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0001 LFD GENERAL GUIDELINES: INTRODUCTION

INTRODUCTION

The following protocols have been developed and approved by the Denver Metro EMS Medical Directors group. They have also been reviewed and approved by the Iverson Memorial Medical Director. These protocols define the standard of care for EMS providers in the Laramie Fire Departments response district, and delineate the expected practice, actions, and procedures to be followed.

No protocol can account for every clinical scenario encountered, and the EMS director recognizes 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 agency 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.

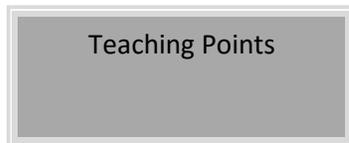
In order to keep protocols as uncluttered as possible, and to limit inconsistencies, individual drug dosing has not been included in the algorithms. It is expected the EMTs will be familiar with standard drug doses. Drug dosages are included with the medications section of the protocols as a reference.

PROTOCOL KEY

Boxes without any color fill describe actions applicable to all levels of EMT. Boxes with orange fill are for actions of EMT-Intermediate level or higher, and blue-filled boxes are for EMT-paramedic level. When applicable, actions requiring base contact are identified in the protocol.

EMT	AEMT	EMT-I	Paramedic
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Teaching points deemed sufficiently important to be included in the protocol are separated into grey-filled boxes with a double line border:



PEDIATRIC PROTOCOLS

For the purposes of these clinical care protocols, pediatric patients are those < 12 years of age, except where identified in a specific protocol.

0001 LFD GENERAL GUIDELINES: INTRODUCTION

With permission from Denver Metro EMS Medical Directors and the contributors listed below. The Laramie Fire Department in conjunction with Iverson Memorial Hospital would like to utilize the following EMS Protocols. The LFD has made several changes to these Protocols but none the less has used these as a basis to establish an updated version to our system. 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 during this revision of the Denver Metro EMS protocols.

Denver Metro EMS Medical Directors January 2016

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0002 LFD GENERAL GUIDELINES: CONFIDENTIALITY

CONFIDENTIALITY

- 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:
 - The patient consents
 - 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)

- 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.

Exceptions

- 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.
 - The patient is not entitled to confidentiality for disclosures made publicly.
 - The patient is not entitled to confidentiality with regard to evidence of a crime.

- Additional Considerations
 - Any disclosure of medical information should not be made unless necessary for the treatment, evaluation or diagnosis of the patient.
 - 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.
 - Any discussions of prehospital care by and between the receiving hospital, the crewmembers in attendance, or at in-services or audits are done strictly for educational or performance improvement purposes. Further disclosures are not authorized.
 - Radio communications should not include disclosure of patient names.
 - This procedure does not preclude or supersede your agency's HIPAA policy and procedures.

0003 LFD GENERAL GUIDELINES: CONSENT

- **CONSENT**

- **General Principles: Adults**

- An adult in the State of Wyoming 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 person is deemed to have decision-making capacity if he/she has the ability to provide informed consent, i.e., the patient:
 - Understands the nature of the illness/injury or risk of injury/illness
 - Understands the possible consequences of delaying treatment and/or refusing transport
 - Given the risks and options, the patient voluntarily refuses or accepts treatment and/or transport.
- 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.
- **Implied Consent:** An unconscious adult is presumed to consent to treatment for life-threatening injuries/illnesses.
- **Involuntary Consent:** a person other than the patient in rare circumstances may authorize Consent. This may include a court order (guardianship), authorization by a law enforcement officer for prisoners in custody or detention, or for persons under a mental health hold or commitment who are a danger to themselves or others or are gravely disabled.

- **Procedure: Adults**

- Consent may be inferred by the patient's actions or by express statements. If you are not sure that you have consent, clarify with the patient or **CONTACT BASE**. This may include consent for treatment decisions or transport/destination decisions.
- Determining whether or not a patient has decision-making capacity to consent or refuse medical treatment in the prehospital setting can be very difficult. Every effort should be made to determine if the patient has decision-making capacity, as defined above.
- For patients who do not have decision-making capacity, **CONTACT BASE**.
- If the patient lacks decision-making capacity and the patient's life or health is in danger, and there is no reasonable ability to obtain the patient's consent, proceed with transport and treatment of life-threatening injuries/illnesses. If you are not sure how to proceed, **CONTACT BASE**.
- For patients who refuse medical treatment, if you are unsure whether or not a situation of involuntary consent applies, **CONTACT BASE**.

- **General Principles: Minors**

- A parent, including a parent who is a minor, may consent to medical or emergency treatment of his/her child. There are exceptions:
 - 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.

0003 GENERAL GUIDELINES: CONSENT

- The consent of a parent is not necessary to authorize hospital or emergency health care when an EMT in good faith relies on a minor's consent, if the minor is at least 15 years of age and emancipated or married.
- Minors may seek treatment for abortion, drug addiction, and venereal disease without consent of parents. Minors > 15 years may seek treatment for mental health.
- When in doubt, your actions should be guided by what is in the minor's best interests and base contact.
- **Procedure: Minors**
- A parent or legal guardian may provide consent to or refuse treatment in a non- life-threatening situation.
- When the parent is not present to consent or refuse:
 - 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.
 - 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
 - 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, and notify police to respond and assist.

0004 LFD GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

- **PHYSICIAN AT THE SCENE/MEDICAL**

DIRECTION Purpose

- To provide guidelines for prehospital personnel who encounter a physician at the scene of an emergency

General Principles

- The prehospital provider has a duty to respond to an emergency, initiate treatment, and conduct an assessment of the patient to the extent possible.
- 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.
- Good patient care should be the focus of any interaction between prehospital care providers and the physician.

Procedure

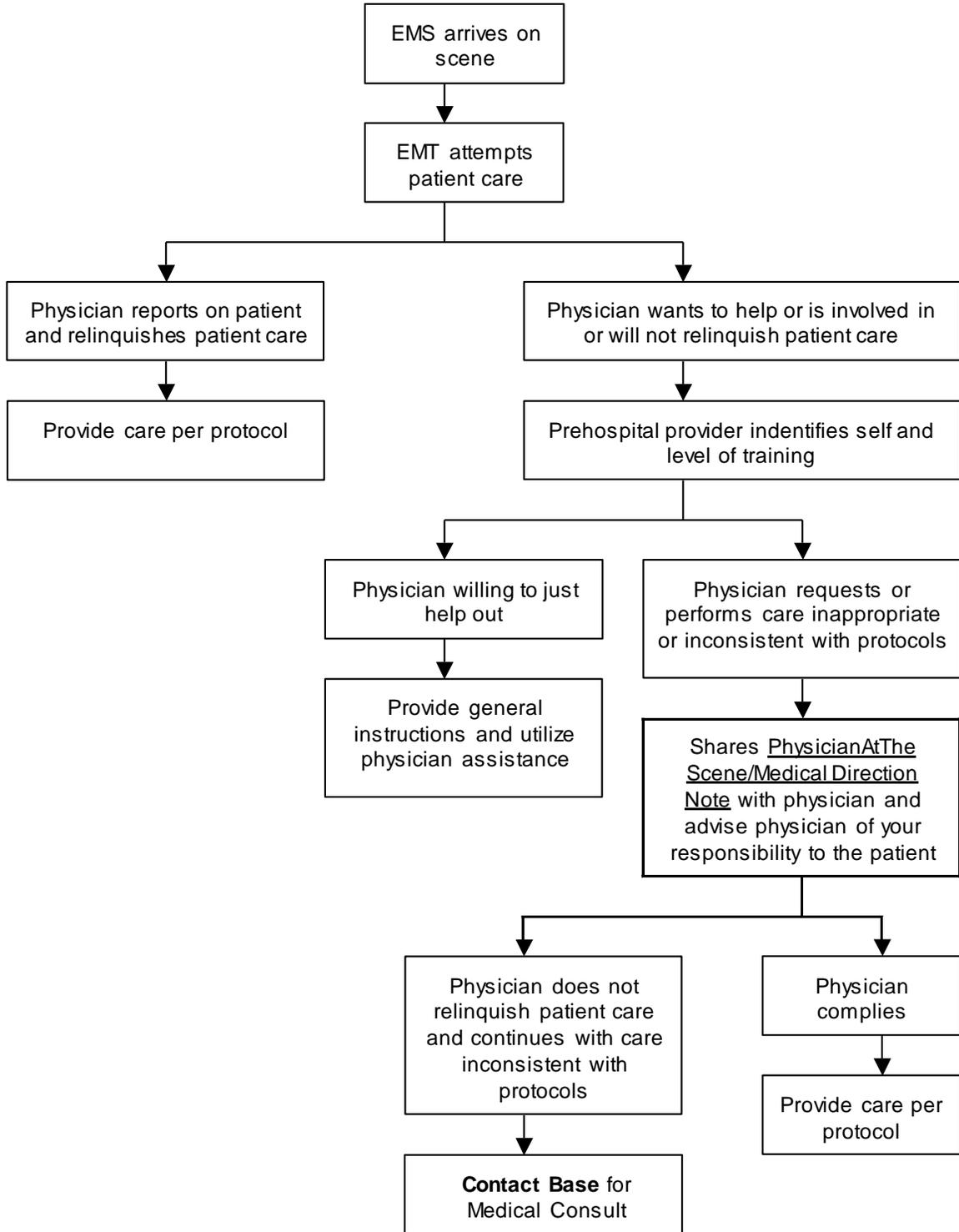
- See algorithm below and sample note to physician at the scene

Special notes

- Every situation may be different, based on the physician, the scene, and the condition of the patient.
- **CONTACT BASE** when any question(s) arise.

0004 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM



0004 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

Physician at the Scene/Medical Direction Note

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 Wyoming and providing identification, you may be asked to assist in one of the following ways:

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

THANK YOU FOR OFFERING YOUR ASSISTANCE DURING THIS EMERGENCY.

Medical Director

Agency

0005 LFD GENERAL GUIDELINES: TERMINATION OF RESUSCITATION AND FIELD PRONOUNCEMENT GUIDELINES

Purpose

- A. To provide guidelines for resuscitation and field pronouncement of patients in cardiac arrest in the prehospital setting

General Principles

- A. Agency policy determines base contact requirements for patients for whom resuscitative efforts are being withheld.
- B. Attempt resuscitation for all patients found pulseless and apneic, unless any of the following are present:
 - 1. Physician orders as specified on a "Do Not Resuscitate/DNR" order
 - 2. A valid CPR directive present with the patient
 - 3. Dependent lividity or rigor mortis
 - 4. Decomposition
 - 5. Decapitation
 - 6. Evidence of massive blunt head, chest, or abdominal trauma
 - 7. Third degree burns over more than 90% of the total body surface area

Termination of Resuscitation (TOR)

- A. All cases described below require contact with a base physician to approve termination of resuscitation (TOR).
 - 1. **Blunt Trauma Arrest:**
 - a. Contact Base for TOR if patient is apneic and pulseless and no response to BLS care including chest compressions and bag valve mask ventilations.
 - 2. **Penetrating Trauma Arrest:**
 - a. Resuscitate and transport to a trauma facility.
 - i. If time of arrest suspected to be > 10 minutes, and no signs of life or response to BLS care (as above), consider base contact for TOR.

0005 LFD GENERAL GUIDELINES: TERMINATION OF RESUSCITATION AND FIELD PRONOUNCEMENT GUIDELINES

3. Medical Pulseless Arrest:

- a. Resuscitate according to Universal Pulseless Arrest Algorithm on scene (unless unsafe) until one of the following end-points met:
 - i. Return of spontaneous circulation (ROSC).
 - ii. No ROSC despite 15 minutes of provision of ALS care or BLS care with an AED. If shockable rhythm still present, continue resuscitation and transport to closest emergency department.
 - iii. Contact base for TOR at any point if continuous asystole for at least 15 minutes in any patient 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:
 - i. No AED shock advised
 - ii. No ROSC
 - iii. Arrest unwitnessed by either EMS or bystanders
 - iv. No bystander CPR before EMS arrival

- c. The following patients found pulseless and apneic warrant resuscitation efforts beyond 30 minutes and should be transported:
 - i. Hypothermia
 - ii. Drowning with hypothermia and submersion < 60 minutes
 - iii. Pregnant patient with estimated gestational age \geq 20 weeks

- B. **After pronouncement**, do not alter condition in any way or remove equipment (lines, tubes, etc.), as the patient is now a potential coroner's case.

0006 LFD GENERAL GUIDELINES: ADVANCED MEDICAL DIRECTIVES

Advance Medical Directives

- A. These guidelines apply to both adult and pediatric patients.
- B. There are several types of advance medical directives (documents in which a patient identifies the treatment to be withheld in the event the patient is unable to communicate or participate in medical treatment decisions).
- C. Some patients may have specific physician orders on a form order or "Comfort One" Bracelet to withhold CPR or resuscitation and should be honored by EMS.
- D. Resuscitation may be withheld from, or terminated for, a patient who has a valid CPR Directive, Do Not Resuscitate Order (DNR), or other advance medical directive when:
 - 1. It is clear to the prehospital provider from the document that resuscitation is refused by the patient or by the patient's attending physician who has signed the document; and
 - 2. Base physician has approved withholding of or ceasing resuscitation.
- E. Suspected suicide does not necessarily negate an otherwise valid CPR Directive, DNR order or other advanced medical directive. **CONTACT BASE**
- F. A Living Will ("Declaration as to Medical or Surgical Treatment") requires a patient to have a terminal condition, as certified in the patient's hospital chart by two physicians.
- H. Other types of advance directives may be a "Durable Medical Power of Attorney," or "Health Care Proxy". Each of these documents can be very complex and require careful review and verification of validity and application to the patient's existing circumstances. Therefore, the consensus is that resuscitation should be initiated until a physician can review the document or field personnel can discuss the patient's situation with the base physician. **If there is disagreement at the scene about what should be done, CONTACT BASE for guidance.**
- I. Verbal DNR "orders" are not to be accepted by the prehospital provider. In the event family or an attending physician directs resuscitation be ceased, the prehospital provider should immediately **CONTACT BASE**. The prehospital provider should accept verbal orders to cease resuscitation only from the **Base physician**.
- J. There may be times in which the prehospital provider feels compelled to perform or continue resuscitation, such as a hostile scene environment, family members adamant that "everything be done," or other highly emotional or volatile situations. In such circumstances, the prehospital provider should attempt to confer with the base for direction and if this is not possible, the prehospital provider must use his or her best judgment in deciding what is reasonable and appropriate, including transport, based on the clinical and environmental conditions, and establish base contact as soon as possible.

Additional Considerations:

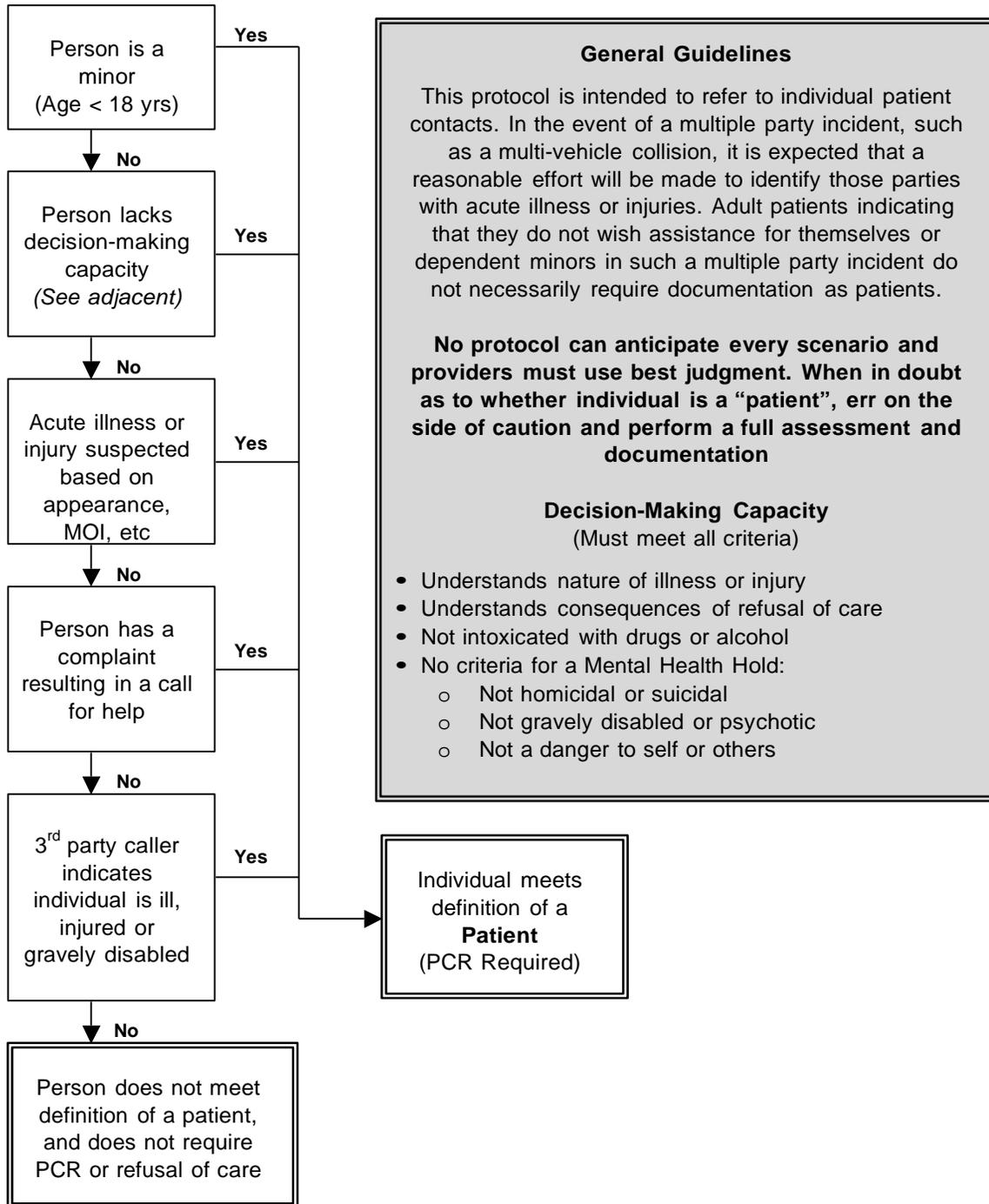
- A. Patients with valid DNR orders or advanced medical directives should receive supportive or comfort care, e.g. medication by any route, positioning and other measures to relieve

0006 LFD GENERAL GUIDELINES: ADVANCED MEDICAL DIRECTIVES

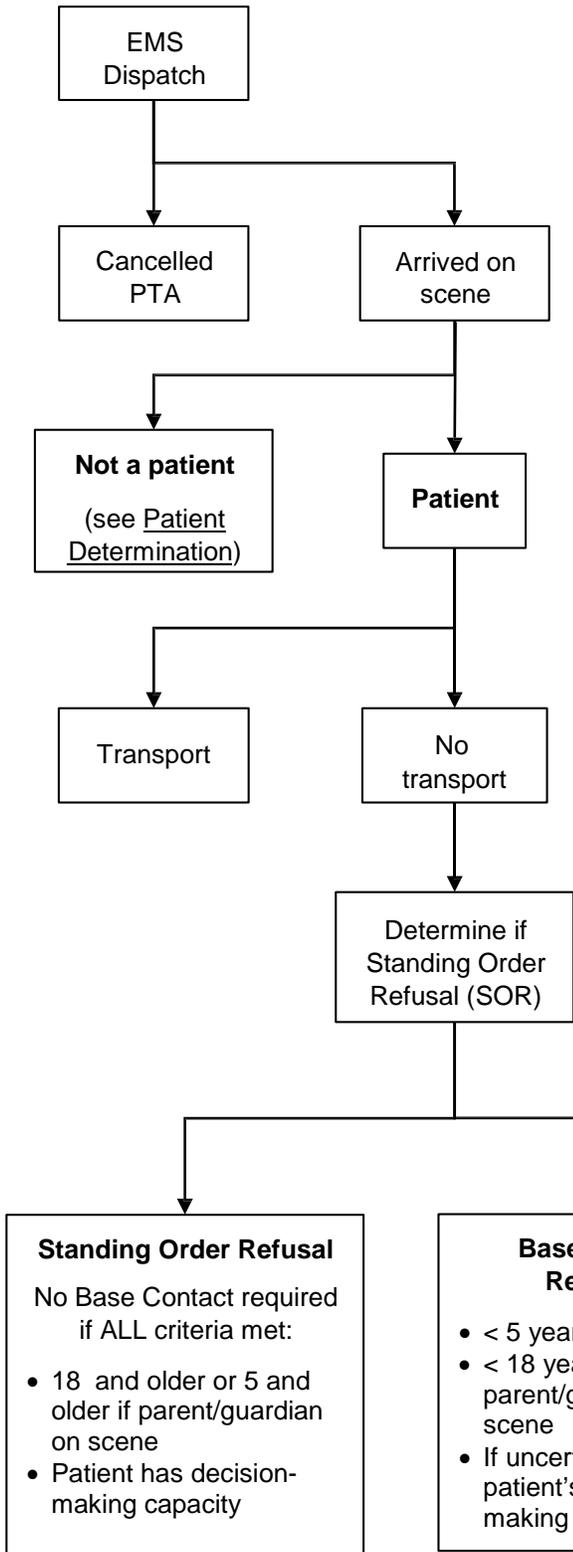
pain and suffering. Also the use of oxygen, suction and manual treatment of an airway obstruction as needed for comfort.

- B. 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.

0007 LFD GENERAL GUIDELINES: PATIENT DETERMINATION: "PATIENT OR NO PATIENT"



0008 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL



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

Refer to 0003: General Guidelines: Consent for complete decision-making capacity guidelines

A person is deemed to have decision-making capacity if he/she has the ability to provide informed consent, i.e., the patient:

1. Understands the nature of the illness/injury or risk of injury/illness
2. Understands the possible consequences of delaying treatment and/or refusing transport
3. Given the risks and options, the patient voluntarily refuses or accepts treatment and/or transport.

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

For potentially intoxicated patients, refer to 4015 Alcohol Intoxication

Documentation Requirements for Refusal

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

High Risk Patients

Base contact is strongly recommended whenever, in the clinical judgement of the EMS provider, the patient is at high risk of deterioration without medical intervention.

0009 LFD GENERAL GUIDELINES

NARCOTIC AND BENZODIAZEPINE ACQUISITION AND DOCUMENTATION

Background

1. The Laramie Fire Department ambulance service currently utilizes the controlled substances of Morphine Sulfate, Fentanyl, Lorazepam (Ativan), and Diazepam (Valium).
2. Morphine sulfate and Fentanyl are FDA Schedule II narcotics and require rigorous security and documentation.
3. The following procedures are created with the intent of maintaining and documenting the necessary security for LFD/IMH narcotics and benzodiazepines utilized in the prehospital setting.

Acquisition and Pyxis stocking

1. The LFD EMS Commander will ensure an adequate supply of Morphine, Fentanyl, Ativan and Valium will be available for restocking ambulances in the Pyxis system in the IMH ambulance bay.
2. The Pyxis supply of these medications will be obtained through the Medical Director only by the EMS Commander and MS222 forms will be returned to the Medical Director to file.

Dispensing to MS Units

1. The optimal stocking on each ambulance will be 4 Tubex (40 mg) of morphine, 4 Tubex (400mcg) of fentanyl, 2 Tubex (4mg) Ativan and 2 Tubex (20mg) of Valium.
2. When a medication is utilized and needs to be restocked on ambulance, the individual replacing stock is responsible for ensuring that the medication to be immediately stocked and secured with a tamper-proof tag inside the secured locked box (except Ativan, which is stored in MediFridge).
3. The individual restocking the medication is also responsible for ensuring that the secured compartment is labeled as to contents with a new label.

Dispensing and security in MS Units

1. The medication box on individual ambulances is to remain secured with a tamper-proof tag at all times inside the locked box, unless necessary for dispensing or restocking the contained medications.
2. A label will be inserted inside each medication box detailing the security tag number; the name and # of each medication contained within the compartment; and the earliest expiration date for each medication. The label will be signed by the individual who applied the tamper-proof tag.

3. Whenever the tamper-proof tag is removed for any reason, a new tag is to be affixed and a new label is to be filled out and applied. Altering the existing label does not satisfy this requirement.
4. Whenever the tamper-proof tag is removed for any reason, an entry is to be made in the Narcotic Security Log in the ambulance's log book.
5. Daily tracking will be conducted by checking the tamper-proof tag number against that listed on the label and making the appropriate entry on the Narcotic Log located on the back of the ambulance's checkout sheet. "Ditto" marks are not to be used on the Narcotic Log.
6. Any variance from this protocol should be reported immediately to the Shift Commander on duty. All individuals assigned to the ambulance in question are considered responsible for proper security of medications on board.

Documentation

1. Any wasted or expired narcotics or benzodiazepines **MUST** be documented in the Narcotic waste Log located in the IMH ER next to the Pyxis system.
2. Any used narcotics or benzodiazepines must be documented in the ambulance use log on the ambulance that the medication was used from (found near the rear of the checkout book of that ambulance).
3. Any narcotics and benzodiazepines used for patient care must be documented in the electronic patient care report.
4. Appropriately adjust the Pyxis system when restocking ambulances with narcotics or benzodiazepines.

0010 LFD GENERAL GUIDELINES: MANDATORY REPORTING OF ABUSE PATIENTS

Purpose

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

General Principles

- At-risk adult or pediatric patients who are suspected to be victims of abuse or exploitation, as defined in State Statute and Rule, should be reported in a manner consistent with agency guidelines/procedures.

0012 LFD GENERAL GUIDELINES: "BASE CONTACT" FOR PHYSICIAN CONSULTATION

Purpose

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

General Principles

- A. Base contact for physician consultation is not the same as emergency department pre- notification of patient arrival and handoff.
- B. Base contact is used in multiple care scenarios including but not limited to; forewarning of unstable or complicated patients, patient refusal and medical consultation and discussion.
- C. Good communication is critical to a smooth transition of care between the prehospital setting and the emergency department.
- E. Throughout the protocol patient "**BASE CONTACT**" is used to signify the need for call in. These algorithm points reflect critical decision points in care where communication with physician support is expected.
- F. As stated in the introduction the protocols are to be used as guidelines. Protocol cannot account for every patient scenario and deviation from protocol may at times be justified and in the patients best interest.

Preferred "BASE CONTACT" Times.

- A. Medical consultation should be readily available at all times and should be utilized in the following circumstances:
 - a. Any time "**BASE CONTACT**" is required or recommended per protocol.
 - b. Unusual presentations or patient care situations not covered by set protocol and outside the scope of practice or comfort level of care by individual prehospital provider.
 - c. Necessary deviation from protocol deemed to be in the best interest of the patient.
 - d. For selected patient care refusals as indicated by 0008 General Guidelines: Patient Non-Transport or Refusal.
 - e. During the care of critically ill patient who is not responding to protocol/algorithmic treatment.

0100 LFD PROCEDURE PROTOCOL: OROTRACHEAL INTUBATION

Indications:

- Respiratory failure
- Absence of protective airway reflexes
- Present or impending complete airway obstruction
- Anticipated prolonged need for positive pressure ventilation

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
 - 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

Technique:

1. Initiate BLS airway sequence
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 immobilization 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. ETCO₂
 - b. Presence and symmetry of breath sounds
 - c. Rising SpO₂
 - d. Other means as needed
7. Ventilate with BVM. Assess adequacy of ventilations
8. During transport, continually reassess ventilation, oxygenation and tube position with continuous ETCO₂ and SpO₂

Precautions:

- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think "DOPE"
 - **D**islodgement
 - **O**bstruction
 - **P**neumothorax
 - **E**quipment failure (no oxygen)
- Reconfirm and document correct tube position 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. Use King airway or BVM ventilations if 2 attempts at intubation unsuccessful.

0110 LFD 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
- Anticipated prolonged need for positive pressure ventilation

Paramedic

Contraindications:

- Apnea
- Severe mid-face trauma

Technique:

1. Initiate BLS airway sequence
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 (If available)
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. ETCO₂
 - b. Presence and symmetry of breath sounds
 - c. Rising SpO₂
 - d. Other means as needed
15. Ventilate with BVM. Assess adequacy of ventilations
16. During transport, continually reassess ventilation, oxygenation and tube position with continuous ETCO₂ and SpO₂

Precautions:

- Before performing BNTI, consider if patient can be safely ventilated with non-invasive means such as CPAP or BVM
- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think "DOPE"
 - **D**islodgement
 - **O**bstruction
 - **P**neumothorax
 - **E**quipment failure (no oxygen)
- Reconfirm and document correct tube position 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.

0111 PROCEDURE PROTOCOL: MAD (Mucosal Atomization Device)

General Description:

The nasal mucosa provides a safe, effective route for medication delivery with a *MAD* (Mucosal Atomization Device). Medication absorption rates and plasma concentrations are comparable to the intravenous route.

Indications:

The following medications are approved for IN (intranasal) administration:

1. Fentanyl: pain control
2. Ativan: Active seizure or Anxiety
3. Narcan: Altered mentation, known or suspected opiate drug overdose
4. Glucagon: Hypoglycemia and unsafe / inability to initiate IV

Contraindications:

1. Do not use if Epistaxis is present.
2. Do not use if patient has severe nasal congestion.
3. Do not use in cases of nasal trauma.
4. Do not give more than 1 mL per nostril.

Procedure:

1. Prepare your equipment (MAD, 1 or 3 cc syringe, medication).
2. Draw up your medication (same dosage you would use for IV administration). Allow some air in the syringe to make up for the "dead space" so that all the medication is administered.
3. Attach the MAD to the end of the syringe.
4. Press the atomizer against the nostril.
5. Briskly depress the syringe plunger.
6. Administer $\frac{1}{2}$ of the dose in each nostril. Do not give more than 1cc per nostril.

Notes:

1. IV access should be established if possible after nasal medication is given.
2. IN (Intranasal) administration is not meant to replace IM and IV injections, but adds more versatility for use when IV access is not readily available or prudent.

0120 LFD PROCEDURE PROTOCOL: PERCUTANEOUS CRICOTHYROTOMY

Paramedic

Introduction:

- Percutaneous 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.

Indications:

- A life-threatening condition exists **AND** advanced airway management is indicated, **AND** adequate oxygenation and ventilation cannot be accomplished by other less invasive means.

Contraindications:

- Anterior neck hematoma is a relative contraindication
- Age less than 12 years old is a relative contraindication

Technique:

1. Prepare skin using aseptic solution
2. Position the patient in a supine position, with in-line spinal immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view
3. Perform cricothyrotomy according to manufacturer's instructions for selected device
4. Confirm and document tube placement by:
 - a. ETCO₂
 - b. Breath sounds
 - c. Rising pulse oximetry
 - d. Other means as needed
5. Ventilate with BVM assessing adequacy of ventilation
6. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
7. Secure tube with tube ties or device
8. 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

0121 LFD PROCEDURE PROTOCOL: BOUGIE ASSISTED SURGICAL 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.

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.

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 immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.
2. Using an aseptic technique (betadine/alcohol wipes), cleanse the area.
3. Standing on the left side of the patient, stabilize the larynx with the thumb and middle finger of your left hand, and identify the cricothyroid membrane, typically 4 finger-breadths 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.
6. Insert the bougie curved-tip first through the incision and angled towards the patient’s feet
 - 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 “hangup” 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: ETCO₂ 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 from the carotid or jugular vessels, or their branches.

0130 LFD PROCEDURE PROTOCOL: KING AIRWAY

AEMT	EMT-I	Paramedic
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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

Contraindications:

- Intact gag reflex
- Caustic ingestion

Technique:

1. Initiate BLS airway sequence
2. Select proper size King Airway based on patient height:
 - a. 35" to 45" tall = #2
 - b. 41" to 51" tall = #2.5
 - c. 4' to 5' tall = #3
 - d. 5'-6' tall = #4
 - e. Greater than 6' tall = #5
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 (included)
4. Suction airway and pre-oxygenate with BVM ventilations, if possible
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. Hold King tube in dominant hand at the connector. With other hand, open mouth and lift chin
8. Rotate King tube so blue index line is facing corner of mouth
9. Introduce tip into mouth and advance airway behind tongue into the hypopharynx
10. As tube passes tongue, rotate King so that blue index line is again facing the chin
11. Without excessive force, advance King so that base is aligned with teeth or gums
12. Using supplied syringe, inflate cuff balloon with correct volume of air (marked on King tube):
 - a. Size 2 = 30 mL
 - b. Size 2.5 = 35 mL
 - c. Size 3 = 50 mL
 - d. Size 4 = 70 mL
 - e. Size 5 = 80 mL
13. Attach bag to King and begin ventilating patient. While bagging, slowly and slightly withdraw King until ventilations are easy and chest rise is adequate
14. Confirm tube placement by auscultation, chest movement, and ETCO₂
15. Monitor patient for vomiting and aspiration
16. Continuously monitor ETCO₂, SpO₂, vital signs

Precautions:

1. If patient < 4' tall, an appropriately sized pediatric King tube must be used.
2. Use with caution in patients with broken teeth, which may lacerate balloon
3. Use with caution in patients with known esophageal disease
4. Do not remove a properly functioning King tube in order to attempt intubation

0140 LFDPROCEDURE PROTOCOL: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

AEMT	EMT-I	Paramedic
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Indications:

- Symptomatic patients with moderate-to-severe respiratory distress as evidenced by at least two (2) of the following:
 - Rales (crackles)
 - Dyspnea with hypoxia (SpO₂ less than 90% despite O₂)
 - Dyspnea with verbal impairment – i.e. cannot speak in full sentences
 - Accessory muscle use
 - Respiratory rate greater than 24/minute despite O₂
 - Diminished tidal volume

Contraindications:

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

Technique:

1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR, SpO₂, and ETCO₂)
3. Apply the CPAP mask and secure with provided straps, progressively tightening as tolerated to minimize air leak
4. Operate CPAP device according to manufacturer specifications
5. Start with the lowest continuous pressure that appears to be effective. Adjust pressure following manufacturer instructions to achieve the most stable respiratory status utilizing the signs described below as a guide
6. Monitor patient continuously, record vital signs every 5 minutes.
7. Assess patient for improvement as evidenced by the following:
 - a. Reduced dyspnea
 - b. Reduced verbal impairment, respiratory rate and heart rate
 - c. Increased SpO₂
 - d. Stabilized blood pressure
 - e. Appropriate ETCO₂ 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 SpO₂ readings
 - d. Rising ETCO₂ levels or other ETCO₂ 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 FiO₂ adjustment and will only administer up to 30% oxygen. If no improvement in oxygenation with a fixed pressure CPAP device consider adding supplemental oxygen.

0141 PROCEDURE PROTOCOL: ResQGARD

I. Indications for Use:

1. Spontaneously breathing patients who are experiencing symptoms of low blood circulation (e.g. diaphoresis, tachycardia, weak radial pulses, cold, clammy skin, tachypnea) or hypotensionⁱ (e.g. < 100 mm Hg [adults]; per age & weight and as directed by a physician [children]), which can be secondary to a variety of causes such as:
 - a. Anaphylaxis
 - b. Blood loss (traumatic or medical etiology) or blood donation
 - c. Burns
 - d. Dehydration
 - e. Dialysis
 - f. Drug overdose
 - g. Heat shock
 - h. Orthostatic intolerance
 - i. Pregnancy
 - j. Sepsis/toxins
 - k. Spinal shock
2. Permissive Hypotension: in cases (e.g. hemorrhage due to a trauma-related injury) in which a lower than normal blood pressure (BP) is desired to assist in the blood-clotting process, the ResQGARD may still be a reasonable therapy to help maintain “permissive hypotension.”

II. Contraindications:

1. Flail chest
2. Shortness of breath or respiratory insufficiency
3. Chest pain
4. Dilated cardiomyopathy
5. Congestive heart failure
6. Pulmonary hypertension
7. Aortic stenosis

II. Precautions

1. The ResQGARD is not recommended for use in patients with a penetrating chest injury that have on-going, uncontrolled blood loss.
2. Children under 25 lbs may not tolerate the ResQGARD.
3. If respiratory distress develops during use of the ResQGARD, immediately discontinue use.

III. Procedure for Use:

1. Identify the need for ResQGARD application (assess indication for use).
2. Reassure patient and position as appropriate.
3. Obtain baseline vital signs.
 - a. A blood pressure may also be estimated rapidly as follows:
 - i. A palpable radial pulse is generally an indication that the systolic BP is at least 90 mmHg.
 - ii. A palpable brachial pulse is generally an indication that the systolic BP is at least 80 mmHg.
 - iii. A palpable femoral pulse is generally an indication that the systolic BP is at least 70 mmHg.

0141 PROCEDURE PROTOCOL: ResQGARD

- iv. A palpable carotid pulse is generally an indication that the systolic BP is at least 60 mmHg.
4. Explain to the patient that the device will make it slightly more difficult to breathe, but that the resistance is what may make them feel better.
5. Apply the ResQGARD:
 - a. Using the ResQGARD on a facemask:
 - i. Gently (but firmly) hold the ResQGARD over the nose and mouth (or have the patient hold), establishing and maintaining a tight face seal with facemask. The head strap (e.g. ResQStrap) may be used if the patient does not want to hold the ResQGARD in place.
 - b. Using the ResQGARD on a mouthpiece:
 - i. Place the mouthpiece into the patient's mouth and have them make a tight seal with their lips.
 - ii. Apply the nose clip if necessary to discourage inspiring through nose.
6. Have patient breathe in slowly (over 2 - 3 seconds) and deeply; exhale normally. Breathe at a rate of 10 - 16/minute.
7. If supplemental oxygen is used, attach the tubing to the oxygen port on the ResQGARD and deliver up to 15 lpm, but do not exceed 15 lpm.
8. If end tidal carbon dioxide (ETCO₂) monitoring is desired, attach the sensor to the exhalation port of the ResQGARD.
9. Reassess vital signs often (every 3 - 5 minutes).
10. Once the patient's blood pressure has stabilized and risen to an acceptable level it is recommended that you continue ResQGARD treatment for approximately 5 minutes before discontinuing its use. Reapply if necessary if the blood pressure drops again.
11. Document ResQGARD therapy on patient care report (e.g. time initiated and discontinued, vital sign response).

IV. Special Patient Considerations:

1. In a patient without intravenous (IV) access, applying the ResQGARD may make it easier to establish an IV because of the improvement in blood pressure.
 2. The ResQGARD may be used in conjunction with other indicated treatments for hypotension (e.g. fluids, vasopressors, patient positioning).
 3. In cases where the rate of blood loss is unclear, the recommendation is to use the ResQGARD as you would a fluid challenge in the field (i.e. if a fluid challenge is indicated, then the ResQGARD may be too).
 4. Some patients who are claustrophobic will tolerate ResQGARD use on a mouthpiece better than on a facemask.
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0150 LFD PROCEDURE PROTOCOL: CAPNOGRAPHY

AEMT	EMT-I	Paramedic
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Indications:

- MANDATORY: to rule out esophageal intubation and confirm endotracheal tube position in all intubated patients.
- To identify late endotracheal tube dislodgement
- To monitor ventilation and perfusion in any ill or injured patient

Contraindications:

- None

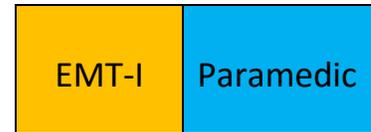
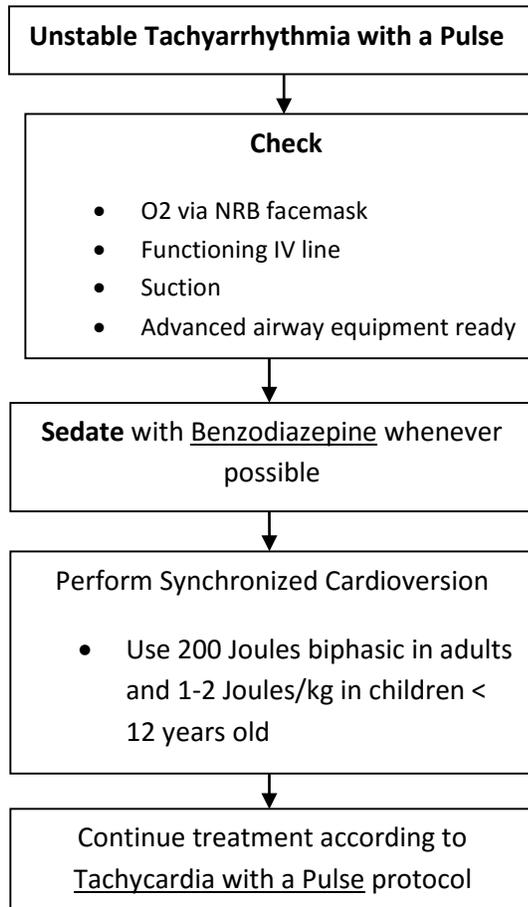
Technique:

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

Precautions:

1. To understand and interpret capnography, remember the 3 determinants of ETCO₂:
 - a. Alveolar ventilation
 - b. Pulmonary perfusion
 - c. Metabolism
2. Sudden loss of ETCO₂:
 - a. Tube dislodged
 - b. Circuit disconnected
 - c. Cardiac arrest
3. High ETCO₂ (> 45)
 - a. Hypoventilation/CO₂ retention
4. Low ETCO₂ (< 25)
 - a. Hyperventilation
 - b. Low perfusion: shock, PE, sepsis
5. Cardiac Arrest:
 - a. In low-pulmonary blood flow states, such as cardiac arrest, the primary determinant of ETCO₂ is blood flow, so ETCO₂ is a good indicator of quality of CPR
 - b. If ETCO₂ is dropping, change out person doing chest compression
 - c. In cardiac arrest, if ETCO₂ not > 10 mmHg after 20 minutes of good CPR, this likely reflects very low CO₂ production (dead body) and is a 100% predictor of mortality

0160 LFD PROCEDURE PROTOCOL: SYNCHRONIZED CARADIOVERSION



This procedure protocol applies to conscious, alert patients with signs of poor perfusion due to tachyarrhythmia in whom synchronized cardioversion is indicated according to Tachyarrhythmia with a Pulse protocol

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 “sync” mode, then deactivate “sync” and reattempt 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 Universal 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 220 bpm in children < 8 years 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

0170 LFD PROCEDURE PROTOCOL: TRANSCUTANEOUS CARDIAC PACING

Indications

1. Symptomatic bradyarrhythmias (includes A-V block) not responsive to medical therapy

EMT-I	Paramedic
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Precautions

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

Contraindications

1. Pacing is contraindicated in pulseless arrest.

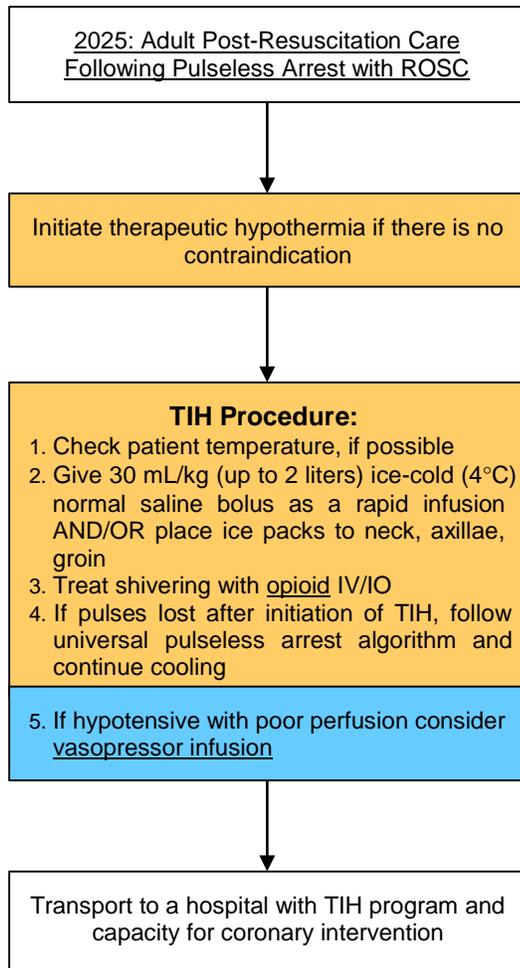
Technique

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. Increase current 10 mAmps every 10-15 seconds until capture or 200 mAmps (usually captures around 100 mAmps).
8. If there is electrical capture, check for femoral pulse.
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. Pacing is rarely indicated in patients under the age of 12 years.
3. Muscle tremors may complicate evaluation of pulses, femoral pulse may be more accurate.
4. Pacing may cause diaphragmatic stimulation and apparent hiccups.
5. CPR is safe during pacing. A mild shock may be felt if direct active electrode contact is made.

0180 PROCEDURE PROTOCOL: THERAPEUTIC INDUCED HYPOTHERMIA AFTER CARDIAC ARREST



EMT-I	Paramedic
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Return of spontaneous circulation (ROSC) criteria:

- Pulse and measurable blood pressure
- Increase in ET_{CO}₂ on capnography

Contraindications to TIH:

- Purposeful response to painful stimuli
- Age < 12 years
- Active bleeding
- Traumatic arrest
- Definite pregnancy
- Temperature < 34° C (93.2° F) or suspected hypothermia

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 if TIH patient

Consider and Contact Base for Other Indications For Cooling:

- Drowning
- Hanging or asphyxiation
- Hyperthermia

**0190 LFD PROCEDURE PROTOCOL: RESTRAINT
PROTOCOL**

Indications:

- A. Physical restraint of patients is permissible and encouraged if the patient poses a danger to him or 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 (e.g., verbal de-escalation should be used first if the situation allows).
- B. **Paramedic:** Consider pharmacological treatment (sedation) of agitation in patients that require transport and are behaving in a manner that poses a threat to him or herself or others.
 - 1. See Agitated/Combative Patient Protocol: (The term “chemical restraint” is no longer preferred)
- 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.

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Precautions:

- A. When appropriate, involve law enforcement
- B. Restraints shall be used only when necessary to prevent a patient from seriously injuring him or herself or others (including the ambulance crew), 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 is impairing 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 Handcuff Protocol.

Technique:

- A. 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.
- B. Have all equipment and personnel ready (restraints, suction, a means to promptly remove restraints).
- C. Use assistance such that, if possible, 1 rescuer handles each limb and 1 manages the head or supervises the application of restraints.
- D. 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.**
- E. After application of restraints, check all limbs for circulation. During the time that a patient is in restraints, continuous attention to the patient’s airway, circulation and vital signs is mandatory. A restrained patient may never be left unattended.

Documentation

Document the following in all cases of restraint:

- A. Description of the facts justifying restraint
- B. Efforts to de-escalate prior to restraint
- C. Type of restraints used
- D. Condition of the patient while restrained, including reevaluations during transport
- E. Condition of the patient at the time of transfer of care to emergency department staff
- F. Any injury to patient or to EMS personnel

Complications:

- A. Aspiration: continually monitor patient’s airway
- B. Nerve injury: assess neurovascular status of patient’s limbs during transport
- C. Complications of medical conditions associated with need for restraint
 - 1. Patients may have underlying trauma, hypoxia, hypoglycemia, hyperthermia, hypothermia, drug ingestion, intoxication or other medical conditions
- D. Excited Delirium Syndrome. This is a life-threatening medical emergency. These patients are truly out of control. They will have some or all of the following symptoms: paranoia, disorientation, hyper-aggression, hallucination, tachycardia, increased strength, and hyperthermia.

0200 LFD PROCEDURE PROTOCOL: TOURNIQUET PROTOCOL

Indications

- A. A tourniquet may be used to control potentially fatal hemorrhage only after other means of hemorrhage control have failed.

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EMT-I	Paramedic

Precautions

- A. A tourniquet applied incorrectly can increase blood loss.
- B. Applying a tourniquet can cause nerve and tissue damage whether applied correctly or not. Proper patient selection is of utmost importance.
- C. Injury due to tourniquet is unlikely if the tourniquet is removed within 1 hour. In cases of life-threatening bleeding benefit outweighs theoretical risk.
- D. 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. Other improvised tourniquets are not allowed.

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. Mark the time and date of application on the patient's skin next to the tourniquet.
 - 5. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.

**0210 LFD PROCEDURE PROTOCOL: NEEDLE THORACOSTOMY FOR
TENSION PNEUMOTHORAX DECOMPRESSION**

EMT-I	Paramedic
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Indication:

- A. Needle decompression of tension pneumothorax is a standing order for EMT-I and Paramedics.
- B. **All** of the following clinical indicators must be present:
 - 1. Severe respiratory distress
 - 2. Hypotension
 - 3. Unilateral absent or decreased breath sounds

Technique:

- A. Expose entire chest
- B. Clean skin overlying site with available skin prep
- C. Insert largest, longest available angiocath either at 2nd intercostal space at midclavicular line, or 5th intercostal space at midaxillary line
 - 1. Either approach is acceptable, generally the site with the least soft tissue overlying ribs is preferred
- D. 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

0220 LFD PROCEDURE PROTOCOL: INTRAOSSEUS CATHETER PLACEMENT

AEMT	EMT-I	Paramedic
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Indications (must meet all criteria):

- A. Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness defined as:
 - 1. Cardiopulmonary arrest or impending arrest
 - 2. Profound shock with severe hypotension and poor perfusion
- B. Utilization of IO access for all other patients requires **Base Contact**
 - 1. E.g.: Hypoglycemia with severe symptoms (e.g. unresponsive) and no venous access
- C. IO placement may be considered prior to peripheral IV attempts in critical patients without identifiable peripheral veins

Technique:

- A. Site of choice – **tibial plateau**: 2 fingerbreadths below the tibial tuberosity on the anteromedial surface of tibia.
 - 1. Alternative sites (e.g. **humeral head in adults**) are device-specific and require authorization from the agency Medical Director.
- B. Clean skin.
- C. Place intraosseous needle perpendicular to the bone.
- D. Follow manufacturer's guidelines specific to the device being used for insertion.
- E. Entrance into the bone marrow is indicated by a sudden loss of resistance.
- F. Flush line with 10 mL saline. **Do not attempt to aspirate marrow**
 - a. If patient conscious, administer lidocaine for pain control before infusing any other fluids
- G. Secure line
 - 1. 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.
- H. 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.
- I. A person should be assigned to monitor the IO at the scene and en route to the hospital.
- J. Do not make more than one IO placement attempt per bone.
- K. Do not remove IO needles in the field.
- L. Notify hospital staff of all insertion sites/attempts.

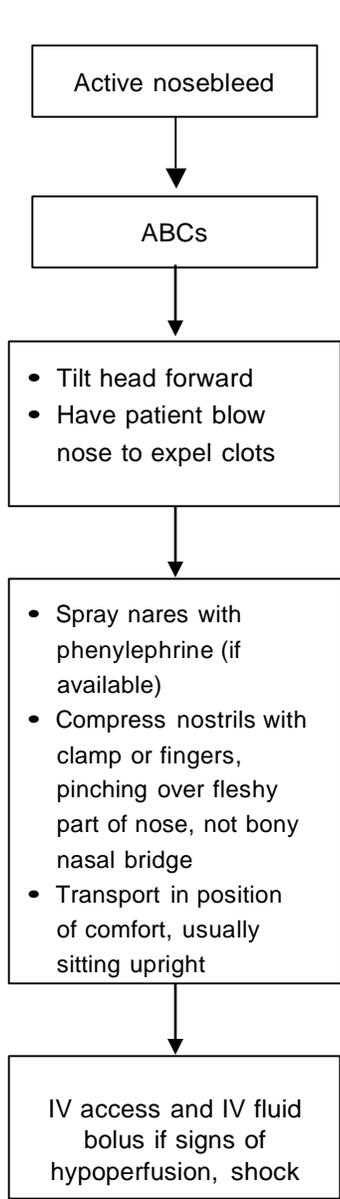
Complications:

- A. Fracture
- B. Compartment syndrome
- C. Infection

Contraindications:

- A. Fracture of target bone
- B. Cellulitis (skin infection overlying insertion site)
- C. Osteogenesis imperfecta (rare condition predisposing to fractures with minimal trauma)
- D. Total knee replacement (hardware will prevent placement)

0230 LFD PROCEDURE PROTOCOL: EPISTAXIS MANAGEMENT



EMT	AEMT
EMT-I	Paramedic

General Guidelines:

- Most nosebleeding is from an anterior source and may be easily controlled
- Avoid phenylephrine in pts with known CAD
- Anticoagulation with aspirin, clopidogrel (Plavix), warfarin (Coumadin) will make epistaxis much harder to control. Note if your patient is taking these or other anticoagulant medications
- Posterior epistaxis is a true emergency and may require advanced ED techniques such as balloon tamponade or interventional radiology. Do not delay transport. Be prepared for potential airway issues.
- Patients using nasal cannula oxygen may have cannula placed in mouth while nares are clamped or compressed for nosebleed

0240 LFD PROCEDURE PROTOCOL: TASER PROBE REMOVAL

Indications

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

Contraindications

- TASER probe embedded in the eye or genitals. In such cases, transport patient to an emergency department for removal.

EMT	AEMT
EMT-I	Paramedic

Technique

1. Confirm the TASER has been shut off and the barb cartridge has been disconnected. .
2. Using a pair of shears cut the TASER wires at the base of the probe.
3. 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.
4. 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.
5. Repeat the process for any additional probes.
6. 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.
7. Apply sterile dressing.
8. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever.

0250 LFD PROCEDURE PROTOCOL: SELF-ASSISTED MEDICATIONS

EMT	AEMT	EMT-I	Paramedic
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Purpose

It is the purpose of this protocol to provide direction for the EMT-Basic for assisting patients in the proper administration of the patient's own inhaler, nitroglycerin, epinephrine pen, and activated charcoal.

Indications (Inhaler)

1. Patient has prescribed albuterol, isoetharine, metaproterenol, ipratropium metered-dose inhaler AND
2. Patient presents with signs and symptoms of a respiratory emergency AND
3. Administration is authorized by medical control.

Contraindications (Inhaler)

1. Patient not alert
2. Dosage authorized by medical control already taken
3. Inhaler does not belong to patient
4. Permission to administer not granted

Administration (Inhaler)

1. Administer oxygen
2. Assess patient (vital signs, respiratory)
3. Confirm name of patient
4. Confirm medication belongs to patient
5. Confirm number of doses already taken and effect
6. Confirm that medication has not expired
7. **Contact medical control. If authorized:**
8. Medication should be at room or warmer temperature
9. Shake inhaler well
10. Instruct patient to exhale deeply
11. Instruct patient to seal lips around inhaler
12. Depress inhaler as patient inspires
13. Instruct patient to hold breath as long as comfortable
14. Administer oxygen
15. Reassess patient (vital signs and respiratory)
16. Administer additional doses if indicated and authorized by medical control

Indications (Nitroglycerin)

1. Patient has chest pain AND
2. Patient has cardiac history AND
3. Patient has nitroglycerin prescribed by physician AND
4. Patient's blood pressure is greater than 100mm/Hg systolic AND
5. Medical control authorizes administration
6. Patient does not use Viagra /ED meds

Procedure: Self-Assisted Meds continued

0250 LFD PROCEDURE PROTOCOL: SELF-ASSISTED MEDICATIONS cont.

Contraindications (Nitroglycerin)

1. Patient's blood pressure is less than 100mg/Hg systolic
2. Patient has or may have a head injury
3. Patient is a child or infant
4. Patient has already taken the prescribed dosage
5. Taking Viagra /ED meds

Administration (Nitroglycerin)

1. Administer oxygen
2. Complete cardiac assessment
3. Confirm patient's name, that medication belongs to patient, that medication has not expired, that the prescribed dosage has not been already administered
4. Find out when the last dosage was taken and what the effects of that dose were
5. Confirm that the patient is alert
6. **Contact medical control. If authorized:**
7. Have patient lift his or her tongue
8. Place one tablet or one spray under patient's tongue
9. Reassess patient's blood pressure and other cardiac signs
10. Chart time of administration, effects, and monitor patient

Indications (Epi-Pen Autoinjector)

1. Signs and/or symptoms of respiratory distress or shock secondary to allergic reaction, AND
2. Medication prescribed for the patient, AND
3. Authorization by medical control.

Contraindications (Epi-Pen Autoinjector)

There are no contraindications to authorized administration of epinephrine in life threatening anaphylactic emergencies

Administration (Epi-Pen Autoinjector)

1. Administer oxygen
2. Assess the patient for respiratory or cardiovascular complications associated with anaphylaxis
3. Confirm the name of the patient, that the medication is prescribed for the patient
4. **Contact medical control. If authorized:**
5. Remove the cap from the device
6. Place the device against the patient's thigh and hold firmly in place for 10 seconds after the device activates
7. Record the dosage, time given, and effects
8. Dispose of the device in a biohazard container
9. Reassess patient and treat for immediate or impending shock
10. Be prepared to start CPR or AED if condition deteriorates
11. Transport patient immediately as condition may recur

0260 LFD PROCEDURE PROTOCOL: HAZARDOUS MATERIAL PATIENTS

A. General

1. Safety of the responders is the number one priority during all incidents.
2. During response to "man down" or other distress of unknown etiology, especially in the scientific, industrial, or transportation setting, keep in mind the possibility of chemically induced problems rather than simple physiological causes. If you take this possibility into account and take the proper precautions and ask the proper questions, it may keep you from being part of the problem rather than part of the solution.
3. Do initial evaluation of suspected hazmat scenes from a safe distance, with binoculars if appropriate.
4. Ambulance personnel lacking proper PPE should not have contact with contaminated victims until they have been decontaminated.
5. Effort must be made to control the scene to the extent that contaminated victims are not allowed to exit the scene and arrive eventually at the ER, contaminating it.

B. Procedure

1. EMS operations should be staged in the COLD zone.
2. Research of the possible hazards, decontamination agents, PPE necessary for responders, and any other pertinent information should be made prior to patient contact.
3. Contact should be made with the ER as soon as the product has been identified (both to alert the ER and to initiate the use of their TOMES program for reference.) Contact should be made also on the inbound trip conveying patient condition, decon and treatment given, level of suspected remaining contamination, and other information requested by the ER staff.
4. All reasonable effort should be made to remove or isolate unneeded medical equipment from the patient compartment and to shield the inside of the patient compartment from contamination during transport.
5. Treatment for patients of hazmat incidents is largely symptomatic in nature and should be dictated by the appropriate LFD protocols and through ER contact.
6. Extreme hygiene is necessary when dealing with these patients, especially when considering invasive procedures (i.e., thorough decon of I.V. site prior to introduction of catheter to prevent injection of contaminants across the dermal barrier.)
7. Ambulances transporting potentially contaminated patients will remain out of service until the ambulance has been decontaminated to the satisfaction of the Duty Chief. It is the responsibility of the ambulance crew to provide for the decontamination and to contact the Duty Chief, providing him with necessary information to make the decision of serviceability

0270 LFD PROCEDURE PROTOCOL: BIOHAZARDS

Indications: Whenever a biohazard is produced or encountered, it must be dealt with accordingly.

- All used sharps must be disposed of immediately in an approved biohazard container.
- All soiled linens must be changed out after every call.
- All biohazards that accumulate in the wastebasket must be disposed of after each call.
- The back of the ambulance will be cleaned of all blood and body fluids after each call using an approved cleanser (i.e. Vindicator).
- All equipment that has been contaminated will be properly cleaned after each call.

0280 LFD PROCEDURE: FIELD DRAWN BLOOD SAMPLES

AEMT	EMT-I	Paramedic
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Indications

- A. Patients receiving an IV in the field and who, in the judgment of the field providers, will need blood tests in the emergency department.
- B. Patients receiving IV dextrose in the field.
- C. Patients that may have been exposed to carbon monoxide.

Precautions

- A. Use body substance isolation precautions.
- B. Proper identification of the patient and the specimen(s) is mandatory.
- C. Improper technique in obtaining the specimen will result in inaccurate or invalid test results. This wastes critical time and defeats the purpose of drawing specimens in the field.

Technique

- A. After initiating an IV and removing the needle, attach the Vacutainer holder to the hub of the IV catheter. (This is accomplished using the Luer adaptor attached to the Vacutainer holder.)
- B. Fill all the desired blood tubes in appropriate order per system requirements.
- C. Tubes containing anticoagulant should be inverted gently back and forth at least ten times to insure adequate mixing of blood with the substance in the tube. **Do not shake the tube** as this could cause hemolysis, which could interfere with test results.
- D. The tubes should be placed in a small biohazard bag. The bag should be labeled with the patient's name and time of draw, and taped to the patient's IV bag. The tubes may also be handed directly to the nurse attending the patient.

Side effects and special notes

- A. Any discrepancy in identification must be reported immediately to the emergency department charge nurse.
- B. Pediatrics receiving an IV should have at least a speckled red tube and lavender top tube drawn. The red top may be filled only halfway and the lavender only 1/4 of the way to do the needed tests. If available, red and lavender pediatric tubes may be used.
- C. The blue top tube must be filled exactly, according to the vacuum.
- D. Blood samples should be drawn prior to the administration of IV fluid, in order to provide a better and less dilute sample for potential "donor" patients.

0290 LFD PROCEDURE PROTOCOL: FINGER STICK FOR BLOOD GLUCOSE

EMT	AEMT	EMT-I	Paramedic
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Indications

- A. Suspected diabetic emergencies.
- B. Any coma of unknown etiology.
- C. Status epilepticus of uncertain etiology.
- D. Syncope, stroke, or seizures with focal deficit.
- E. Altered mental status.

Therapeutic Effects

- A. Gives estimate blood glucose level.

Contraindications

- A. None

Adverse Effects

- A. None

Equipment

- A. Lancet, lancing device (optional).
- B. Gloves and face protection, as necessary.
- C. Antiseptic solution. (Note: alcohol may reduce the accuracy of the glucose test strip, be sure to let it dry before lancing finger).
- D. Bandaid.
- E. Glucose test strip for glucose determination of capillary or venous blood.

Procedure

- A. Put on gloves and use face protection, as necessary.
- B. Assemble all necessary supplies and equipment.
- C. Select a suitable site (generally the dependent side of the second or third digit of either hand).
- D. Prepare the site. Cleanse the site thoroughly with antiseptic solution.
Let the site dry.
- E. Use your thumb proximal to the puncture site to function as a mild tourniquet and to stabilize the skin over the puncture site.
- F. Gently puncture the site with the lancet.
- G. Dispose of the lancet in a biohazard container.
- H. "Milk" the finger by applying gentle pressure to the site, then let go, allowing blood to fill finger, then squeeze again.
- I. Turn the finger over and allow the accumulated drop of blood to drip freely onto the strip. Do not "wipe" the blood off of the finger with the strip.
- J. Follow manufacturer's directions on reading the glucose test strip.
- K. Cleanse the site again with antiseptic solution. Apply a dry, sterile dressing (bandaid is fine).

Special Information

- A. If the patient is very dehydrated or has poor circulation to extremities, then the results may be inaccurate.

0300 LFD PROCEDURE PROTOCOL: PATIENT ATTENDANCE

- A. Indications: LFD personnel can only attend patients that they are certified to provide care for. If an ALS procedure or medication is administered, then a minimum of one ALS certified EMT must accompany the patient in the back of the ambulance to the transport designation.

LFD personnel in training for skill upgrades (EMT Basic and EMT Intermediate) shall only attend patients and/or perform invasive procedures in a controlled setting. For those undergoing upgrade to the basic level, a State certified EMT must be present while attending to patients. For those upgrading to Intermediate, all invasive procedures must be practiced in either a classroom setting, operating room or emergency department, previous to being performed in an ambulance under supervision.

- B. Special Considerations

None

0310 LFD PROCEDURE PROTOCOL: AMBULANCE TRANSFERS

A. Arrangements

1. The decision to transfer and the mode of transport (air, ground, etc.), will be made by the physician who is responsible for the care of the patient at the time the transfer is ordered. The physician will decide the level of transfer, i.e., emergent, urgent, non-emergent (these transfers usually take place out of the Emergency Department or ICU).
2. Arrangements for transfers will be made by the nursing supervisor or appropriate E.R. staff with the on-duty LFD Shift Commander (721-5332 or 760-0191). In the event that the Shift Commander is not available, arrangements should be made with dispatch (721-5358). If the patient is to be transported by air, the nursing supervisor may contact Greeley Air Life, MAST @ F.E. Warren, Casper, or Scottsbluff, NB. All information, including special skills or equipment needed, will be documented on the transfer sheet.
3. Emergent transfers will be handled by the Front Line MS unit. If time permits, the 2nd line MS unit and/or overtime will handle transfers leaving the Front Line MS unit in service.

EMERGENT - Emergent transfers require lights and sirens and the Front Line MS unit will respond. The patient may be somewhat stable, however, immediate transport to another facility is imperative. Therefore, we will not wait for an overtime crew to take the transfer.

URGENT - Urgent transfers may also indicate lights and sirens, however, usually the patient is stable and "Code 3" status is not required. Urgent transfers may still require immediate transport by the Front Line MS or it may wait until an overtime crew is available. An overtime crew generally takes 30 minutes to get ready.

NON-EMERGENT - Non-emergent transfers are transfers of patients who are considered stable and are not in a life threatening or potentially life threatening status. Non-emergent transfers are not indicated for lights and sirens. Overtime crews will be called in to handle a non-emergent transfer.

4. No more than two ambulances are permitted to leave the city limits on transfers without permission from the emergency room doctor on duty and the Shift Commander or his designee.

0310 LFD PROCEDURE PROTOCOL: AMBULANCE TRANSFERS cont.

B. Personnel Responsibilities

1. Doctor writes orders and determines transfer urgency.
2. EMT's are responsible for the operation of the ambulance. They will use their own judgement in regards to speed as it relates to the road conditions. They will also assist in patient care as needed.
3. R.N.'s are responsible for receiving transfer orders, making appropriate arrangements, obtaining patient records and notifying the receiving hospital.

R.N.'s are also responsible for the patient care and are covered by their protocols while out of radio/cellular phone contact.

C. Miscellaneous

1. If a transfer occurs over a normal meal time (lunch or dinner), personnel may choose an appropriate place to eat. Consideration should be given to time and LFD/IMH manning.
2. In the event of a mechanical breakdown, the hospital and LFD shall be notified as soon as possible. Depending on the location of the breakdown, arrangements will be made for the continued transport of the patient.

0320 LFD PROCEDURE PROTOCOL: PSYCHIATRIC TRANSFERS

Purpose

The purpose of this protocol is to provide direction for the conduct of inter-facility transfers of patients with psychiatric disorders.

Indications

This protocol will provide guidelines for the conduct of such transfers when one or more of the following conditions exist:

1. The patient's condition and or history is such that he or she poses a real or perceived physical threat to either himself or herself or the ambulance attendant while en route.
2. The patient's condition and/or history is such that he or she poses a real or perceived threat to make unsubstantiated claims of impropriety on the part of the ambulance attendant while en route.

Direction

1. For patients who may pose a physical threat to themselves or attendants, additional personnel will be assigned to the transfer as appropriate: (a) personnel trained and equipped to restrain the patient using physical and/or chemical means, (b) law enforcement personnel, or (c) additional IMH or LFD personnel.
2. For patients who may pose a threat of allegations of impropriety, additional personnel will be assigned to the transfer as appropriate: (a) IMH personnel previously involved in the patient's treatment for their psychological disorder, (b) IMH personnel of the same gender as the patient, or (c) additional IMH or LFD personnel.

Special Considerations

Attendants required to conduct such transfers may request such additional help. The requests will be granted or denied after consultation between the Nursing Supervisor and Shift Commander on duty at the time of the transfer.

Requests for additional attendants for such transfers will be subject to review of the LFD EMS Commander, the LFD Medical Director, and IMH ED Manager.

0330 LFD PROCEDURE PROTOCOL: HELICOPTER TRANSPORTS

A. Indications:

1. Significant (unstable) head trauma
2. Multiple emergent patients
3. Complicated extrications of emergent patients
4. Other situations in which rapid transport of patients is critical and in which ground transport cannot provide rapid transport
5. Urgent or Emergent patients in areas inaccessible to ground ambulance

B. Contact and Communications:

1. Requests for helicopter services may be made either through IMH Emergency Department or LARC dispatch.
2. When possible, the Emergency Department should be notified of helicopter requests.
3. Landing zones and any special procedures should be coordinated through ACSO deputies in the field.
4. Responding units should monitor the Mutual Aid channel for traffic from incoming helicopter ambulances.
5. EMS personnel should be prepared to give a brief report, including patient's condition, vital signs and any special considerations to helicopter staff upon initial radio contact.
6. In the event that helicopter transport becomes unnecessary prior to their arrival, cancellation should be made through the agency, which made the initial request.

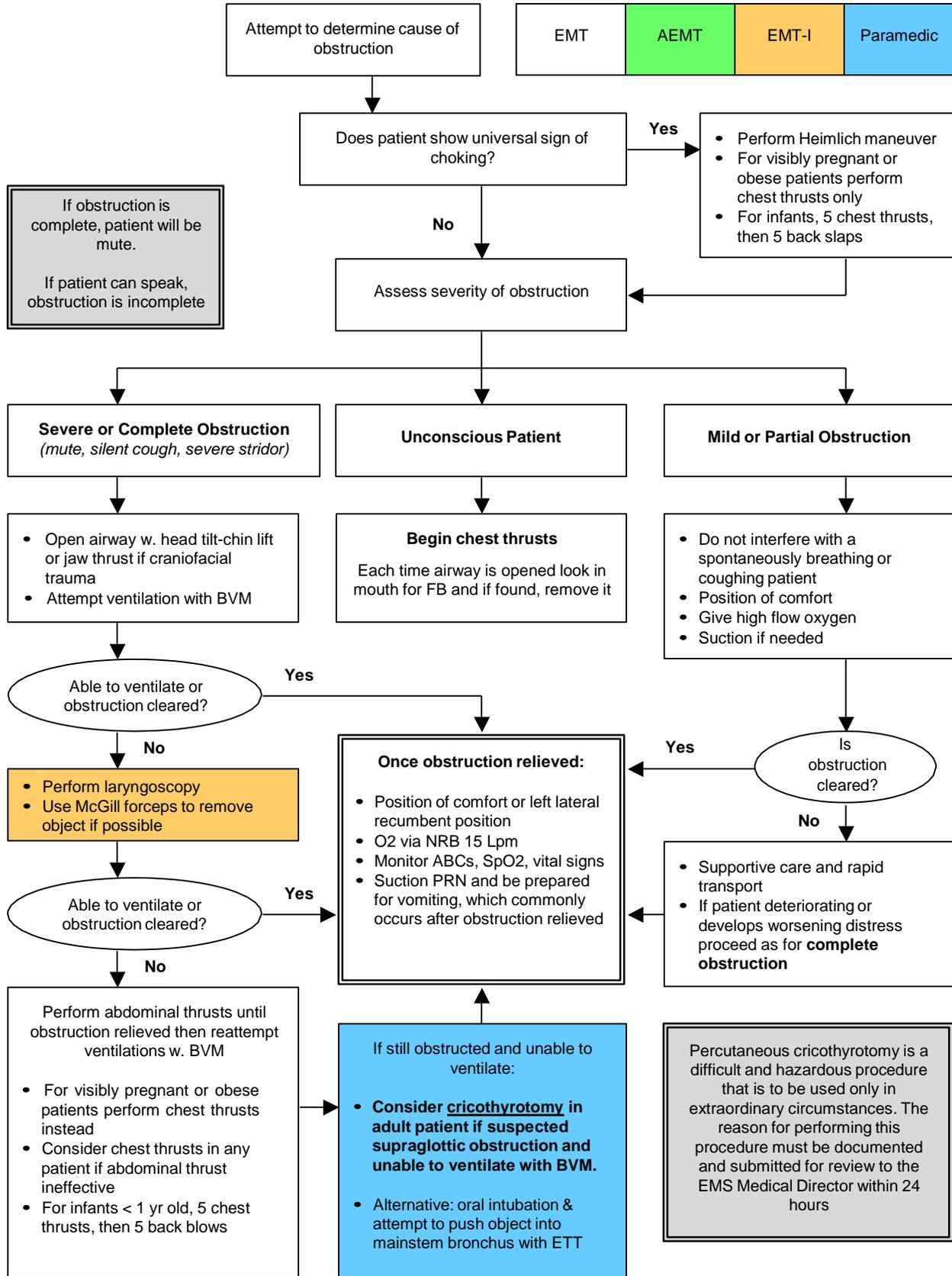
C. Landing and Safety:

1. In the event that ACSO deputies are unavailable to establish a landing zone, LFD personnel may choose a suitable area. It should be:
 - a. 100' x 100' or larger
 - b. As flat and firm as possible
 - c. Free of overhead obstructions and loose debris

0330 Procedure: Helicopter Transports continued

2. Radio contact with the helicopter must be made, identifying the landing zone and any potential hazards associated with the zone.
3. Landing zones at night should be marked with flares if possible, or with other lighting devices. Avoid shining bright lights down wind into the LZ (and thus into the eyes of the pilot).
4. Never approach a helicopter from the uphill side.
5. Never approach a helicopter until eye contact has been made with the pilot and he has signaled you to do so.
6. Always approach a helicopter from the front and never from the rear. Tail rotors can be deadly.
7. Remove any loose articles of clothing (ie hats) these can be pulled into the blades.

1010 OBSTRUCTED AIRWAY



Severe or Complete Obstruction
(mute, silent cough, severe stridor)

Unconscious Patient

Mild or Partial Obstruction

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

Begin chest thrusts

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

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

↓

Able to ventilate or obstruction cleared?

Yes

↓

Is obstruction cleared?

No

- Perform laryngoscopy
- Use McGill forceps to remove object if possible

Once obstruction relieved:

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

- Supportive care and rapid transport
- If patient deteriorating or develops worsening distress proceed as for **complete obstruction**

Able to ventilate or obstruction cleared?

No

Perform abdominal thrusts until obstruction relieved then reattempt ventilations w. BVM

- For visibly pregnant or obese patients perform chest thrusts instead
- Consider chest thrusts in any patient if abdominal thrust ineffective
- For infants < 1 yr old, 5 chest thrusts, then 5 back blows

If still obstructed and unable to ventilate:

- Consider cricothyrotomy in adult patient if suspected supraglottic obstruction and unable to ventilate with BVM.**
- Alternative: oral intubation & attempt to push object into mainstem bronchus with ETT

Percutaneous cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances. The reason for performing this procedure must be documented and submitted for review to the EMS Medical Director within 24 hours

If obstruction is complete, patient will be mute.

If patient can speak, obstruction is incomplete

2000 ADULT (AGE ≥ 12 years) CARDIAC ARREST GENERAL PRINCIPLES

Specific Information Needed For Patient Care Report

- Onset (witnessed or unwitnessed), preceding symptoms, bystander CPR, downtime before CPR and duration of CPR
- Past History: medications, medical history, suspicion of ingestion, trauma, and environmental factors (hypothermia, inhalation, asphyxiation)

Document Specific Objective Findings

- Unconscious, unresponsive
- Agonal, or absent respirations
- Absent pulses
- Any signs of trauma, blood loss
- Skin temperature

General Guidelines: Chest Compressions

- 1 cycle of CPR = 30:2 chest compressions: breaths
- 5 cycles CPR = 2 minutes chest compressions
- Push hard and push fast (at least 100/minute)
- Ensure full chest recoil
- Rotate compressors every 2 minutes with rhythm checks
 - During CPR, any interruption in chest compressions deprives heart and brain of necessary blood flow and lessens chance of successful defibrillation
 - Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks.
 - Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check

General Guidelines: Defibrillation

- In unwitnessed cardiac arrest, give first 2 minutes of CPR without interruptions for ventilation. During this time period passive oxygenation is preferred with OPA and NRB facemask. If arrest is witnessed by EMS, immediate defibrillation is first priority
- All shocks should be given as single maximum energy shocks
 - Manual biphasic: follow device-specific recommendations for defibrillation. If uncertain, give maximum energy (e.g. 200J)
 - Manual monophasic: 360J
 - AED: device specific

General Guidelines: Ventilation during CPR

- If suspected cardiac etiology of arrest, during first approximately 4 minutes of VT/VF arrest, passive oxygenation with OPA and NRB facemask is preferred to positive pressure ventilation with BVM or advanced airway
- EMS personnel must use good judgment in assessing likely cause of pulseless arrest. In patients suspected of having a primary respiratory cause of cardiopulmonary arrest, (e.g.: COPD or status asthmaticus), adequate ventilation and oxygenation are a priority
- In general, patients with cardiac arrest initially have adequately oxygenated blood, but are in circulatory arrest. Therefore, chest compressions are initially more important than ventilation to provide perfusion to coronary arteries
- Do not interrupt chest compressions and do not hyperventilate. Hyperventilation decreases effectiveness of CPR and worsens outcome

General Guidelines: Timing of Placement Of Advanced Airway

- Advanced airway (e.g. King, ETT) may be placed at any time after initial 2 rounds of chest compressions and rhythm analysis, provided placement does not interrupt chest compressions
- Once an advanced airway is in place, compressions are given continuously and breaths given at 8-10 per minute
- Always confirm advanced airway placement with ETCO₂
 - Use continuous waveform capnography if available. In low flow states such as cardiac arrest, colorimetric CO₂ detector may be inaccurate and not sense very low CO₂ level

2000 ADULT (AGE ≥ 12 years) CARDIAC ARREST
GENERAL PRINCIPLES

General Guidelines: Pacing

- Pacing is not indicated for asystole and PEA. Instead start chest compressions according to Universal Pulseless Arrest Algorithm.
 - Pacing should **not** be undertaken if it follows unsuccessful defibrillation of VT/VF as it will only interfere with CPR and is not effective

General Guidelines: ICD/Pacemaker patients

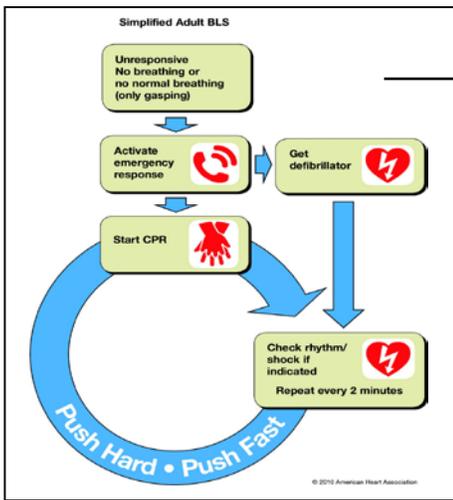
- If cardiac arrest patient has an implantable cardioverter defibrillator (ICD) or pacemaker: place pacer/defib pads at least 1 inch from device. Biaxillary or anterior posterior pad placement may be used

General Notes

- CPR in a moving ambulance or pram is ineffective
 - In general, work cardiac arrest on scene either to return of spontaneous circulation (ROSC) or to field pronouncement, unless scene is unsafe
- **Contact Base** for termination of resuscitation

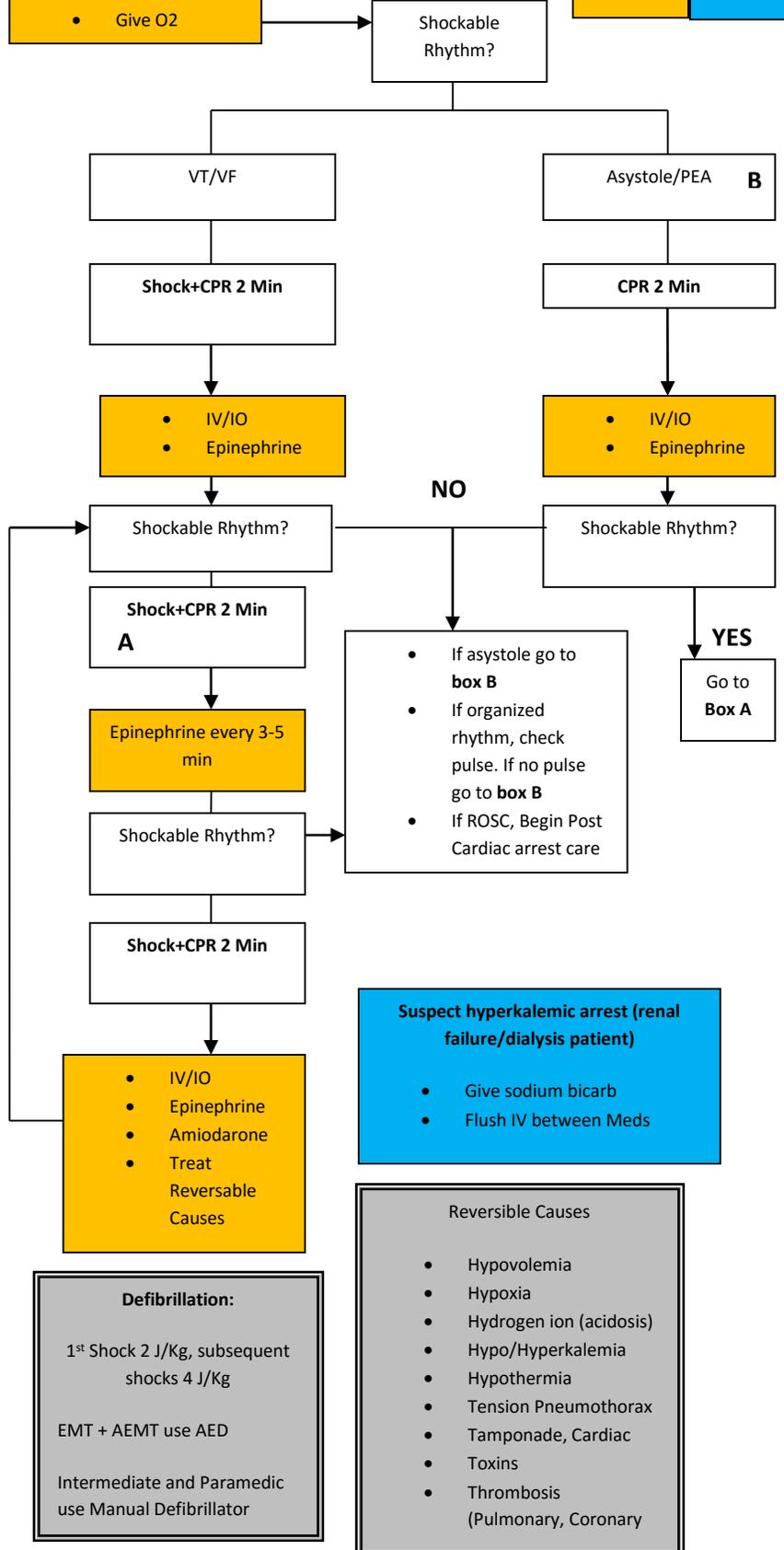
2020 ADULT (≥12 YEARS) UNIVERSAL PULSELESS ARREST ALGORITHM

EMT	AEMT
EMT-I	EMT-P



ALS Sequence

- Start CPR
- Attach manual defibrillator
- Give O₂



Compressions

- 2 Min uninterrupted compressions before rhythm analysis unless arrest witnessed by EMS
- 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 ETCO₂ < 10, improve compressions

Ventilations

- Passive oxygenation with NRB or NC preferred for first 4 minutes (2 cycles) of CPR, 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 compression to ventilation ratio
- If Advanced airway in place ventilate at 8-10 Breath/Min
- Use ResQPOD**

Airway

- An advanced airway (king, ETT) may be placed at any time after initial 4 min of passive oxygenation, if applicable, or ASAP if asphyxia arrest suspected, provided placement does not interrupt compressions
- Use ResQPOD**

ROSC

- Full Set of Vitals
- Sustained abrupt rise in ETCO₂ typically >40

2025 POST-RESUSCITATION CARE WITH ROSC

Post-Cardiac Care

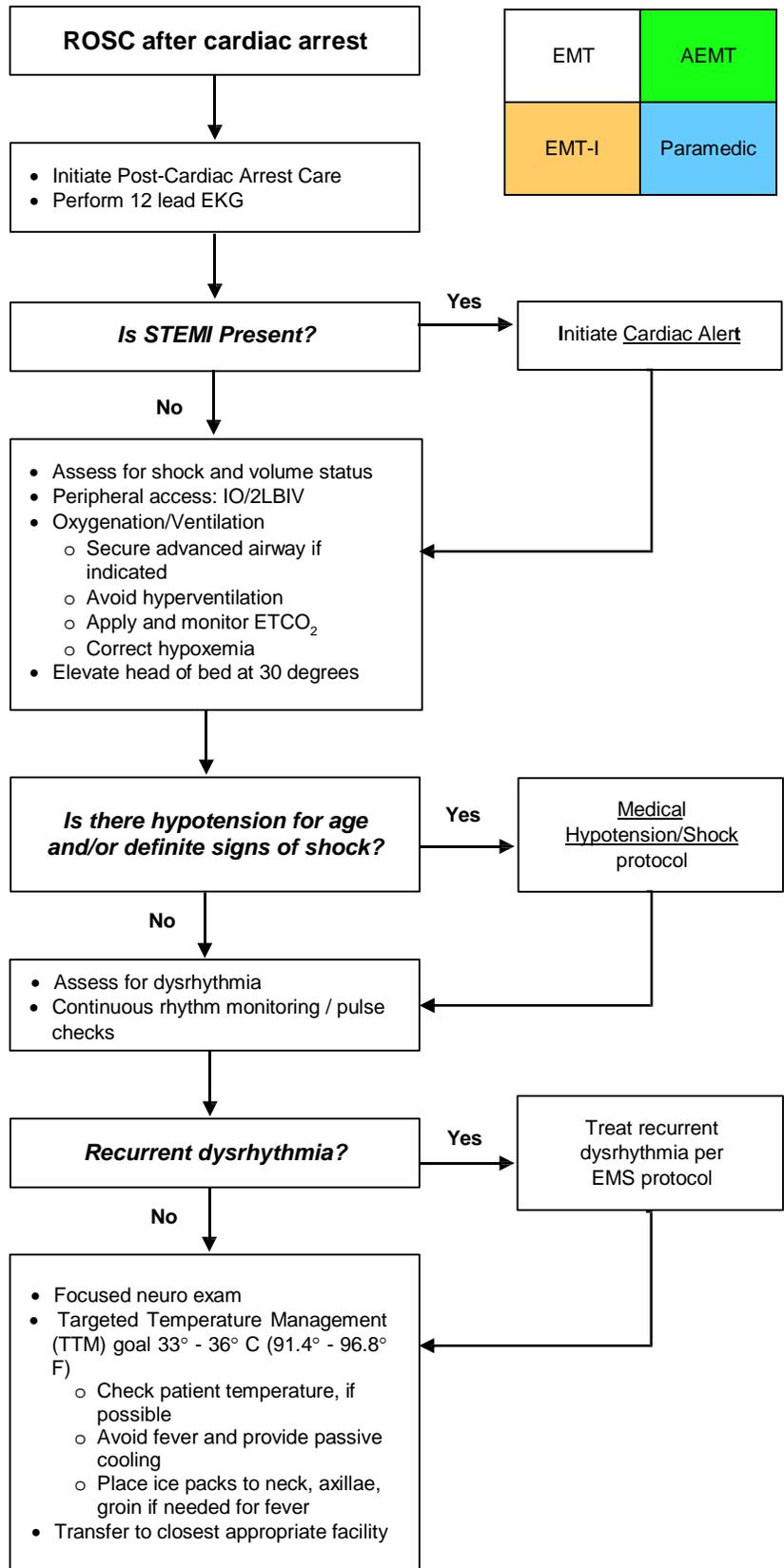
- Following ROSC several simultaneous and stepwise interventions must be performed to optimize care and maximize patient outcome
- Algorithm stresses high priority assessments and interventions and will assist provider through complex management decisions.

Return of spontaneous circulation (ROSC) criteria:

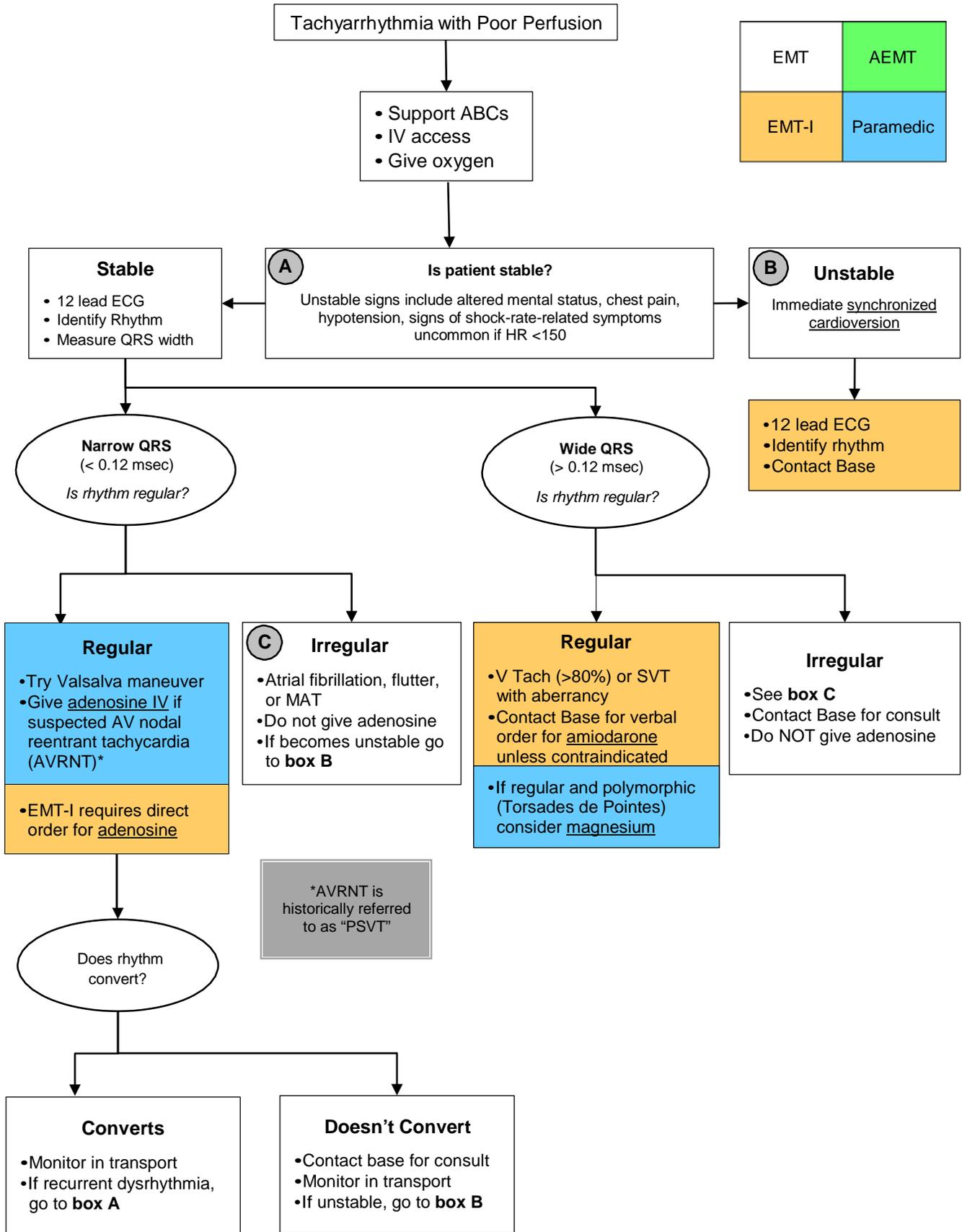
Pulse and measurable blood pressure
Increase in ET_{CO}₂ on capnography

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



2030 ADULT (≥ 12 YEARS) TACHYARRHYTHMIA WITH POOR PERFUSION



2040 ADULT (AGE>12 YEARS) BRADYARRHYTHMIA WITH POOR PERFUSION

EMT	AEMT
EMT-I	EMT-P

Bradycardia with a pulse
Heart rate <60 and inadequate for clinical condition

- | | |
|---|---|
| <ul style="list-style-type: none"> • Support ABCs • Give Oxygen • Start IV • Initiate Transport | <ul style="list-style-type: none"> • Cardiac Monitor • Identify Rhythm • 12 lead ECG |
|---|---|

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

Adequate perfusion

Poor Perfusion

Monitor and Transport

- Give atropine
- Prepare for transcutaneous pacing

- Consider dopamine early if pacing

- Consider epinephrine if pacing ineffective

Monitor and Transport

Reminders:

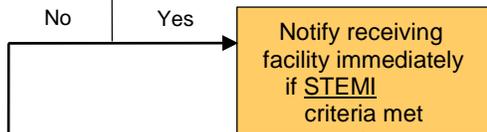
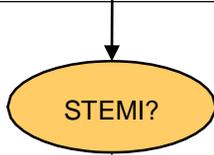
- If pulseless arrest develops go to pulseless arrest algorithm
- Search for possible contributing factors: "5 H's and T's"
- Symptomatic severe bradycardia is usually related to one of the following
 - Ischemia (MI)
 - Drugs (beta blocker, calcium channel blocker)
 - Electrolytes (hyperkalemia)

2050 ADULT CHEST PAIN

EMT	AEMT
EMT-I	Paramedic

Consider life threatening causes of chest pain in all patients

- While assessing ABCs give supplemental oxygen, monitor vital signs, cardiac rhythm, start IV
- **Obtain 12-lead ECG**
- Administer aspirin if history suggests possible cardiac chest pain
 - Consider Air Transport if 30 mile response or greater



Give SL nitroglycerin if suspected cardiac chest pain and no contraindication

An **EMT** may administer patient's prescribed nitroglycerin, **Contact Base** for verbal order

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

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

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

Life threatening causes of chest pain

- Acute coronary syndrome (ACS)
- Pulmonary embolism
- Thoracic aortic dissection
- Tension pneumothorax

Nitroglycerin Contraindications

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

2051 STEMI ALERT

EMT-I	Paramedic
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Goal:

- To identify patients with ST-segment elevation myocardial infarction (STEMI) in the prehospital setting and provide advanced receiving hospital notification in order to minimize door-to-balloon times for percutaneous coronary intervention (PCI)

Inclusion Criteria:

- Symptoms compatible with ACS (chest pain, diaphoresis, dyspnea, etc)
- 12-lead ECG showing ST-segment elevation (STE) at least 1 mm in two or more anatomically contiguous leads. **Transmit 12-lead to ER**
- Age 35-85 years old (If STEMI patient outside age criteria, contact receiving hospital for consult)

Exclusion Criteria:

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

Actions:

- Treat according to chest pain protocol en route (cardiac monitor, oxygen, aspirin, nitroglycerine and opioid)
- Notify receiving hospital ASAP with ETA and request CARDIAC ALERT. Do not delay hospital notification. If possible, notify ED before leaving scene
- Start 2 large bore peripheral IVs
- Rapid transport
- If patient does not meet inclusion criteria, or has exclusion criteria, yet clinical scenario and ECG suggests true STEMI, request medical consult with receiving hospital emergency physician

Additional Documentation Requirements:

- Time of first patient contact
- Time of first ECG

2100 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 chestpain, pulmonaryedema, 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

3010 ADULT (AGE > 12 YEARS) UNIVERSAL RESPIRATORY DISTRESS ALGORITHM

EMT	AEMT
EMT-I	EMT-P

Respiratory distress

For all patients:
While assessing ABCs: Give supplemental O2, Monitor Vital Signs, Cardiac Rhythm, SpO2, and ETCO2

Patent Airway?

NO

Obstructed Airway Protocol

YES

Are Ventilations adequate for physiologic state?

NO

Assist ventilations with BVM and airway adjuncts as needed

YES

Is SpO2 > 90% with Supplemental O2?

NO

Assess for CPAP or need for advanced airway

YES

Is anaphylaxis likely?

YES

Allergic Rxn Protocol

NO

Is asthma or COPD Likely?

YES

Asthma or COPD protocol

NO

Is CHF/Pulmonary edema likely?

YES

CHF/Pulmonary Edema protocol

NO

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

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

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

3020 ADULT (AGE > 12 YEARS) ASTHMA

EMT	AEMT
EMT-I	EMT-P

Universal Respiratory Distress Protocol and prepare for immediate transport

Presentation suggests asthma: Wheezing, prolonged expiratory phase, decreased breath sounds, accessory muscle use, known hx of asthma

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

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

EMT may administer either MDI or nebulized albuterol with base contact for verbal order

Give nebulized albuterol :
May give continuous neb for severe respiratory distress

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

Is response to treatment adequate?

YES

NO

Severe Exacerbation:

- IV methylprednisolone
- Consider IM epinephrine. Indicated only if no response to neb and severe distress

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

Is response to treatment adequate?

YES

NO

- Reassess for pneumothorax
- Consider CPAP
- If CPAP contraindicated, ventilate with BVM, and consider advanced airway

- Consider IM Epinephrine
- Obtain ECG: Rule out unstable rhythm, ACS

Consider pulmonary and non-pulmonary causes of respiratory distress:

Examples; pulmonary embolism, pneumonia, pulmonary edema, anaphylaxis, heart attack, pneumothorax, sepsis, metabolic acidosis (e.g. DKA), anxiety

- Continue monitoring and assessment en route
- Be prepared to assist ventilations as needed
- Contact base for medical consult as needed

3030 COPD

EMT	AEMT
EMT-I	EMT-P

Universal Respiratory Distress Protocol and prepare for immediate transport

Presentation suggests COPD:
Wheezing, prolonged expiratory phase, decreased breath sounds, accessory muscle use

Give oxygen, check SpO₂, start IV and place on monitor

EMT may administer either MDI or nebulized albuterol with base contact for verbal order

Give nebulized albuterol :
May give continuous neb for severe respiratory distress

Is response to treatment adequate?

NO

- Reassess for pneumothorax
- Consider alternative diagnoses, including cardiac disease
- Consider CPAP if severe distress
- Give IV Methylprednisolone
- Assist ventilations with BVM as needed
- Consider advanced airway if CPAP contraindicated or not available

• Obtain ECG: Rule out unstable rhythm, ACS

YES

- Continue cardiac monitoring, SPO₂ and ETCO₂
- Be prepared to assist ventilations as needed
- Contact base for medical consult as needed

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

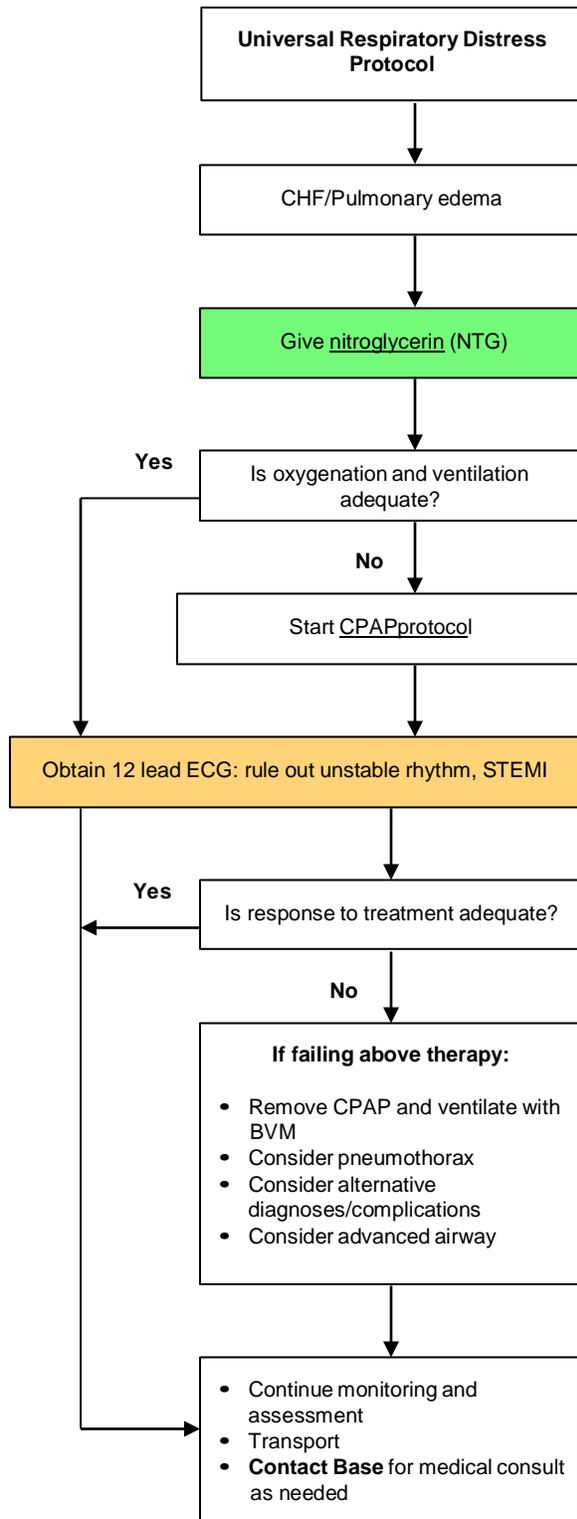
IV Methylprednisolone treatment effect maximal over hours. In severe exacerbations, it may be given pre-hospital but should not be given for mild attacks responding well to bronchodilators

CPAP may be very helpful in severe COPD exacerbation; however these patients are at increased risk of complications of CPAP such as hypertension and pneumothorax. Cardiopulmonary monitoring is mandatory.

- Special notes:**
- Correct Hypoxia: do not withhold maximum oxygen for fear of CO₂ retention
 - Consider pulmonary and non-pulmonary causes of respiratory distress: Examples: pulmonary embolism, pneumonia, pulmonary edema, anaphylaxis, heart attack, pneumothorax, sepsis, metabolic acidosis (e.g. DKA) anxiety
 - Patients with COPD are older and have co-morbidities, including heart disease
 - Wheezing may be a presentation of pulmonary edema, "Cardiac Asthma"
 - Common Triggers for COPD exacerbations include: Infection, dysrhythmia (e.g. a-Fib) myocardial ischemia

3050 CHF/PULMONARY EDEMA

EMT	AEMT
EMT-I	Paramedic



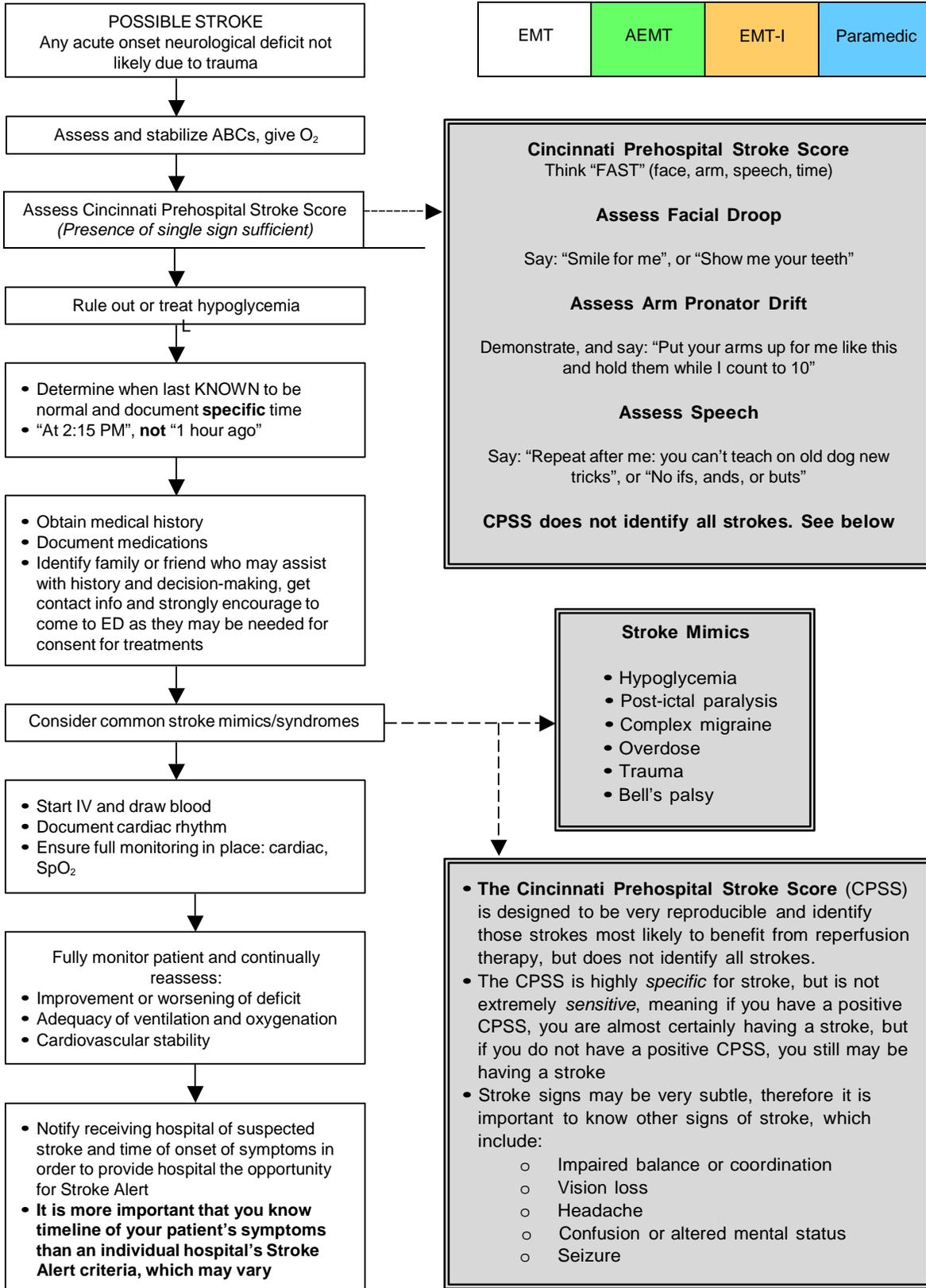
Therapeutic Goals:

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

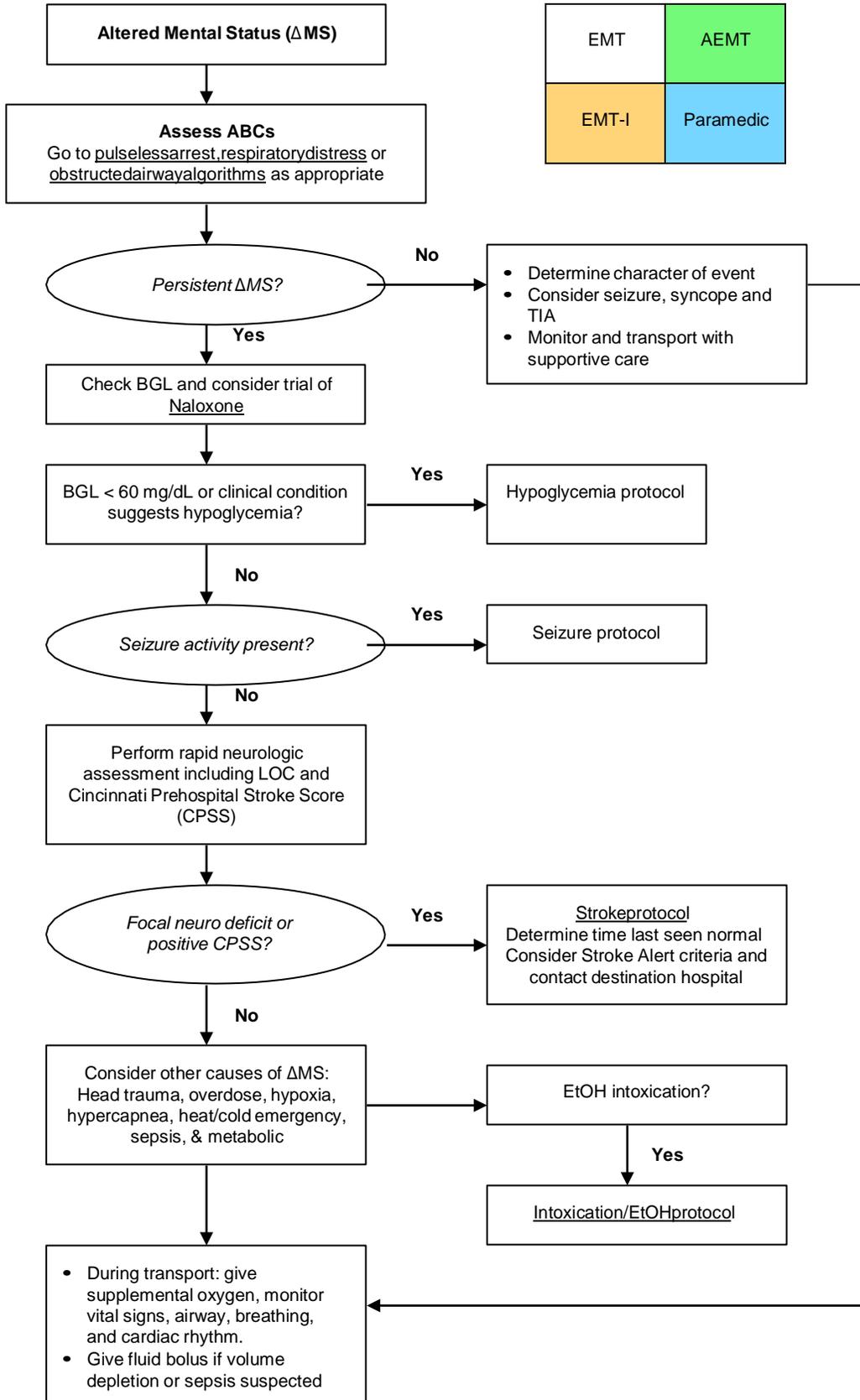
Special Notes:

- 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 preferred

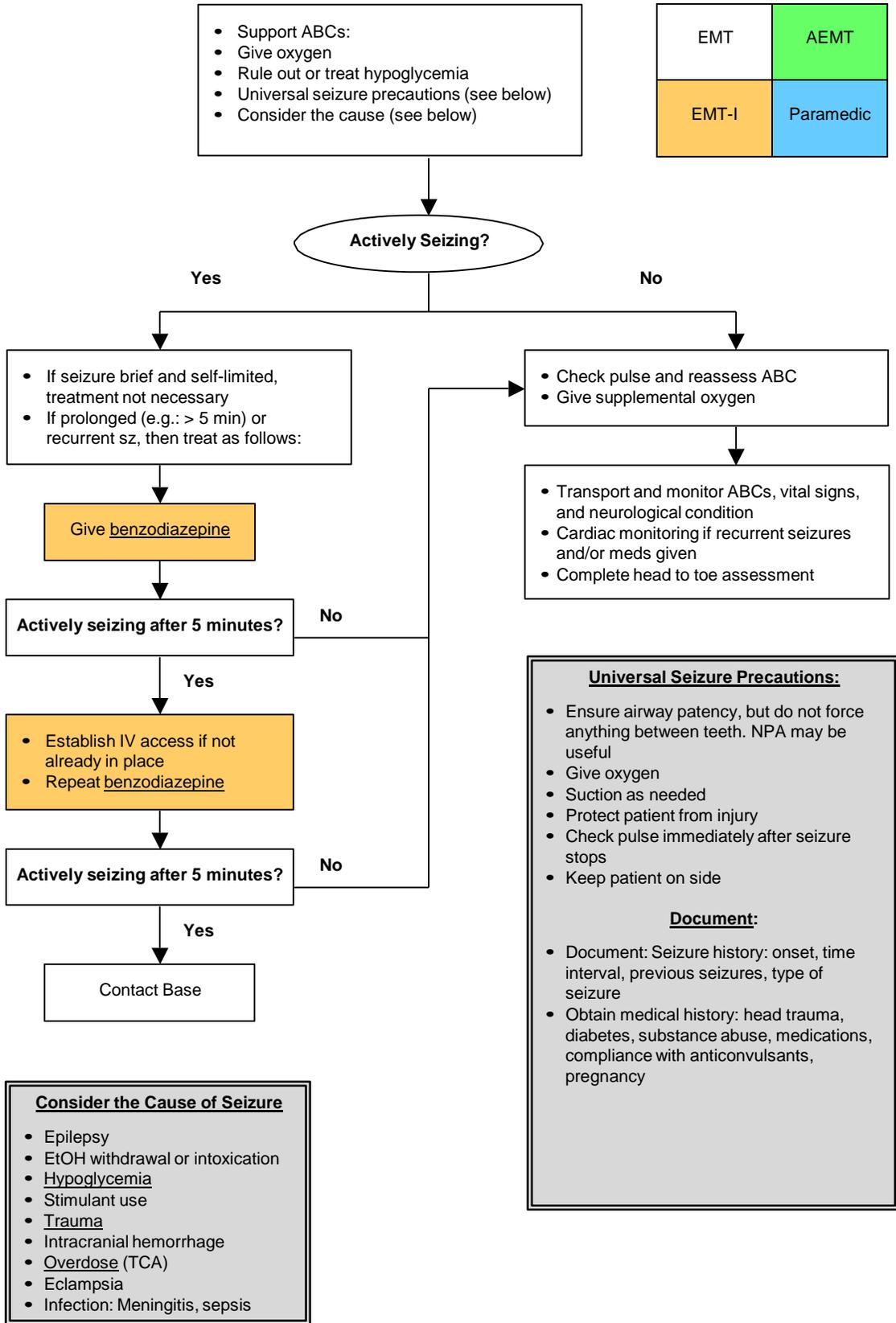
4011 STROKE



4012 UNIVERSAL ALTERED MENTAL STATUS



4013 ADULT (≥ 12 YEARS) SEIZURE



4014 HYPOGLYCEMIA

EMT	AEMT
EMT-I	EMT-P

Check blood glucose level in ANY patient with signs or symptoms consistent with hypoglycemia

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

Regarding refusals after a hypoglycemic episode:

See Patient Refusal protocol

Transport is always indicated for any of the following patients:

- Pts with *unexplained* hypoglycemia
- Pts taking oral hypoglycemic meds
- Pts not taking food by mouth
- Pts who do not have competent adult to monitor

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

- Glucagon IM
- Alternative: if severe symptoms (coma), consider IO and administer Dextrose IO (D25 dilution may be necessary for IO administration)

Is BGL < 60?

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

Administer oral glucose.
 Reassess patient

Are you able to establish IV access?

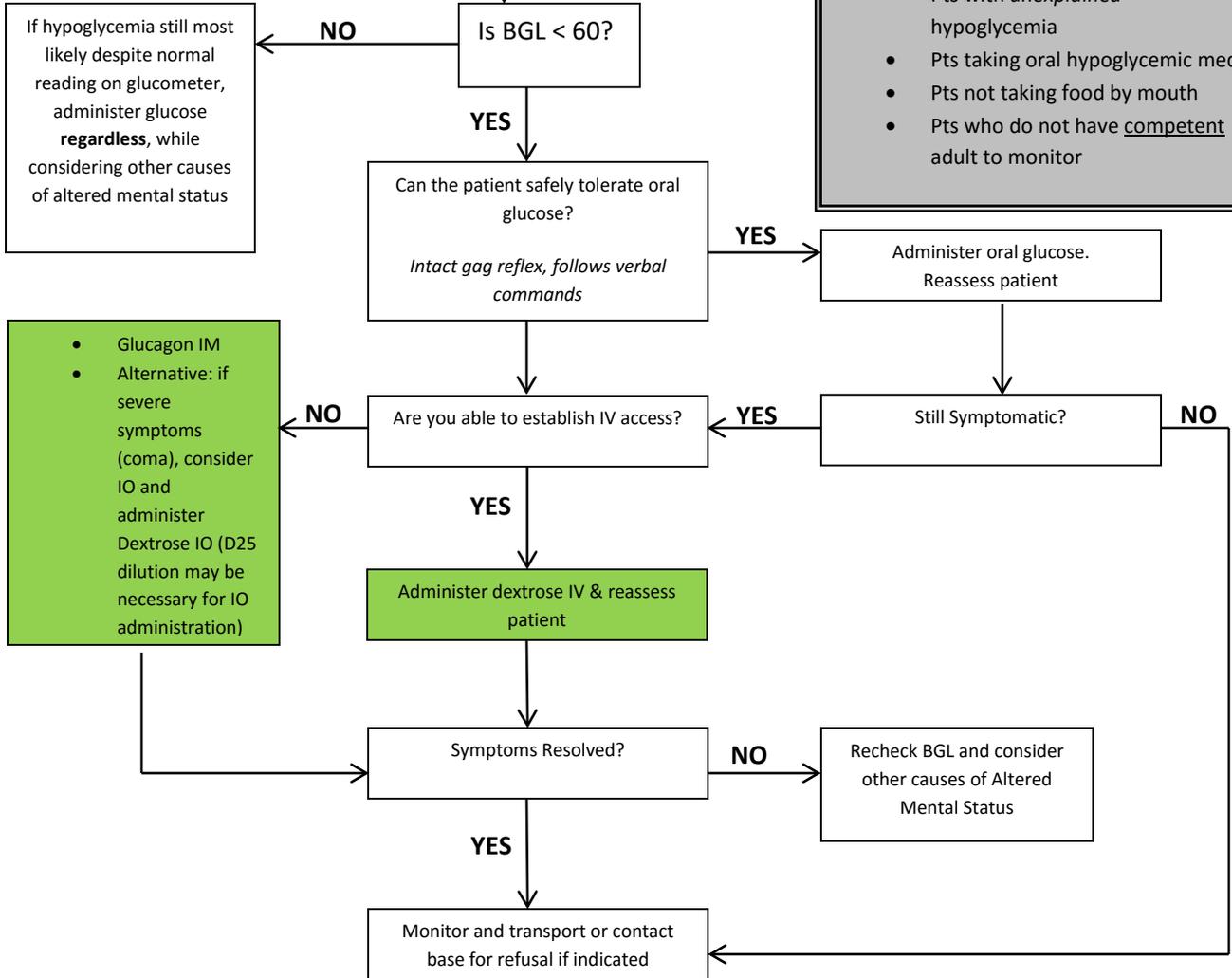
Still Symptomatic?

Administer dextrose IV & reassess patient

Symptoms Resolved?

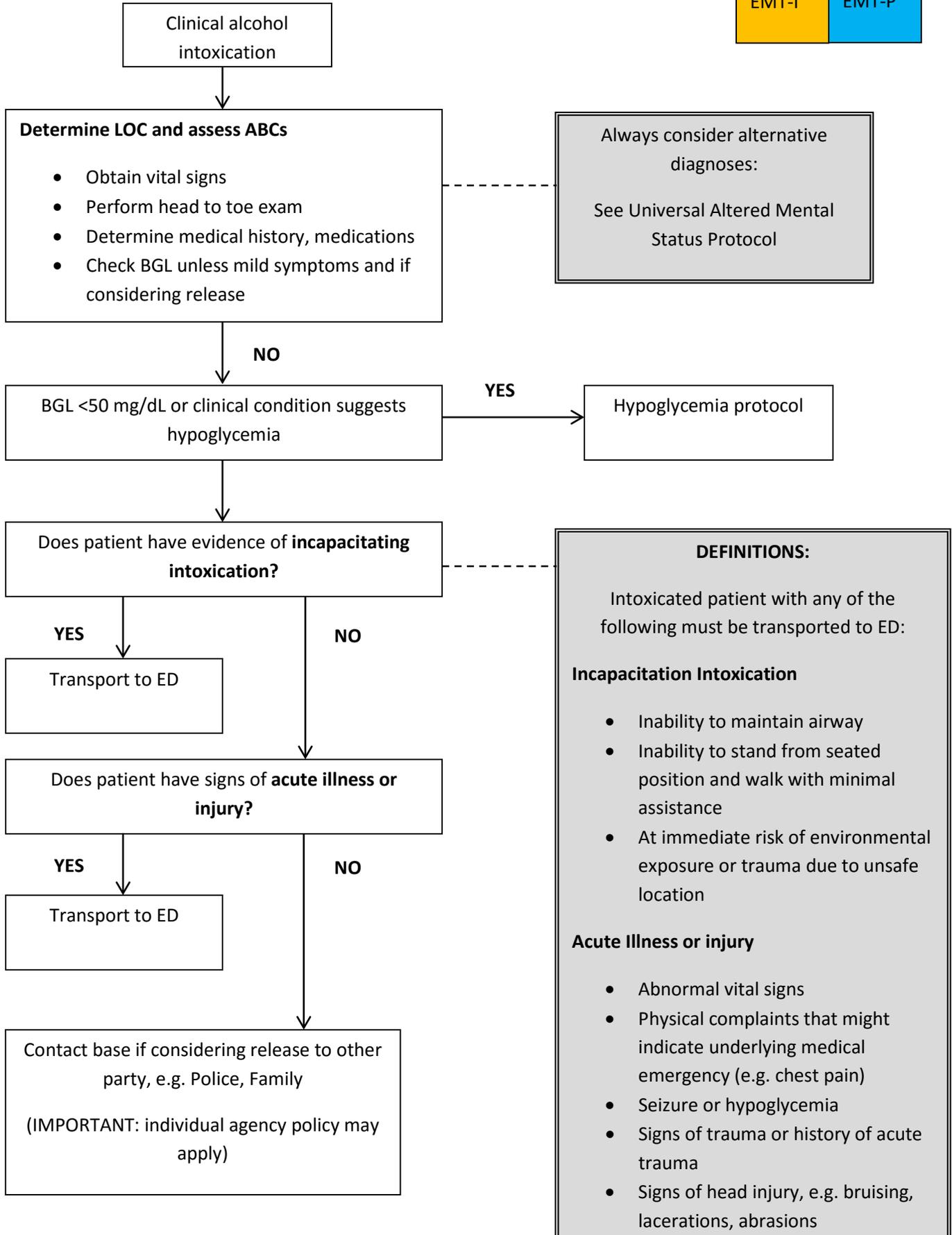
Recheck BGL and consider other causes of Altered Mental Status

Monitor and transport or contact base for refusal if indicated



4015 ALCOHOL INTOXICATION

EMT	AEMT
EMT-I	EMT-P

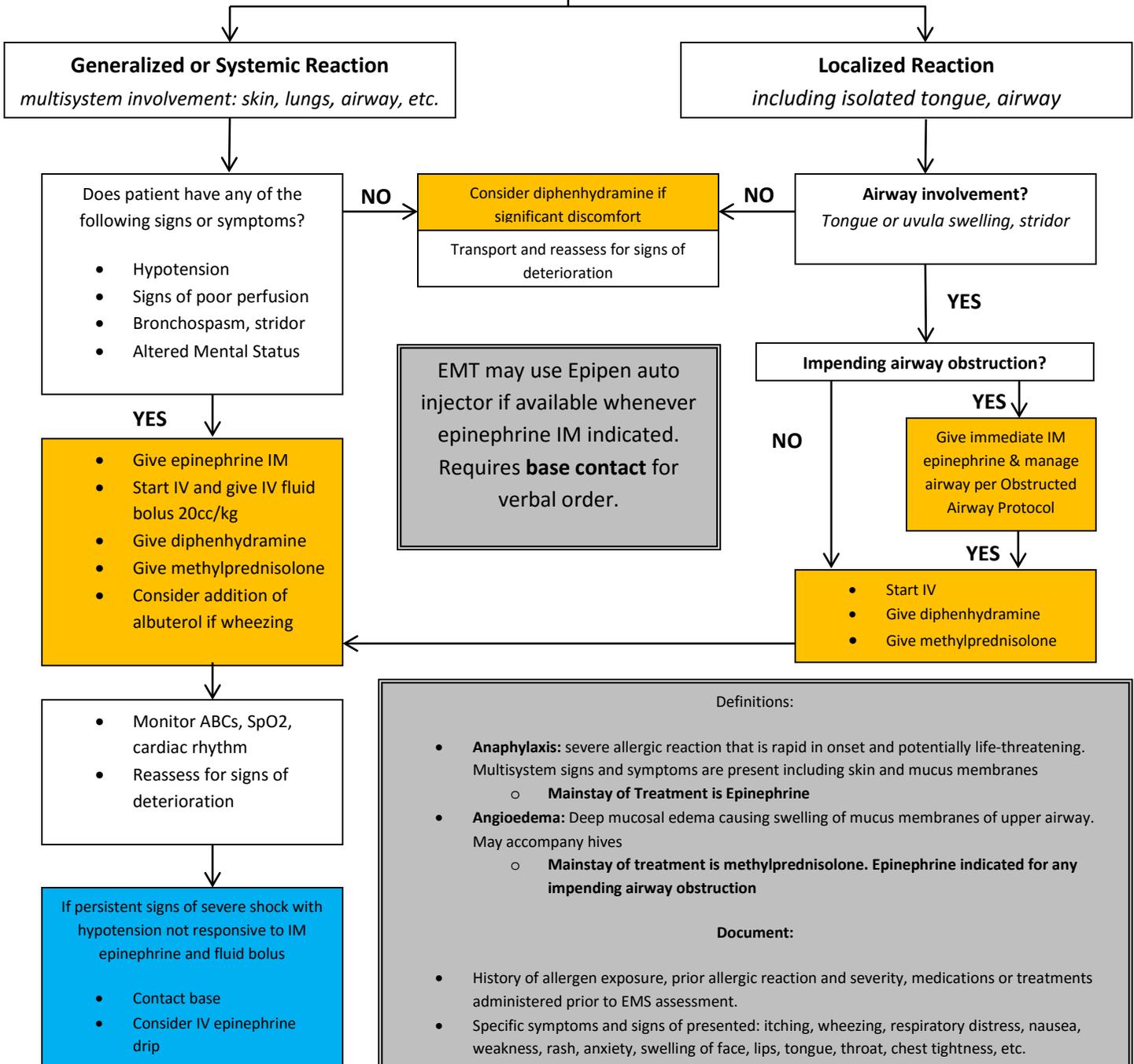


4020 ALLERGY AND ANAPHYLAXIS

EMT	AEMT
EMT-I	EMT-P

Allergic reaction, anaphylaxis or angioedema

- Assess ABCs, give oxygen
- If possible, determine likely trigger
- Determine PMH, medications, allergies
- Classify based on symptom severity and systems involved
- Other specific protocols may apply: e.g.: obstructed airway, bites & envenomation



4030 ABDOMINAL PAIN/VOMITING

EMT	AEMT
EMT-I	EMT-P

Abdominal exam:

- Gently palpate 4 quadrants, noting areas of tenderness, guarding, rigidity or distension
- Note any pulsatile mass
- Note surgical scars
- Check bilateral radial pulses
- Check bilateral blood pressures

History:

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

Abdominal pain and/or vomiting

- Access ABCs
- Give Oxygen
- Identify signs of shock and hypovolemia
- Consider cardiac etiology
- Identify GI bleeding
- Transport in position of comfort

- Start IV
- If GI bleed consider 2nd IV
- Vital signs, Head-to-toe exam

- Cardiac Monitor and 12 lead ECG if diabetic, age >50 and upper abdominal pain or unstable vital signs
- Antiemetic if vomiting. AEMT may give ODT ondansetron only and require VO

Elderly Patients:

- Much more likely to have life-threatening cause of symptoms
- Always consider vascular emergencies: AAA, MI
- Shock may be occult, with absent tachycardia in setting of severe hypovolemia

Signs of Hypotension, or poor perfusion

YES

NO

- 2 large bore IVs
- 20cc/kg NS bolus
- Elevate legs
- Reassess response to treatment
- See Hypotension/shock protocol

Consider opioid (Fentanyl) for severe pain

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

4040 OVERDOSE AND ACUTE POISONING

EMT	AEMT
EMT-I	EMT-P

PPE and decontaminate when appropriate

Obtain specific information:

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

ABC's
IV, oxygen, monitor

Need for airway management?

YES

- Naloxone
- Airway adjuncts and BVM
- Ventilations as needed

See Airway Management Protocol

NO

Hypotension?

YES

IV fluid Bolus per hypotension/shock protocol

Consider Dopamine if no response to 20ml/KG NS Bolus

NO

Altered Mental Status?

YES

Universal altered mental status protocol

- Check BGL
- Consider specific ingestions

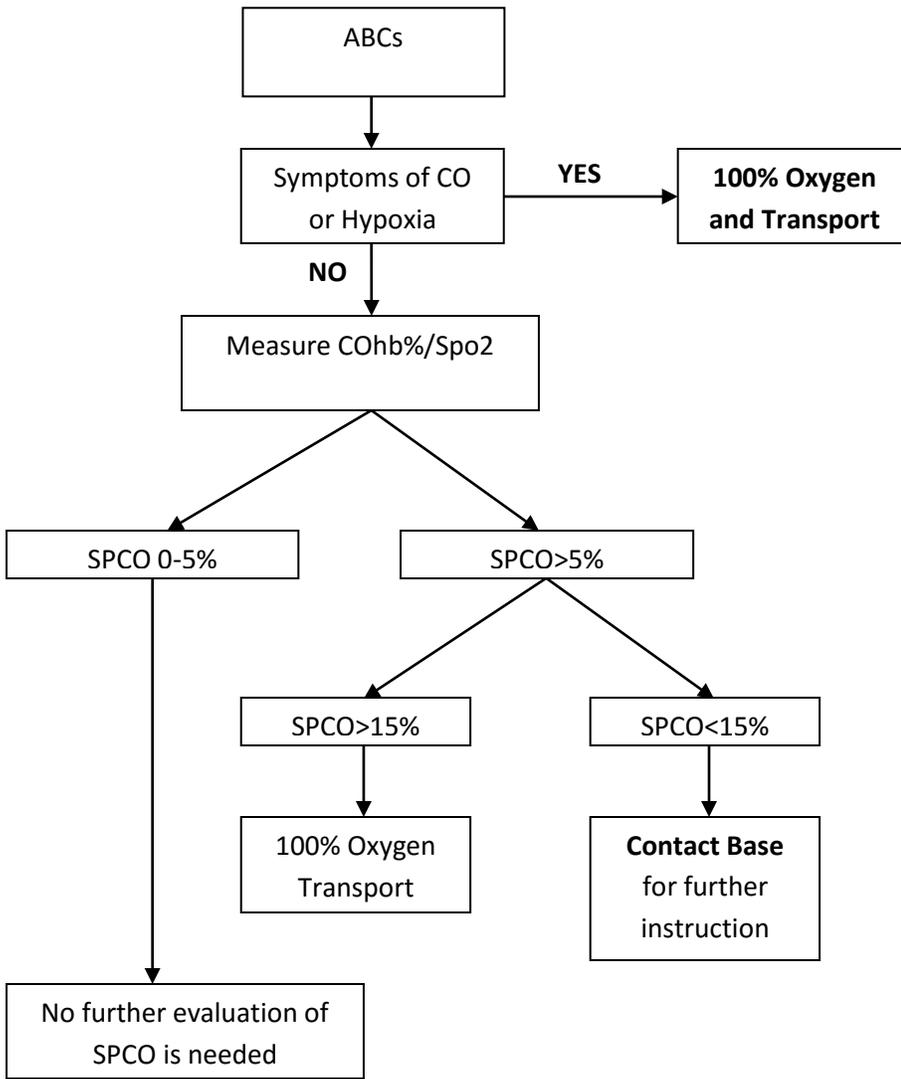
NO

Specific ingestion?

<p>Stimulant</p> <p><i>Tachycardia, HTN, agitation, sweating, psychosis</i></p>	<p>Tricyclic antidepressant</p> <p><i>Wide Complex tachycardia, seizure</i></p>	<p>Organophosphate or nerve agent</p> <p><i>DUMBELS or SLUDGE</i></p>	<p>Calcium Channel Blocker</p> <p><i>Bradycardia, Heart block, Hypotension</i></p>	<p>β-Blocker</p> <p><i>Bradycardia, Heart Block, Hypotension</i></p>
<p>Agitated combative patient protocol</p> <p>Benzo for severe symptoms</p>	<p>See Seizure Protocol</p> <p>If intubated, consider hypervent to ETCO 25-30</p>	<p>Supportive Care</p> <p>Atropine (EMT-I requires VO)</p>	<p>20 ml/Kg Bolus</p> <p>Glucagon (EMT-I Requires VO)</p>	<p>20 ml/Kg Bolus</p> <p>Dopamine Glucagon (EMT-I requires VO)</p>

4050 SUSPECTED CARBON MONOXIDE EXPOSURE

EMT	AEMT
EMT-I	EMT-P



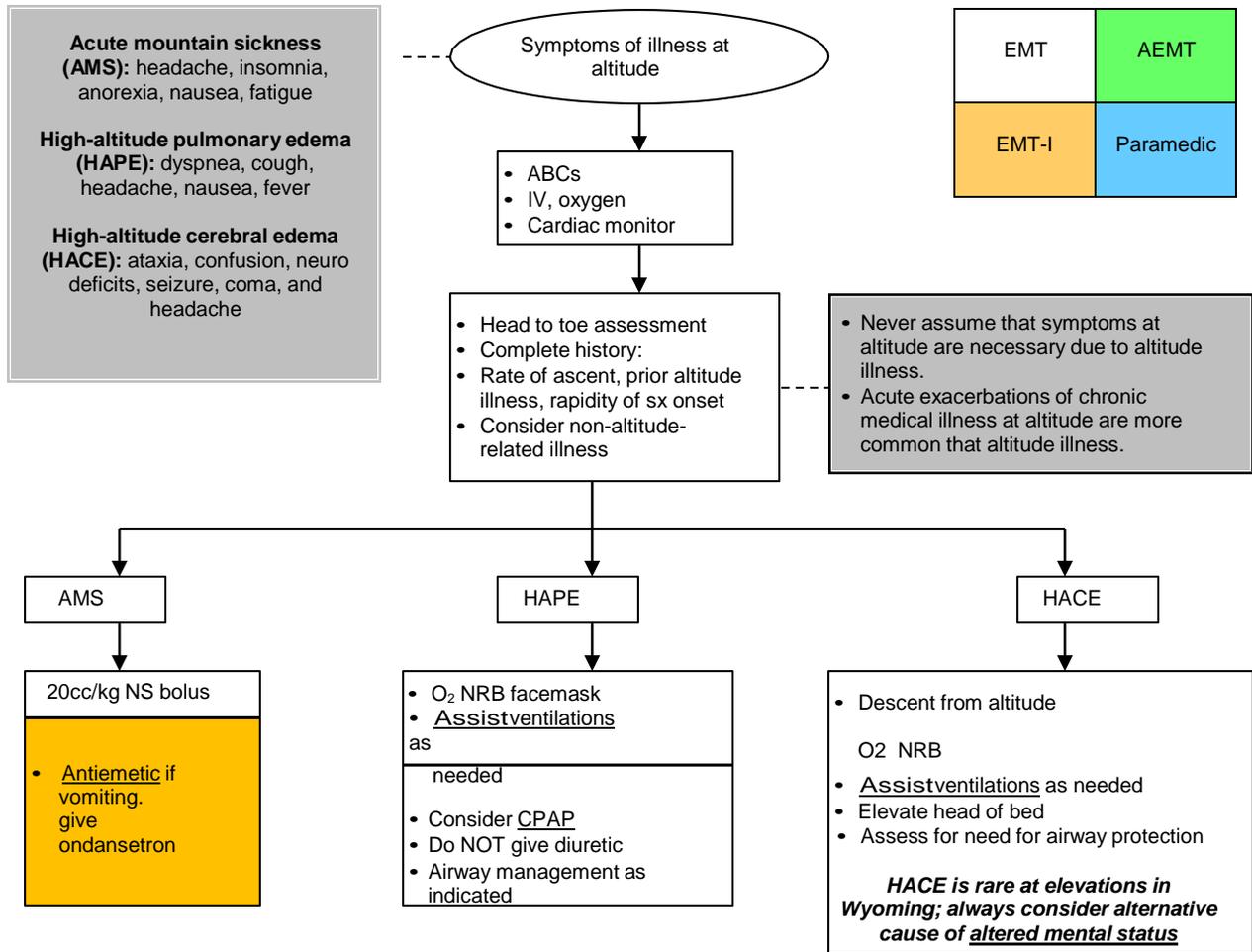
General Guidelines:

- 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 Hydroxycobalamin 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

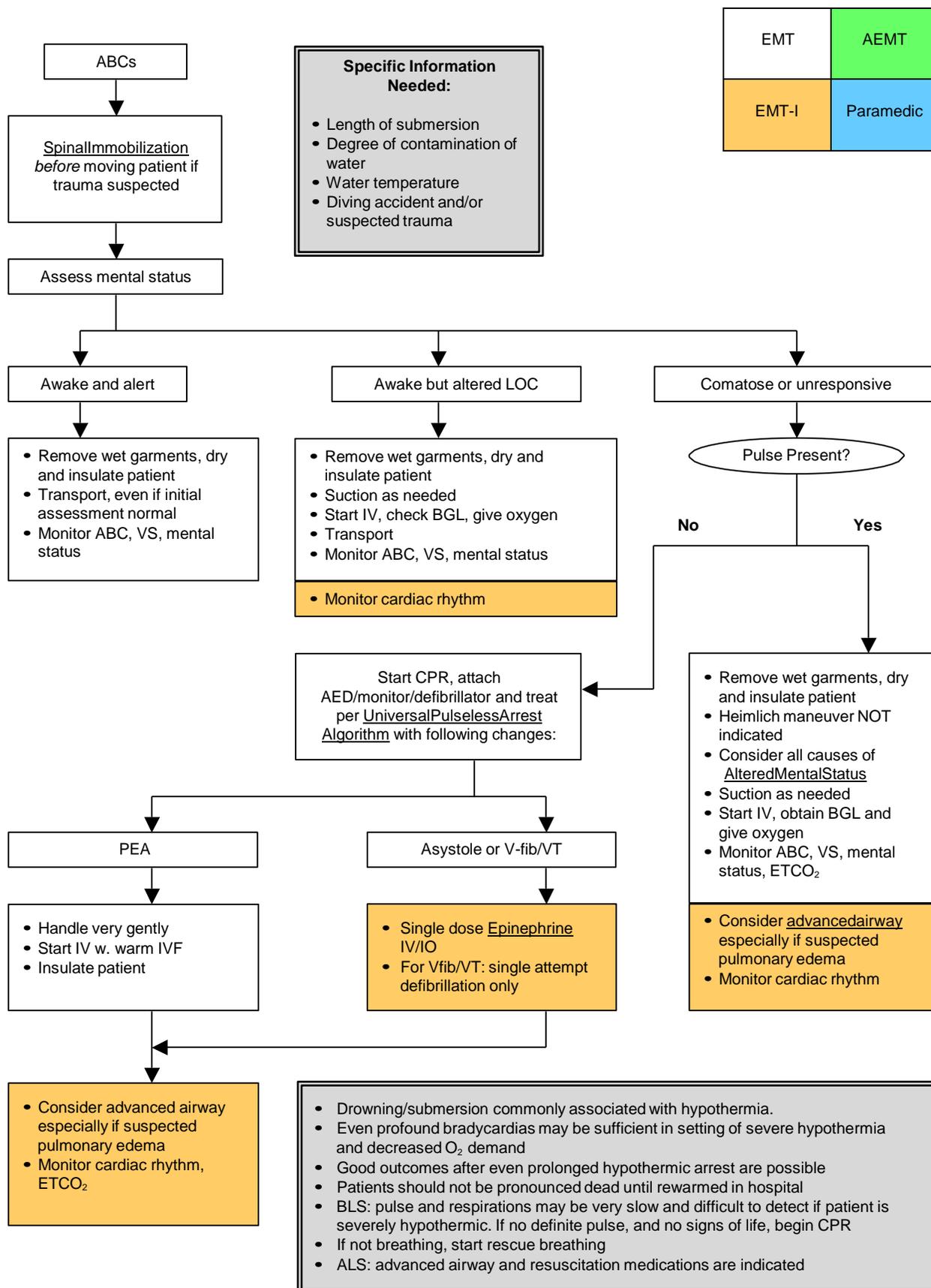
Signs and symptoms per COHb

- **<15-20% COHb**
 - Mild: Headache, nausea, vomiting, dizziness, blurred vision
- **21-40% COHb**
 - Moderate: Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness
- **41-59% COHb**
 - Severe: Dysrhythmias, hypotension, cardiac ischemia, palpations, respiratory arrest, pulmonary edema, seizures, coma, cardiac arrest
- **>60% COHb**
 - Death

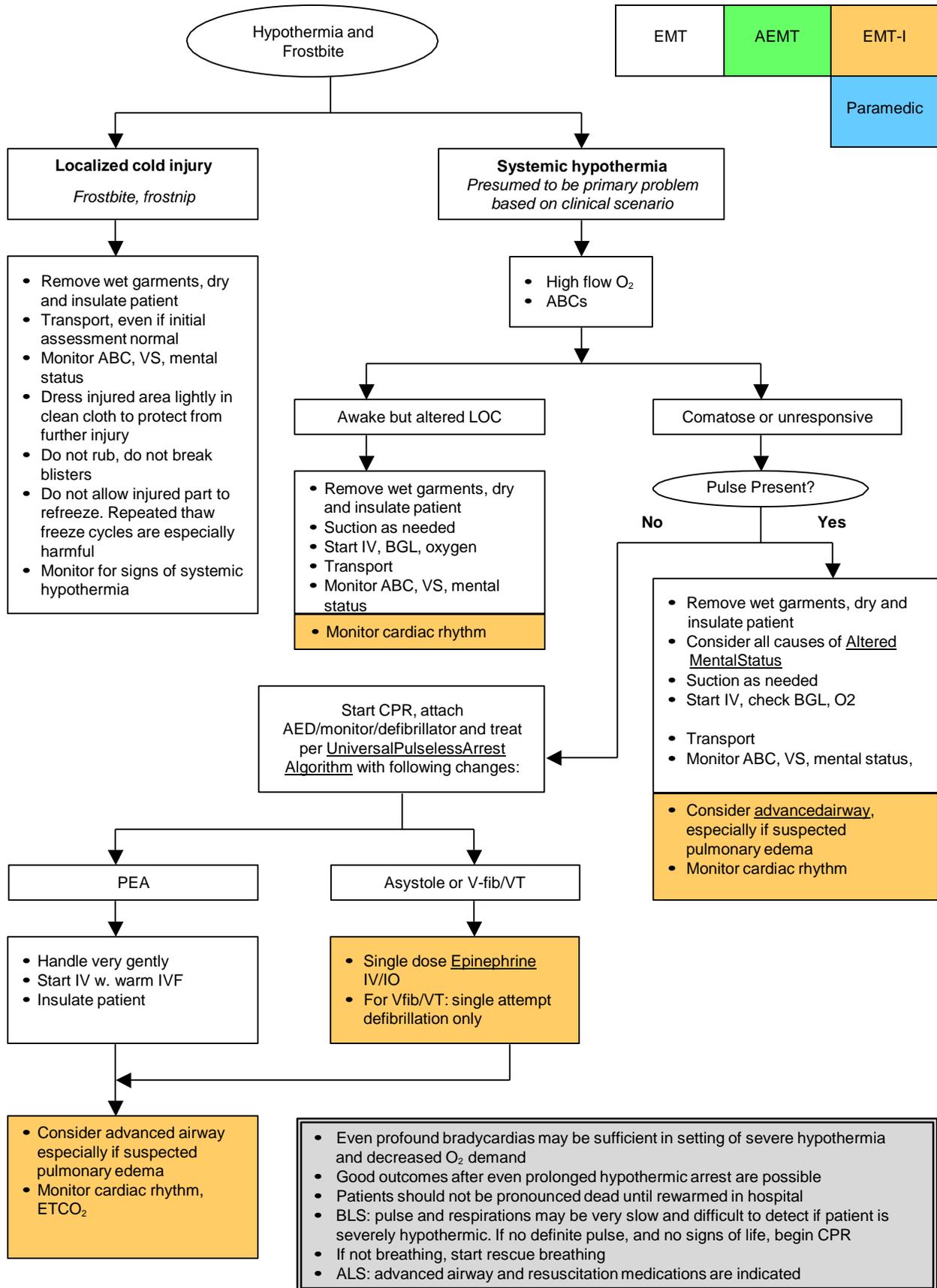
4051 HIGH ALTITUDE ILLNESS



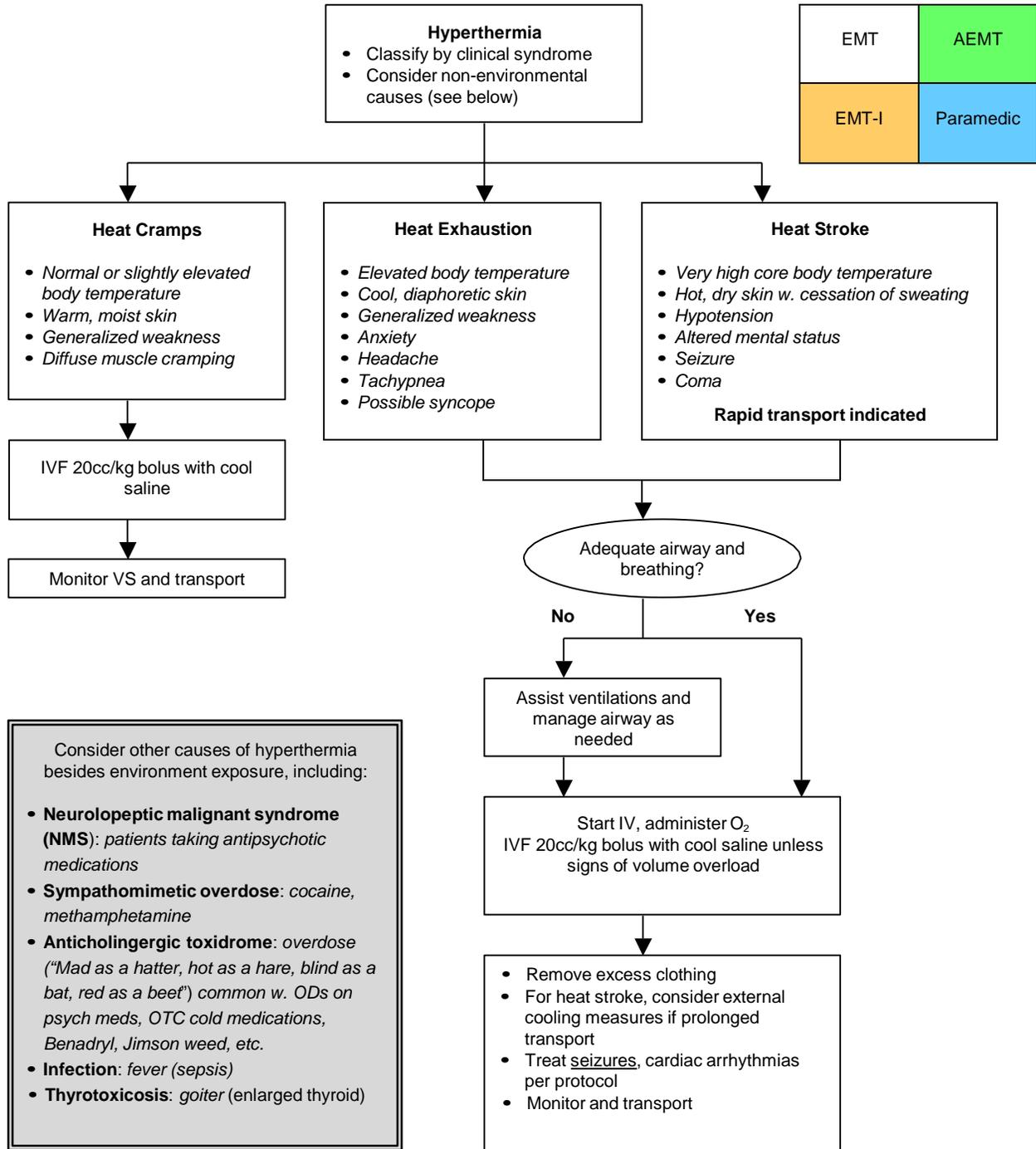
4052 DROWNING



4053 HYPOTHERMIA



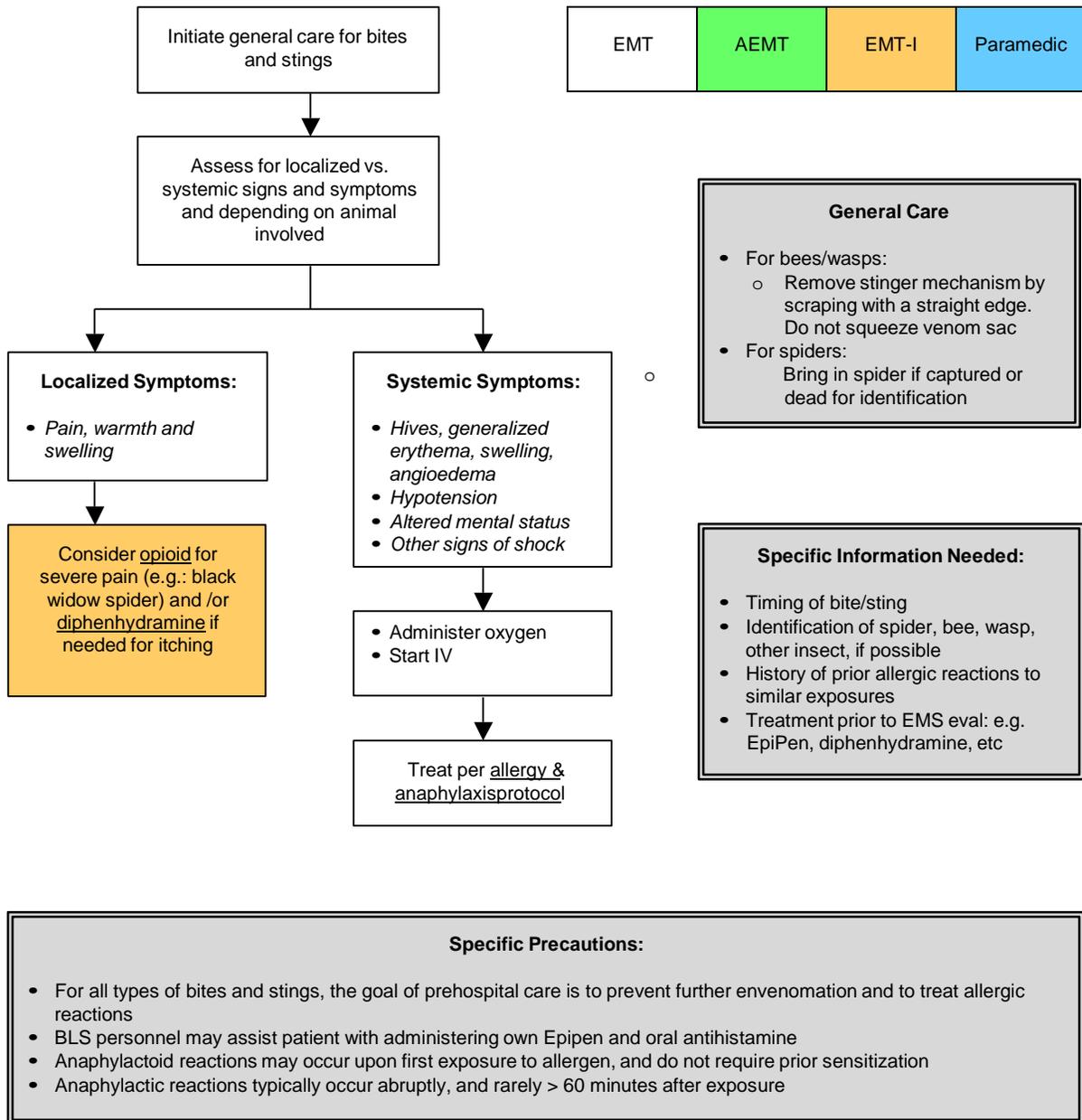
4054 ENVIRONMENTAL HYPERTHERMIA



Consider other causes of hyperthermia besides environment exposure, including:

- Neuroleptic malignant syndrome (NMS):** patients taking antipsychotic medications
- Sympathomimetic overdose:** cocaine, methamphetamine
- Anticholinergic toxidrome:** overdose ("Mad as a hatter, hot as a hare, blind as a bat, red as a beef") common w. ODs on psych meds, OTC cold medications, Benadryl, Jimson weed, etc.
- Infection:** fever (sepsis)
- Thyrotoxicosis:** goiter (enlarged thyroid)

4055 INSECT/ARACHNID STINGS AND BITES PROTOCOL

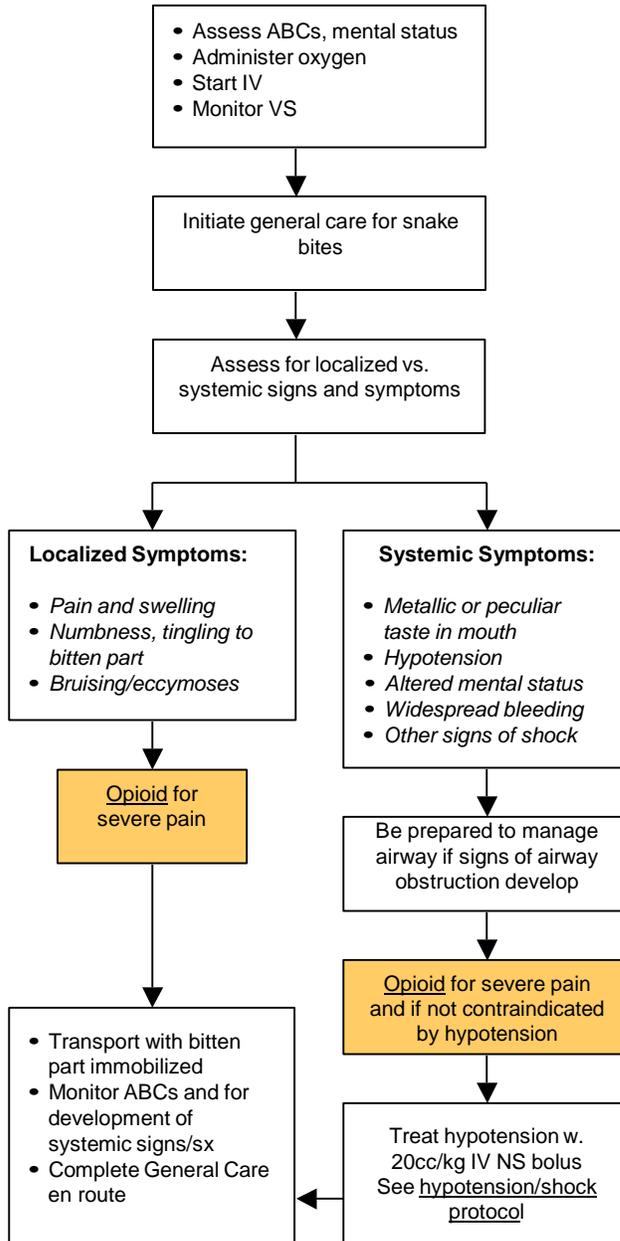


Specific Precautions:

- For all types of bites and stings, the goal of prehospital care is to prevent further envenomation and to treat allergic reactions
- BLS personnel may assist patient with administering own EpiPen and oral antihistamine
- Anaphylactoid reactions may occur upon first exposure to allergen, and do not require prior sensitization
- Anaphylactic reactions typically occur abruptly, and rarely > 60 minutes after exposure

4056 SNAKE BITE PROTOCOL

EMT	AEMT	EMT-I	Paramedic
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General Care:

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

Obtain specific information:

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

Specific Precautions:

- Exotic venomous snakes, such as pets or zoo animals, may have different signs and symptoms than those of pit vipers. In case of exotic snake bite, contact base and consult zoo staff or poison center for direction.
- If adequate photo can be taken, it is not necessary to bring snake to ED.
- Never pick up a presumed-to-be-dead snake by hand. Rather, use a shovel or stick. A dead snake may reflexively bite and envenomate.
- > 25% of snake bites are “dry bites”, without envenomations.
- Conversely, initial appearance of bite may be deceiving as to severity of envenomation.
- Fang marks are characteristic of pit viper bites (e.g. rattlesnakes).
- Jaw prints, without fang marks, are more characteristic of non-venomous species.

4060 MEDICAL HYPOTENSION/SHOCK PROTOCOL

EMT	AEMT
EMT-I	EMT-P

Shock is a state of decreased tissue oxygenation. Significant vital organ hypoperfusion may be present without hypotension. Home medications may also limit development of tachycardia.

**

Goal is to maximize **oxygen delivery** with supplemental oxygen and assisted ventilations (if needed), and to maximize **perfusion** with IV fluids.

Adult with SBP <90mmHg
AND/OR signs of poor perfusion

- ABC's
- Complete set of VS
- Full Monitoring
- O2 Via NRB @ 15LPM
- IV Access
- ALS transport

Signs of poor perfusion?
AMS, Tachycardia, Cool clammy skin, Venous Lactate >4 (see below)

NO

Recheck and monitor if patient remains asymptomatic and clinically stable, treatment may not be necessary

YES

Life Threatening brady or tachydysrhythmia?

YES

Treat according to appropriate protocol

NO

- Consider etiology of shock state
- Give 500cc NS bolus IV/IO and reassess.

Consider the etiology of your patient's shock state, which may have specific treatments, e.g.:

- Sepsis
- Hemorrhage
- Anaphylaxis
- Overdose
- Cyanide or CO poisoning
- Other: PE, MI, tension pneumothorax

Repeat 500cc boluses, reassessing for pulmonary edema, up to 2 liters total or until goal of SBP >90mmHg and signs of adequate perfusion

For ongoing hypotension, poor perfusion or pulmonary edema, contact base for dopamine drip

If patient is at risk for adrenal insufficiency, see adrenal insufficiency protocol

Adrenal insufficiency patients at risk may include:

- Chronic steroid use
- Addison's disease
- Congenital adrenal hyperplasia
- Other patients identified as such by family, medical record, or physician note

Septic Shock is defined by:

1. Presence of Systemic Inflammatory Response Syndrome (SIRS)

AND

2. Suspected Infection

AND

3. Signs of hypoperfusion (hypotension or elevated venous lactate)

SIRS criteria:

- HR >110
- RR >24
- Temp >100.4 or <96.8F

The initial treatment of septic shock involves maximizing perfusion with IVF fluid boluses, not vasopressors.

Lactate Measurement

At this time there is insufficient evidence to recommend for or against routine point of care measurement of lactate by EMS. Although it shows promise for improved detection of hypoperfusion, lactate measurement is not considered mandatory or standard of care by the Laramie Fire Department EMS Medical directors.

4061 ADRENAL INSUFFICIENCY PROTOCOL

Patient at risk for adrenal insufficiency (Addisonian crisis):

- Identified by family or medical alert bracelet
- Chronic steroid use
- Congenital Adrenal Hyperplasia
- Addison's disease

EMT	AEMT
EMT-I	Paramedic

Assess for signs of acute adrenal crisis:

- Pallor, weakness, lethargy
- Vomiting, abdominal pain
- Hypotension, shock
- Congestive heart failure

Corticosteroid Administration

- **Adult** (Age 12 years or older):
 - Methylprednisolone 125 mg IV/IM x 1
- **Pediatric** (age < 12 years):
 - Methylprednisolone 2 mg/kg IV/IM up to a maximum dose of 125 mg x 1

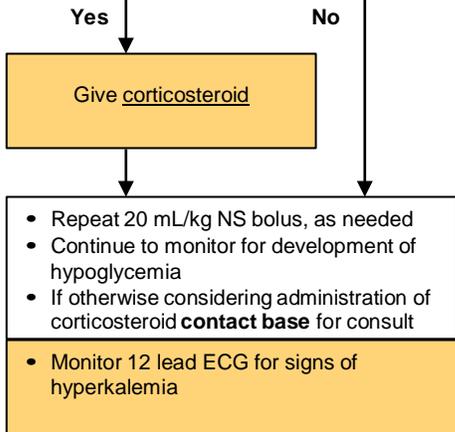
All symptomatic patients:

- Check blood glucose and treat hypoglycemia, if present
- Start IV and give oxygen
- Give NS bolus IV 20 mL/kg up to 2 liters

Does patient have hypotension and signs of poor perfusion?

- *Altered mental status*
- *Tachycardia*
- *Cool, clammy skin*

- If the patient is confirmed to have a disease (such as congenital adrenal hyperplasia or chronic use of systemic steroids) that could lead to acute adrenal insufficiency or Addisonian crisis, then the administration of steroids may be life-saving and necessary for reversing shock or preventing cardiovascular collapse
- Patients at risk for adrenal insufficiency may develop Addisonian crisis 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
- 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



4070 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

Scene Safety

- A. Scene safety and provider safety are a priority. Consider police contact if scene safety is a concern.
- B. Refer to restraint protocol as needed.

EMT	AEMT
EMT-I	Paramedic

Specific Information Needed

- A. Obtain history of current event; 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
 1. E.g.: Well groomed, disheveled, debilitated, bizarrely dressed
- B. Evaluate vital signs.
 1. Is a particular toxidrome suggested, e.g.: sympathomimetic?
- C. Note medic alert tags, breath odors suggesting intoxication.
- D. Determine ability to relate to reality.
 1. Does the patient know who she is, where she is, who you are and why you are there?
 2. Does the patient appear to be hallucinating or responding to internal stimuli?
- E. Note behavior. Consider known predictors of violence:
 1. Is the patient male, intoxicated, paranoid or displaying aggressive or threatening behavior or language?

Treatment

- A. If patient agitated or combative, see Agitated/Combative Patient Protocol
- B. Attempt to establish rapport
- C. Assess ABCs
- D. Transport to closest Emergency Department
- E. Be alert for the possibility of patient fleeing the scene
- F. Consider organic causes of abnormal behavior (trauma, overdose, intoxication, hypoglycemia)
- G. If patient restraint considered necessary for patient or EMS safety, refer to Restraint Protocol.
- H. Check blood sugar
- I. If altered mental status or unstable vital signs:
 1. Administer oxygen.
 2. Establish venous access.
 3. Refer to Universal Altered Mental Status Protocol.

Mental Health Holds

- A. 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.
- B. 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
- C. If a patient with a psychiatric complaint is intoxicated or otherwise lacks decision making capacity for any other reason than no Mental Health Hold is needed and such a patient should be brought to an emergency department for evaluation and stabilization with implied consent.
- D. If EMS is called to evaluate a patient with an isolated psychiatric complaint who is not

4070 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

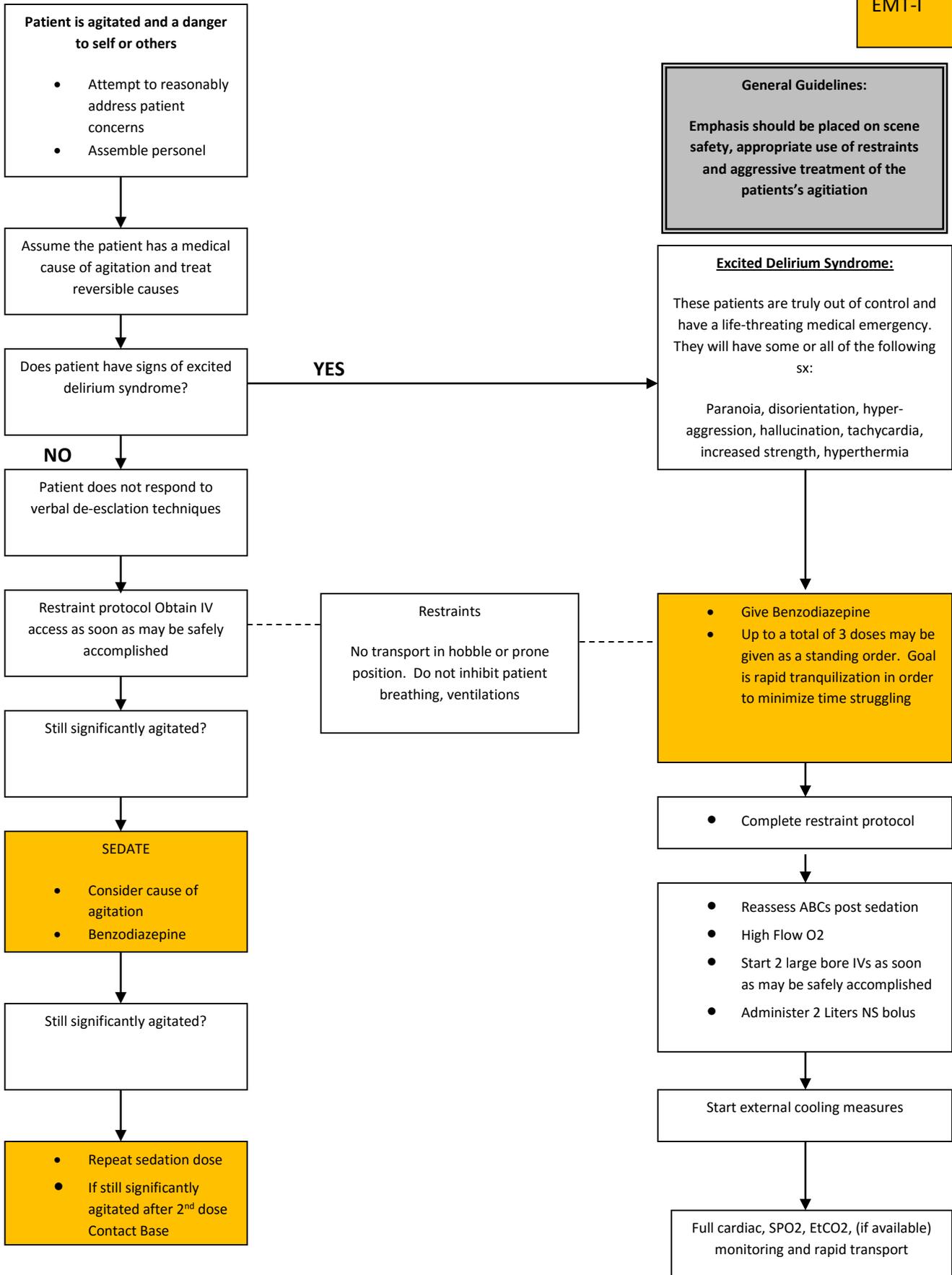
- intoxicated, or otherwise lacking decision making capacity, and who refuses treatment or transport, *and* law enforcement are not willing to transport patient, then EMS should contact Medical Direction for medical consult with **BASE PHYSICIAN**.
- E. If there is a reasonable concern for suicidal or homicidal ideation, or grave disability from another mental health condition, then **BASE PHYSICIAN** may give a verbal order placing the patient on a Mental Health Hold and direct EMS personnel to transport the patient against his or her will in accordance with Wyoming State statutes. The physician's name, and time and date of the Mental Health Hold must be recorded on the PCR. Effort should be made to obtain consent for transport from the patient, and to preserve the patient's dignity throughout the process.
- F. It is expected that receiving facilities will receive such patients and perform an appropriate evaluation to determine if continuation of a Mental Health Hold is indicated at the time of their assessment.
- G. Although there is always a risk of accusations of kidnapping or assault in such cases, such accusations are extremely rare. The risk of abandonment of a potentially suicidal or otherwise gravely impaired patient far outweigh any theoretical risk of allegations of kidnapping when actions are taken in the interest of patient safety.

Specific Precautions

- A. Psychiatric patients often have an organic basis for mental disturbances. Be suspicious of hypoglycemia, hypoxia, head injury, intoxication, or toxic ingestion.
- B. If emergency treatment is unnecessary, do as little as possible except to reassure while transporting. Try not to violate the patient's personal space.
- C. If the situation appears threatening, consider a show of force involving police before attempting to restrain.
- D. Beware of weapons. These patients can become very violent.
- E. An EMT, AEMT, Intermediate or paramedic may initiate a Mental Health Hold only by direct verbal order from the **BASE PHYSICIAN**.
- F. Document name of **BASE PHYSICIAN**.

4075 AGITATED/COMBATIVE PATIENT PROTOCOL

EMT	AEMT
EMT-I	EMT-P



4076 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. 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.
3. EMS personnel are not responsible for the law enforcement hold on these patients.
4. Handcuffed patients **will not** be placed in the prone position.
5. Handcuffs may be used with spinal immobilization. Medical priorities should take priority in the positioning of the handcuffs.

EMT	AEMT
EMT-I	EMT-P

4080 CHILDBIRTH PROTOCOL

Overview:

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

ABCs O2
15L NRB IV
access

Obtain OB
HX

If suspected imminent Childbirth:

- Allow PT to remain in position of comfort
- Visualize perineum
- Determine if there is time to transport

Specific Information needed:

- Ob (Obstetrical) HX
 - Number of Pregnancies (gravida)
 - Live Births (PARA)
 - Expected delivery date
 - Length of previous labors
 - Narcotic use in past 4 hours

Delivery imminent

Delivery is imminent if there is crowning or bulging of perineum

Delivery not imminent

- Transport in a position of comfort, preferably on the left side, to the hospital if time and conditions allow
- Monitor for progression to imminent delivery

Emergency Childbirth Procedure

- If there is a prolapsed umbilical cord or apparent breech presentation, go to obstetrical complications protocol and initiate immediate transport
- For otherwise uncomplicated delivery:
 - Position mother supine on flat surface, if possible
 - Do not attempt to impair or delay delivery
 - Support and control delivery of head as it emerges
 - Protect perineum with gentle hand pressure
 - Check for cord around neck, gently guide head and neck downward to deliver anterior shoulder. Support and gently lift head and neck downward to deliver posterior shoulder.
- Rest of infant should deliver with passive participation - get a firm hold on baby
- Keep newborn at level of mother's vagina until cord stops pulsating and is double clamped

Critical Thinking:

- Normal pregnancy is accompanied by higher heart rates and lower blood pressures
- Shock will be manifested by signs of poor perfusion
- Labor can take 8-12 hours, but as little as 5 min if high PARA
- The higher the PARA the shorter the labor is likely to be
- High risk factors include: No prenatal care, drug use, teenage pregnancy, DM, htn, cardiac disease, prior breech or C section, preeclampsia, twins
- Note the color of amniotic fluid or meconium

Post partum Care Infant

- Suction mouth and nose only if signs of obstruction by secretions
- Respirations should begin within 15 seconds after stimulating reflexes. If not, begin artificial ventilations at 30-40 breaths per min
- If apneic, cyanotic or HR<100 begin neonate resuscitation
- Dry baby and wrap in warm blanket
- After umbilical cord stops pulsating, double clamp 6" from infant abdominal wall and cut between clamps with a sterile scalpel. If no sterile cutting instrument available, lay infant on mother's abdomen and do not cut clamped cord
- Document 1 and 5 min APGAR scores

Postpartum Care Mother

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

4081 OBSTETRICAL COMPLICATIONS

EMT	AEMT	EMT-I	Paramedic
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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 child birth 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

3rd Trimester Bleeding (6-8 months)

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

Eclampsia/Toxemia

- High flow O₂ via NRB, IV access
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort
- 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 child birth protocol – postpartum care of infant and mother

5000 GENERAL TRAUMA CARE

EMT	AEMT
EMT-I	EMT-P

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



- General Impression
- ABCs and LOC
- Rapid Trauma Assessment
- Prepare for immediate Transport
- SAMPLE history



- Give High Flow Oxygen
- Assist ventilations and manage airway as indicated
- Spinal immobilization if indicated



- Control exsanguination hemorrhage:**
- Direct pressure
 - Tourniquet protocol if indicated
 - Pelvic stabilization if indicated



- Assess disability and limitation:**
- Brief neuro assessment
 - Extremity splinting if indicated

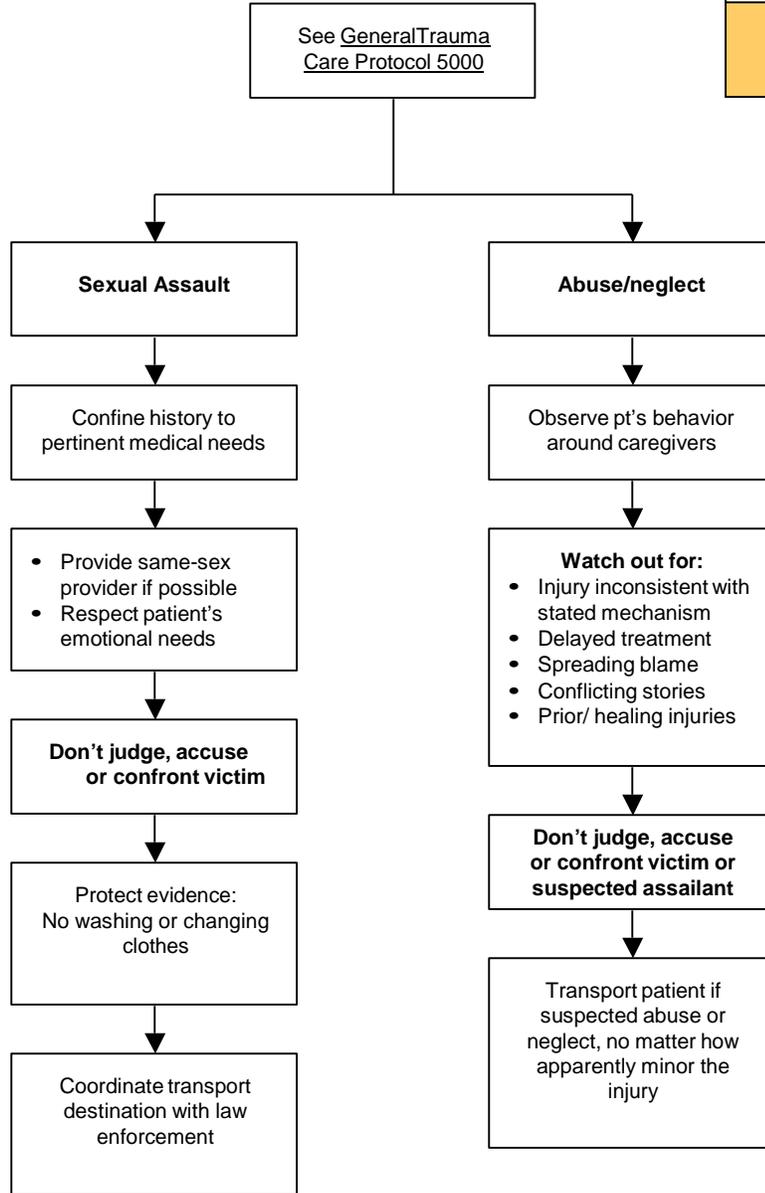


- Rapid Transport to appropriate Trauma Center
- Large bore IV, 2nd if unstable
- Consider IV fluid bolus 20cc/kg if unstable or suspected significant injuries. See Traumatic shock protocol
- Monitor vital signs, ABCs, neuro status, GCS

**CALL APPROPRIATE
TRAUMA RESPONSE
AT IMH**

5005 SPECIAL TRAUMA SCENARIOS PROTOCOL

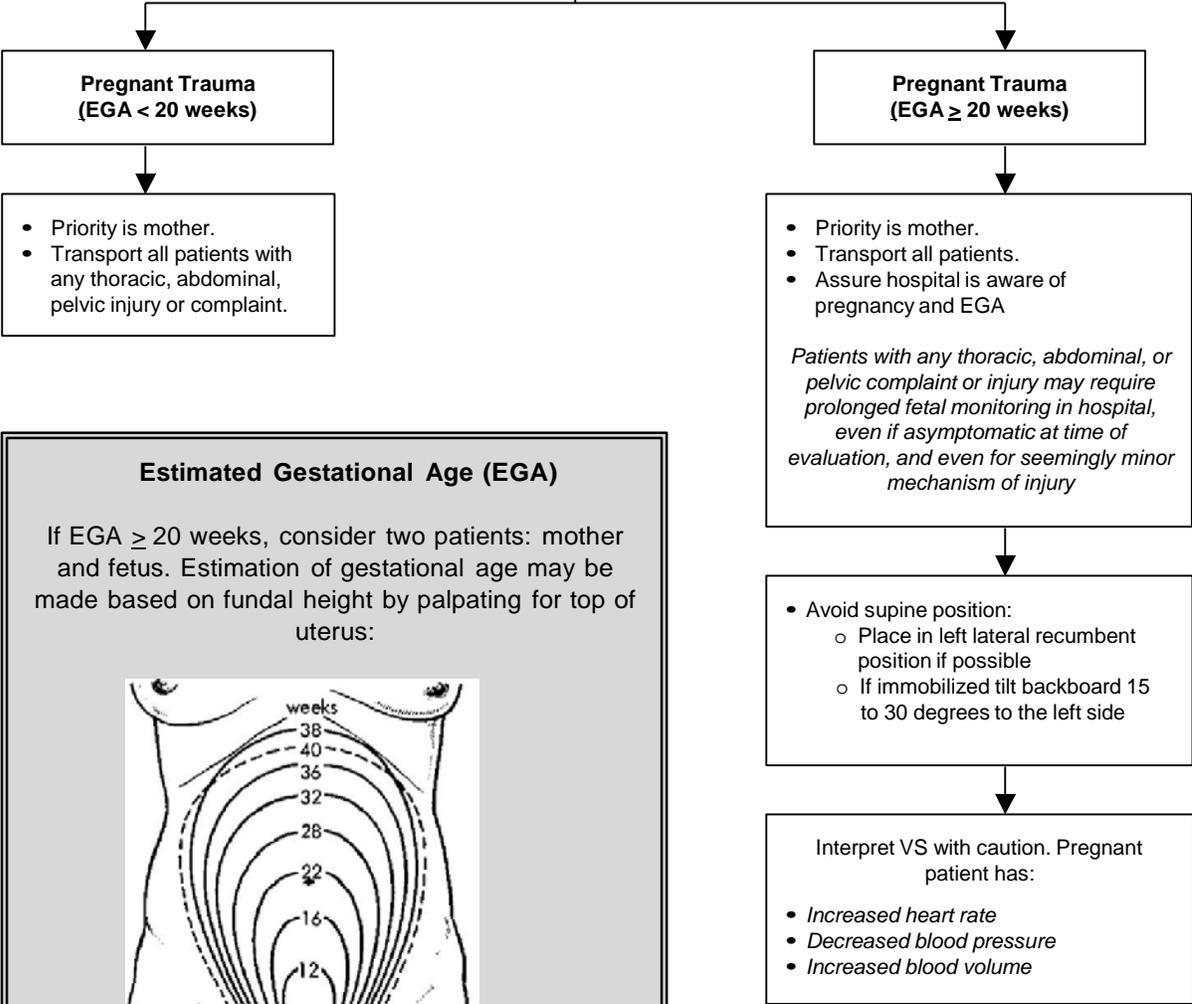
EMT	AEMT
EMT-I	Paramedic



5006 TRAUMA IN PREGNANCY

EMT	AEMT
EMT-I	Paramedic

See GeneralTrauma
CareProtocol 5000



Estimated Gestational Age (EGA)

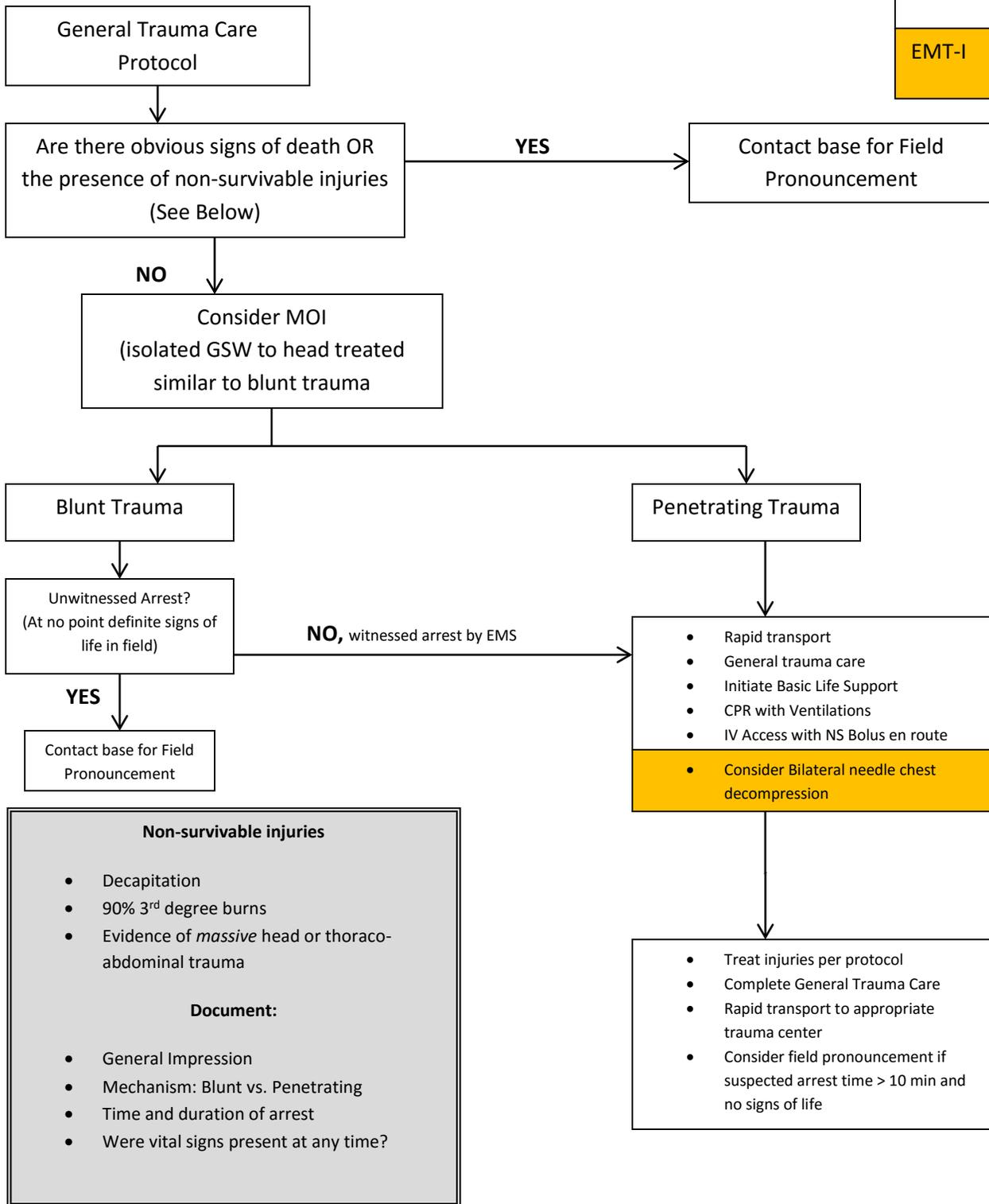
If EGA ≥ 20 weeks, consider two patients: mother and fetus. Estimation of gestational age may be made based on fundal height by palpating for top of uterus:

If uterus is at umbilicus then EGA > 20 weeks

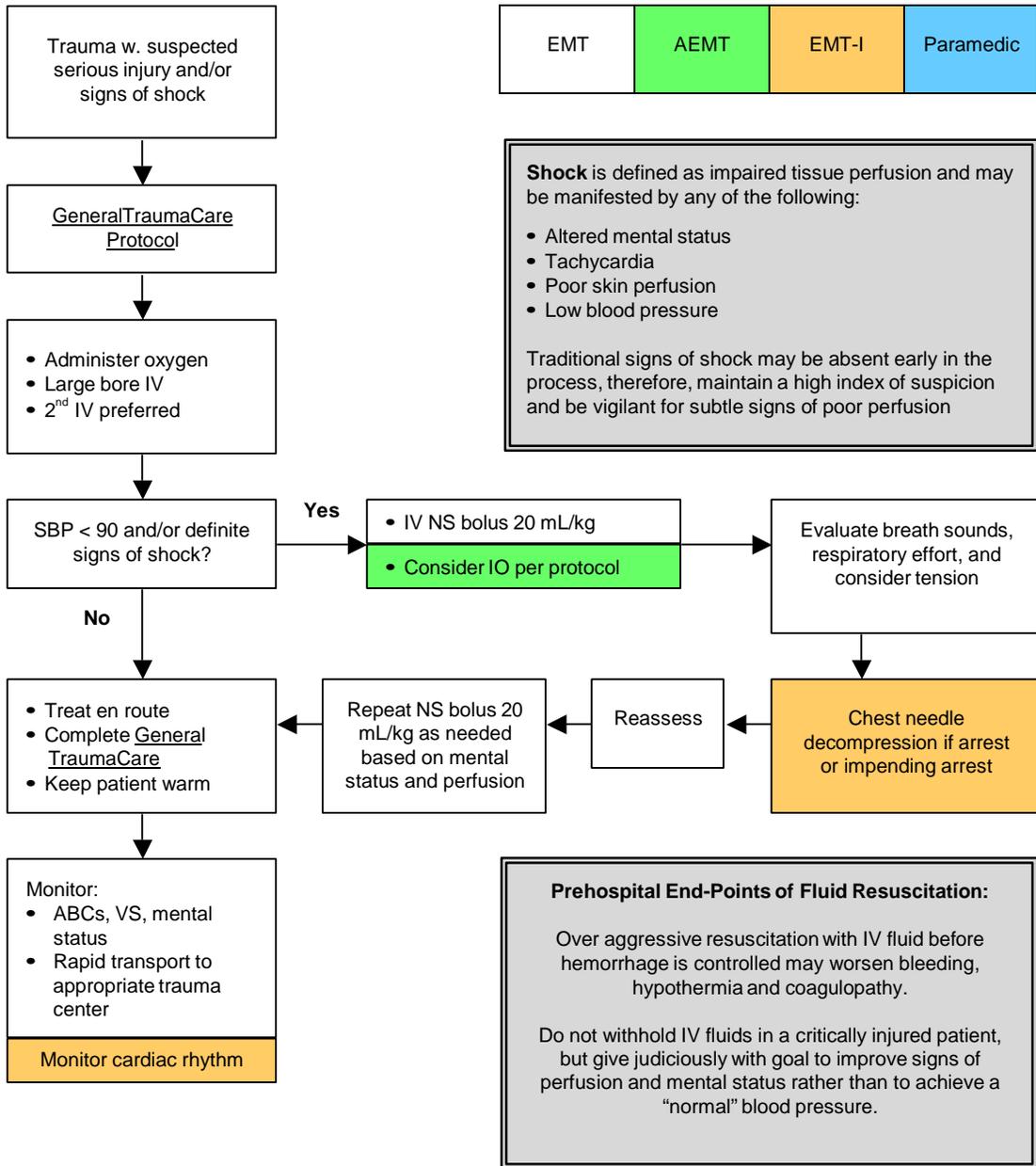
Estimation by Last Menstrual Period:
Due Date = LMP + 9 months + 7 days
EGA = due date – current date

5010 ADULT (AGE > YEARS) TRAUMATIC PULSELESS ARREST

EMT	AEMT
EMT-I	EMT-P



5015 ADULT (AGE ≥ 12 YEARS) TRAUMATIC SHOCK PROTOCOL



5016 Mass Transfusion Field Protocol

This protocol is designed to increase patient survivability after massive blood loss by activating the Mass Transfusion protocol by EMS in the field. Field activation of the Mass Transfusion protocol will reduce the amount of time needed after the patient arrives at the hospital before they can receive blood products.

Indications

- 1) Systolic blood pressure less than 90 systolic
- 2) Heart rate greater than 120 bpm
- 3) Signs of massive blood loss externally or internally

Treatment

- 1) 2 large bore IVs (LR on 15 drop set & NS with blood tubing)
- 2) Aggressively warm the patient (blankets, hot packs, air temperature)
- 3) Administer TXA (see TXA protocol)
- 4) Treat for shock

How to request

- 1) Call in and speak to the on duty ER doctor
- 2) Request the “mass transfusion protocol” be initiated
- 3) State patient’s:
 - a. Vital signs
 - b. Skin color
 - c. Mechanism of injury
 - d. Field treatment
 - e. Other pertinent information

Notes

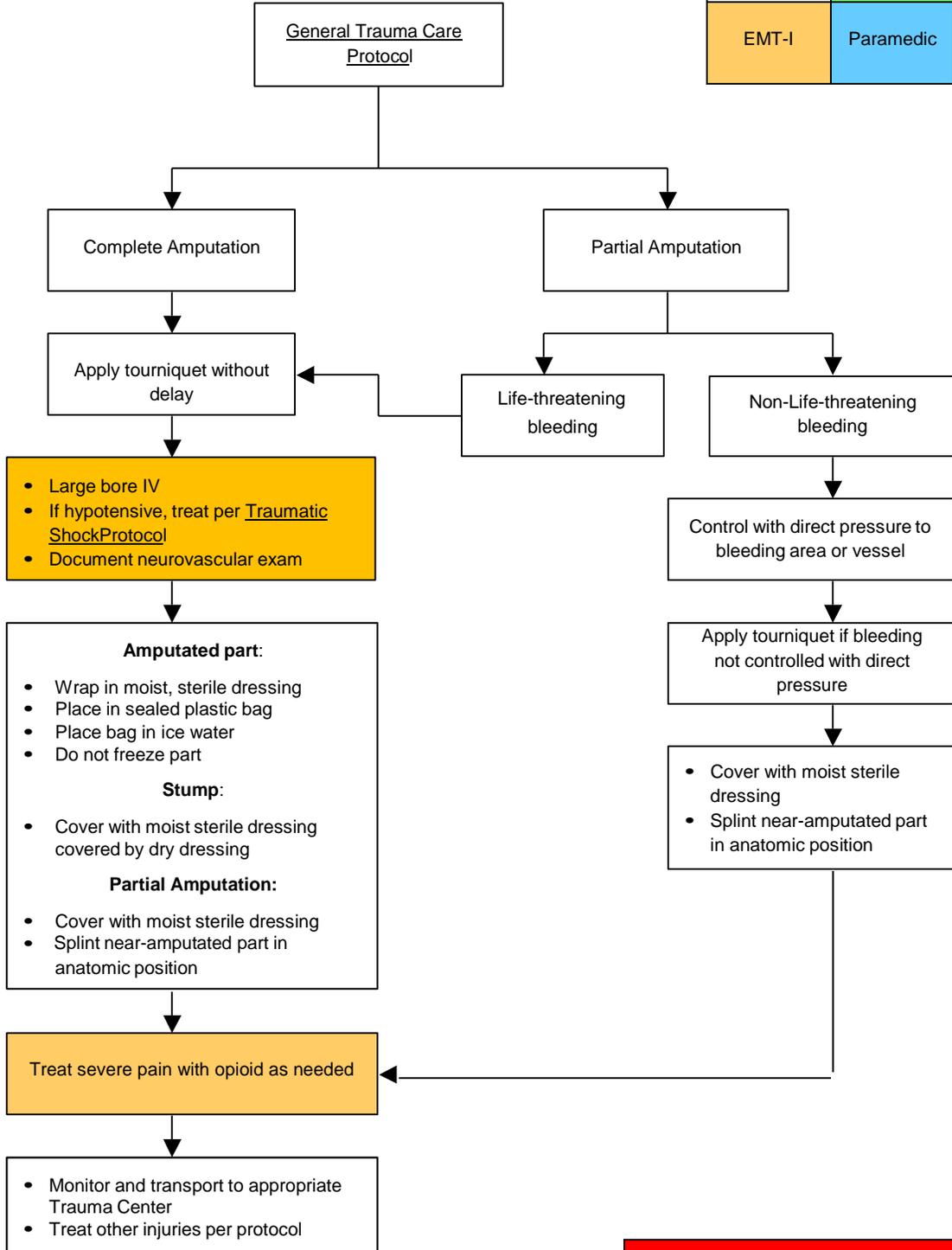
“Mass Transfusion Protocol” shall indicate the immediate need of:

- 2 units of O negative Packed Red Blood Cells
- 2 units of Fresh Frozen Plasma
- 2 additional units of Packed Red Blood Cells will be typed and crossed

Blood products are an expensive and limited resource, necessitating this protocol be used wisely.

5020 AMPUTATIONS

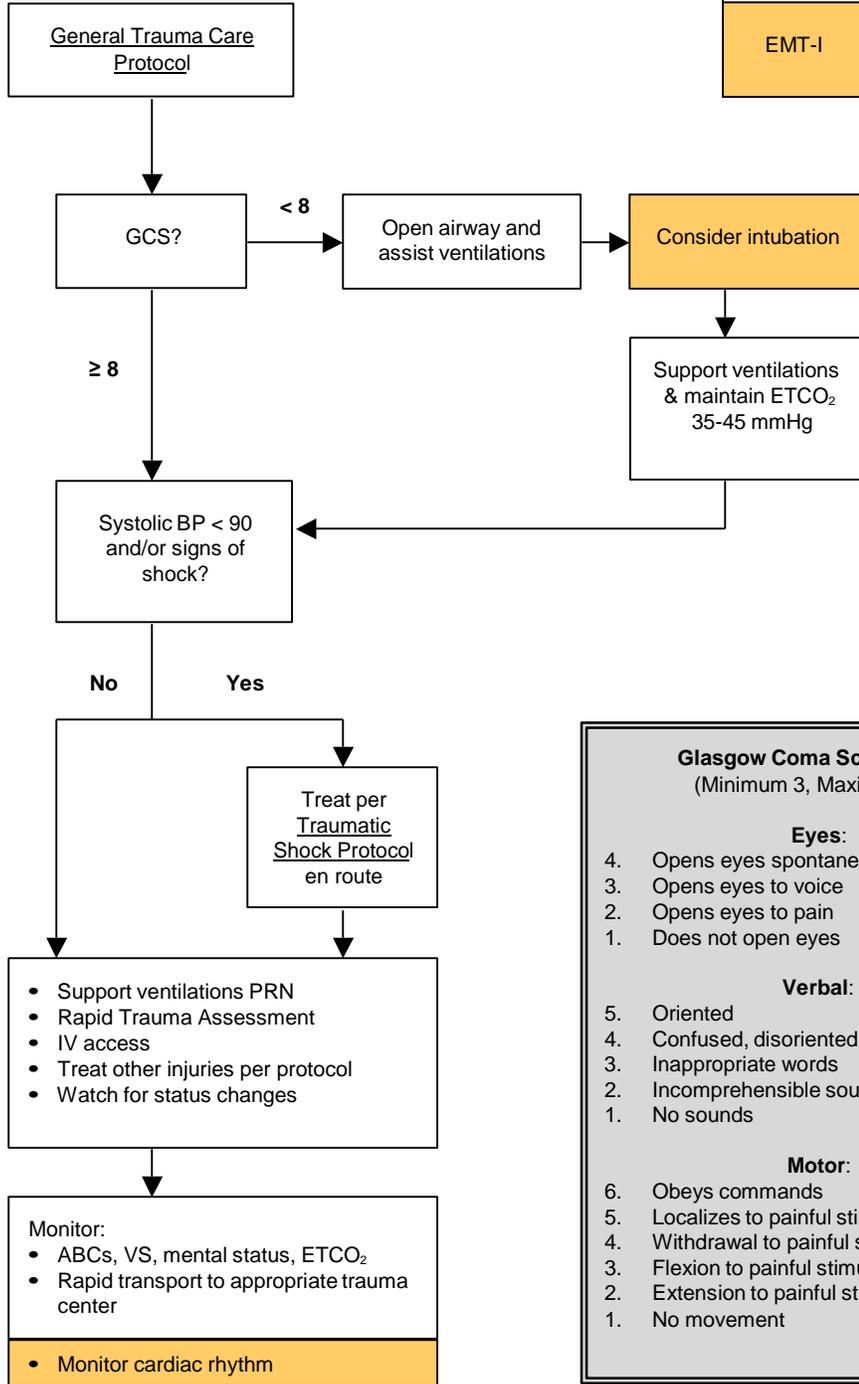
EMT	AEMT
EMT-I	Paramedic



Consider **Second** Tourniquet if bleeding not controlled with 1st

5030 HEAD TRAUMA PROTOCOL

EMT	AEMT
EMT-I	Paramedic



Glasgow Coma Score (GCS)
(Minimum 3, Maximum 15)

Eyes:

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

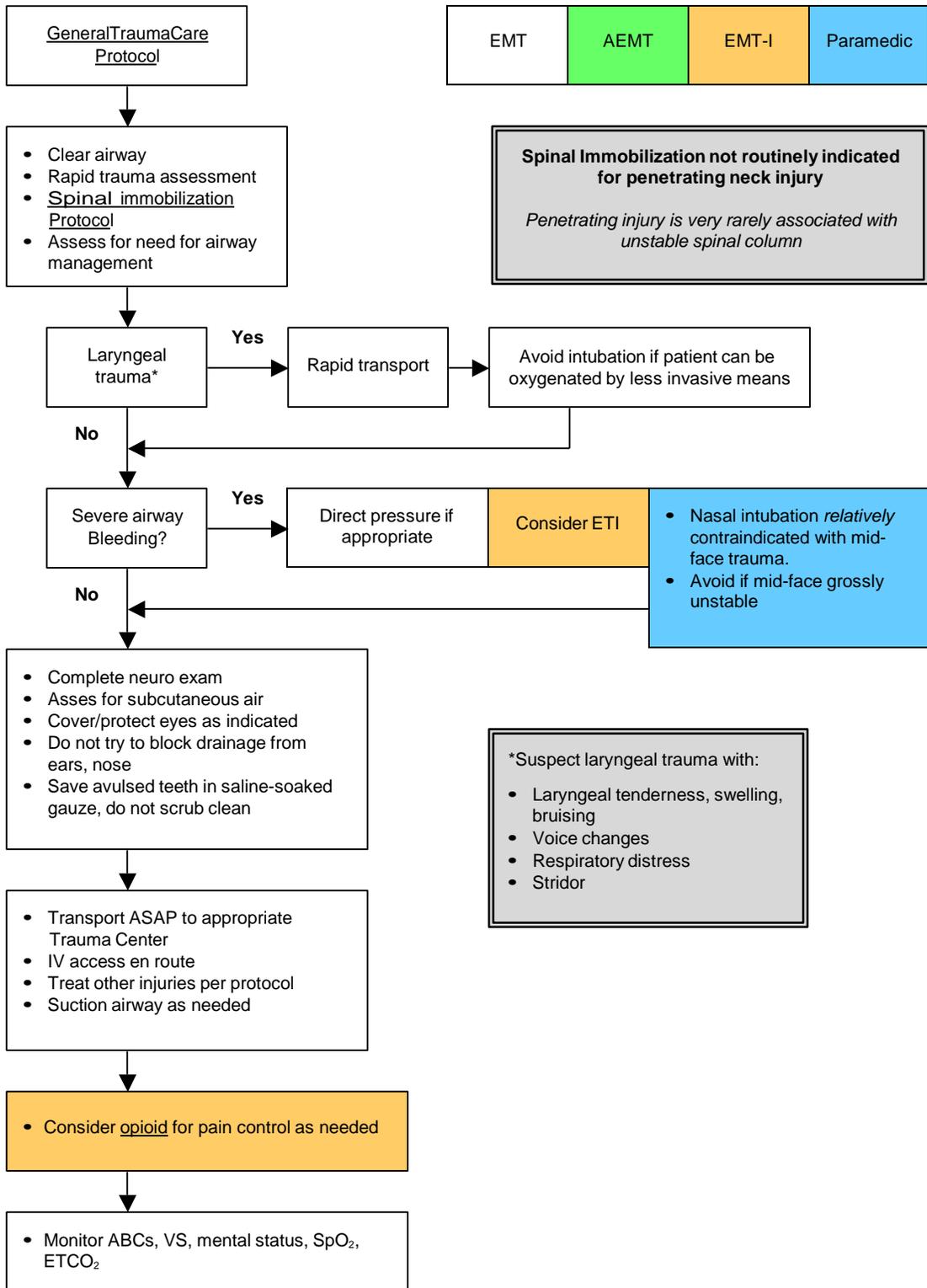
Verbal:

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

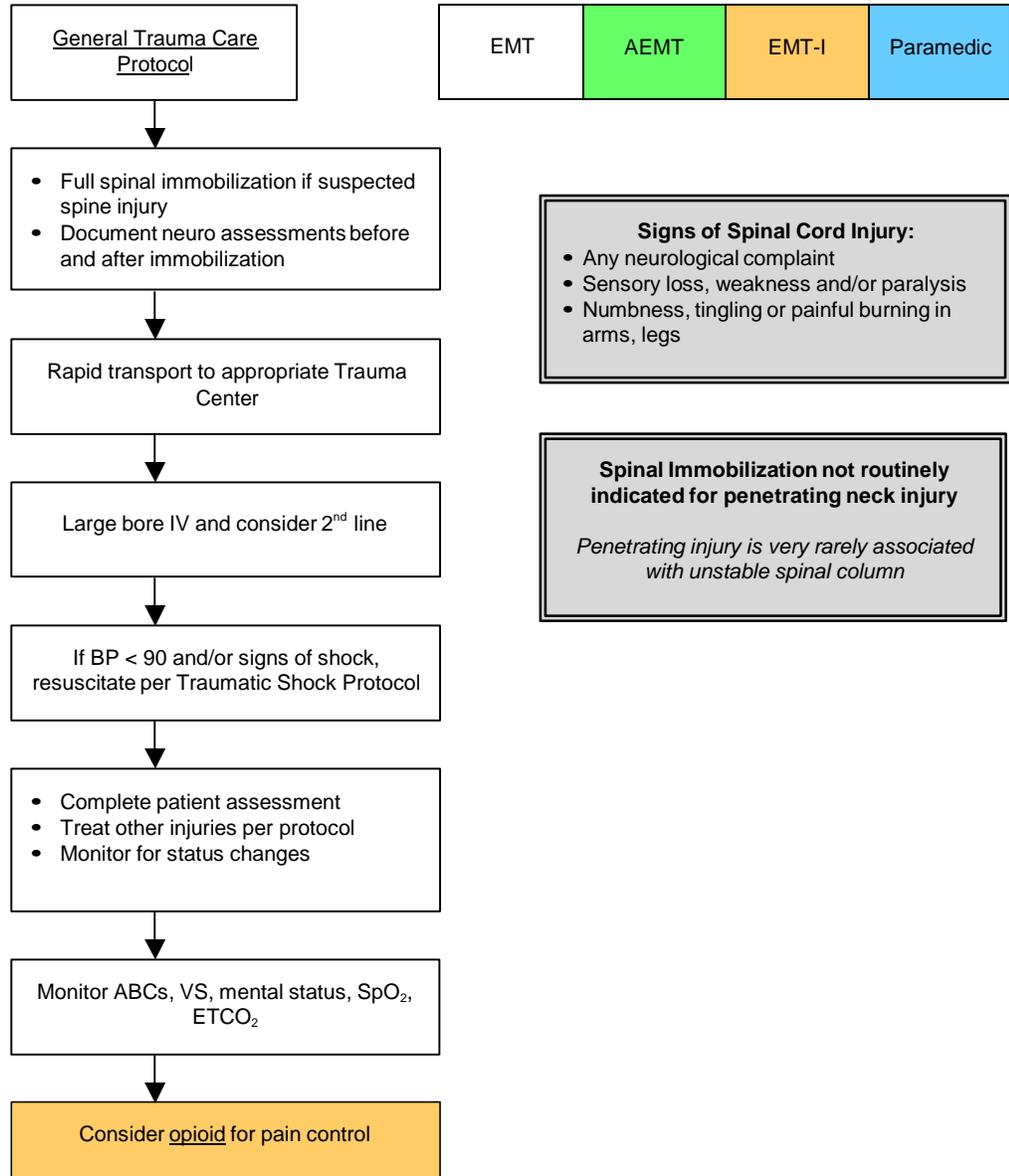
Motor:

6. Obeys commands
5. Localizes to painful stimuli
4. Withdrawal to painful stimuli
3. Flexion to painful stimuli
2. Extension to painful stimuli
1. No movement

5040 FACE AND NECK TRAUMA



5050 ADULT SPINAL TRAUMA



5055 Adult Spinal Precautions Protocol

Does patient have/complain of any of the following:

- Midline C/T/L spine tenderness on palpation
- Neurologic complaints or deficits
- Other distracting injuries
- Alteration in mentation or under influence of drugs or ETOH
- Barrier to evaluate for spinal injury (e.g. language or developmental barrier)
- Mechanism of injury significant enough to cause spinal injury

Yes

No

Place c-collar on patient and ask them not to move neck.

If **NONE** of the above criteria, no spinal precautions required

ANY bluntly injured patient (whether from a fall, assault, MVC, etc, however seemingly minor) should be placed in a c-collar (or some sort of improvised C-spine immobilization if the patient cannot tolerate a c-collar) but they can be SELECTIVELY placed on a backboard in accordance with this protocol.

Is there an objective neurological deficit?

No

Are there signs/symptoms of traumatic injury?

No

Yes

Did patient sustain **ONLY** penetrating trauma (not involving spine)?

Yes

No

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

Yes

No

Is the patient able to comfortably lay still?

Yes

No

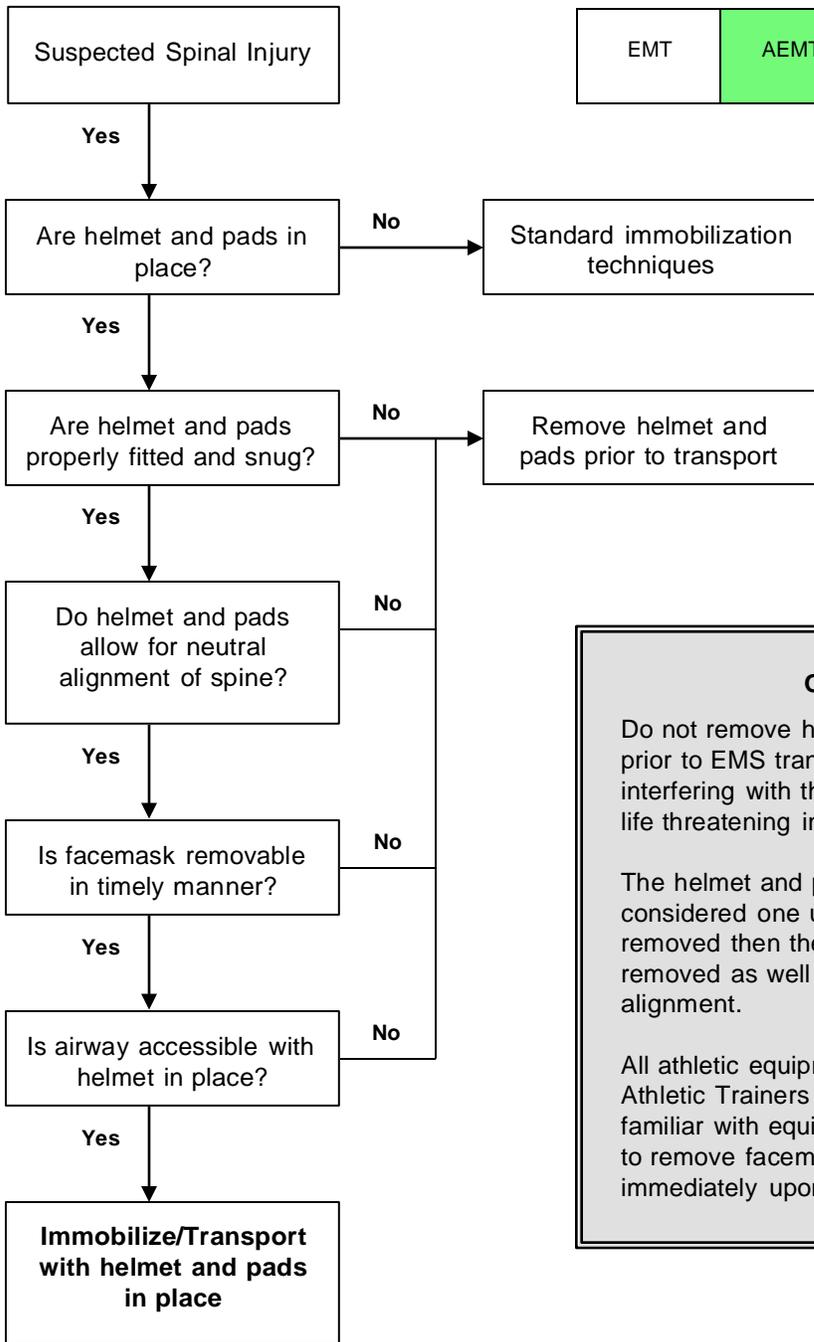
Immobilize using the backboard or scoop & cervical collar with standard technique.

Patient does **NOT** require a backboard. Have them lie still on the gurney, which will provide sufficient spinal precaution.

- Backboards have not been shown to be any benefit for spinal injuries, but may cause harm.
- Backboards/scoops are useful tools for carrying non-ambulatory patients to a gurney. Patients who do not need a backboard may be gently slid off the backboard/scoop onto the gurney.
- Self-extrication from a vehicle with assistance is likely better than standard extrication procedures.
- Vacuum mattresses should be used preferentially over a backboard if readily available.
- If for any reason you are uncomfortable NOT immobilizing a patient, then place patient on a backboard.
- **Use caution when assessing elderly patients for spinal injury. These patients are at higher risk and may have minimal symptoms.**
- Consider improvised cervical spine immobilization such as towel rolls and tape or a SAM splint if needed to prevent airway compromise or worsening spinal injury or the rigid c-collar cannot be correctly size to the patient.
- **Neurological exam documentation is MANDATORY in patients with potential spinal trauma, including serial exams.**

5056 SUSPECTED SPINAL INJURY WITH PROTECTIVE ATHLETIC EQUIPMENT IN PLACE

EMT	AEMT	EMT-I	Paramedic
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Overview

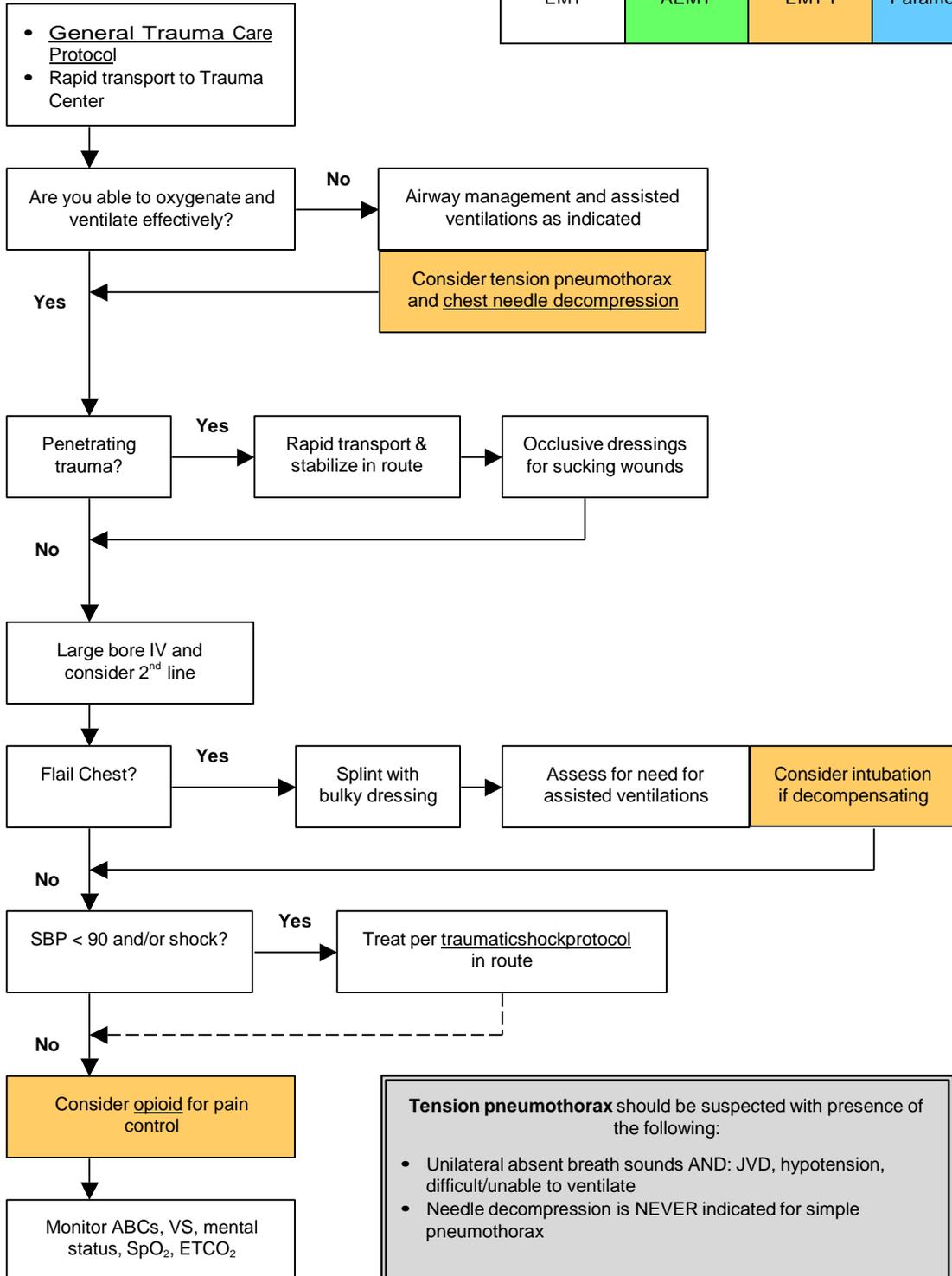
Do not remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life threatening injuries.

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.

5060 CHEST TRAUMA

EMT	AEMT	EMT-I	Paramedic
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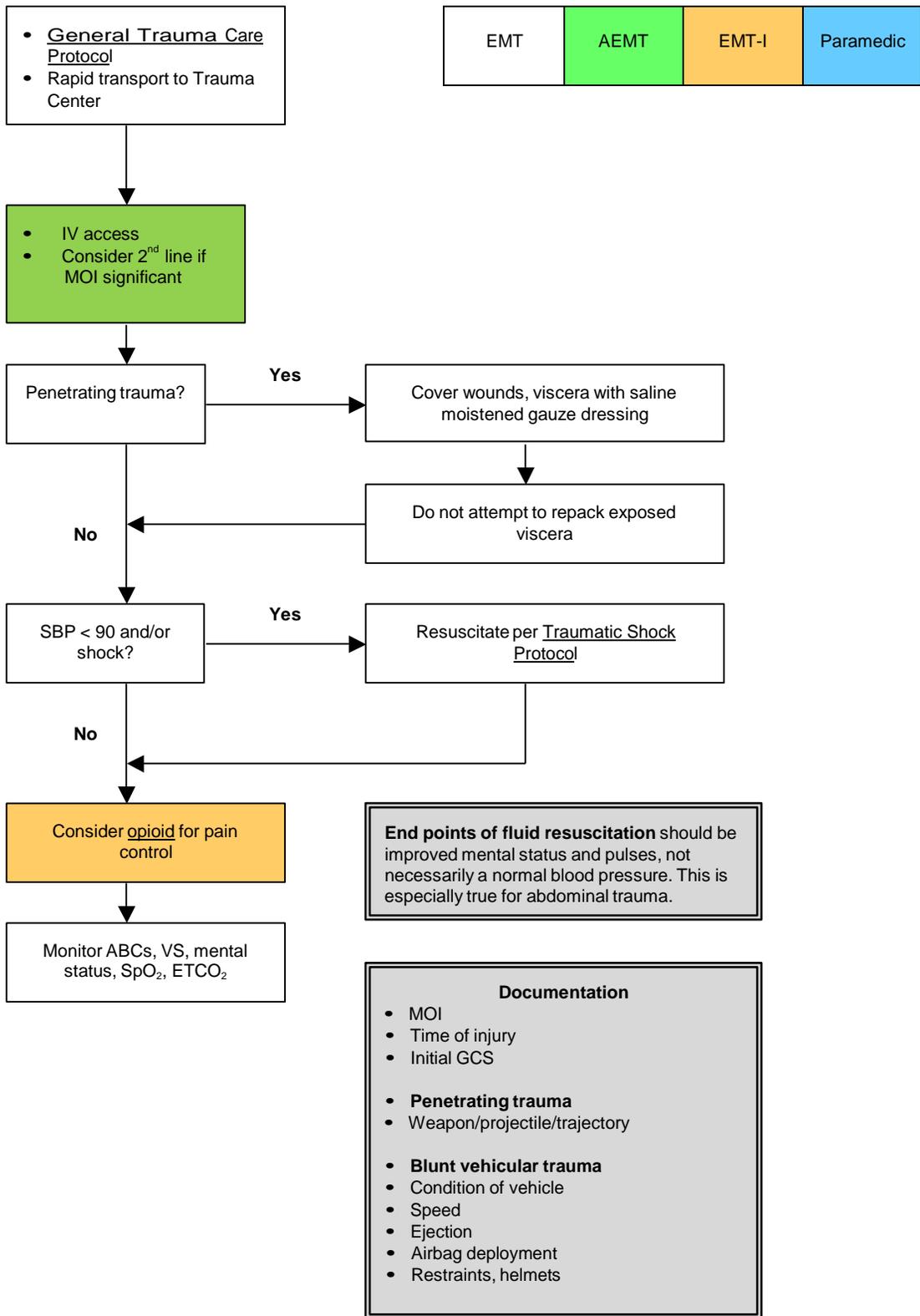


Tension pneumothorax should be suspected with presence of the following:

- Unilateral absent breath sounds AND: JVD, hypotension, difficult/unable to ventilate
- Needle decompression is NEVER indicated for simple pneumothorax

End points of fluid resuscitation should be improved mental status and pulses, not necessarily a normal blood pressure. This is especially true for penetrating chest trauma.

5070 ABDOMINAL TRAUMA



5080 Abdominal Aortic and Thoracic Aortic Aneurysm Protocol

Aneurysms often don't cause signs or symptoms until they rupture, grow large enough to press on nearby body parts, or block blood flow.

-Abdominal Aortic Aneurysms (AAA)

Symptoms include:

- A throbbing feeling in the abdomen
- Deep pain in the back or the side of the abdomen
- Steady, gnawing pain in the abdomen that lasts for hours or days

If an AAA ruptures, **symptoms** may include sudden, severe pain in your lower abdomen and back; nausea (feeling sick to your stomach) and vomiting; constipation and problems with urination; clammy, sweaty skin; light-headedness; and a rapid heart rate when standing up.

Internal bleeding from a ruptured AAA can send the pt into [shock](#).

-Thoracic Aortic Aneurysms (TAA)

Symptoms include:

- Pain in your jaw, neck, back, or chest
- [Coughing](#) and/or hoarseness
- Shortness of breath and/or trouble breathing or swallowing

If a TAA ruptures sudden, severe, sharp or stabbing pain starting in the upper back and moving down into the abdomen. Pain in the chest and arms may be felt. The Pt can quickly go into shock.

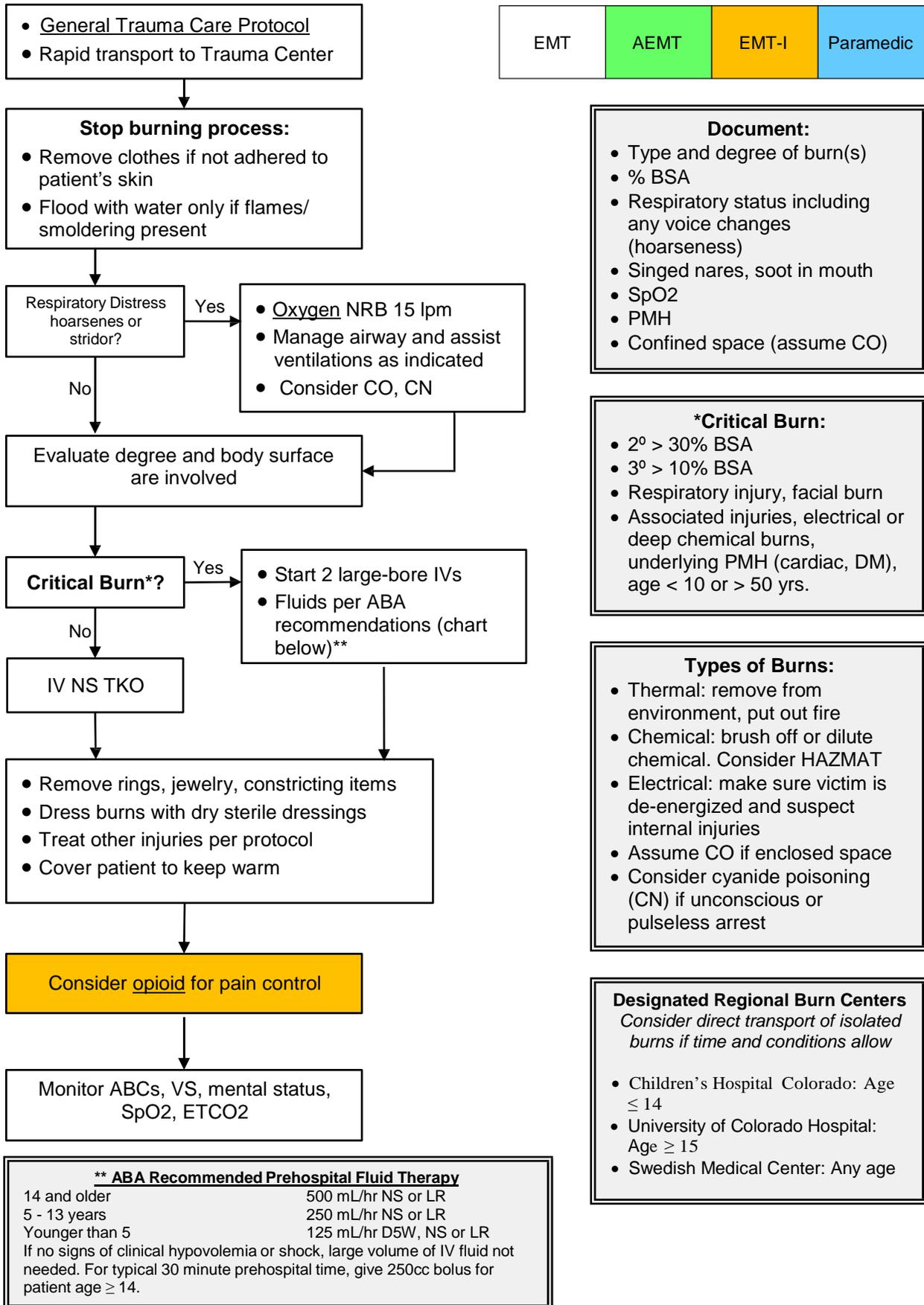
In STABLE patients

- Ensure adequate airway and breathing
- Provide oxygen via a nonrebreather mask
- Place 2 large-bore intravenous lines
- Provide continuous cardiac monitoring

For UNSTABLE patients

- Airway protection
- Mechanical Ventilation
- Aggressive fluid resuscitation
- Contact with the receiving hospital

5090 BURNS



Document:

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

***Critical Burn:**

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

Designated Regional Burn Centers
Consider direct transport of isolated burns if time and conditions allow

- Children's Hospital Colorado: Age ≤ 14
- University of Colorado Hospital: Age ≥ 15
- Swedish Medical Center: Any age

6000 GENERAL GUIDELINES FOR PEDIATRIC PATIENTS

General Guideline:

- A. Pediatric patients, defined as age < 12 years for the purpose of these protocols, have unique anatomy, physiology, and developmental needs that affect prehospital care. Because children make up a small percentage of total calls and few pediatric calls are critically ill or injured, it is important to stay attuned to these differences to provide good care. Therefore, **CONTACT BASE** early for guidance when treating pediatric patients with significant complaints, including abnormalities of vital signs. Pediatric emergencies are usually not preceded by chronic disease. If recognition of compromise occurs early, and intervention is swift and effective, the child will often be restored to full health.

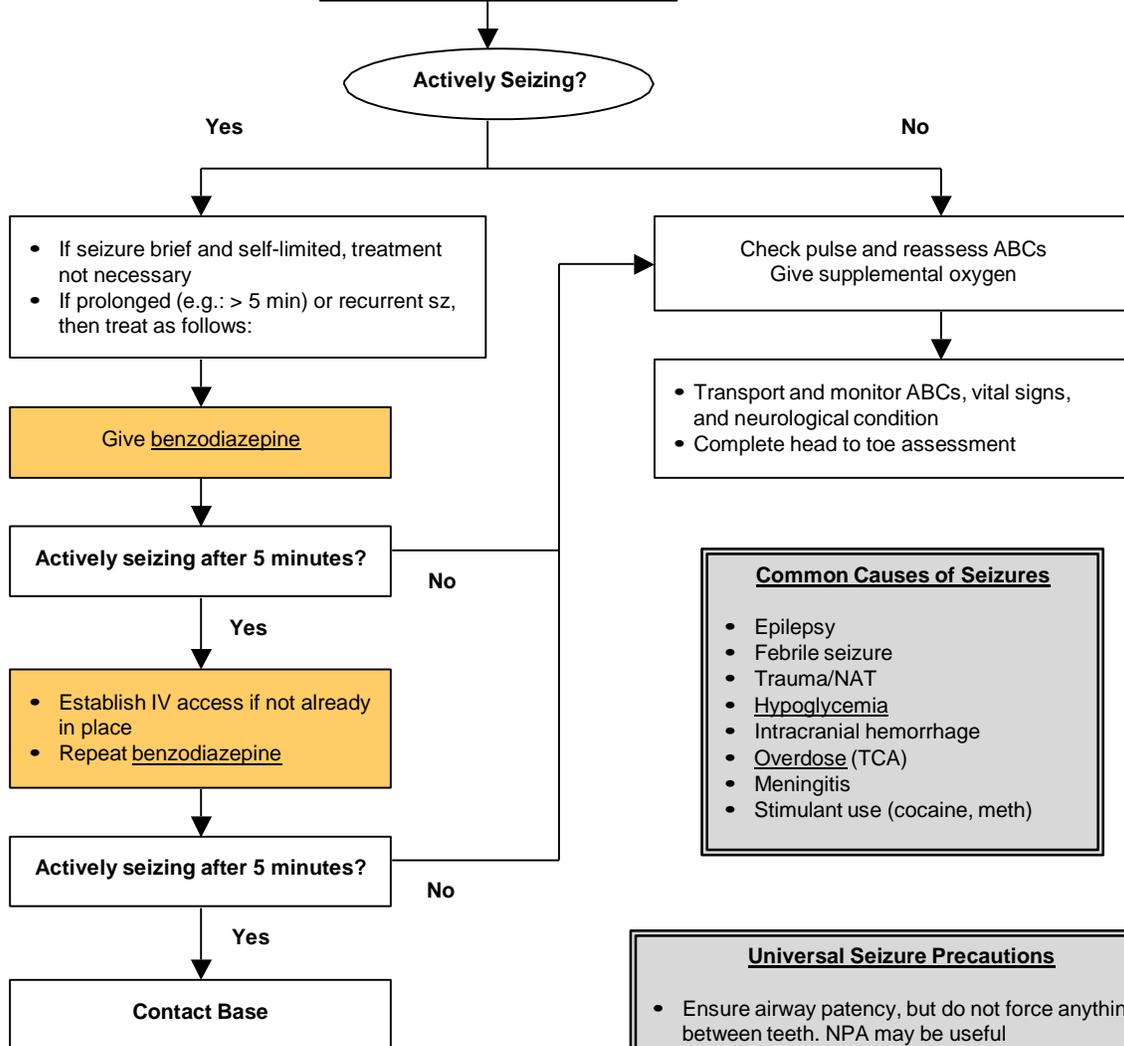
Specific Considerations:

- A. The following should be kept in mind during the care of children in the prehospital setting:
 1. Airways are smaller, softer, and easier to obstruct or collapse.
 2. Respiratory reserves are small. A minor insult like improper position, vomiting, or airway narrowing can result in major deficits in ventilation and oxygenation.
 3. Circulatory reserves are also small. The loss of as little as one unit of blood can produce severe shock in an infant. Conversely, it is difficult to fluid overload most children. You can be confident that a good hands-on circulation assessment will determine fluid needs accurately.
 4. Assessment of the pediatric patient can be done using your knowledge of the anatomy and physiology specific to infants and children.
 5. Listen to the parents' assessment of the patient's problem. They often can detect small changes in their child's condition. This is particularly true if the patient has chronic disease.
 6. The proper equipment is very important when dealing with the pediatric patient. A complete selection of pediatric airway management equipment, IV catheters, cervical collars, and drugs has been mandated by the state. This equipment should be stored separately to minimize confusion.

6005 PEDIATRIC SEIZURE (< 12 YEARS)

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

EMT	AEMT
EMT-I	Paramedic



- Common Causes of Seizures**
- Epilepsy
 - Febrile seizure
 - Trauma/NAT
 - Hypoglycemia
 - Intracranial hemorrhage
 - Overdose (TCA)
 - Meningitis
 - Stimulant use (cocaine, meth)

- Universal Seizure Precautions**
- Ensure airway patency, but do not force anything between teeth. NPA may be useful
 - Give oxygen
 - Suction as needed
 - Protect patient from injury
 - Check pulse immediately after seizure stops
 - Keep patient on side
- Document:**
- Document: Seizure history: onset, time interval, previous seizures, type of seizure
 - Obtain medical history: head trauma, diabetes, substance abuse, medications, compliance with anticonvulsants, pregnancy

6010 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL

PRINCIPLES General Guideline:

A. Pediatric cardiac arrest more frequently represents progressive respiratory deterioration or shock rather than primary cardiac etiologies. Unrecognized deterioration may lead to bradycardia, agonal breathing, and ultimately asystole. Resulting hypoxic and ischemic insult to the brain and other vital organs make neurologic recovery extremely unlikely, even in the doubtful event that the child survives the arrest. Children who respond to rapid intervention with ventilation and oxygenation alone or to less than 5 minutes of advanced life support are much more likely to survive neurologically intact. Therefore, it is essential to recognize the child who is at risk for progressing to cardiopulmonary arrest and to provide aggressive intervention before asystole occurs

Specific Information Needed For Patient Care Report

- A. Onset (witnessed or unwitnessed), preceding symptoms, bystander CPR, downtime before CPR and duration of CPR
- B. Past History: medications, medical history, suspicion of ingestion, trauma, environmental factors (hypothermia, inhalation, asphyxiation)

Document Specific Objective Findings

- A. Unconscious, unresponsive
- B. Agonal, or absent respirations
- C. Absent pulses
- D. Any signs of trauma, blood loss
- E. Skin temperature

General Treatment Guidelines

- A. Treat according to Pediatric BLS and ALS pulseless arrest algorithms
- B. Primary cardiac arrest from ventricular arrhythmia, while less common than in adults, does occur in children. If history suggests primary cardiac event (e.g.: sudden collapse during exercise), then rapid defibrillation is most effective treatment
- C. Most pediatric pulseless arrest is the result of primary asphyxial event, therefore initial sequence is chest compressions **with** ventilations, unlike adult pulseless arrest
- D. Call for ALS assistance if not already on scene or responding

General Guidelines: Chest Compressions for 2 Rescuers

Once advanced airway in place, chest compressions should be given continually with ventilations at 8-10/minute

Neonate (\leq 1 month old)

- 1 cycle of CPR = 3:1 chest compressions: breaths.

Infant and Child (1 month to 12 years old)

- A. 1 cycle of CPR = 15:2 chest compressions: breaths
 - Push hard and fast at a compression rate of 100/minute
 - Minimize interruption to chest compressions
 - a. Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks. Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check

6010 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL PRINCIPLES

- b. Increase in compression interruption correlates with decrease in likelihood of successful defibrillation
- Ensure full chest recoil
 - a. Represents diastolic phase for cardiac filling due to negative intrathoracic pressure
- Avoid hyperventilation
 - a. Associated with barotrauma and air trapping
 - b. Makes CPR less effective by inhibiting cardiac output by increasing intrathoracic pressure and decreasing venous return to the heart
- Rotate compressors every 2 minutes during rhythm checks

General Guidelines: Defibrillation

- A. First shock delivered at 2 J/kg biphasic
- B. All subsequent shocks delivered at 4 J/kg biphasic

General Guidelines: Ventilation during CPR

- A. Do not interrupt chest compressions and do not hyperventilate
- B. Contrary to adult cardiac arrest, pediatric arrest is much more likely to be asphyxial and prolonged. During this period, blood continues to flow to the tissues causing oxygen saturation to decrease and carbon dioxide to increase. Pediatric patients need both prompt ventilation and chest compressions.
- C. Hyperventilation decreases effectiveness of CPR and worsens outcome

General Guidelines: Timing Of Placement Of Advanced Airway

- A. ***BVM is preferred method of ventilation in all pediatric patients age < 8 years***
- B. A supraglottic airway (e.g. King) may be placed at any point in resuscitation in patients ≥ 8 years old and may be considered equivalent to, but not superior to, BVM for ages 8-12
- C. Do not hyperventilate
- D. Always confirm advanced airway placement by objective criteria: ETCO₂
 - a. Use continuous waveform capnography if available

General Guidelines: Pacing

- A. Effectiveness of transcutaneous pediatric pacing has not been established and is not recommended

General Guidelines: ICD/Pacemaker patients

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

Special Notes:

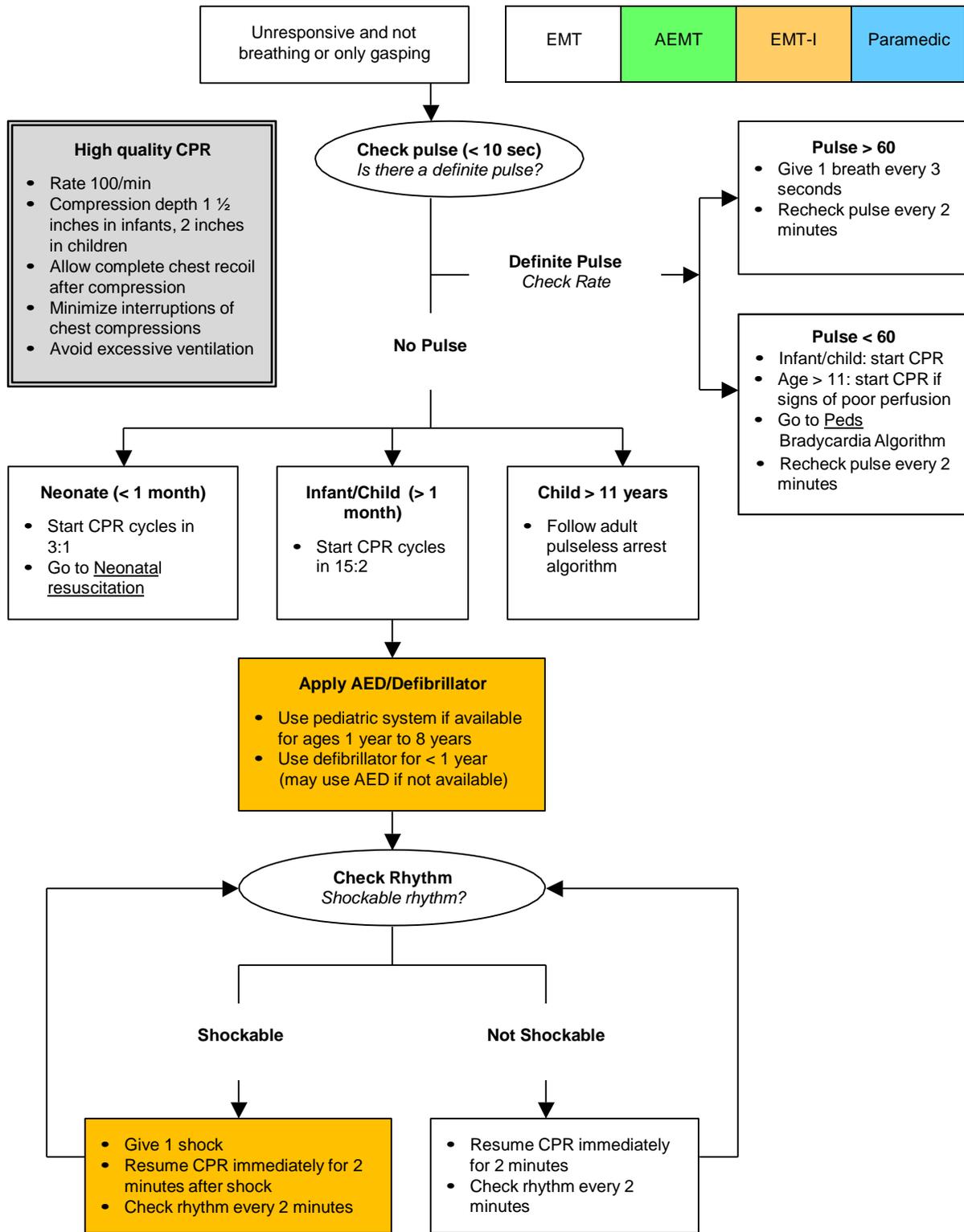
- A. Consider reversible causes of cardiac arrest (“Hs and Ts”):

Hypovolemia	IV Fluid bolus
Hypoxia	Ventilation
Hydrogen Ion (acidosis)	Ventilation
Hyperkalemia	Sodium bicarbonate

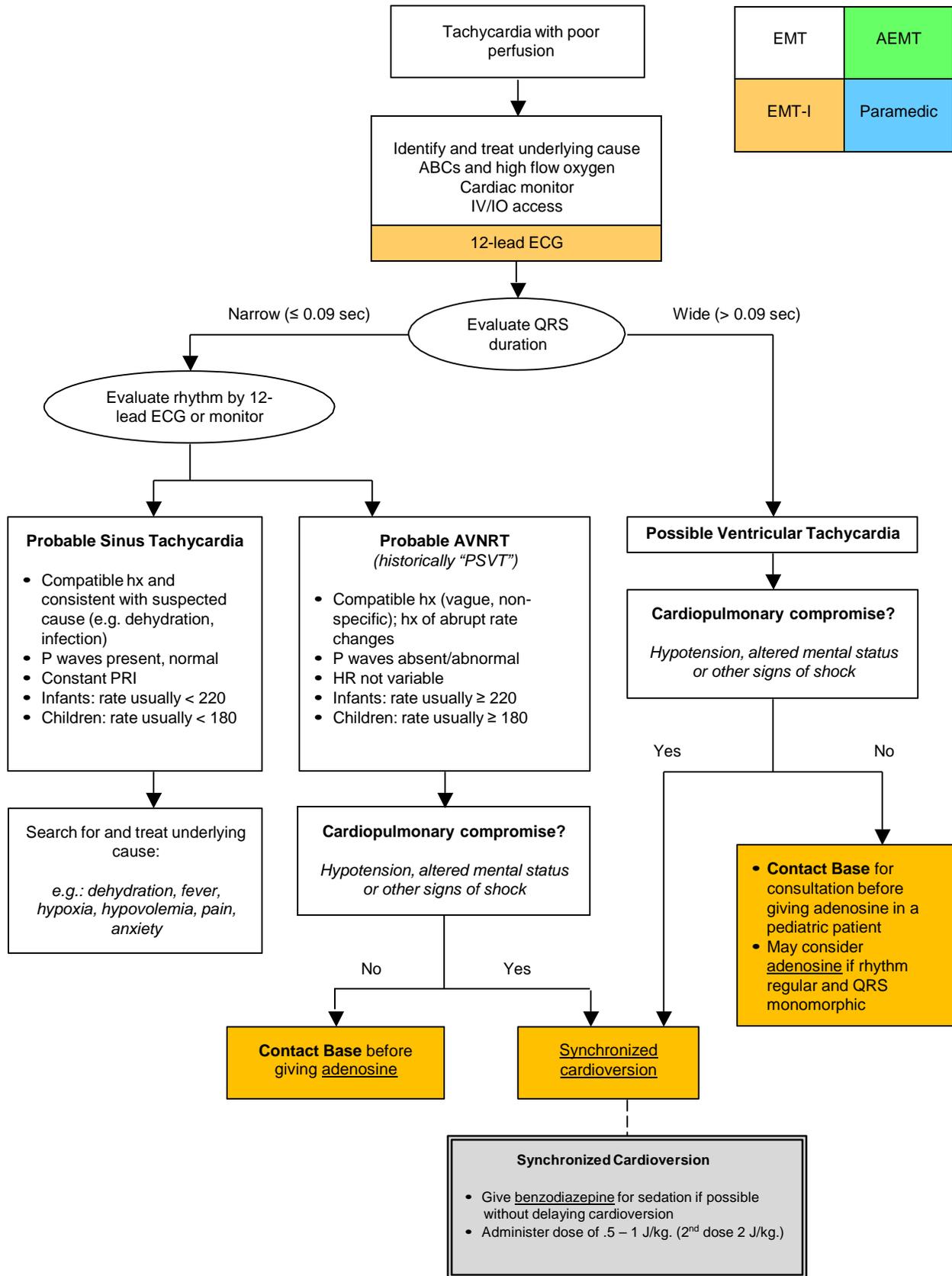
6010 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL PRINCIPLES

Hypothermia	See hypothermia protocol
Toxins: e.g.: opioid overdose	Naloxone 2mg IVP
Tamponade (cardiac)	
Tension pneumothorax	Needle thoracostomy
Thrombosis (coronary)	
Trauma	

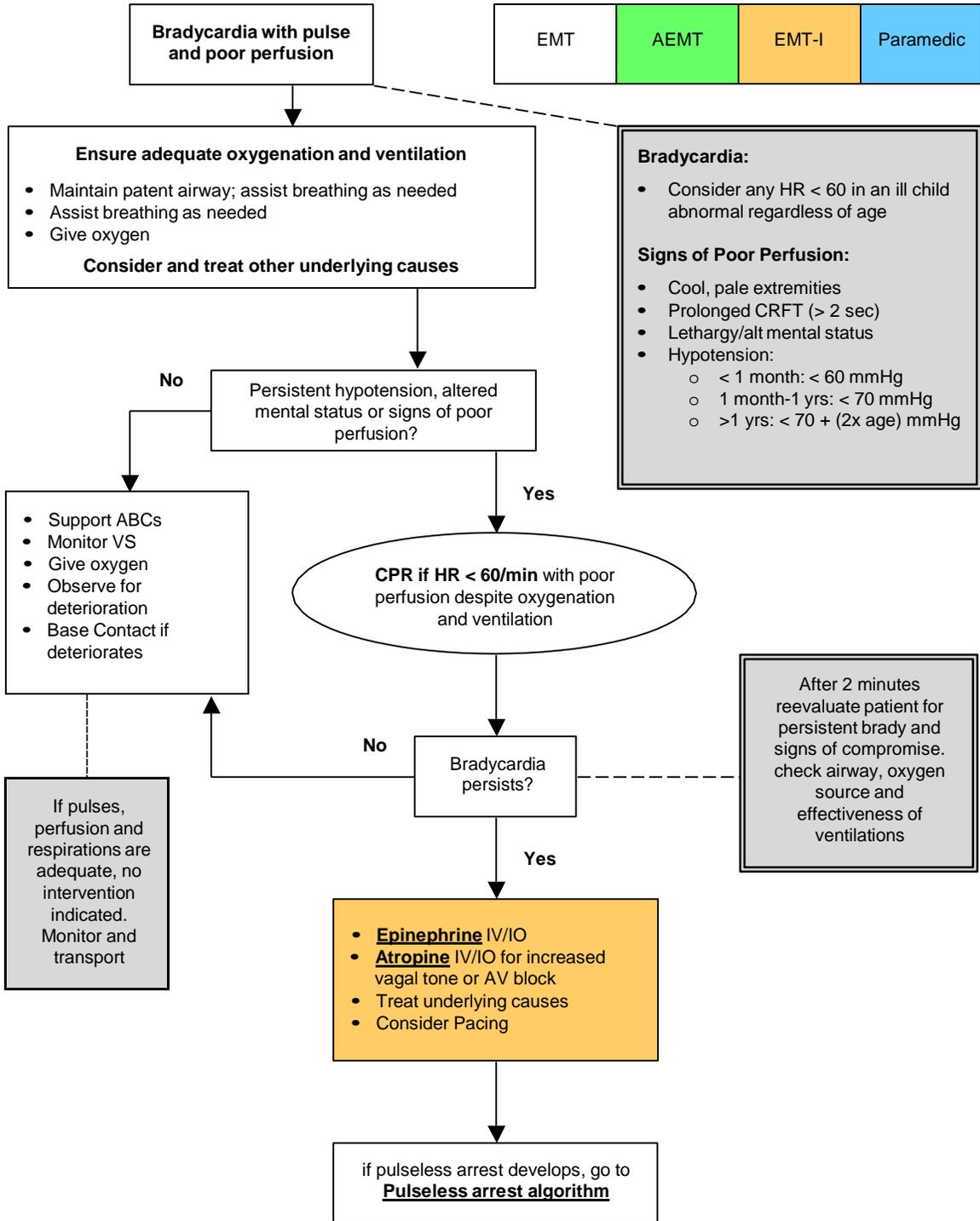
6015 PEDIATRIC (AGE < 12 YEARS) PULSELESS ARREST BLS/AED ALGORITHM



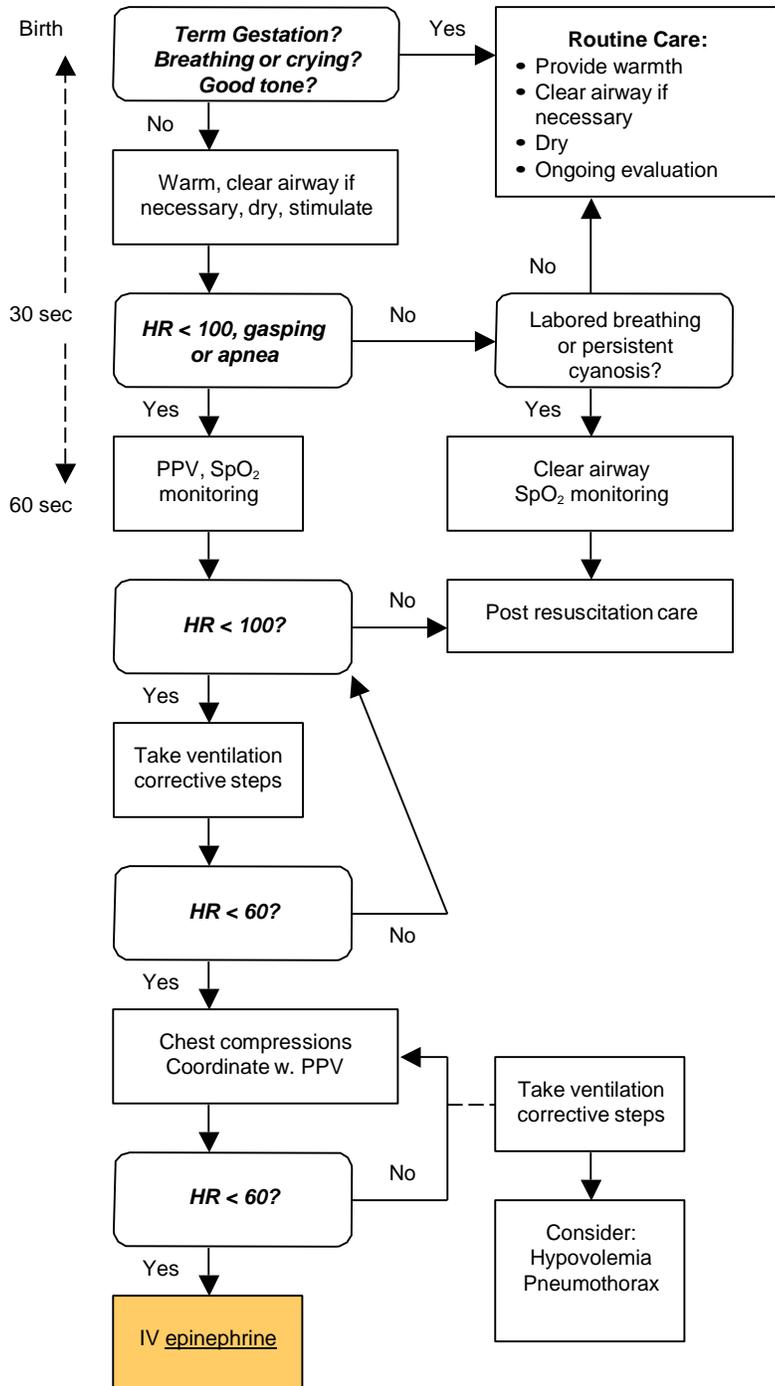
6020 PEDIATRIC (AGE < 12 YEARS) TACHYCARDIA WITH POOR PERFUSION



6021 PEDIATRIC (AGE < 12 YEARS) BRADYCARDIA WITH POOR PERFUSION



6025 NEONATAL RESUSCITATION



EMT	AEMT
EMT-I	Paramedic

General Considerations
(From 2010 AHA Guidelines)

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

Assisting Ventilations:

- Assist ventilations at rate of 40-60 breaths per minute to maintain HR > 100

Chest compressions:

- Indicated for HR < 60 despite adequate ventilation w. supplemental O₂ for 30 seconds
- 2 thumb – encircling hands technique preferred
- Allow chest recoil
- Coordinate with ventilations so not delivered simultaneously
- 3:1 ratio of compressions to ventilations w. exhalation occurring during 1st compression after each ventilation

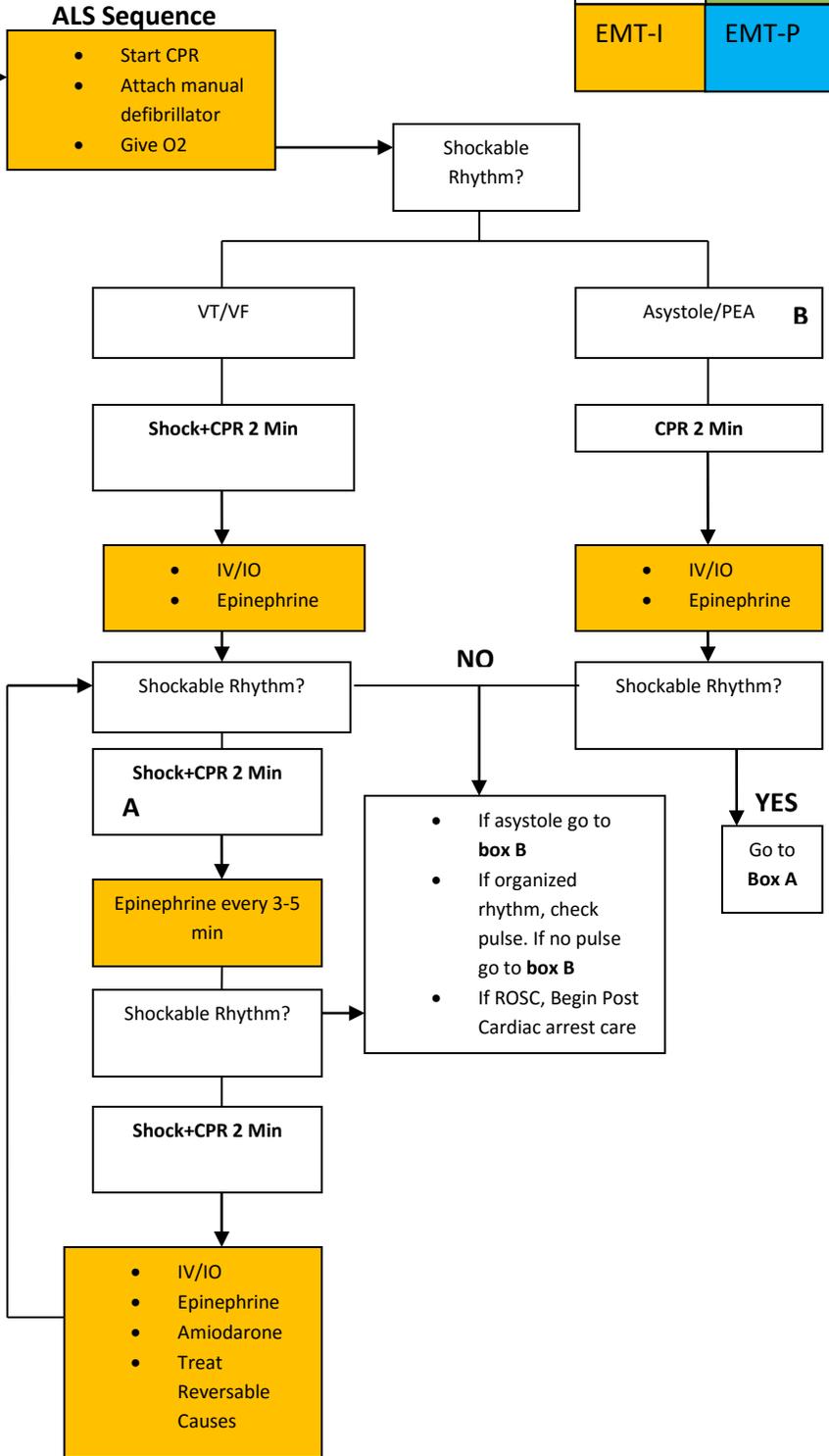
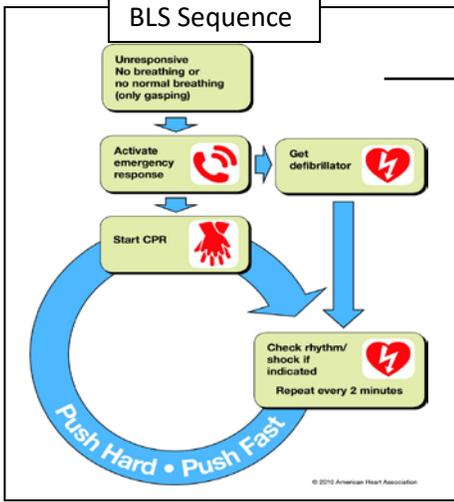
6026 NEONATAL CONSIDERATIONS

General Considerations:

- A. A neonate refers to a newly born child under the age of 30 days. While most neonates transition to post-natal life without difficulty, 10% will require medical assistance. Respiratory insufficiency is the most common complication observed in the newly born.
- B. Neonates born quickly may exhibit signs of stress such as apnea, grunting respirations, lethargy or poor tone
 1. Provide warmth, bulb suction mouth and then nose, and dry the infant
 2. If breathing spontaneously, HR >100 and infant is vigorous, continue to monitor
 3. If apneic, cyanotic, lethargic, or HR <100, provide 100% oxygen via BVM ventilations at a rate of 40-60 bpm
 4. If HR < 60, begin CPR at 3:1 compression: ventilation ratio.
- C. For neonates who do not respond to initial interventions as above:
 1. Obtain blood glucose level and if < 60, administer dextrose IV/IO (D10 4 mL/kg)
 2. Administer epinephrine IV for persistent HR < 60
 3. Consider hypovolemia and administer 10-20ml/kg NS over 5-10 minutes
- D. Neonates with congenital heart disease may not be detected prior to hospital discharge after delivery. Consider a cardiac cause of shock in the neonate who remains hypoxic or has persistent cyanosis despite 100% oxygen. These neonates may decompensate quickly and fluid administration should be used carefully (10ml/kg NS)
- E. Newborns are at high risk for hypothermia. Provide early warming measures, keep covered as much as possible (especially the head) and increase the temperature in the ambulance
- F. Acrocyanosis (cyanosis of only the hands and feet) is normal in newborns and does not require intervention
- G. Prolonged apnea without bradycardia or cyanosis may indicate respiratory depression caused by narcotics. However, naloxone should be avoided in infants of a known or suspected narcotic-addicted mother as this may induce a withdrawal reaction. Respiratory support alone is recommended
- H. Obtain pregnancy history, gestational age of the neonate, pregnancy complications, and any illicit drug use during pregnancy.

6030 PEDIATRIC (AGE <12 YEARS) PULSELESS ALS ALGORITHM

EMT	AEMT
EMT-I	EMT-P



CPR, Ventilation and Advanced Airway

- BVM preferred for all patients <8 years old and is appropriate as primary means of ventilation in all pediatric patients
- An appropriately-sized supraglottic airway (e.g. King) may be placed if available at any point in resuscitation in children ≥ 8 years old.
- No intubation for cardiac arrest < age 12 unless other methods, i.e. BVM, supraglottic airway, are unsuccessful.
- If no advanced airway, alternate ventilations and compressions in 15:2 ratio
- If advanced airway in place ventilate continuously at 8-10 breaths/min
- Avoid excessive ventilation

Defibrillation:

- 1st Shock 2 J/Kg, subsequent shocks 4 J/Kg
- EMT + AEMT use AED
- Intermediate and Paramedic use Manual Defibrillator

ROSC:

- Return of Spontaneous Circulation
- FULL set of Vitals

Regarding where to work arrest and presence of Family Members

- CPR in a moving ambulance or pram is ineffective (w/out CPR device)
- In general, work cardiac arrest on scene either to ROSC, or to field pronouncement, unless the scene is unsafe
- Family presence during resuscitation is preferred by most families, is rarely disruptive, may help with grieving process for family members
- Family presence during resuscitation is recommended, unless disruptive to resuscitation efforts
- Contact Base for termination of resuscitation.

6040 CARE OF THE CHILD WITH SPECIAL NEEDS

General Guideline:

Children with special health care needs include those with chronic physical, developmental, behavioral or emotional health issues. These children often have complex medical needs and may be technology-dependent. Parents or caregivers for such children can be a wealth of knowledge about their child's care and may carry a reference care sheet. **Contact Base** station for any concerns.

- A. 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 order

Feeding Tubes:

- A. Feedings tubes are used for administration of medications and to provide feeds to children with an impaired ability to take oral feeds. Always ask caretaker the type of feeding tube (does the tube end in the stomach or jejunum?) and when it was placed
- B. Tubes may be placed through the nose, mouth or abdomen and end in the stomach or jejunum (upper intestine)
- C. Consider venting and/or gently aspirating the feeding tube in a child with respiratory or abdominal distress to allow removal of gastric contents and decompression
- D. Feeding tubes that have been placed less than 6 weeks ago are not well established and may close within 1 hour of tube removal. If transport time is prolonged, place an 8 Fr suction catheter tube 2 inches into the stoma to maintain patency. Do NOT use the tube.

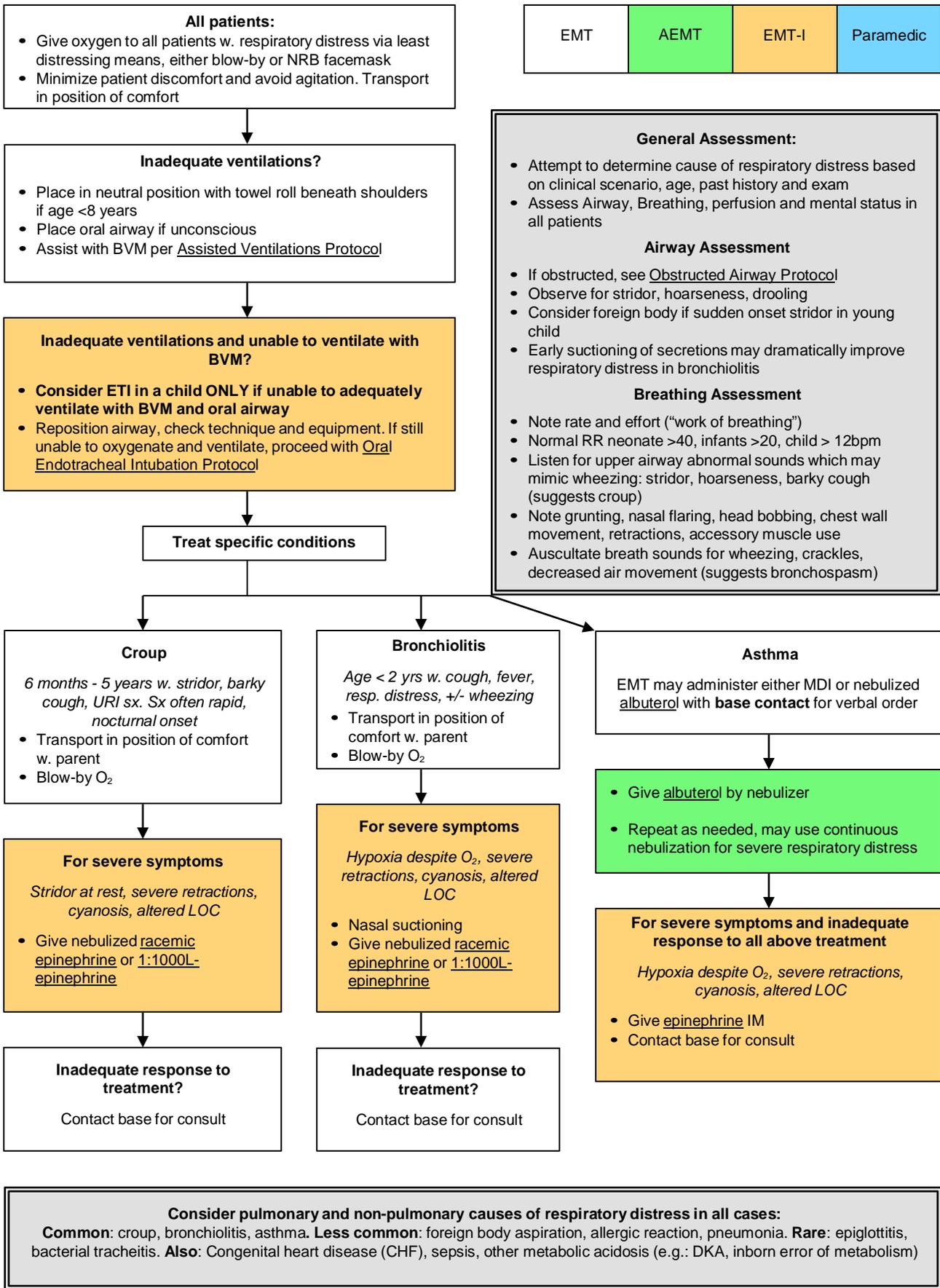
Tracheostomy:

- A. A tracheostomy is a surgical opening between the trachea and the anterior surface of the neck. Its purpose is to bypass the upper airway for chronically ventilated patients, upper airway obstructions, or to facilitate secretion removal in those with ineffective gag or swallow reflexes.
- B. Use bag-valve attached to the tracheostomy to assist ventilations if needed. May also attempt BVM with gloved finger over the tracheostomy
- C. Inability to ventilate and/or signs of respiratory distress (nasal flaring, retractions, hypoxia, etc) may indicate tracheostomy obstruction. Suction tracheostomy, passing the suction catheter no further than 6 cm. Limit suctioning time to minimum amount of time necessary to accomplish effective suctioning. Oxygenate between passes with the suction catheter.
- D. 0.5ml of saline may be instilled into the tracheostomy to assist suctioning of thick secretions
- E. If unable to ventilate through the tracheostomy tube and patient is apneic, bradycardic, or in pulseless arrest, remove tracheostomy tube and pass an appropriately sized endotracheal tube through the stoma approximately 1-2 inches, secure and ventilate. Appropriate depth must be based upon breath sounds, as right mainstem intubation is likely.
- F. Remember that caregivers are often the best people to change and suction a tracheostomy tube. Use them as your resource when possible.

Central Venous Catheters (CVCs):

- A. Because of their size and location, a much greater risk of serious bacterial infections exist with CVCs compared to peripheral intravenous lines. Special care must be used when accessing such lines
- B. Prior to accessing a CVC, hands should be washed and gloves worn. Vigorously scrub the CVC hub with an alcohol swab. While alcohol possesses some antimicrobial properties, the friction produced by scrubbing is the most effective
- C. A port is an implanted venous central venous catheter (below the surface of the skin). These devices require a non-coring (e.g. Huber) needle for accessing and should not be accessed in the field

6050 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS ALGORITHM (AGE < 12 YEARS)



6060 PEDIATRIC APPARENT LIFE-THREATENING EVENT (ALTE)

DEFINITION:
An infant < 1 year of age with episode frightening to the observer characterized by apnea, choking/gagging, color change or change in muscle tone

EMT	AEMT
EMT-I	Paramedic

Support ABCs as necessary

Obtain detailed history of event and medical history

Complete head-to-toe assessment

- Any child with an ALTE should be transported to ED for evaluation
- Monitor vital signs en route

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

6070 PEDIATRIC TRAUMA CONSIDERATIONS (AGE < 12 YEARS)

EMT	AEMT	EMT-I	Paramedic
-----	------	-------	-----------

Spinal Immobilization

- A. Context/Special Considerations:
- B. 60-80% of spine injuries in children occur at the cervical level
- C. Children < 8 age year are more likely to sustain high C1-C3 injuries
- D. Less force is required to injure the cervical spine in children than adults
- E. Children with Down Syndrome are at risk for cervical spine injury
- F. **Avoid strapping abdomen- children are abdominal breathers**
- G. Use age/size appropriate immobilization devices
- H. Proper immobilization of pediatric patients should **prevent**:
 - 1. Flexion/extension, rotation, lateral bending or axial loading of the neck (car seats do not prevent axial loading and are not considered proper immobilization technique)
 - 2. Non-neutral alignment or alteration in normal curves of the spine for age (consider the large occiput)
 - 3. Twisting, sliding or bending of the body during transport or care

Spinal Immobilization criteria:

- A. Be conservative. Children are difficult to assess and “clinical clearance” criteria are not well established, as in adults
- B. Immobilize the following patients as well as any child you suspect clinically may have a spine injury:
 - 1. Altered Mental Status (GCS < 15, AVPU < A, or intoxication)
 - 2. Focal neurologic findings (paresthesias, loss of sensation, weakness)
 - 3. Non-ambulatory patient
 - 4. Any complaint of neck pain
 - 5. Torticollis (limited range of motion, difficulty moving neck in history or physical)
 - 6. Substantial torso Injury (thorax, abdomen, pelvis)
 - 7. High Risk MVC (head on collision, rollover, ejected from the vehicle, death in the same crash, or speed > 55 m/h)
 - 8. Diving accident

Laramie Fire Department
Authorized Medications

Adenosine (*Adenocard*)

Albuterol (*Proventil, Ventolin*)

Amiodarone (*Cordarone*)

Aspirin (*ASA*)

Ativan (*Lorazepam*)

Atropine Sulfate

Benadryl (*Diphenhydramine*)

Dextrose

Dopamine (*Intropin*)

Epinephrine (*Adrenalin*)

Fentanyl (*Sublimaze*) & Morphine Sulfate

Glucagon

Lidocaine (*Xylocaine*)

Narcan (*Naloxone*)

Nitroglycerin

Oxygen

TXA (*Tranexamic Acid*)

Valium (*Diazepam*)

Zofran (*Ondansetron*)

LFD 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
 - 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: (Requires **CALL IN** and **DIRECT VERBAL ORDER** for EMT-I administration)

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: (Requires **CALL IN** and **DIRECT VERBAL ORDER**)

0.2 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

Contact medical control for further considerations

LFD MEDICATIONS

Protocol

- Asthma
 - COPD
 - PediatricRespiratoryDistress
 - AllergyandAnaphylaxis
-

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 epinephrineIM.

LFD MEDICATIONS

ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

Description

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

Onset & Duration

- Onset: 5-15 minute after inhalation
 - Duration: 3-4 hours after inhalation
-

Indications

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

Contraindications

- Severe tachycardia is a relative contraindication
-

Adverse Reactions

- Tachycardia
 - Palpitations
 - Dysrhythmias
-

Drug Interactions

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

How Supplied

MDI: 90 mcg/metered spray (17-g canister with 200 inhalations)

Pre-diluted nebulized solution: 2.5 mg in 3 mL NS (0.083%)

Dosage and Administration

Adult:

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.

Pediatric:

Single Neb dose

Albuterol sulfate 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 5-15 minutes. May be repeated twice during transport (total of 3 doses)

LFD MEDICATIONS

Protocol

- Asthma
 - COPD
 - PediatricRespiratoryDistress
 - AllergyandAnaphylaxis
-

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.

LFD MEDICATIONS

AMIODARONE (CORDARONE)

Description

Amiodarone has multiple effects showing 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.

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

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

Adverse Reactions

- Severe 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 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 over 3-5 minutes. (**CONTACT BASE** for additional doses)

Protocol

- [Adult Universal Pulseless Arrest Algorithm](#)
 - [Pediatric Universal Pulseless Arrest Algorithm](#)
 - [Adult Tachycardia with Poor Perfusion](#)
-

Special Considerations

- A 12-lead EKG should be performed and documented, when available.

LFD 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

Indications

- Suspected acute coronary syndrome.
-

Contraindications

- Active** gastrointestinal bleeding
 - Aspirin allergy
-

How Supplied

Chewable tablets 81mg

Dosage and Administration

- 324mg PO
-

Protocol

- Chest Pain
-

Special Considerations

- Patients with suspected acute coronary syndrome taking warfarin (Coumadin) or clopidogrel (Plavix) may still be given aspirin

LFD MEDICATIONS

ATIVAN (Lorazepam)

Dosage and Administration

Seizure or sedation for cardioversion or transcutaneous pacing:

Adult:

IV/IO route: 1 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): 2 mg

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

Pediatric:

IV route 0.05 mg/kg

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

IN/IM route (intranasal preferred): 2 mg

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

Sedation of severely agitated or combative patient

Adult:

IV route: 2 mg

IN/IM route: 2 mg

Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** present, in which case up to a total of 3 doses may be given as standing order in order to rapidly sedate patient

Pediatric:

CONTACT BASE before any consideration of sedation of severely agitated/combative child

Onset & Duration

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

Indications

- Status epilepticus
 - Sedation of the severely agitated/combative patient
 - Sedation for cardioversion or transcutaneous pacing (TCP)
 - Adjunctive agent for treatment of severe pain (e.g. back spasms) in adults that is uncontrolled by maximum opioid dose – **WITH CALL IN ONLY**
-

Contraindications

- Hypotension
 - Respiratory depression
-

Adverse Reactions

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

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.
-

Protocol

- Synchronized Cardioversion
 - Transcutaneous Pacing
 - Adult Seizure
 - Pediatric Seizure
 - Pediatric tachycardia with poor perfusion
 - Agitated/Combative Patient
 - Poisoning/Overdose
-

Special Considerations

- This medication should be given slowly over a 2 minute span.**
- 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 elderly patients > 65 years old or small adults < 50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.
- Must be kept refrigerated and protected from light.**

LFD MEDICATIONS

ATROPINE SULFATE

Dosage and Administration

Hemodynamically Unstable Bradycardia

Adult:

0.5 mg IV/IO bolus.

Repeat if needed at 3-5 minute intervals to a maximum dose of 3 mg. (Stop at ventricular rate which provides adequate mentation and blood pressure)

Pediatric:

0.02 mg/kg IV/IO bolus. Minimum dose is 0.1 mg, maximum single dose 0.5 mg

Stable Bradycardia and Poisoning/Overdose

CONTACT BASE

Indications

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

Description

Atropine is an endogenous 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)
-

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"
-

Protocol

- Bradycardia
- Neonatal Resuscitation
- Poisoning/Overdose

Special Considerations

- Atropine causes pupil dilation, even in cardiac arrest settings

LFD MEDICATIONS

BENADRYL (Diphenhydramine)

Dosage and Administration

Adults:

50 mg IV/IO/IM (not to exceed 400 mg)

Pediatrics:

<8 years: 1-2 mg/kg slow IV/IO/IM (not to exceed 50 mg)

Indications

- Allergic reaction
 - Dystonic medication reactions or akathisia (restlessness)
 - Benadryl second to Epi in severe anaphylaxis
-

Precautions

- Asthma or COPD, thickens bronchial secretions
 - Narrow-angle glaucoma
-

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, compazine, etc).

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.
-

Protocol

Allergy/Anaphylaxis

LFD MEDICATIONS

DEXTROSE

Dosage and Administration

Adult:

25 gm (50 ml of a 50% solution) IV/IO bolus

Pediatric:

1-8 years: 2-4 ml/kg of a 25% solution (waste 25ml of 50% vial and replace with normal saline)

<1 year: 2-4 ml/kg of a 10% solution (waste 40ml of 50 % vial and replace with normal saline)

Indications

- Hypoglycemia (symptomatic less than 60 ml/dl)
 - The unconscious or altered mental status patient with an unknown etiology.
-

Precautions

- None
-

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.

Protocol

- 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.
- Dextrose should be diluted 1:1 with normal saline (to create D₂₅W) for patient 1-8 years old.

LFD MEDICATIONS

DOPAMINE (Intropin)

Dosage and Administration

CONTACT BASE for direct physician order

Adult IV/IO:

2~20 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 achieve desired effect.

Pediatrics IV/IO:

2~20 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 achieve desired effect.

Mix: 400 mg in 250 ml NS or 800 mg in 500 ml NS to produce concentration of 1600 mcg/ml.

Indications

- Hypotension refractory to adequate fluid resuscitation
 - Symptomatic bradycardia with signs of poor perfusion
-

Contraindications

- Hypovolemia
 - Hemorrhagic shock
-

Description

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.

Adverse Reactions

- Tachydysrhythmias
 - Hypertension
 - Increased myocardial oxygen demand
-

Protocol

- Medical Hypotension/Shock Protocol
 - Adult Bradycardia
-

Special Considerations

- May become ineffective if added to alkaline solution.

□ Tissue extravasation at the IV site can cause skin sloughing due to vasoconstriction. Be sure to make Emergency Department personnel aware if there has been any extravasation of dopamine containing solutions so that proper treatment can be instituted.

INTRAVENOUS DRIP RATES FOR DOPAMINE

Concentration: 1600 mcg/ml

Dopamine 400mg/250ml
Table displays rate in mls/hr

Mcg/kg/min					
Kg	1	2	3	4	5
40	1.5	3.0	4.5	6.0	7.5
45	1.7	3.4	5.1	6.8	8.4
50	1.9	3.8	5.6	7.5	9.4
55	2.1	4.1	6.2	8.3	10.3
60	2.3	4.5	6.8	9.0	11.3
65	2.4	4.9	7.3	9.8	12.2
70	2.6	5.3	7.9	10.5	13.1
75	2.8	5.6	8.4	11.3	14.1
80	3.0	6.0	9.0	12.0	15.0
85	3.2	6.4	9.6	12.8	15.9
90	3.4	6.8	10.1	13.5	16.9
95	3.6	7.1	10.7	14.3	17.8
100	3.8	7.5	11.3	15.0	18.8
105	3.9	7.9	11.8	15.8	19.7
110	4.1	8.3	12.4	16.5	20.6

LFD MEDICATIONS

EPINEPHRINE (Adrenalin)

Dosage and Administration

Adult:

Pulseless Arrest

1 mg (10 ml of a 1:10,000 solution), IV/IO bolus.
Repeat every 3-5 minutes.

Bradycardia/ hypotension refractory to other interventions (Contact Base):

Continuous infusion titrated to effect: 1 mg in 250 ml of Normal Saline IV/IO
infused at 2 mcg/min until desired BP of > 90 mmHg systolic achieved.

Asthma:

0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

Systemic allergic reaction:

0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.

Severe systemic allergic reaction (Anaphylaxis) refractory to IM epi (Contact Base):

Continuous infusion titrated to effect: 1 mg in 250 ml of Normal Saline IV/IO
infused at 2 mcg/min until desired BP of > 90 mmHg systolic achieved

ALTERNATIVE to racemic epinephrine: (for epiglottitis, miscellaneous causes of stridor) 5 ml of 1:1000 epinephrine via nebulizer x 1

Epinephrine Auto-Injector: requires **BASE CONTACT** for EMT administration

Systemic allergic reaction:

Adult: 0.3 mg IM with autoinjector (adult EpiPen)
Pediatric: 0.15 mg IM with autoinjector (EpiPen Jr.)

Pediatric:

Cardiac arrest:

0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution).
Subsequent doses repeated every 3-5min: 0.01 mg/kg IV/IO (0.1 ml/kg of 1:10,000 solution)

Bradycardia (CONTACT BASE)

0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO

Asthma

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM

Moderate to Severe Allergic Reactions

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM

Severe systemic allergic reaction (Anaphylaxis) refractory to IM epi (Contact Base):

0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO

Indications

- Pulseless Arrest
 - Anaphylaxis
 - Asthma
 - Bradycardia with poor perfusion
-

Adverse Reactions

- Tachycardia and tachydysrhythmia
- Hypertension

- Anxiety
 - May precipitate angina pectoris
-

Drug Interactions

- Should not be added to sodium bicarbonate or other alkaloids as epinephrine will be inactivated at higher pH.
-

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.

Protocol

- Adult Universal Pulseless Arrest Algorithm
 - Pediatric Pulseless Arrest ALS Algorithm
 - Adult Bradycardia
 - Neonatal Resuscitation
 - Allergy and Anaphylaxis Protocol
 - Bradycardia with Poor Perfusion
 - Pediatric Respiratory Distress
-

Special Considerations

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

7010 MEDICATIONS

FENTANYL and MORPHINE (Opioids)

Dosage and Administration

FENTANYL:

- Adult doses may be rounded to nearest 25 mcg increment
- Initial dose in adults typically 100 mcg
- Strongly consider 1/2 typical dosing in elderly or frail patient

Adult:

IV/IO route: 1 mcg/kg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg
- Additional dosing requires BASE CONTACT

IN route: 1 mcg/kg.

- Dose may be repeated after 10 minutes after initial IN dose to a maximum cumulative dose of 3 mcg/kg. IV route is preferred for repeat dosing.
- Additional dosing requires BASE CONTACT

Pediatric (1-12 years):

IV/IO route: 1 mcg/kg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg.
- Additional dosing requires BASE CONTACT

IN route: 1 mcg/kg.

- Dose may be repeated after 10 minutes after initial IN dose to a maximum cumulative dose of 3 mcg/kg. IV route is preferred for repeat dosing.

IN route requires BASE CONTACT and approval for any patient < 5 years old,

or any patient < 12 years old with indication other than isolated orthopedic injury or burns

Pediatric < 1 year: BASE CONTACT

MORPHINE:

Adult:

IV/IO/IM routes: 5 mg. (5mg and 5 mg, and the BASE CONTACT after 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 5 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 0.2 mg/kg.

Additional cumulative dosing requires BASE CONTACT.

- Morphine may not be given IN as it is poorly absorbed

Pediatric < 1 year: BASE CONTACT

NOTE: IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect. IO/IN/IM are acceptable alternatives when IV access is not readily available. Repeat doses of IN Fentanyl can be given if IV access cannot be established. 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.

Indications

- Treatment of hemodynamically stable patients with moderate to severe pain due to traumatic or medical conditions, including cardiac conditions, abdominal pain, back pain, etc.
- Treatment of shivering after therapeutic induced hypothermia (TIH).

Contraindications

- 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 traditional dose in the elderly.**
- Co administration 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

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.

Protocol

Extremity Injuries	Face and Neck Trauma
Adult Chest Pain	Chest Trauma
Therapeutic Induced hypothermia	Abdominal Trauma
Abdominal Pain	Spinal Trauma
Amputations	Snake Bites
Burns	Bites/Stings

LFD MEDICATIONS

GLUCAGON

Dosage and Administration

Adult:

Hypoglycemia 1.0 mg, IM

Beta Blocker/Calcium Channel overdose 2.0 mg IV bolus (Contact Base)

Pediatric:

Hypoglycemia 0.1 mg/kg IM. Maximum dose 1.0 mg

Beta Blocker/Calcium Channel overdose 2.0 mg IV bolus (Contact Base)

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.
 - Esophageal relaxation
-

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.

Side Effects

- Tachycardia
 - Headache
 - Nausea and vomiting
-

Protocol

Seizure
Poisoning/Overdose
Hypoglycemia

LFD MEDICATIONS

LIDOCAINE 2% SOLUTION

Dosage and Administration

0.5 mg/kg IO bolus, slowly, **maximum dose is 50 mg**

Indications

- Analgesic for intraosseous infusion
-

Description

Local anesthetic for relief of pain during intraosseous fluid administration.

Side Effects

- Seizures
 - Drowsiness
 - Tachycardia
 - Bradycardia
 - Confusion
 - Hypotension
-

Precautions

- Lidocaine is metabolized in the liver and therefore, 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
-

Protocol

Intraosseous Administration

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

LFD MEDICATIONS

NARCAN (Naloxone)

Dosage and Administration

Adult:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total
In cases of severe respiratory compromise or arrest, 2 mg bolus IV/IO/IM is appropriate, otherwise drug should be titrated

Pediatrics:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2 mg total

Onset & Duration

Onset: Within 5 minutes

Duration: 1-4 hours

Indications

- For reversal of suspected opioid-induced CNS and respiratory depression
 - Coma of unknown origin with impaired airway reflexes or respiratory depression
-

Adverse Reactions

- Tachycardia
 - Nausea and vomiting
 - Pulmonary Edema
-

Description

Naloxone is a competitive opioid receptor antagonist

Protocol

- Universal Altered Mental Status Protocol
 - 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 naloxone must be transported to a hospital**

LFD MEDICATIONS

NITROGLYCERINE (Nitrostat, Nitroquick...etc)

Dosage and Administration

0.4 mg sublingual spray, every 5 minutes
PRN up to a total of 3 doses for persistent Chest Pain

Onset & Duration

Onset: 1-3 min.
Duration: 20-30 min.

Indications

- Chest, arm, neck 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. Viagra, Cialis)
-

Adverse Reactions

- Hypotension
 - Headache
 - Syncope
 - Flushing
 - Burning under the tongue
-

Description

Short-acting peripheral venodilator decreasing cardiac preload and afterload.

Protocol

- Adult Chest Pain
- CHF/Pulmonary Edema

LFD MEDICATIONS

OXYGEN

Administration

Flow LPM Dosage Indications

- Low Flow 1-2 LPM Minor medical / trauma
 - Moderate Flow 3-9 LPM Moderate medical / trauma
 - High Flow 10-15 LPM Severe medical / trauma
-

Indications

- Suspected hypoxemia or respiratory distress from any cause
 - Acute chest or abdominal pain
 - Hypotension/shock states from any cause
 - Trauma
 - Suspected carbon monoxide poisoning
 - Obstetrical complications, childbirth
-

Precautions

- If the patient is not breathing adequately, the treatment of choice is assisted ventilation, with supplemental oxygen.
 - Titrate SpO₂ to ≥ 90%. This may take some time.
 - Do not withhold oxygen from a COPD patient out of concerns for loss of hypoxic respiratory drive. This is never a concern in the prehospital setting with short transport times. Consult Medical direction if transport times are long.
-

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. Breathing, in most people, is regulated by small changes in the acid-base balance and CO₂ levels. It takes relatively large decreases in oxygen concentration to stimulate respiration.

7010 MEDICATIONS

Tranexamic Acid (TXA)

General Description:

Tranexamic acid (TXA) is a synthetic derivative of the amino acid lysine that inhibits fibrinolysis by blocking the lysine binding sites on plasminogen. TXA safely reduces the risk of death from bleeding in trauma (based on 2 large clinical studies).

Indication:

1. Adults in traumatic hemorrhagic shock with suspected need for massive blood transfusion
 - a. clinical evidence of marked blood loss
 - a. (internal or external bleeding)
 - b. Sustained tachycardia (greater than 110 bpm)
 - c. Sustained hypotension (less than 90 mmHg)

Contraindications:

1. Non-hemorrhagic shock.
2. Non-traumatic hemorrhagic shock.
3. Hemorrhagic shock stabilized by other measures.
4. Known allergic reaction to TXA.
5. Pregnancy greater than 24 weeks.

Dosage:

1. 1 gram mixed in 100 ml NS or LR. Given over 10 minutes
(NO IV PUSH)

Notes:

1. Complete TXA checklist (see next page) before administration.
2. Notify the ER of TXA administration and need for mass transfusion protocol (see mass transfusion protocol).
3. Document time of injury and time of TXA administration.

Tranexamic Acid (TXA) Checklist

Administration of TXA is indicated if **all** of the following criteria are present

1) Age greater than 16	
2) Evidence of significant blunt or penetrating trauma	
3) Evidence of severe internal or external hemorrhage	
4) Sustained systolic BP less than 90 mmHg (or < 100 mmHg if 55 y/o or older)	
5) Sustained heart rate greater than 110 bpm	
6) Time less than 3 hours since initial injury	

To administer TXA:

- 1) Mix 1 gram of TXA in 100 ml of 0.9% Normal Saline or Lactated Ringers.
- 2) Infuse over 10 minutes IV or IO.
 - a. TXA by IV push can cause hypotension. Avoid.
- 3) Use a separate IV. DO NOT give with blood products, factor VIIa, or Pencillin in the same IV.

CONTRAINDICATIONS:

- 1) Non-hemorrhagic shock
- 2) Non-traumatic hemorrhagic shock
- 3) Hemorrhagic shock stabilized by other measures
- 4) Known allergic reaction to TXA
- 5) Pregnancy greater than 24 weeks.

LFD MEDICATIONS

VALIUM (Diazepam)

Dosage and Administration

Seizure or sedation for cardioversion or transcutaneous pacing:

Adult:

IV/IO 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 0.3 mg/kg

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

Sedation of severely agitated or combative patient

Adult:

IV route: 5 mg

- Dose may be repeated x 1 after 5 minutes. **Contact base** for more than 2 doses, unless **Excited Delirium Syndrome** present, in which case up to a total of 3 doses may be given as standing order in order to rapidly sedate patient

Pediatric:

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

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 is not absorbed well IN.
 - IM administration has the slowest time of onset.
-

Indications

- Status epilepticus
 - Sedation of the severely agitated/combative patient
 - Sedation for cardioversion or transcutaneous pacing (TCP)
 - Adjunctive agent for treatment of severe pain (e.g. back spasms) in adults that is uncontrolled by maximum opioid dose – **WITH CALL IN ONLY**
-

Contraindications

- Hypotension
 - Respiratory depression
-

Adverse Reactions

- Respiratory depression, including apnea

- Hypotension
 - Consider ½ dosing in the elderly for all benzodiazepines
-

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.
-

Protocol

- Synchronized Cardioversion
 - Transcutaneous Pacing
 - Adult Seizure
 - Pediatric Seizure
 - Pediatric tachycardia with poor perfusion
 - Agitated/Combative Patient
 - Poisoning/Overdose
-

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 elderly patients > 65 years old or small adults < 50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.

LFD MEDICATIONS

ZOFRAN (Ondansetron)

Dosage and Administration

Adult:

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

Pediatric: < 4 years old:

2 mg IV/PO/ODT

Pediatric: ≥ 4 years old:

4 mg IV/PO/ODT

Indications

- Nausea and vomiting
-

Contraindications

- None.
-

Adverse Effects:

- Very low rate of adverse effects, very well tolerated
-

Description

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

Protocol

- Abdominal Pain/Vomiting
- Altitude Illness

ODT-(Orally Disintegrating Tablet).