a ventricular arrhythmia.
  - Examples of sodium channel blockers include tricyclic antidepressants (TCA) such as amitriptyline, also other medications like diphenhydramine, phenytoin, lidocaine, procainamide, or carbamazepine.

**Contraindications**

- Metabolic and respiratory alkalosis
- Hypocalcemia
- Hypokalemia

**Adverse Reactions**

- Metabolic alkalosis
- Paradoxical cerebral intracellular acidosis
- Sodium bolus can lead to volume overload

**Drug Interactions**

- If administering in same IV/IO line with calcium, flush IV/IO line with at least 10 mL of fluid between medications.
- Alkalization of urine may increase half-lives of certain drugs.
- Vasopressors may be deactivated.

**Dosage and Administration: 8.4% sodium bicarbonate solution****Adult and Pediatric:**

- **Pulseless arrest suspected due to hyperkalemia** (e.g., typically patient with dialysis, end-stage renal disease)
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes.
- **Renal Failure with known or suspected hyperkalemia**  
**Known or suspected hyperkalemia with ECG changes**  
**Crush or suspension injury with known or suspected hyperkalemia**  
**Sodium channel blocker poisoning with wide QRS >120 msec or ventricular arrhythmia**
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes or until QRS is narrowed.

**Protocol**

- [Medical Pulseless Arrest](#)
- [Overdose and Acute Poisoning](#)
- [Hyperkalemia](#)

## 9290 MEDICATIONS

### TOPICAL OPHTHALMIC ANESTHETICS

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#### Description

Proparacaine and tetracaine are local anesthetics approved for ocular administration for relief of eye pain caused by corneal abrasion or chemical injury.

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#### 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

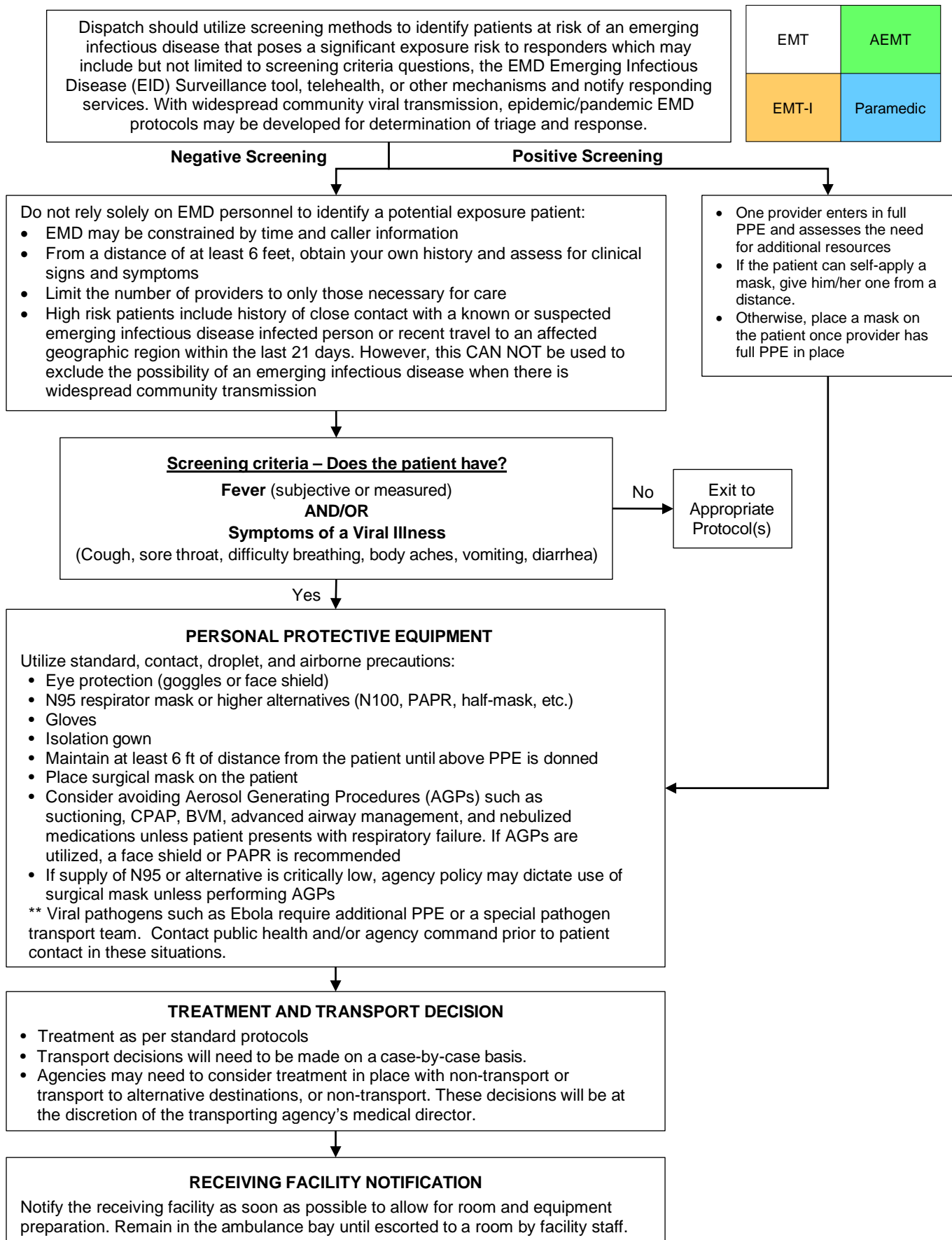
- Instill 2 drops into affected eye. **Contact Base** for repeat dosing.
- 

#### 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.

# 10010 VIRAL EPIDEMIC/PANDEMIC SCREENING, TREATMENT, AND TRANSPORT

**Indication:** EMS agency Medical Direction has decided to enact this protocol based on local indications that the healthcare system infrastructure is overwhelmed.



## 10020 VIRAL EPIDEMIC/PANDEMIC TREAT IN PLACE GUIDELINE

### Purpose:

- A. Identify patients that are safe to treat in place and not transport to a hospital during widespread cases of a viral epidemic/pandemic in order to accomplish the following:
- Minimize disease transmission to the community
  - Protect first responders and healthcare personnel
  - Preserve healthcare system functioning when the system is overwhelmed.

EMT	AEMT
EMT-I	Paramedic

### Indications for Non-Transport:

- A. EMS agency Medical Direction has decided to enact treat in place guidelines based on local indications that the healthcare system infrastructure is overwhelmed. This may include, but is not limited to, one of the following circumstances:
- Hospitals are exceeding maximum census
  - Hospitals and facilities are experiencing significant overcrowding
  - Hospitals and first response agencies have enacted surge plans
  - Healthcare providers are unable to obtain required personal protective equipment (PPE) to prevent transmission of disease.

### Assessment Algorithm for Treat in Place

#### Initial Assessment:

- For patients with an emerging infectious disease, refer to the [viral epidemic/pandemic screening guideline](#)
- Initial assessment should begin from a distance of at least 6 feet from the patient and be limited to one EMS provider, if possible, with appropriate PPE.

#### Patient guidance for EMS return precautions depending on system's ability to respond:

Severe shortness of breath, confusion or alteration of mental status, syncope, moderate to severe chest pain, inability to tolerate food or liquids, skin cyanosis

#### Inclusion Criteria for Non-Transport:

- Age > 2 years or < 65 years old
- History of fever with symptoms of viral syndrome illness (including some or all of the following cough, nasal/chest congestion, sore throat, body aches)
- Vital signs:** (or normal for age for pediatric patients)
  - Respiratory Rate > 8 or < 20
  - O2 Saturation > 90%
  - Heart Rate < 100 bpm
  - Systolic BP at least 100
  - GCS 15
- Absence of** shortness of breath with activity, respiratory distress, syncope, cyanosis, diaphoresis, and chest pain other than mild pain with coughing

No

Proceed with standard medical treatment protocols

Yes, to all

#### Non-Transport Disposition:

- The patient has a support system
- Patient or person making decision on behalf of patient (parent, medical power of attorney (POA), guardian, etc) consents to treat in place



# Foothills Regional Emergency Medical & Trauma Advisory Council

Serving Boulder, Clear Creek, Gilpin, Grand, & Jefferson Counties

## Foothills RETAC

### **Prehospital Trauma Destination Policy Narrative**

**Overview:** The Colorado Department of Public Health and Environment (CDPHE), in conjunction with the State Emergency Medical & Trauma Advisory Council (SEMTAC), require each Regional Emergency Medical & Trauma Advisory Council (RETAC) to formulate patient movement policies. This Prehospital Trauma Triage Algorithm and Policy were developed by the Foothills RETAC to aid and promote appropriate destinations for trauma patients originating within our five-county region.

**Explanation of Algorithm:** The left side of the attached algorithm was developed by SEMTAC and approved by the Board of Health to quickly identify the trauma patient, and what priority is given to trauma patients, utilizing physiological findings, mechanisms of injury, and co-morbid factors. The left side of the algorithm was used for each RETAC to develop their own individual algorithm, staying within this framework. The right side of this algorithm was developed by the Foothills RETAC. The “right” side is kept deliberately general in order to accommodate the diverse areas/counties within our region.

**Explanation of Terms used by the RETAC:** The Foothills RETAC chose to insert the words “*most rapidly accessible*” instead of others such as closest or nearest. Many factors are taken into consideration when transporting a trauma patient. These include, but are not limited to, weather, geography, number of patients, number of prehospital personnel, training level of prehospital personnel, and other factors that influence decision making.

**Oversight:** It is expected that each transporting agency within the Foothills RETAC will use this algorithm to transport trauma patients in an effective time-sensitive manner, and that patients will be taken to the “*most appropriate*” trauma center given the above mentioned factors. The Foothills RETAC, in conjunction with Agency and Facility Medical Directors will monitor patient destinations through a Continuous Quality Improvement (CQI) program when developed.

**Possible Exemptions to Destination Policies:** In the case of a facility that is actively pursuing trauma center designation it is up to the discretion of the Medical Director for the transport agency to decide what is the most appropriate rapidly accessible facility for the trauma patient. When facilities undergo changes to their trauma designation level, those will be considered on a case to case basis as the situations arise.

**Boulder County Trauma:** Boulder County is fortunate to have 5 Trauma Centers. There are two Level II Trauma Centers: Boulder Community Hospital and Good Samaritan Medical Center. They also have three Level III Trauma Centers: Longmont United Hospital, Longs Peak Hospital, and Avista Hospital. For High-Level trauma patients, prehospital personnel should transport to the most appropriate Trauma Center they can reach in the least amount of time accounting for traffic, weather, training level of provider, or other conditions.

**Clear Creek County Trauma:** Clear Creek County does not have medical facilities within their county. Most trauma patients are transported via Interstate 70 to the Denver Metropolitan region. Occasionally, depending on circumstances, a patient may be transported east along US Highway 6 coming into the Golden area or Interstate 70 west into Summit County to Summit Medical Center depending on the location of the trauma incident.



**Gilpin County Trauma:** Gilpin County does not have medical facilities within their county. Most trauma patients are transported via Interstate 70 to the Denver Metropolitan region. Occasionally, depending on circumstances, a patient may be transported east along US Highway 6 coming into the Golden area or Interstate 70 west into Summit County depending on the location of the trauma incident. They may also be transported into Boulder County via Highway 119 depending upon the location of the trauma incident.

**Grand County Trauma:** Grand County has Middle Park Medical Center-Kremmling, a Level IV Trauma Center, and Middle Park Medical Center-Granby a Level IV Trauma Center, and Denver Health East Grand Community Clinic and Emergency Center, a Level V Trauma Center. Each of these medical facilities is located in very separate areas of the county and travel time between facilities is approximately 30 minutes via ground ambulance. Middle Park Medical Center-Kremmling is located in Kremmling, in the western side of the county, Middle Park Medical Center Granby is located in Granby in the middle of the county and Denver Health East Grand Community Clinic and Emergency Center is located in Winter Park in the eastern part of the county. Denver Health East Grand Community Clinic and Emergency Center, when open, has all of the capabilities of any Level IV trauma facility. When Denver Health East Grand Community Clinic and Emergency Center is open, Grand County Ambulance transports to the nearest one of their trauma centers for traumas within the county. At the western most, southern, and eastern most regions, where Grand borders other counties on Rabbit Ears and Berthoud Pass, and Highway 9, a decision must be made weighing all factors, if the patient should be taken out of county to a higher level of care. Discretion within this algorithm is given to the ambulance agency, with the knowledge that CQI, when developed, will monitor trauma transports.

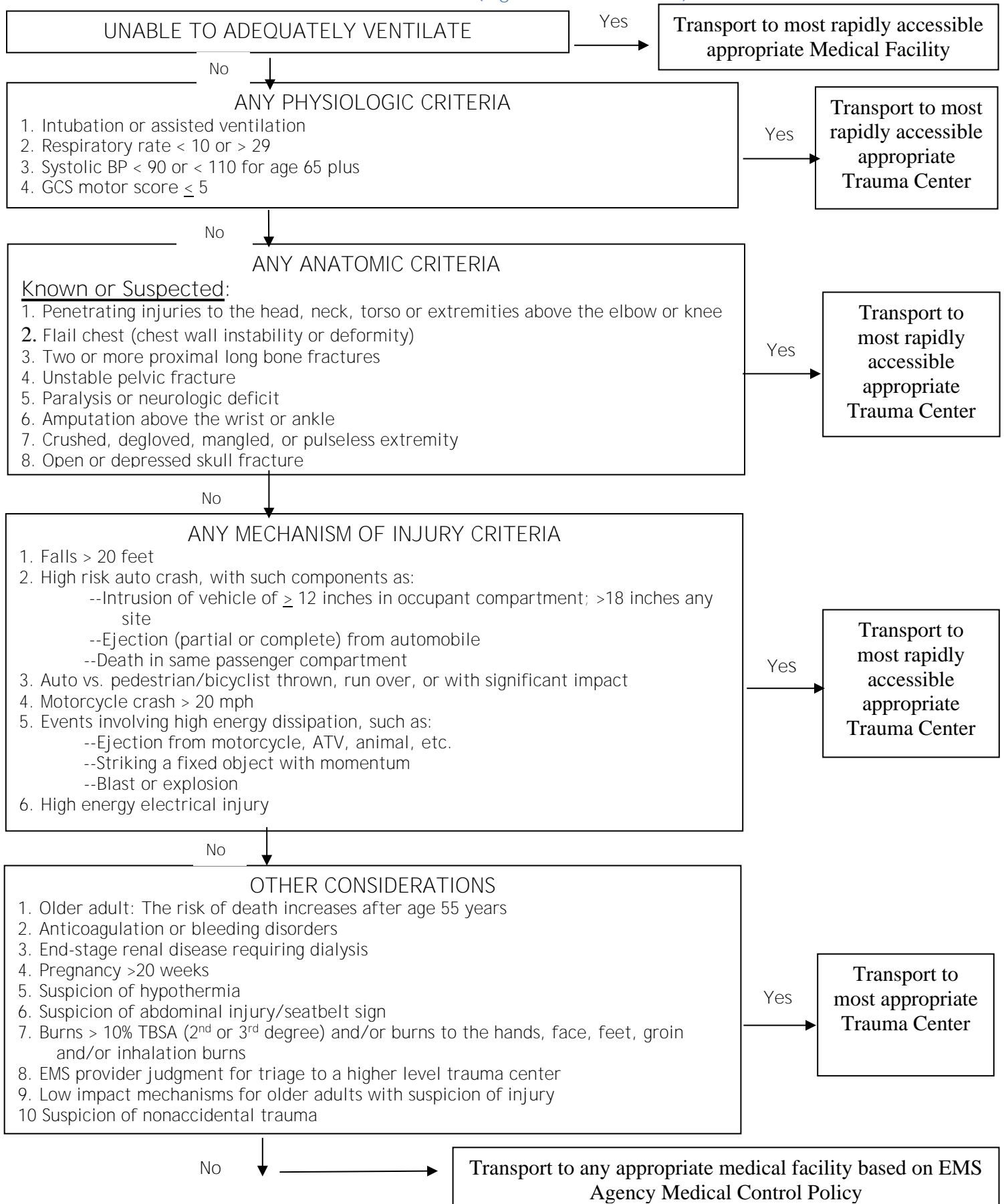
**Jefferson County Trauma:** Jefferson County currently has two Trauma Centers. These are: Saint Anthony Hospital, a level I Trauma Center located in Lakewood, and Lutheran Medical Center, a Level III Trauma Center located in Wheatridge. The choice of which trauma center to transport to by the individual transporting agency is made using the Trauma Triage Algorithm, taking into consideration numerous variables such as weather, level of prehospital personnel, road obstructions, and scene times. Jefferson County is an exceptionally large diverse county, and transport decisions will reflect the individual incident, while following this algorithm. Trauma patients requiring EMS transport on the borders of Jefferson may find it appropriate to transport outside of the Foothills RETAC.

**Air Transport:** The FRETAC protocols for Air Transport take into consideration the advanced level of care given to patients by flight crews. The Foothills RETAC currently has one Level I Trauma Center located in Jefferson County. We leave it to the discretion of requesting prehospital ground transport agency and the flight crews, and their medical directors as to which Trauma Center they are flown to for scene transport of the trauma patient. We also recognize that flight crews may have many other factors to consider in triage decisions. These include such things as: wind, weather, number of patients, agency request, and especially patient presentation. Therefore, the air transport algorithms are far more lenient in providing guidelines, not mandates, in choosing the most appropriate patient destination. When developed at CDPHE, and our FRETAC CQI program when developed will monitor destinations for their appropriateness.

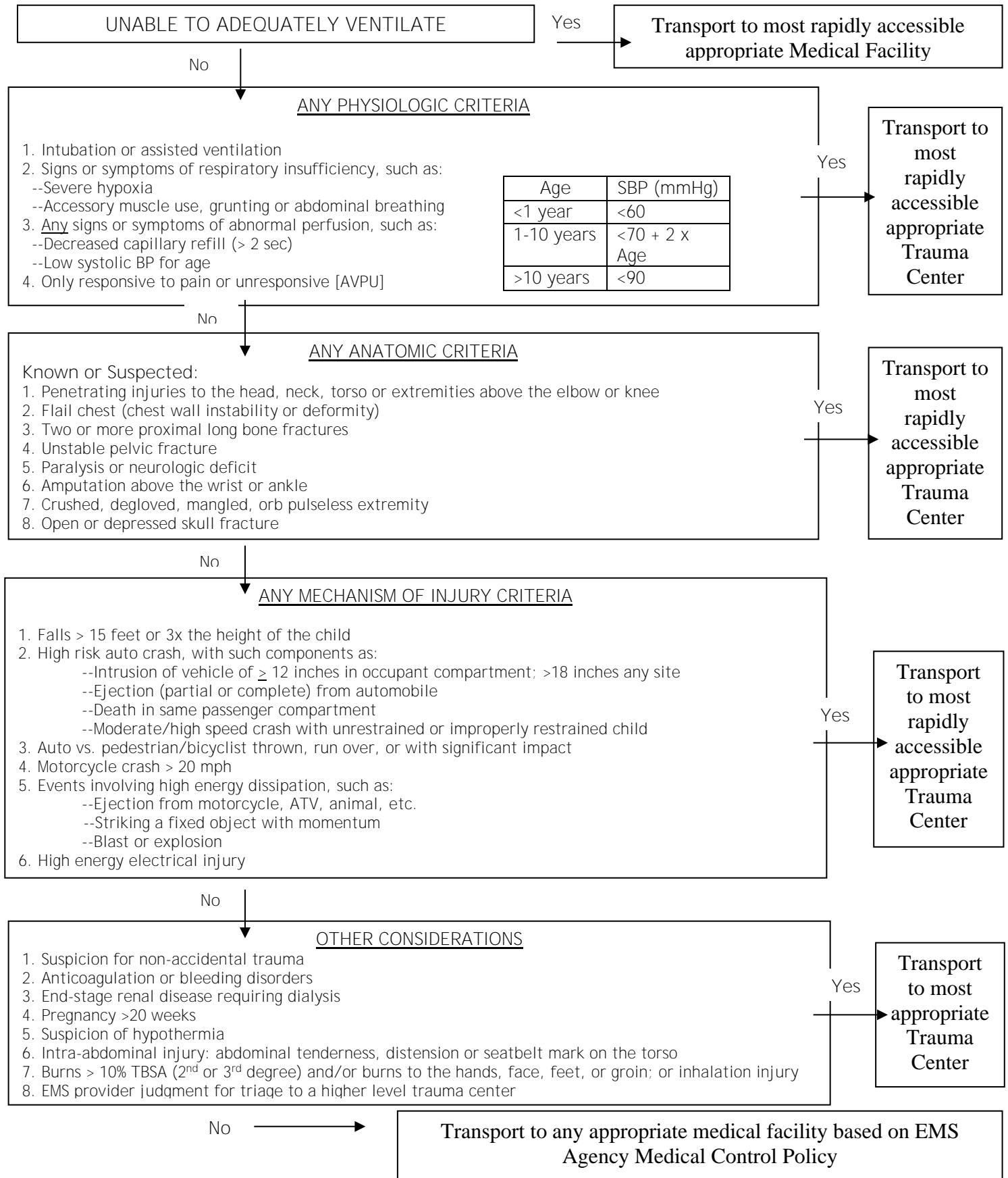
**Pediatric Care:** There are currently no Pediatric Level I or II Trauma Centers within the Foothills RETAC. Transportation destination for Pediatric patients will be dependent upon numerous factors with location of traumatic incident and patient condition being the most important. Pediatric destinations must be left to the EMS agency and their Medical Director using solid QI Programs for patient destination.

**EMS Medical Direction:** It is the expectation of the Foothills RETAC that the EMS Medical Directors will be actively involved in trauma destination decisions and oversight of the EMS agencies for which they are responsible. Active EMS Agency QI Programs with Trauma Destination review are also expected.

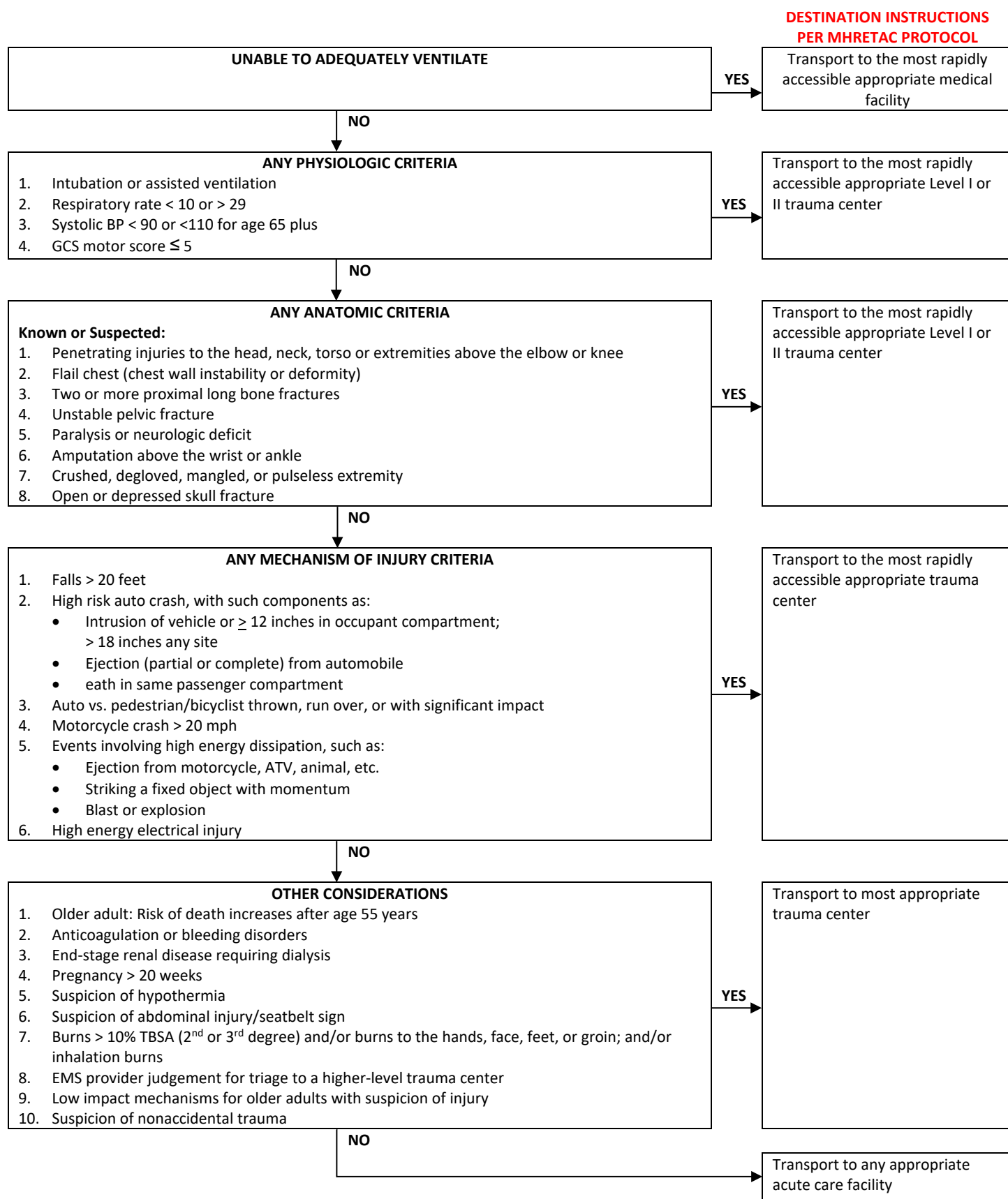
**Foothills RETAC**  
Prehospital Trauma Triage Transport Algorithm Guideline  
**Adult Patients (Ages 15 and older)**



Foothills RETAC  
Prehospital Trauma Triage Algorithm Guideline  
Pediatric Patients (Less than 15 years old)



**2020 MHRETAC Prehospital Trauma Triage Algorithm Guideline**  
**Adult Patients (Ages 15 and older)**





## **Mile-High Regional Emergency Medical and Trauma Advisory Council (MHRETAC)**

### **Adult Trauma Triage Algorithm Overview September 17, 2020**

The MHRETAC contains the most and the highest-level trauma centers in the state of Colorado. The counties included are Adams, Arapahoe, Broomfield, Denver, Douglas and Elbert. The region has most the Level I trauma centers, the only Level I Regional Pediatric Trauma Center in Colorado, and a majority of Level II trauma centers. Numerous level III and IV trauma centers are within the MHRETAC. This region includes Non-Designated trauma centers, specialty facilities and numerous Non-Designated Free-Standing Emergency Rooms (CCEC- Licensed Community Clinics with Emergency Care). There are also free-standing emergency departments (FSED) that may include both licensed emergency departments that accept EMS traffic as an extension of an affiliated hospital, as well as independent emergency departments unaffiliated with a hospital.

**Most Rapidly Accessible Appropriate-** The MHRETAC chose to insert the words “most rapidly accessible appropriate” instead of others such as closest or nearest. Many factors are taken into consideration when transporting a trauma patient. These include, but are not limited to weather, geography, number of patients, special needs of patients, number of prehospital personnel, level of prehospital personnel and other factors that influence decision making. The MHRETAC actively supports and promotes the Medical Directors in defining the guidance for following the MHRETAC trauma destination policy.

**Interfacility Transfers-** The MHRETAC recognizes that compliance with this algorithm may require interfacility transfers.

**EMS Medical Direction-** It is the expectation of the MHRETAC that the EMS Medical Directors will be active and involved in trauma destination decisions and oversight of the agencies for which they are responsible. The MHRETAC expects EMS medical directors use medical expertise and patient centered principles in all their decisions. Transport to Non-Designated Free-Standing Emergency Rooms and Free-Standing Emergency Departments with or without hospital affiliation are at the discretion and guidelines of the Medical Director for each agency.

Approved by Mile-High RETAC Clinical Care Committee on September 17, 2020

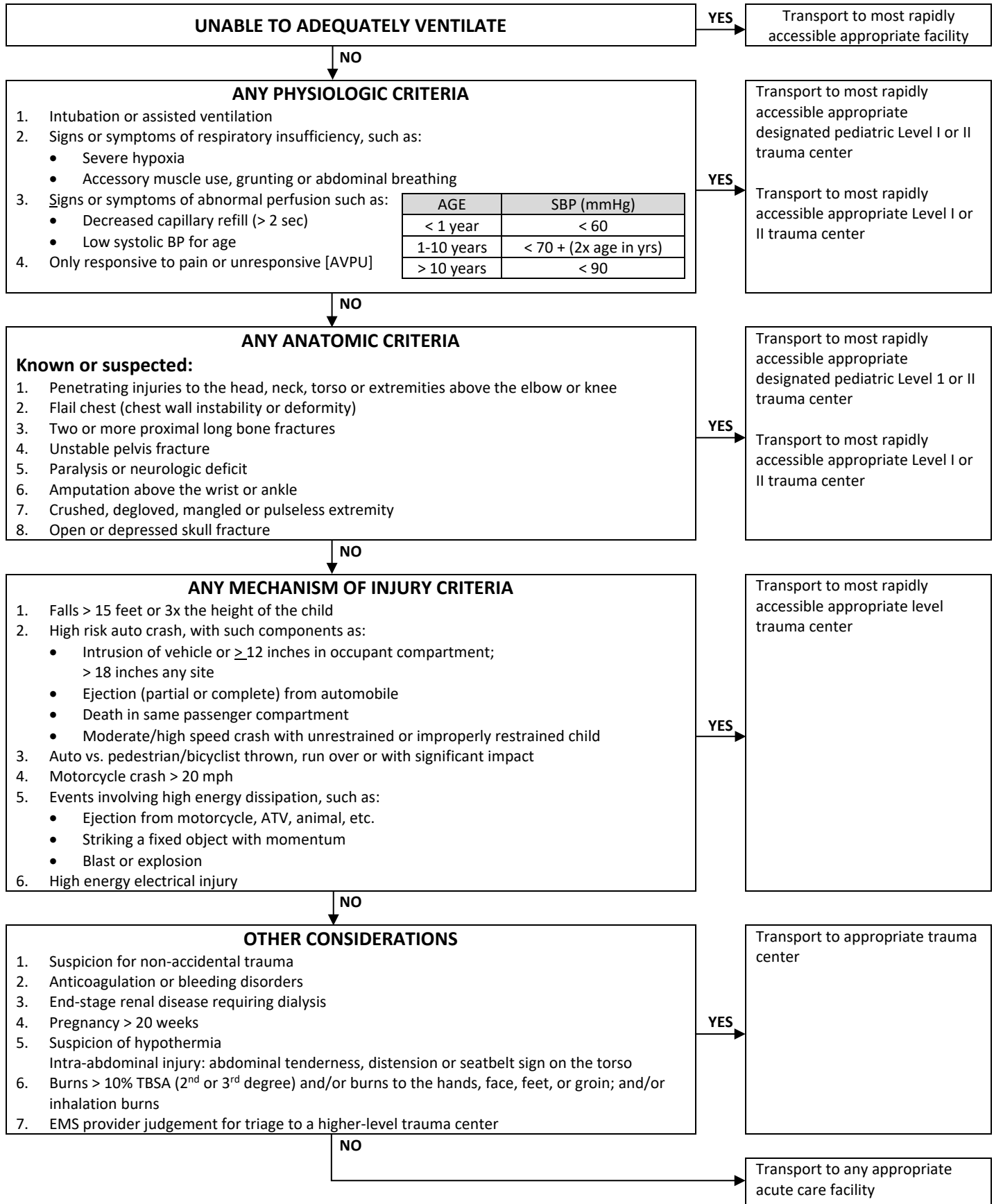
Approved by Mile-High RETAC Board of Directors on September 17, 2020

Reviewed by Regional Medical Direction & Denver Metro EMS Medical Directors Group on November 4, 2020

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

**DESTINATION INSTRUCTIONS PER  
MHRETAC PROTOCOL**





## **Mile-High Regional Emergency Medical and Trauma Advisory Council (MHRETAC)**

### **Proposed Pediatric Trauma Triage Algorithm Overview September 2020**

The MHRETAC contains the most and the highest-level trauma centers in the state of Colorado. The counties included are Adams, Arapahoe, Broomfield, Denver, Douglas and Elbert. The region has most the Level I trauma centers, the only Level I Regional Pediatric Trauma Center in Colorado, and a majority of Level II trauma centers. Numerous level III and IV trauma centers are within the MHRETAC. This region includes Non-Designated trauma centers, specialty facilities and numerous Non-Designated Free-Standing Emergency Rooms (CCEC- Licensed Community Clinics with Emergency Care). There are also free-standing emergency departments (FSED) that may include both licensed emergency departments that accept EMS traffic as an extension of an affiliated hospital, as well as independent emergency departments unaffiliated with a hospital.

**Most Rapidly Accessible Appropriate-** The MHRETAC chose to insert the words “most rapidly accessible appropriate” instead of others such as closest or nearest. Many factors are taken into consideration when transporting a trauma patient. These include, but are not limited to weather, geography, number of patients, special needs of patients, number of prehospital personnel, level of prehospital personnel and other factors that influence decision making. The MHRETAC actively supports and promotes the Medical Directors in defining the guidance for following the MHRETAC trauma destination policy.

**Interfacility Transfers-** The MHRETAC recognizes that compliance with this algorithm may require interfacility transfers.

**EMS Medical Direction-** It is the expectation of the MHRETAC that the EMS Medical Directors will be active and involved in trauma destination decisions and oversight of the agencies for which they are responsible. The MHRETAC expects EMS medical directors use medical expertise and patient centered principles in all their decisions. Transport to Non-Designated Free-Standing Emergency Rooms and Free-Standing Emergency Departments with or without hospital affiliation are at the discretion and guidelines of the Medical Director for each agency.

**Pediatrics-** The Children’s Hospital Colorado is recognized as a specialized resource for pediatric patients less than 15 yrs of age.

Approved by Mile-High RETAC Clinical Care Committee on September 17, 2020

Approved by Mile-High RETAC Board of Directors on November 19, 2020

Approved by Regional Medical Direction & Denver Metro EMS Medical Directors Group on November 4, 2020

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## RESPIRATORY EXTENDED CARE SUPPLEMENTS

EMT	AEMT	EMT-I	Paramedic
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### **2000X OBSTRUCTED AIRWAY**

- A. Continue to reassess and utilize maneuvers within [obstructed airway](#) protocol.
- B. If suspected angioedema, epinephrine will not help. Move to placement of advanced airway per agency protocol.
- C. If suspected laryngospasm, CPAP can often help to open vocal cords.
- D. If prolonged obstruction, assess for post obstructive pulmonary edema.

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### **2010X AND 2020X ADULT/PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS**

- A. Goals of extended care treatment
  - 1. Establish continuous respiratory / cardiac / ventilatory monitoring. Document and observe trends.
  - 2. Prevent hypoxia.
  - 3. Reassess airway, lung exam, respiratory status, and vital signs on regular cadence to recognize trends toward respiratory failure collapse.
  - 4. Prevent hypotension.
  - 5. Continuous re-evaluation for need of advanced airway per agency protocol.
  - 6. Recognize evidence of underlying causes
    - a. [Upper airway obstruction](#) – hoarseness, stridor, drooling, exaggerated chest wall movement
    - b. [Congestive heart failure](#) - Neck vein distention in upright position, rales, peripheral edema
    - c. Pulmonary embolism / deep vein thrombosis – Unilateral lower extremity edema with redness or pain
    - d. [Pulmonary edema](#) – diminished breath sounds with rales / rhonchi
    - e. [Allergic reaction](#) – hives or airway/facial edema
  - 7. Consider request for additional resources (e.g., critical care rendezvous, mutual aid for personnel) or need to pause/divert transport
- B. Perform at least every 10 minutes reassessment of:
  - 1. Airway and ventilation – airway patency, lung exam, work of breathing, capnography, respiratory rate and pulse oximetry.
  - 2. Circulatory status – pulse rate, heart rhythm, blood pressure, skin exam.
  - 3. Mentation for indication of brain perfusion and oxygenation.
  - 4. Trend EtCO<sub>2</sub> as a means of recognizing shift toward hyperventilation when readings fall below 30 mmHg and hypoventilation when reading exceeds 50 mmHg.
- C. Optimize respiratory status
  - 1. Adjust supplemental oxygen to maintain oxygen level of 90% or higher, with caution of COPD / emphysema patients who should not exceed 95%.
  - 2. Place patient in position of comfort.
  - 3. If ventilations are inadequate, first try assisting with BVM 100% oxygen with PEEP valve closed.
  - 4. Treat underlying causes per agency protocol.
- D. Optimize circulatory status
  - 1. Establish IV access.
  - 2. Maintain systolic BP of 90 mmHg minimum with infusion of normal saline or Lactated Ringer's solution. Caution with fluid support if signs or symptoms of heart failure or cardiac etiology of respiratory compromise.



3. If systolic blood pressure below 90 mmHg and cardiac etiology for respiratory distress suspected, consider renal / cardiac dosing of [vasopressor medications](#) per agency protocol.

- E. Consider non-invasive ventilatory support per agency protocol
- F. Prepare for advanced respiratory support if downward trending of respiratory status

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### **2030X AND 2040X ADULT/PEDIATRIC WHEEZING**

- A. Continue to reassess and utilize medications within [wheezing](#) protocol.
- B. Extend use of [albuterol](#) to continuous albuterol via nebulizer.
- C. In patients suspected of [anaphylaxis](#), extend use of epinephrine to repeat dosing every 20 minutes as needed for recurrent wheezing.

D. Consider IV [corticosteroids](#) per agency protocol.

- E. Slowing of respiratory rate, depressed mental status, inability to maintain respiratory effort, or worsening hypoxia suggests the patient requires intubation. Follow [rapid sequence intubation \(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic\)](#) or advanced airway protocol per agency. Nasal intubation is not recommended.

- F. Mechanical ventilation goal is to maintain adequate oxygenation and ventilation while minimizing airway pressures by using low tidal volumes (6-8 mL/kg) and low respiratory rates (10-12/minute). To avoid barotrauma, elevations in EtCO<sub>2</sub> can be tolerated (permissive hypercapnia).
- G. Mechanically ventilated asthma patients have a higher risk of barotrauma and acute pneumothorax and surveillance for this consequence should be ongoing.

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### **2050X PEDIATRIC STRIDOR/CROUP**

- A. Try to keep the child calm and minimize crying.

B. Repeat nebulized [epinephrine](#) every 15 minutes as needed, especially if there is a positive response with dosing.

C. Consider IV [corticosteroids](#) per agency protocol, dexamethasone is preferred.

- D. If patient has signs of impending respiratory failure, anticipate difficult intubation and use ET tube 0.5 to 1 mm smaller in size than typically used.

E. If respiratory collapse and unable to apply advanced airway, move to cricothyroidotomy.

## CARDIAC EXTENDED CARE SUPPLEMENTS

EMT	AEMT	EMT-I	Paramedic
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### **3030X POST CARDIAC ARREST CARE**

- A. Goals of extended care treatment
  - 1. Identify STEMI if present.
  - 2. Prepare for and treat post cardiac arrest complications.
  - 3. Minimize damage to the heart and brain.
- B. Perform frequent scheduled (at least every 10 minutes) reassessments of:
  - 1. Airway and ventilation
  - 2. Circulatory status
  - 3. Neurologic status
  - 4. Pain control
- C. If the ECG meets cardiac alert criteria, notify the accepting facility.
  - 1. Specify that you have a cardiac arrest with ROSC, ECG showing a STEMI.
- D. Shock, follow the [medical hypotension](#) protocols.
  - 1. Inferior and Posterior MI
    - a. May respond to volume.
    - b. More likely to have high grade heart blocks. Utilize [transcutaneous pacing](#) protocol, not atropine.
  - 2. Anterior and lateral MI (Left sided)
    - a. Do not resuscitate with fluid bolus.
    - b. More likely to require [vasopressor support](#).
- E. Minimizing ongoing cardiac damage requires that the patient has adequate coronary perfusion pressure and oxygenation (Target ROSC vital signs)
  - 1. Without putting excess strain on the heart.
  - 2. Consider [post-intubation](#) protocols if the patient cannot be adequately ventilated.
  - 3. Consider passive cooling if the resources are available.

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### **3060X CHEST PAIN**

- A. Goals of extended care treatment
  - 1. Identify life threatening causes of chest pain and treat them if possible.
- B. Perform frequent scheduled (at least every 10 minutes) reassessments of:
  - 1. Airway and ventilation
  - 2. Circulatory status
  - 3. Neurologic status
  - 4. Pain control
- C. If an acute coronary syndrome is suspected
  - 1. Perform serial scheduled electrocardiograms to detect worsening ischemia or STEMI.
    - a. Notify receiving facility if patient develops criteria for a cardiac alert.
  - 2. Only use oxygen to treat hypoxia or dyspnea.
  - 3. When available use [nitroglycerin paste](#).
- D. If suspected aortic aneurysm, pay attention to evolving or transitory changes in the neurologic symptoms (stroke-like).
- E. If a pulmonary embolism is suspected, decompensation will present as hypotension more commonly than hypoxia.

1. Fluid bolus to optimize preload (up to 2 X 500 ml bolus of crystalloid fluids)

2. If unresponsive to fluids initiate [vasopressor protocol](#).

F. For any chest pain consider opioid for analgesia.

1. May consider ketamine (**Paramedic with Critical Care Endorsement or WAIVERED for Paramedic**) for analgesia, if available.

G. Notify the receiving facility.

1. If there is a major change in status or transport method.

2. Close to arrival.

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### **3070X STEMI ALERT**

A. Goals of extended care treatment

1. Serial ECGs
2. Pain control
3. Identification and treatment of arrhythmia

B. Perform frequent scheduled (at least every 10 minutes) reassessment of:

1. Airway and ventilation
2. Circulatory status
3. ECG
4. Pain control

C. If shock develops, follow [medical hypotension](#) protocol.

1. Inferior and posterior STEMI

a. May respond to volume.

b. More likely to have high grade heart blocks. Utilize [transcutaneous pacing](#) protocol, not atropine.

2. Anterior and lateral STEMI

- a. Cannot resuscitate with fluid bolus.
- b. More likely to require vasopressor support.

D. Notification

1. In addition to initial STEMI alert done as soon as possible, notify receiving hospital of any changes in clinical status, cardiac rhythm, or ECG.
- 

Pain control in ACS is important to prevent detrimental physiologic effects such as increase in blood pressure and heart rate, which increase myocardial oxygen demand therefore potentially worsening ischemia and infarction.

#### **STEMI complications to identify and treat:**

- [Acute heart failure](#)
- [Arrhythmias](#)
- [Cardiogenic shock](#)

## MEDICAL EXTENDED CARE SUPPLEMENTS

EMT	AEMT	EMT-I	Paramedic
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### 4000X MEDICAL SHOCK

#### A. Goals of extended care treatment

1. Reassess the patient for change in condition and document vital signs (at least every 5 minutes).
  - a. Perform frequent reassessment of respiratory status to include documentation of respiratory rate, work of breathing, SpO<sub>2</sub>, EtCO<sub>2</sub>, and breath sounds with fluid infusion to prevent and rule out pulmonary edema.
2. Maintain the patient on supplemental oxygen with a target of 94% to 98% saturation.
3. For adults, the overall goal is improving and maintaining perfusion and mentation, not necessarily normalization of vital signs. For pediatrics patients, best evidence demonstrates improved outcomes with normalization of vital signs within the first hour.
4. Attempt to determine the type of shock to identify appropriate treatment interventions:
  - a. Cardiogenic (e.g., AMI, CHF, arrhythmia)
  - b. Distributive (e.g., neurogenic, septic, anaphylactic)
  - c. Hypovolemic
  - d. Obstructive (e.g., pulmonary embolism, cardiac tamponade, tension pneumothorax)

#### B. Patient monitoring: Consider use of the following monitoring tools as indicators of poor tissue perfusion during prolonged transport. Reassessment and perfusion correction with volume or vasopressors should be considered when one or more indicators are present (See below).

1. End tidal CO<sub>2</sub> monitoring: readings less than 25 mmHg
2. Urine output: Decreased or no urine output (<1 mL/kg/hr)
3. If available, check lactate level (greater than 2 mmol/L likely indicates poor tissue perfusion)

#### C. Extended care treatment for specific etiologies

1. Septic shock (Distributive)
  - a. Antipyretics for fever if not administered in last 6 hours – [Acetaminophen](#) or [Ibuprofen](#)

b. Consider antibiotics for suspected septic shock, if blood cultures can be obtained in advance, and/or EMS has coordinated with receiving hospital about choice of antibiotic therapy (**Paramedic with Critical Care Endorsement or WAIVERED for Paramedic**).

2. Hemorrhage (Hypovolemic)

a. If available, the administration of whole blood or packed red blood cells (**Paramedic with Critical Care Endorsement or WAIVERED for Paramedic**) may be indicated for hemorrhagic shock.

- b. If whole blood is unavailable:

- i. Treat with the minimum volume of isotonic fluids to maintain adequate blood pressure

(a) Adult: SBP of 100 mmHg

(b) Pediatric:

Age	Minimum SBP (mmHg)
0-23 months	75
2-5 years	80
6-8 years	85
9-12 years	90

Permissive hypotension is acceptable for short transports however with prolonged transport it may worsen patient outcomes. For this reason, the goal is to maintain a higher SBP during extended care.

3. Dysrhythmia (Cardiogenic)
  - a. Attempt to correct any unstable arrhythmias prior to treating with volume replacement or vasopressors. Reference ACLS/PALS for further care details.
  - b. Bradyarrhythmia
    - i. Adults and Children: Clinically significant bradyarrhythmia is generally associated with heart rates <60 beats per minute.
  - c. Tachyarrhythmia
    - i. Adults: Clinically significant tachyarrhythmia is generally associated with heart rates >150 beats per minute.
    - ii. Children: Clinically significant tachyarrhythmia is generally associated with heart rates >180 beats per minute, and in infants >220 beats per minute. Search for and treat underlying causes with lower heart rates, which likely represent sinus tachycardia.
4. Anaphylactic shock (Distributive)
  - a. Treat per [allergy and anaphylaxis](#) protocol
5. Myocardial infarction or congestive heart failure (Cardiogenic)
  - a. Administrator 250 mL fluid bolus for hypotension in presence of myocardial infarction, following nitroglycerin administration, or with congestive heart failure.
  - b. Reassess for pulmonary edema. If no signs of pulmonary edema, consider additional administrations of 250 mL fluid boluses until either improved mentation or target blood pressure is met.
6. Overdose
  - a. Provide supportive care per [overdose](#) protocol and frequently reassess if patient requires any redosing of medications.

**Signs of Pulmonary Edema**

- Crackles at lung bases
- Hypoxia
- Retractions

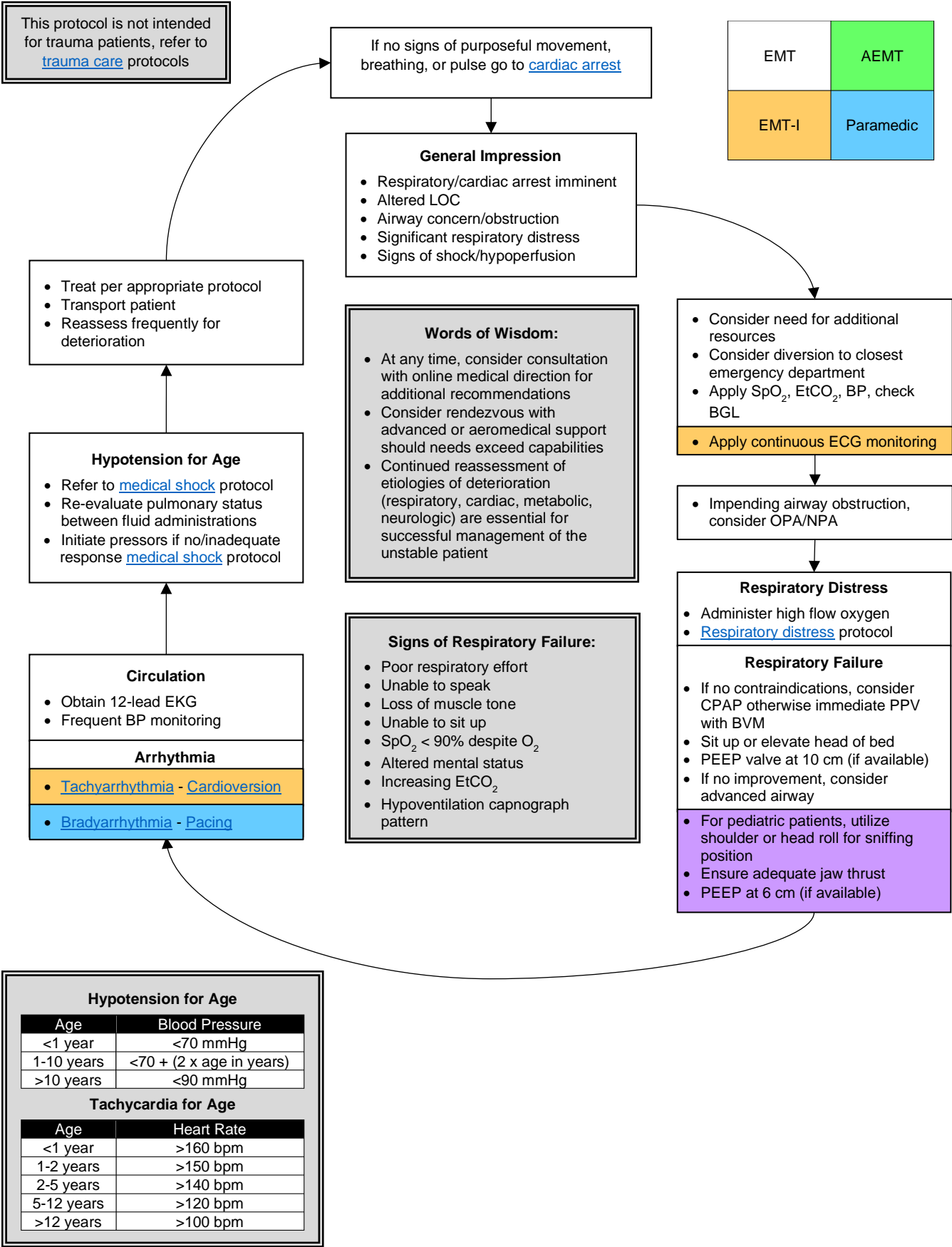
**D. Treatment for ongoing hypotension**

1. Vasopressor infusion – Refer to [medication extended care supplement](#) for alternative epinephrine infusions.
2. If there is a history of adrenal insufficiency, long-term steroid dependence, or fluid-refractory shock requiring vasopressors consider corticosteroid administration:

- a. Hydrocortisone succinate – 2 mg/kg (maximum 100 mg) IV/IM (preferred); OR
- b. [Methylprednisolone](#) – 2 mg/kg IV (maximum 125 mg); OR
- c. Dexamethasone – 0.6 mg/kg IV/IM (maximum dose of 16 mg)

- d. Specialized prescription medications to address an acute crisis may be given by all levels with a direct verbal order, 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 if possible.

4005X ADULT MEDICAL PATIENT IN EXTREMIS



## TRAUMA EXTENDED CARE SUPPLEMENTS

EMT	AEMT	EMT-I	Paramedic
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### 8000X GENERAL TRAUMA CARE

#### A. Goals of extended care treatment

1. Reassess the patient for change in condition.
2. Assess and treat for shock.
3. Reducing coagulopathy
4. Preventing hypothermia
5. Minimizing secondary injuries
6. Accessing additional resources
7. Maintaining pain control

#### B. Perform frequent scheduled (at least every 10 minutes) reassessments of:

1. Airway and ventilation
2. Circulatory status
3. Neurologic status
4. Pain control

#### C. Assessment and treatment of shock - If hypotensive:

1. Control any compressible bleeding source.
2. Treat potentially unstable pelvic fractures (pelvic binder) or major extremity fractures (appropriate splint) to minimize blood loss.

3. Consider TXA administration per agency protocol (**Paramedic with Critical Care Endorsement or WAIVERED for Paramedic**)

4. If whole blood is available (**Paramedic with Critical Care Endorsement or WAIVERED for Paramedic**)

- a. Treat with a goal to replace at least 30% of the estimated blood loss.
- b. If uncertain or persistently hypotensive, seek to treat with 2 units of RBC containing products.
- c. If the patient receives blood products, administer [calcium gluconate](#) (**WAIVERED**)

#### 5. If whole blood is unavailable:

- a. Treat with the minimum amount of fluids to maintain blood pressure
  - i. Adult: SBP of 100 mmHg
  - ii. Pediatric:

Age	Minimum SBP (mmHg)
0-23 months	75
2-5 years	80
6-8 years	85
9-12 years	90

Permissive hypotension is acceptable for short transports however with prolonged transport it may worsen patient outcomes. For this reason, the goal is to maintain a higher SBP during extended care.

#### 6. Maintain the patient on supplemental oxygen.

#### 7. Use the shock index (SI) to quantify the severity of shock and use the Delta SI (new SI – old SI) to detect changes in the shock state

- a. Shock index = heart rate/systolic blood pressure.
- b. Document every 10 minutes.
- c. An increase of 0.1 or more significantly increases mortality and additional fluid resuscitation should be initiated.

#### Shock Index, Pediatric Adjusted (SIPA) Maximum Normal Value:

- 4-6 years = 1.2
- 6-12 years = 1
- >12 years = 0.9

D. Reduce coagulopathy

1. Prevent or treat hypothermia
2. Reverse acidosis to treat coagulopathy, treatment options include:

a. If available, consider administration of blood products **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)**

b. If blood products are unavailable, consider administration of IV/IO fluids.

3. Provide clotting factors if possible – fresh frozen plasma or whole blood resuscitation **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)**

E. Prevent of hypothermia

1. Use available passive treatments.
2. Consider active rewarming (hot packs, heated humidified O<sub>2</sub>, warmed fluids)
  - a. If possible, use the TCCC style model: Active heat source – vapor barrier-insulating layer with wind proof outer barrier.
  - b. All intubated trauma patients should have active rewarming.
  - c. All patients in shock should have active rewarming.

F. Minimize brain and spinal secondary injuries.

1. Injuries to brain and spinal cord require more aggressive resuscitation and management.
2. Maintain SBP of 110 mmHg
3. Given high risk of secondary injury from hypoxia and rapid decompensation always keep SpO<sub>2</sub> > 90%. Utilize preemptive airway control to support normoxia.

G. Assess need for additional resources.

1. Decide if your patient is best served with a handoff to a helicopter EMS (HEMS) transport, if available
2. Consider HEMS to bring whole blood or blood products for life threatening extremity hemorrhage or non-compressible truncal injuries at risk for hemorrhage.
3. Consider bringing additional help when leaving the scene with potentially complex resuscitations.

H. Notify the receiving facility.

1. If there is a major change in status or transport method
2. Within 10 minutes of arrival

I. Pain control

1. Consider sequential doses of ketamine for patients with marginal blood pressures or hypotension **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)**

2. If one category of drugs (opiates or ketamine) is working stay with that category
  - a. Unless you run out of that medication
  - b. If you switch medication categories do not continue to give medications from the first category. This will increase your risk of respiratory depression.

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## **8020X TRAUMATIC SHOCK**

A. TXA may be given to all trauma patients with known or suspected hemorrhagic injuries as soon as possible per agency protocol **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)** – Do not give 3 hours after injury

B. Volume resuscitation

1. The preferred fluid for volume resuscitation is whole blood **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)**, if it is unavailable, packed red blood cells and fresh frozen plasma **(Paramedic with Critical Care Endorsement or WAIVERED for Paramedic)** may be used

a. If the patient receives blood products, administer [calcium gluconate](#) **(WAIVERED)**

2. If blood products are unavailable, lactated Ringers (first choice) or normal saline should be given using the minimum volume to achieve your blood pressure goals



- C. Use the shock index and delta SI to identify compensated shock patients as well as those beginning to decompensate.
  - D. Hypothermia should be aggressively managed.
    - 1. Low threshold for active rewarming
    - 2. Either 3-part commercial product, or 4-part improvised (heating source-vapor barrier-insulating layer-outer cover)
    - 3. Fluids should be heated, if possible.
- 

### **8030X HEAD TRAUMA**

- A. Patients with confirmed or suspected head injury should have a target systolic blood pressure of 110 mmHg.
  - B. Maintain patient with an ETCO<sub>2</sub> of 35-40 unless there are signs of brain herniation then target ETCO<sub>2</sub> of 30-35 via modest hyperventilation.
  - C. Document scheduled GCS scores to monitor progression of neurologic signs.
- 

### **8040X FACE AND NECK TRAUMA**

- A. Early airway control
  - B. Laryngeal trauma: Consider rendezvous with HEMS for RSI
- 

### **8050X SPINAL TRAUMA**

- A. Patients with confirmed or suspected spinal injury should have a target systolic blood pressure of 110 mmHg
  - B. Anticipation of spinal level creep
    - 1. May worsen neurogenic shock.
    - 2. Above T4 may cause bradycardia
    - 3. Above C5 may cause respiratory insufficiency or respiratory failure
  - B. If the patient requires full spinal motion restriction, consider vacuum bag immobilization if available
    - 1. If using a standard back board monitor for pressure injuries, consider repositioning, or padding.
  - C. Document scheduled neurologic reassessments.
- 

### **8060X CHEST TRAUMA**

- A. The most common treatable cause of patient decompensation will be tension pneumothorax.
    - 1. If the patient has clinical findings of pneumothorax, perform scheduled reassessments.
    - 2. Any change in hemodynamic status (shock) should include assessment for tension pneumothorax.
- 

### **8070X ABDOMINAL AND PELVIC TRAUMA**

- A. Serial reassessment of peritoneal signs
-

### **8090X BURNS**

- A. Airway control – Progression of signs suggests need for early airway management
  - B. Volume resuscitation for extended transport
    - 1. For patients with >20% body surface area 2<sup>nd</sup> and 3<sup>rd</sup> degree burns
    - 2. 2 mL x weight in Kg x %TBSA
  - C. Minimize hypothermia.
  - A. Minimize wound contamination.
- 

### **8110X TRAUMA IN PREGNANCY**

- A. Use the shock index (SI = heart rate/systolic blood pressure) to quantify the severity of shock and use the Delta SI to detect changes in the shock state
    - 1. Document every 30 minutes.
    - 2. An increase of 0.1 or more significantly increases mortality and additional fluid resuscitation should be initiated.
  - B. If the second trimester or later roll patient to the left to prevent occlusion of the inferior vena cava. See prolonged transport of the pregnant patient.
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## MEDICATION EXTENDED CARE SUPPLEMENTS

EMT	AEMT	EMT-I	Paramedic
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### 9080X CALCIUM

Paramedic

- A. Refer to [calcium](#) for medication information.
- B. Supplemental Indication/Dosing
  1. Patient receives blood products (**WAIVERED**)
    - a. Adult
      - i. Consider treatment with 3 gm calcium gluconate IV

### 9120X EPINEPHRINE

Paramedic

- C. Refer to [epinephrine](#) for medication information.
- D. Supplemental Indication/Dosing – Epinephrine
  1. **Mix:** Inject amount of epinephrine into normal saline size bag per table below to achieve 1mcg/mL concentration. Use macro drip set for infusion.

Normal Saline Volume	Epinephrine Amount	Epinephrine 1mg/mL Concentration Amount	Epinephrine 0.1mg/mL Concentration Amount
1000 mL	1 mg	1 mL	10 mL
500 mL	0.5 mg	0.5 mL	5 mL
250 mL	0.25 mg	0.25 mL	2.5 mL

2. **Adult IV/IO:**
  - a. 0.01-1 mcg/kg/min
  - b. 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. Titrate to desired hemodynamic effect with goal BP of > 90 mmHg systolic, improved respiratory status (bronchodilation), and improved perfusion/mentation.
3. **Pediatric IV/IO:** 0.01-1 mcg/kg/min

Drip Rate Chart (1 mcg/mL)		
Dose (mcg/min)	10 gtt/mL Drip Set	15 gtt/mL Drip Set
2	20 gtt/min	30 gtt/min
3	30 gtt/min	45 gtt/min
4	40 gtt/min	60 gtt/min
5	50 gtt/min	75 gtt/min
6	60 gtt/min	90 gtt/min
7	70 gtt/min	105 gtt/min
8	80 gtt/min	120 gtt/min
9	90 gtt/min	135 gtt/min
10	100 gtt/min	150 gtt/min

### 9220X NITROGLYCERIN

AEMT

EMT-I

Paramedic

- A. Refer to [nitroglycerin](#) for medication information
- B. Supplemental Indication/Dosing
  1. Nitroglycerin paste
    - a. Start with a sublingual dose, then apply 1" of nitroglycerin paste on application paper.

- b. Place the paper, with nitroglycerin paste toward patient, on the anterior chest wall of the patient.
  - c. Remove application paper and wipe the patient's skin if systolic blood pressure falls below 100 mmHg or for other signs of hypotension.
-