Boulder County EMS Protocols 2020

The Boulder County Protocols are a work in progress, and are regularly reviewed, updated and compared to the latest best practice models and research by the Boulder County Medical Directors and the Boulder County Protocol Committee. These current protocols are based in large part on the Denver Metro EMS Protocols. The Boulder County Protocol Committee would like to acknowledge the following for their contribution, talent and time in the creation of the Denver Metro EMS protocols.

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0010 GENERAL GUIDELINES: INTRODUCTION

INTRODUCTION

The following protocols have been developed and approved by the Denver Metro EMS Medical Directors (DMEMSMD) group. They have been further revised by the Boulder County Protocol Committee and Boulder County EMS Physicians to meet the specific needs of the Boulder County EMS providers. These protocols define the standard of care for EMS providers in the Boulder County area, and delineate the expected practice, actions, and procedures to be followed.

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

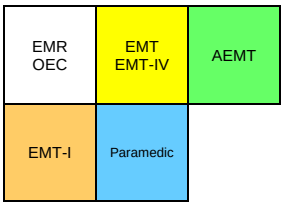
The protocols are presented in an algorithm format. An algorithm is intended to reflect real-life decision points visually. An algorithm has certain limitations, and not every clinical scenario can be represented. Although the algorithm implies a specific sequence of actions, it may often be necessary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

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

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

PROTOCOL KEY

Boxes without any color fill describe actions applicable to all certification levels. Boxes with yellow fill are for EMT and/or EMT-IV level or higher, orange fill are for actions for intermediate level or higher, and blue-filled boxes are for Paramedic level. When applicable, actions requiring **RECEIVING HOSPITAL** contact are identified in the protocol.



- Teaching points

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

PEDIATRIC PROTOCOLS

For the purposes of these clinical care protocols, pediatric patients are 12 years of age or younger with the exception of trauma which is less than 15 years of age. Infant is defined as less than 1 year of age. Neonate is defined as less than one month of age. Pediatric specific indications will be noted by a purple box.

Pediatric Protocol

TRAINING AND EDUCATION

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

The curriculum for initial EMS provider training may not cover some of the treatments, procedures and medications included in these protocols. Therefore, it is the responsibility of the EMS agency and Medical Director to ensure the initial training, verification, and maintenance of these skills falling outside traditional EMS education with all agency providers. This may be of additional importance when training and orienting newly hired providers prior to independent practice.

0020 GENERAL GUIDELINES: CONFIDENTIALITY

CONFIDENTIALITY

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

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

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

   1. Exceptions

      i. The patient is not entitled to confidentiality of information that does not pertain to the medical treatment, medical condition, or is unnecessary for diagnosis or treatment.

      ii. The patient is not entitled to confidentiality for disclosures made publicly.

      iii. The patient is not entitled to confidentiality with regard to evidence of a crime.

C. Additional Considerations:

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

0030 GENERAL GUIDELINES: CONSENT

General Principles: Adults

A. An adult in the State of Colorado is 18 years of age or older.
B. 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.
C. 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. Not intoxicated with drugs and/or alcohol
    4. Given the risks and options, the patient voluntarily refuses or accepts treatment and/or transport.
D. 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.
E. The odor of alcohol on a patient's breath does not, by itself, prevent a patient from refusing treatment.
F. **Implied Consent:** An unconscious adult is presumed to consent to treatment for life-threatening injuries/illnesses.
G. **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

A. 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 RECEIVING HOSPITAL**. This may include consent for treatment decisions or transport/destination decisions.
B. 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.
C. For patients who do not have decision-making capacity, **CONTACT RECEIVING HOSPITAL**.
D. 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 RECEIVING HOSPITAL**.
E. For patients who refuse medical treatment, if you are unsure whether or not a situation of involuntary consent applies, **CONTACT RECEIVING HOSPITAL**.

General Principles: Minors

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

Procedure: Minors

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

0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

Purpose

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

General Principles

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

Procedure

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

Special notes

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

0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

NOTE TO PHYSICIANS ON INVOLVEMENT WITH EMS PROVIDERS

THANK YOU FOR OFFERING YOUR ASSISTANCE.

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

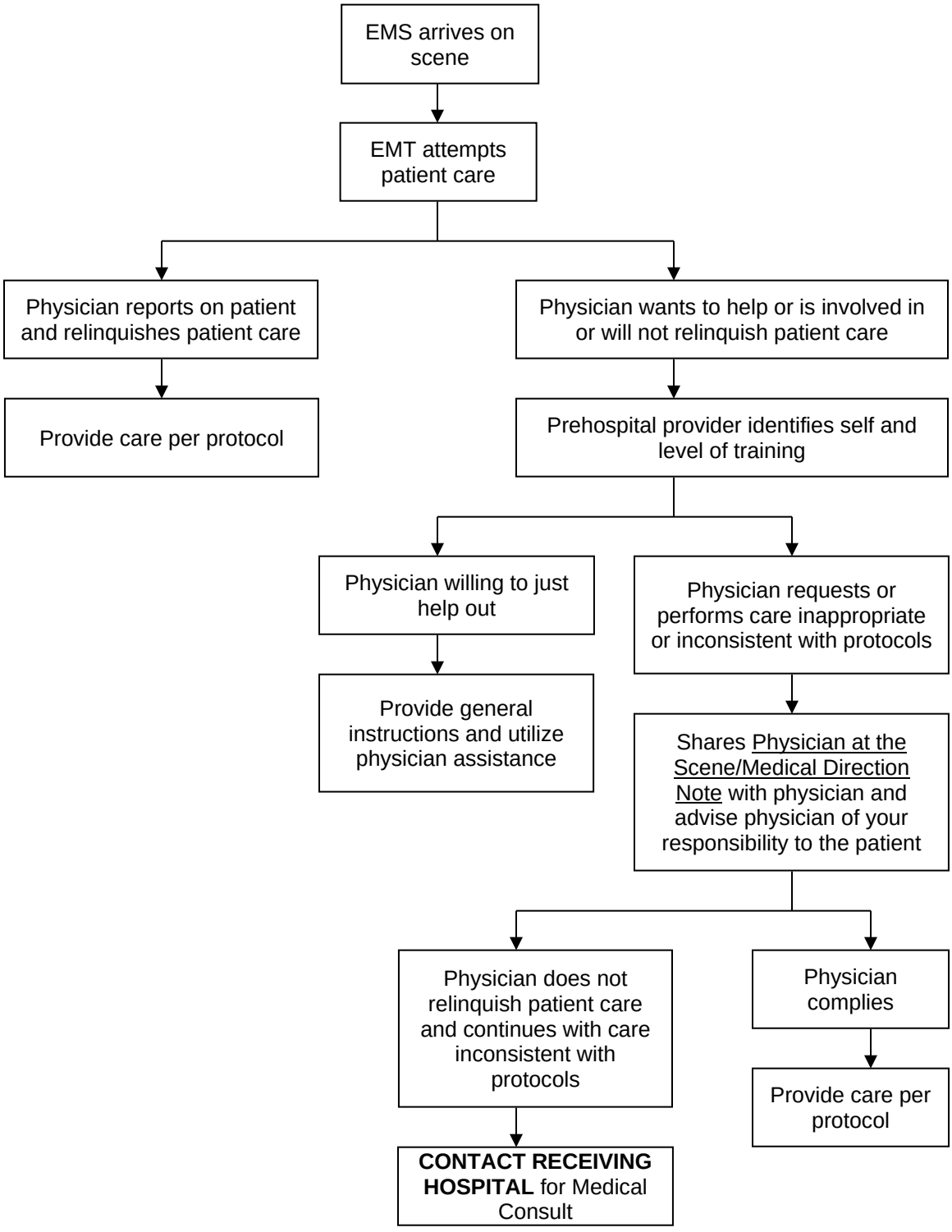
1. Offer your assistance or suggestions, but the prehospital care providers will remain under the medical control of their **receiving hospital** physician, or
2. With the assistance of the prehospital care providers, talk directly to the **receiving physician** and offer to direct patient care and accompany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

THANK YOU FOR OFFERING YOUR ASSISTANCE DURING THIS EMERGENCY.

Medical Director _____ Agency _____

0040 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM



0050 GENERAL GUIDELINES: FIELD PRONOUNCEMENT

Purpose

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

General Principles

A. Agency policy determines **Contact Receiving Hospital** requirements for patients for whom resuscitation efforts are being withheld.
B. Medical Arrest:
    1. EMS providers should try their best to determine a patient's end-of-life wishes and honor them. Refer to Advanced Medical Directives protocol for discussion of advanced directives and decision making about appropriateness of performing or withholding resuscitation efforts.
        a. Do not attempt resuscitation for patients with a "No CPR" directive based on the patient's wishes or compelling reasons to withhold resuscitation as covered in Advanced Medical Directives protocol.
        b. Do not attempt resuscitation for patients with definite signs of death, such as dependent lividity, rigor mortis, decomposition.
C. Traumatic Arrest:
    1. Do not attempt resuscitation if there is evidence of a non-survivable injury and no sign of life. Examples of non-survivable injuries include decapitation, evidence of massive head, chest, or abdominal trauma, or massive burn with charring.
    2. Blunt trauma: consider field pronouncement if there are no signs of life. Signs of life include spontaneous movement, breathing, presence of a pulse, or reactive pupils.
    3. Penetrating trauma: consider field pronouncement if there are no signs of life, and the arrest duration is suspected to be > 10 minutes.
    4. Exceptions to the above recommendations to consider field pronouncement include arrests with the following mechanisms/scenarios:
        a. Hypothermic arrest
        b. Drowning w/ hypothermia and submersion < 60 min
        c. Lightning strike and electrocution
        d. Avalanche victim
        e. Pregnant patient with estimated gestational age ≥20 weeks

0051 GENERAL GUIDELINES: TERMINATION OF RESUSCITATION

Purpose

A. To provide guidelines for termination of resuscitation for patients in medical pulseless arrest in the prehospital setting. EMS may transport any patient perceived to be viable, or if scene dynamics or public perception necessitates transport.

General Principles

A. Medical Arrest
   1. Resuscitate according to **Universal Pulseless Arrest Algorithm** on scene (unless unsafe) until one of the following endpoints is met:
      a. Return of spontaneous circulation (ROSC).
      b. No ROSC despite 30 minutes of ALS care or BLS care with an AED. If shockable rhythm still present, continue resuscitation and transport to closest emergency department.
      c. **Contact Receiving Hospital** for TOR at any point if the effort is considered futile despite adequate CPR with ventilation and no reversible causes have been identified.
   2. For BLS-only providers, **Contact Receiving Hospital** for TOR when all of the following criteria met:
      a. No AED shock advised
      b. No ROSC
      c. Arrest unwitnessed by either EMS or bystanders
      d. No bystander CPR before EMS arrival

B. Traumatic Arrest
   1. Refer to **Traumatic Arrest** protocol for termination of resuscitation criteria

C. The following patients found pulseless and apneic warrant resuscitation efforts beyond 30 minutes and should be transported:
   1. Hypothermic arrest
   2. Drowning w/ hypothermia and submersion < 60 min
   3. Lightning strike and electrocution
   4. Avalanche victim
   5. Pregnant patient with estimated gestational age ≥20 weeks

D. Once the patient is pronounced, they become a potential coroner's case. From that point on the patient should not be moved and no clothing or medical devices (lines, tubes etc.) should be removed or altered pending coroner evaluation.

0060 General Guidelines: Advance Medical Directives

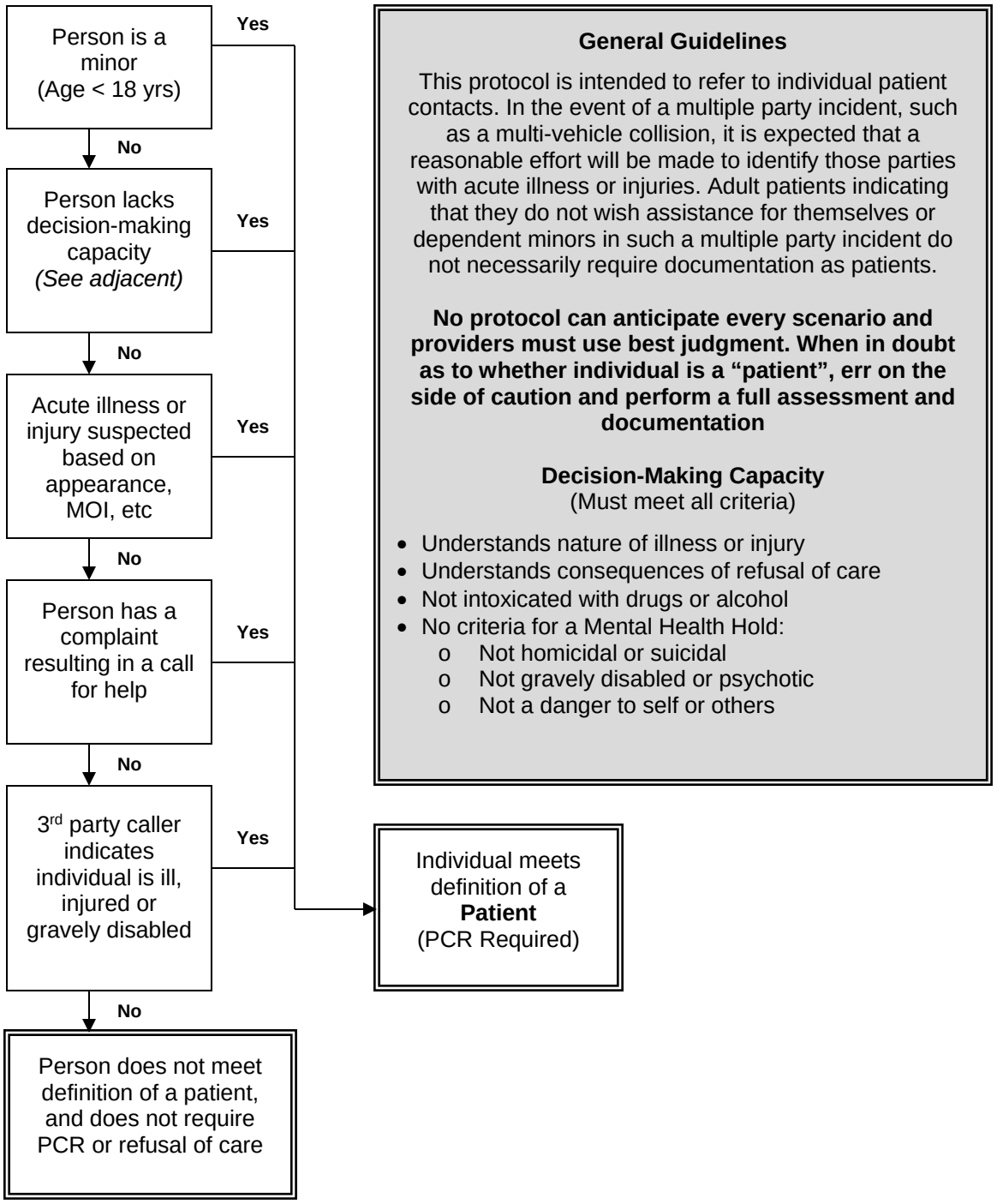
General Principles:

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

Additional Considerations

1. Document the presence of the CPR Directive on the incident report. Describe the patient's medical history, presence of an advanced directive (if any), or verbal request to withhold resuscitation.
2. Mass casualty incidents are not covered in detail by these guidelines. (See State Trauma Triage Algorithm).
3. If the situation appears to be a potential crime scene, EMS providers should disturb the scene as little as possible and communicate with law enforcement regarding any items that are moved or removed from the scene.
4. Mechanisms for disposition of bodies by means other than EMS providers and vehicles should be prospectively established in each county or locale.
5. In all cases of unattended deaths occurring outside of a medical facility, the coroner should be contacted immediately.

0070 GENERAL GUIDELINES: PATIENT DETERMINATION: "*PATIENT OR NO PATIENT*"



General Guidelines

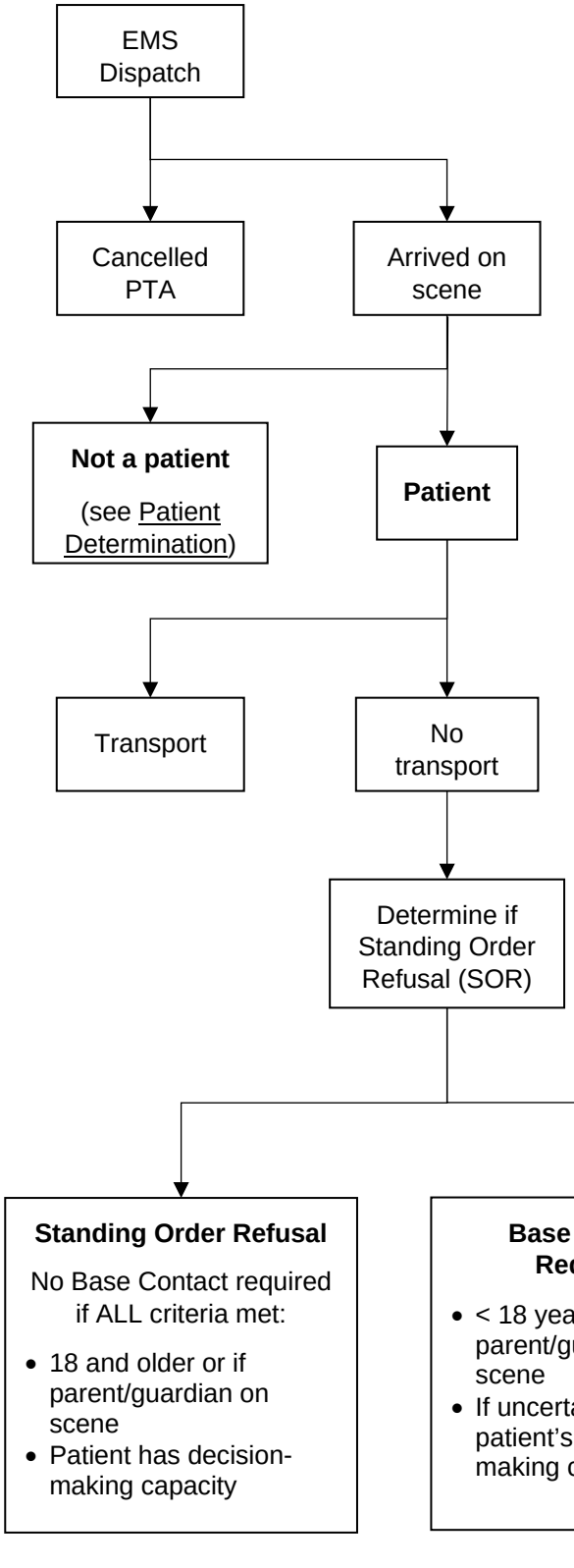
This protocol is intended to refer to individual patient contacts. In the event of a multiple party incident, such as a multi-vehicle collision, it is expected that a reasonable effort will be made to identify those parties with acute illness or injuries. Adult patients indicating that they do not wish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

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

Decision-Making Capacity
(Must meet all criteria)

- Understands nature of illness or injury
- Understands consequences of refusal of care
- Not intoxicated with drugs or alcohol
- No criteria for a Mental Health Hold:
  - Not homicidal or suicidal
  - Not gravely disabled or psychotic
  - Not a danger to self or others

0080 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL



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

Refer to 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 RECEIVING HOSPITAL** for physician consult.

For potentially intoxicated patients, refer to Drug/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 (AMA)

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

0090 GENERAL GUIDELINES: MANDATORY REPORTING OF ABUSE PATIENTS

Purpose

A. To provide guidelines for the reporting of suspected abuse patients. This includes:
   1. Child (less than 18 years old)
   2. Special needs (any age)
   3. Elder (70 years old or greater)

Definition of Abuse:

A. Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation **OR** an act or failure to act which presents an imminent risk of serious harm.

Types of Abuse:

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

Role of Mandated Reporter:

A. A mandatory reporter has ***reasonable cause*** to know or suspect that someone has been subjected to abuse, neglect, or exploitation. *He or she is to immediately report (within 24 hours) the information to local law enforcement or as directed by agency specific guidelines.* Report can be given in two ways:
   1. Verbal report
   2. Written report

B. Mandatory reporters that ***do not*** report abuse, neglect, or exploitation can be:
   1. Charged with a class 3 misdemeanor
   2. Liable for damages proximately caused by failing to report

What to report:

A. The name, address, age, sex, and race of the child, at-risk elder, or at-risk adult with intellectual and developmental disability
B. The name(s) and address(es) of the person(s) responsible for the suspected abuse, neglect, or exploitation—if known
C. A description of the alleged mistreatment and the situation
D. The nature and extent of any injuries—if known
E. Knowledge of previous cases of known or suspected abuse, neglect, or exploitation of the victim or others under the person's care
F. The family composition, including any siblings or others in the household
G. The name, address and/or contact phone number, and occupation of the person making the report
H. Relation of the person making report to the victim and/or how information was obtained
I. Any action taken by the reporting source
J. Any other information reporting person feels is important.

Additional Information:

A. An at-risk elder or at-risk adult with intellectual and developmental disability (per Colorado Revised Statutes §18-6.5-102), or child who are suspected to be victims of abuse, neglect, or exploitation, as defined in Colorado Revised Statutes §19-3-304, should be reported in a manner consistent with agency guidelines/procedures within 24 hours.
B. Any "suspected" or known incident of abuse, neglect, or exploitation must be reported
C. Protecting patient confidentiality does not legally justify a failure to report
D. There is established immunity for reporters "acting in good faith"
E. Reports should be made to local law enforcement with jurisdiction or for suspected child abuse the Colorado child abuse reporting hotline is 1-844-CO-4-KIDS (1-844-264-5437). Document in your patient record who it was reported to.

0100 CARE OF THE CHILD WITH SPECIAL NEEDS

General Guideline:

A. 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 Receiving Hospital** for any concerns.
B. Under Chapter 2 Rule: specialized prescription medications to address an acute crisis may be given by all levels with a direct VO, given the route of administration is within the scope of the provider. This does ***NOT*** apply to giving hydrocortisone for adrenal crisis, for instance if a patient or family member has this medication available on scene.

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. Accessing such lines is discouraged. If extenuating circumstances are present, **Contact Receiving Hospital** prior to accessing.

    - 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
    - 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.

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

Purpose

The term "free-standing emergency department" (FSED) may refer to both licensed emergency departments that accept EMS traffic as an extension of an affiliated hospital, as well as independent emergency departments unaffiliated with a hospital. The following recommendations apply to those FSEDs that accept EMS traffic as an extension of its affiliated hospital.

Recommendations

A. **Hemodynamically stable patients** may be ***considered*** for transport to a hospital-affiliated FSED with the following exceptions:

1. No OB patients > 20 weeks estimated gestational age
2. No trauma patients meeting Boulder County trauma activation guidelines.
3. No alerts (e.g. STEMI, Stroke, Sepsis).
4. No post-cardiac arrest patients with ROSC unless uncontrolled airway
5. No patients under age 5 or over age 64.
6. No psychiatric, intoxicated, or agitated/aggressive patients

B. The following patients may be considered for inclusion to alternative destinations (this list is not all inclusive):

1. Lacerations (simple, no hands/face, scalp acceptable without loss of consciousness)
2. Sprains/non-angulated fractures
3. Insect bites/simple cellulitis
4. Falls with minimal injury
5. Back pain (normal neurological exam)
6. Chronic pain
7. Animal bites (not hands or face)
8. Upper respiratory infection
9. Ear aches (non-diabetic patient)
10. Mild allergic reaction (no epinephrine administered)

C. When time and conditions allow, patients whom pre-hospital providers presume to require inpatient management may be transported to a hospital emergency department to avoid subsequent patient transfers.

Additional Considerations

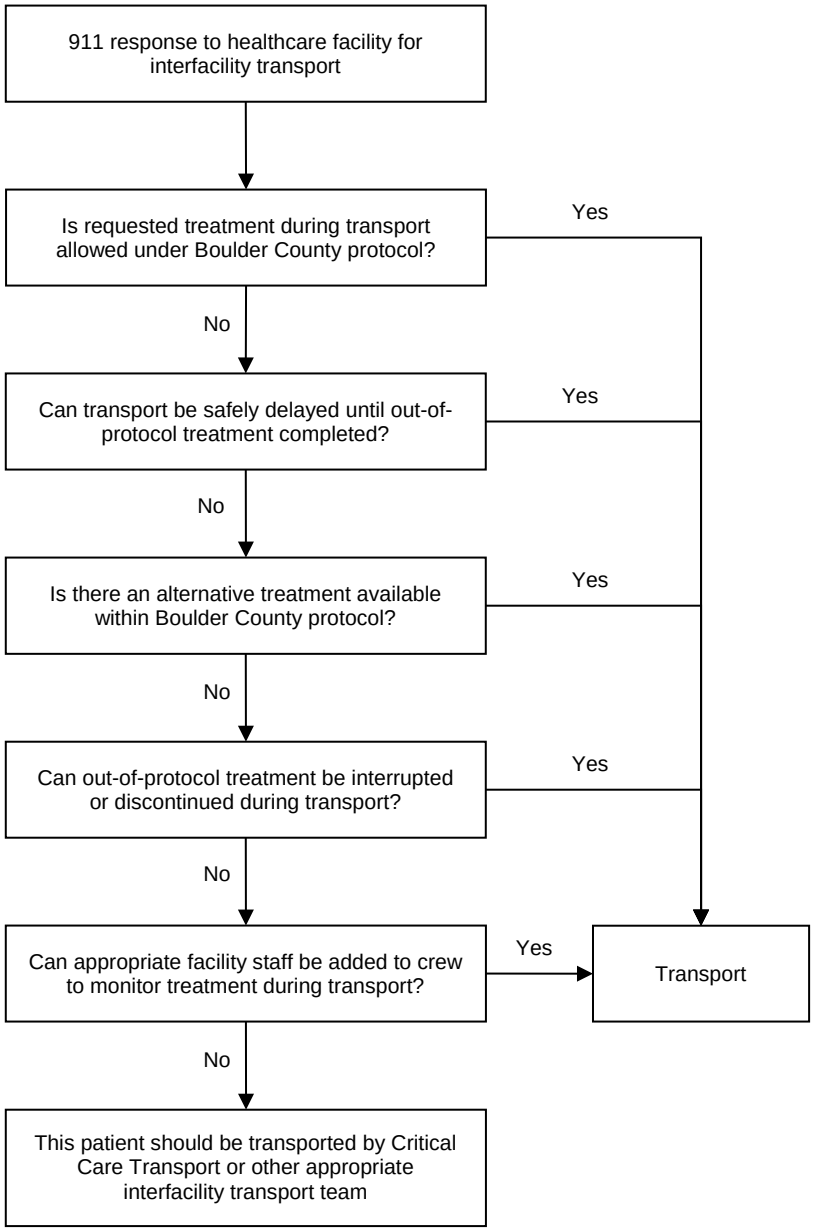
A. Only hospital-affiliated free-standing emergency departments can receive ambulances.

B. It is understood that individual agency guidelines may vary due to unique geographic, clinical or environmental considerations, as well as individual EMS Medical Director and agency policy. Because FSEDs do not have obstetric services, cardiac catheterization labs or operating rooms, these conservative guidelines are provided by the Boulder County EMS Physicians. These recommendations are not intended to supersede individual agency policy and procedures.

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

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

0120 GENERAL GUIDELINES: 911 SYSTEM RESPONSE TO REQUEST FOR INTERFACILITY TRANSPORT



Guidelines:

- The purpose of this protocol is to address the scenario where a 911 response is requested for an interfacility transport and is not intended to supersede existing interfacility transport agency protocols for care.
- Follow existing Boulder County 911 protocols during transport
- All reasonable efforts should be made to accommodate sending physician's destination choice, as specialized care may have already been arranged at the receiving facility, however, transports must be consistent with individual agency and Boulder County protocol as well as RETAC Trauma Triage Algorithm.

0130 GENERAL GUIDELINES: TRANSPORT OF PATIENTS TREATED UNDER A WAIVERED ACT NOT APPROVED FOR THE GROUND TRANSPORT AGENCY

Purpose

To provide guidelines for transport and medical control of patients who are being treated under a State Issued Protocol Waiver for a specific act or medication.

General Principles

A. There may be instances where responding providers have been granted a waiver for an act or medication that the ground transport agency provider does not have. In this case the provider from the waivered agency will maintain medical control of the patient even if it is deemed appropriate to transfer the patient to a different ground transport agency's ambulance.
B. Medical control and responsibility will be maintained by the on scene provider from the agency holding the waiver until the patient has been transferred to a higher level of care.
C. This does not apply to waivers granting county agency EMTs an expanded scope that still falls under the ground transport agency's ALS scope of practice.

0990 Quick Reference for Procedures and Medications Allowed by Protocol

This list does not include Medical Director specific waivers or base contact requirements. It is assumed that not all agencies will necessarily stock all medications. For waivered items Refer to Transport of Patients Treated Under a Waivered Act guideline.

Abbreviations	S = Standing order	P = Physician contact/order	W = Waivered

Airway Procedures	EMR / OEC	EMT	EIV	AEMT	I	PM
Capnography		S	S	S	S	S
Supraglottic airway		S	S	S	S	S
Continuous positive airway pressure (CPAP)		S	S	S	S	S
Orotracheal intubation					S	S
Nasotracheal intubation						S
Percutaneous cricothyrotomy						S
Bougie assisted surgical cricothyrotomy						S
Pediatric needle cricothyrotomy						S
Needle thoracostomy for tension pneumothorax decompression					S	S
Orogastric tube insertion with advanced airway						S

Cardiovascular Procedures	EMR / OEC	EMT	EIV	AEMT	I	PM
Tourniquet	S	S	S	S	S	S
ECG - Acquire (including 12-lead)		S	S	S	S	S
ECG - Interpretation (including 12-lead)					S	S
Blood glucose monitoring	S	S	S	S	S	S
IV – Peripheral			S	S	S	S
IV – External jugular				S	S	S
IO						
• Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness			S	S	S	S
• Utilization of IO access for all other patients				S	S	S
Use of established central line (including PICC) for fluid and medication administration (must have appropriate equipment, e.g. Huber needle, and training to access subcutaneous ports)					S	S
Automated / Semi-automated external defibrillator (AED)	S	S	S	S	S	S
Defibrillation – Manual					S	S
Valsalva maneuver						S
Synchronized cardioversion						S
Transcutaneous cardiac pacing						
• Adult					S	S
• Pediatric					P	P

Medications	EMR / OEC	EMT	EIV	AEMT	I	PM
Specialized prescription medications to address an acute crisis given the route of administration is within the scope of the provider		P	P	P	P	P
Acetaminophen	S	S	S	S	S	S
Adenosine (Adenocard)						
• Adult					P	S
• Pediatric					P	P
Albuterol sulfate (MDI and nebulizer)		S	S	S	S	S
• Assist with patient's prescribed MDI	S	S	S	S	S	S
• MDI and nebulizer – agency supplied		S	S	S	S	S
Antiarrhythmic - Ventricular (amiodarone, lidocaine)						
• Pulseless arrest					P	S
• Tachyarrhythmia with poor perfusion						P
Antiemetic						
• Ondansetron (Zofran) ODT		S	S	S	S	S
• Ondansetron (Zofran) IV/IO			S	S	S	S
• Promethazine (Phenergan)					P	S
• Metoclopramide (Reglan)					P	S

0990 Quick Reference for Procedures and Medications Allowed by Protocol

Medications	EMR / OEC	EMT	EIV	AEMT	I	PM
Antiemetic						
• Droperidol - Adult					P	S
• Droperidol – Pediatric					P	P
Aspirin	S	S	S	S	S	S
Atropine sulfate						
• Hemodynamically unstable bradycardia					P	S
• Organophosphate poisoning					P	S
Benzodiazepines (midazolam, diazepam, lorazepam)						
• Seizure					P	S
• Sedation for transcutaneous pacing or cardioversion					P	S
• Sedation for severely agitated or combative patient – Adult					P	S
• Sedation for severely agitated or combative patient – Pediatric					P	P
• Adjunctive agent for treatment of severe pain / muscle spasms					P	S
Calcium						
• Pulseless arrest assumed due to hyperkalemia						S
• Calcium channel blocker overdose						P
Dextrose			S	S	S	S
Diphenhydramine (Benadryl)				P	P	S
Dopamine						S
Droperidol						
• Adult					P	S
• Pediatric					P	P
DuoDote™ / Mark I Kits	S	S	S	S	S	S
Epinephrine						
• Pulseless arrest – IV/IO					S	S
• Pediatric bradycardia – IV/IO					P	P
• Asthma – IM					P	S
• Anaphylaxis – IM		S	S	S	S	S
• Pediatric severe systemic allergic reaction refractory to IM epinephrine – IV/IO					P	S
• Stridor at rest (alternative to racemic epinephrine)					P	S
• Epinephrine Auto-injector – Patient's prescribed	S	S	S	S	S	S
• Epinephrine Auto-injector – Agency supplied		S	S	S	S	S
• Adult hypotension refractory to fluid resuscitation – IV drip					P	S
• Adult bradycardia with signs of poor perfusion – IV drip					P	S
• Adult severe systemic allergic reaction – IV drip					P	S
Glucagon						
• Hypoglycemia				S	S	S
Haloperidol (Haldol)					P	S
• Adult					P	S
• Pediatric					P	P
Hemostatic agents	S	S	S	S	S	S
Hydrocortisone (Solu-Cortef)					P	S
Hydroxocobalamin (Cyanokit)					S	S
Ibuprofen	S	S	S	S	S	S
Ipratropium Bromide (Atrovent)				P	P	S
Lidocaine 2% anesthetic for IO needle insertion				S	S	S
Lidocaine jelly topical anesthetic						S
Ketamine						W
Magnesium sulfate						
• Torsades de pointes associated with prolonged QT interval						S
• Refractory severe bronchospasm						S
• Eclampsia					P	S

0990 Quick Reference for Procedures and Medications Allowed by Protocol

Medications	EMR / OEC	EMT	EIV	AEMT	I	PM
Methylprednisolone (Solu-Medrol)					P	S
Naloxone (Narcan)						
• Auto-injector and/or IN route	S	S	S	S	S	S
• IV route			S	S	S	S
• IO route				S	S	S
Nitroglycerin (Nitrostat, Nitroquick)						
• Sublingual, patient assisted	P	P	P	S	S	S
• Sublingual, agency supplied				S	S	S
• Nitroglycerin paste				P	P	S
Opioids						
• Adult					P	S
• Pediatric fentanyl administration					P	S
• Pediatric <1 year for morphine administration					P	P
Oral glucose (Glutose, Insta-glucose)	S	S	S	S	S	S
Oxygen	S	S	S	S	S	S
Phenylephrine (Intranasal)						
• Epistaxis		S	S	S	S	S
• Prior to nasotracheal intubation						S
Racemic epinephrine (Vaponepherine)					P	S
Sodium bicarbonate						
• Pulseless arrest assumed due to hyperkalemia					P	S
• Tricyclic antidepressant overdose						S
Topical ophthalmic anesthetics					S	S
Tranexamic acid (TXA)						W

1000 PROCEDURE PROTOCOL: OROTRACHEAL INTUBATION

EMT-I	Paramedic

Indications:

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

Contraindications:

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

PEDIATRIC INTUBATION

Intubation should only be performed if you are unable to manage the patient's airway with a supraglottic airway

Technique:

1. Initiate BLS airway sequence and confirm $ETCO_2$ production at this time.
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment and position patient:
    a. If trauma: have assistant hold in-line spinal stabilization in neutral position
    b. If no trauma, sniffing position or slight cervical hyperextension is preferred
4. Perform laryngoscopy
    a. To improve laryngeal view, use right hand to manipulate larynx, or have assistant apply backwards, upwards, rightward pressure (BURP)
5. Place ETT. Confirm tracheal location and appropriate depth and secure tube
    a. Correct tube depth may be estimated as 3 times the internal diameter of tube at teeth or gums (e.g: 7.0 ETT is positioned at 21 cm at teeth)
6. Confirm and document tracheal location by:
    a. Continuous waveform capnography
    b. Presence and symmetry of breath sounds
    c. Rising SpO_2
7. Ventilate with BVM. Assess adequacy of ventilations
8. During transport, continually reassess ventilation, oxygenation and tube position with continuous waveform capnography and SpO_2

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 with waveform capnography after moving patient and before disconnecting from monitor in ED
- Unsuccessful intubation does not equal failed airway management. Many patients cannot be intubated without paralytics. Abandon further attempts at intubation and use supraglottic airway or BVM ventilations if 2 attempts at intubation unsuccessful.

1010 PROCEDURE PROTOCOL: NASOTRACHEAL INTUBATION

Paramedic

Indications:

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

Contraindications:

- Apnea
- Severe mid-face trauma

Technique:

1. Initiate BLS airway sequence and confirm $EtCO_2$ production at this time.
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment, choose correct ETT size (usually 7.0 in adult, limit is size of naris)
4. Position patient with head in midline, neutral position
5. If trauma: cervical collar may be in place, or assistant may hold in-line stabilization in neutral position
6. If no trauma, patient may be sitting upright
7. Administer phenylephrine nasal drops in each nostril
8. Lubricate ETT with lidocaine jelly or other water-soluble lubricant
9. With gentle steady pressure, advance the tube through the nose to the posterior pharynx; advance the tube horizontally (not upwards). Use the largest nostril. Abandon procedure if significant resistance is felt
10. Keeping the curve of the tube exactly in midline, continue advancing slowly
11. There will be slight resistance just before entering trachea. Wait for an inspiratory effort before final passage through cords. Listen for loss of breath sounds
12. Continue advancing tube until air is definitely exchanging through tube, then advance 2 cm more and inflate cuff
13. Note tube depth and tape securely
14. Confirm and document endotracheal location by:
    a. Continuous waveform capnography
    b. Presence and symmetry of breath sounds
    c. Rising SpO_2
15. Ventilate with BVM. Assess adequacy of ventilations
16. During transport, continually reassess ventilation, oxygenation and tube position with continuous waveform capnography and SpO_2

Precautions:

- Before performing BNTI, consider if patient can be safely ventilated with non-invasive means such as CPAP or BVM
- Use caution in anticoagulated or bleeding disorders given risk of epistaxis.
- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
    - **D**islodgement
    - **O**bstruction
    - **P**neumothorax
    - **E**quipment failure (no oxygen)
- Reconfirm and document correct tube position with waveform capnography after moving patient and before disconnecting from monitor in ED
- Blind nasotracheal intubation is a very gentle technique. The secret to success is perfect positioning and patience.

1020 PROCEDURE PROTOCOL: CRICOTHYROTOMY

Paramedic

Introduction:

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

Indications:

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

Contraindications:

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

Technique:

1. Position the patient supine, with in-line spinal stabilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.
2. Clean skin per agency approved aseptic technique.
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: Waveform capnography as well as clinical indicators (e.g. symmetry of breath sounds, rising pulse oximetry, etc.)
11. Secure tube with ties.
12. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
13. Continually reassess ventilation, oxygenation and tube placement.

Precautions:

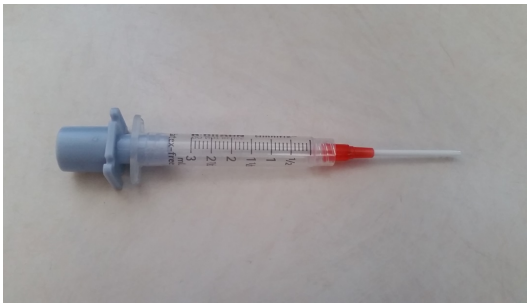
- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage from the carotid or jugular vessels, or their branches.

1027 PROCEDURE PROTOCOL: PEDIATRIC NEEDLE CRICOTHYROTOMY

Paramedic

Introduction:

- Needle cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The rationale for this procedure must be documented in the patient care report and submitted for review to the EMS Medical Director within 24 hours.
- Due to the funnel-shaped, rostral, highly compliant larynx of a pediatric patient, cricothyrotomy is an extremely difficult procedure to successfully perform. As such, every effort should be made to effectively oxygenate the patient before attempting needle cricothyrotomy.
- This protocol is considered optional and may not be adopted by all EMS Medical Directors or by all EMS agencies.
- A standardized, pre-prepared kit is recommended, and can be assembled using common airway equipment. An example is given below. Kit selection may vary and should be approved by the individual agency Medical Director.
- Example of kit:
  - 14 ga. and 16 ga. catheter over needle
  - 3 mL syringe
  - 15 mm endotracheal tube adaptor that fits the 3 mL syringe used by agency (syringe barrel sizes vary)



Indications:

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

Contraindications:

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

Technique:

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

1030 PROCEDURE PROTOCOL: SUPRAGLOTTIC AIRWAY

EMT EMT-IV	AEMT
EMT-I	Paramedic

Indications:

- Rescue airway if unable to intubate a patient in need of airway protection
- Primary airway if intubation anticipated to be difficult and rapid airway control is necessary
- Primary airway in pulseless arrest, when attempts at intubation are likely to interrupt CPR
- Designated advanced airway for EMTs
- Preferred advanced airway in the pediatric patient

Contraindications:

- Intact gag reflex
- Caustic ingestion

Technique:

1. Initiate BLS airway sequence
2. Select proper size supraglottic airway based on manufacturer's specifications
3. Assemble equipment, note correct volume for inflation marked on tube itself, test balloon for leaks, lubricate posterior aspect distal tip with water-soluble lubricant
4. Suction airway and maximize oxygenation with BVM ventilations
5. If trauma: have assistant hold in-line spinal stabilization in neutral position
6. If no trauma, sniffing position or slight cervical hyperextension is preferred
7. Place supraglottic airway utilizing device-specific technique
8. Inflate cuff balloon with correct volume of air (marked on device)
9. Confirm tube placement by auscultation, chest movement, and $ETCO_2$ (preferably with waveform capnography)
10. Continuously monitor waveform capnography, SpO_2, vital signs

Precautions:

1. Do not remove a properly functioning supraglottic airway in order to attempt intubation
2. Correct sizing of supraglottic airways is critical for correct function
3. Supraglottic airways are safe and effective in pediatric patients, provided the correct size tube is selected. The age-range for supraglottic airway use is dependent on the specific device being used. Providers should be trained on and familiar with correct size selection for their device.
4. Use with caution in patients with broken teeth, which may lacerate balloon
5. Use with caution in patients with known esophageal disease who are at increased risk of esophageal injury.

1040 PROCEDURE PROTOCOL: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

EMT EMT-IV	AEMT
EMT-I	Paramedic

Indications:

- Symptomatic patients with moderate-to-severe respiratory distress as evidenced by at least two (2) of the following:
  - Rales (crackles)
  - Dyspnea with hypoxia (SpO_2 less than 90% despite O_2)
  - Dyspnea with inability to speak full sentences
  - Accessory muscle use
  - Respiratory rate greater than 24/minute despite O_2
  - Diminished tidal volume
  - Carbon monoxide exposure

Contraindications:

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

Technique:

1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR, SpO_2, and $ETCO_2$)
3. Apply the CPAP mask and secure with provided straps, progressively tightening as tolerated to minimize air leak
4. Operate CPAP device according to manufacturer specifications
5. Start with the lowest continuous pressure that appears to be effective. Adjust pressure following manufacturer instructions to achieve the most stable respiratory status utilizing the signs described below as a guide
6. Monitor patient continuously, record vital signs every 5 minutes.
7. Assess patient for improvement as evidenced by the following:
   a. Reduced dyspnea
   b. Reduced verbal impairment, respiratory rate and heart rate
   c. Increased SpO_2
   d. Stabilized blood pressure
   e. Appropriate $ETCO_2$ values and waveforms
   f. Increased tidal volume
8. Observe for signs of deterioration or failure of response to CPAP:
   a. Decrease in level of consciousness
   b. Sustained or increased heart rate, respiratory rate or decreased blood pressure
   c. Sustained low or decreasing SpO_2 readings
   d. Rising $ETCO_2$ levels or other $ETCO_2$ 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.

1050 PROCEDURE PROTOCOL: CAPNOGRAPHY

EMT EMT-IV	AEMT	EMT-I	Paramedic

Indications:

A. MANDATORY: to rule out esophageal intubation and confirm endotracheal tube position in all intubated patients.
B. To identify late endotracheal tube dislodgement
C. To monitor ventilation and perfusion in any ill or injured patient
D. To help determine the success of resuscitation
    a. Initial reading of 10 mmHg likely a futile resuscitation
    b. Rapid rise in capnogaphy likely indicator of return of spontaneous circulation

Contraindications:

A. None

Technique:

A. In patient with ETT or advanced airway: place $ETCO_2$ detector in-line between airway adaptor and BVM after airway positioned and secured
B. Patients without ETT or advanced airway in place: place $ETCO_2$ cannula on patient. May be placed under CPAP or NRB facemask
C. Assess and document both capnography waveform and $ETCO_2$ value

Precautions:

A. To understand and interpret capnography, remember the 3 determinants of $ETCO_2$:
    1. Alveolar ventilation
    2. Pulmonary perfusion
    3. Metabolism
B. Sudden loss of $ETCO_2$:
    1. Tube dislodged
    2. Circuit disconnected
    3. Cardiac arrest
C. High $ETCO_2$ (> 45)
    1. Hypoventilation/CO_2 retention
D. Low $ETCO_2$ (< 25)
    1. Hyperventilation
    2. Low perfusion: shock, PE, sepsis
E. Cardiac Arrest:
    1. In low-pulmonary blood flow states, such as cardiac arrest, the primary determinant of $ETCO_2$ is blood flow, so $ETCO_2$ is a good indicator of quality of CPR
    2. If $ETCO_2$ is dropping, change out person doing chest compressions
    3. In cardiac arrest, if $ETCO_2$ not > 10 mmHg after 20 minutes of good CPR, this likely reflects very low CO_2 production and is associated with poor outcome
    4. Sudden rise in $EtCO_2$ may be an indicator of ROSC

1060 PROCEDURE PROTOCOL: INTRAOSSEUS CATHETER PLACEMENT

EMT-IV ONLY	AEMT
EMT-I	Paramedic

Indications:

A. Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness defined as any of the following:
    1. Cardiopulmonary arrest or impending arrest (humeral head IO site preferred)
    2. Profound shock with severe hypotension and poor perfusion
    3. Hypoglycemia with severe symptoms (e.g. unresponsive) and no venous access
B. Utilization of IO access for all other patients requires appropriate clinical justification (NOT indicated for EMT-IV)
C. IO placement may be considered prior to peripheral IV attempts in critical patients without identifiable peripheral veins

Technique:

A. Site of choice – typically proximal tibia. Other sites such as distal femur or humeral head may be considered based on clinical presentation if authorized by agency Medical Director after completion of appropriate training.
B. Clean skin per agency approved aseptic technique.
C. Place intraosseous needle perpendicular to the bone.
    1. For infants less than 6 months consider manual insertion of needle rather than powered device to avoid puncturing through both sides of 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
    1. IO infusion is very painful. If the patient is conscious, administer lidocaine for pain control **before** infusing fluids or medications.
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. Notify hospital staff of all insertion sites/attempts.
L. Removal technique – An IO should only be removed in the field when the patient is refusing transport to a facility after receiving treatment. All refusals of transports for pediatric patients after IO insertion are AMA and require receiving facility contact prior to removal.
    1. To withdraw the catheter, remove the extension/drip set and dressing.
    2. Attach a Luer lock syringe to the hub.
    3. Maintaining axial alignment, twist the syringe and catheter clockwise while pulling straight out. Do not rock or bend the catheter during removal. Dispose of all sharps in a proper sharps container.
    4. Apply pressure as needed and dress the site.
    5. Instruct after IO catheter removal to monitor the involved limb and site for any signs of delayed presentation of symptoms of potential complications including but not limited to fever, discoloration, swelling, pain (with active or passive motion), paresthesias, skin feeling cool or warm, pulses, firmness or taut feel to area as compared to other limb.

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)

1060 PROCEDURE PROTOCOL: INTRAOSSEUS CATHETER PLACEMENT

Side Effects and Special Notes:

A. Some authorities recommend aspiration of marrow fluid or tissue to confirm needle location. This is not recommended for field procedures, as it increases the risk of plugging the needle.
B. Expect flow rates to be slower than peripheral IVs. Pressure bags may be needed. Any drug or IV fluid may be infused.
C. Some manufacturers recommend the use of lidocaine for the treatment of pain associated with fluid administration. Check with your manufacturer and Medical Director for further guidance

1070 PROCEDURE PROTOCOL: SYNCHRONIZED CARDIOVERSION

Paramedic

Unstable tachyarrhythmia with a pulse

↓

Check:
- O_2 via NRB facemask
- Functioning IV line
- Suction
- Advanced airway equipment ready

↓

Sedate with benzodiazepine if not contraindicated

↓

Perform Synchronized Cardioversion

Adult	Pediatric
200 Joules biphasic	0.5-1 Joules/kg biphasic

↓

Continue treatment according to Tachyarrhythmia with Poor Perfusion

Precautions:
- If rhythm is AV nodal reentrant tachycardia (AVNRT, historically referred to as “PSVT”) it is preferred to attempt a trial of adenosine prior to electrical cardioversion, even if signs of poor perfusion are present, due to rapid action of adenosine
- If defibrillator does not discharge in “synch” mode, then deactivate “synch” and reattempt
- If sinus rhythm achieved, however briefly, then dysrhythmia resumes immediately, repeated attempts at cardioversion at higher energies are unlikely to be helpful. First correct hypoxia, hypovolemia, etc. prior to further attempts at cardioversion
- If pulseless, treat according to 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 180 bpm in children and does not require or respond to cardioversion. Treat underlying causes.
- Transient dysrhythmias or ectopy are common immediately following cardioversion and rarely require specific treatment other than supportive care

1080 PROCEDURE PROTOCOL: TRANSCUTANEOUS CARDIAC PACING

EMT-I	Paramedic

Indications

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

Precautions

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

Contraindications

1. Pacing is contraindicated in pulseless arrest.

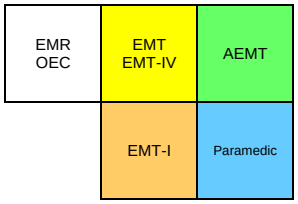
Technique

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

Complications

1. Ventricular fibrillation and ventricular tachycardia are rare complications, but follow appropriate protocols if either occur.
2. 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.

1090 PROCEDURE PROTOCOL: RESTRAINT PROTOCOL



Indications:

A. Physical restraint of patients is permissible and encouraged if the patient poses a danger to him/herself or to others. Only reasonable force is allowable, i.e., the minimum amount of force necessary to control the patient and prevent harm to the patient or others. Try alternative methods first (e.g., verbal de-escalation should be used first if the situation allows).
B. **Paramedic:** Consider pharmacological sedation for agitated patients that require transport and are behaving in a manner that poses a threat to him/herself or others.
    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.

Precautions:

A. When appropriate, involve law enforcement
B. Restraints shall be used only when necessary to prevent a patient from seriously injuring him/herself or others (including the EMS providers), and only if safe transportation and treatment of the patient cannot be accomplished without restraints. They may not be used as punishment, or for the convenience of the crew.
C. Any attempt to restrain a patient involves risk to the patient and the prehospital provider. Efforts to restrain a patient should only be done with adequate assistance present.
D. Be sure to evaluate the patient adequately to determine his or her medical condition, mental status and decision-making capacity.
E. Do not use hobble restraints and do not restrain the patient in the prone position or any position that impairs the airway or breathing.
F. Search the patient for weapons.
G. Handcuffs are not appropriate medical restraints and should only be placed by law enforcement personnel. See Transport of Handcuffed Patient Protocol.

Technique:

A. 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. **Inadequate 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

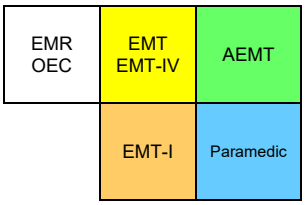
Document the following in all cases of restraint:

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.

1100 PROCEDURE PROTOCOL: SPINAL MOTION RESTRICTION



Indications

- Refer to spinal motion restriction protocol to determine if indicated

Precautions

- When the normal anatomical position of the patient precludes the supine position, such as kyphosis in the elderly or torticollis in a child. In those situations, place padding to fill in the voids or position the patient in the lateral recumbent position.

Technique

1. General Principles of Airway, O_2, IV, Monitor
   a. Monitor ventilations carefully for both rate/depth and accessory muscle use - assist ventilations as necessary
   b. Consider 1-2 large bore IVs with blood pumps (EMT-IV and higher level)
   c. Maintain perfusion with fluid boluses and repeat as necessary (EMT-IV and higher level)
   d. Keep patient warm
2. Maintain manual cervical alignment while the cervical collar is correctly sized.
   a. If the collar cannot be sized or the collar increases discomfort, remove the collar.
   b. Maintain manual alignment until towel rolls are secured.
3. Apply spinal motion restriction for the thorax and lumbar areas to the stretcher mattress using towel or blanket rolls to fill voids.
4. Secure the patient in place.
   a. Secure straps across the torso first, followed by the pelvis and lower legs
   b. Secure towel rolls to the mattress last
5. Consider elevation of the head of the stretcher if **no neurologic deficit** and no increase in pain ***and*** if BP tolerates the semi-fowlers position.
6. Monitor for presence of neurogenic shock
   a. Suspect when bradycardia, hypotension and inadequate respiratory drive are present
   b. Manage hypotension with fluid bolus (EMT-IV and higher level)
7. Consider prophylactic antiemetic to prevent nausea/vomiting (EMT and higher level)

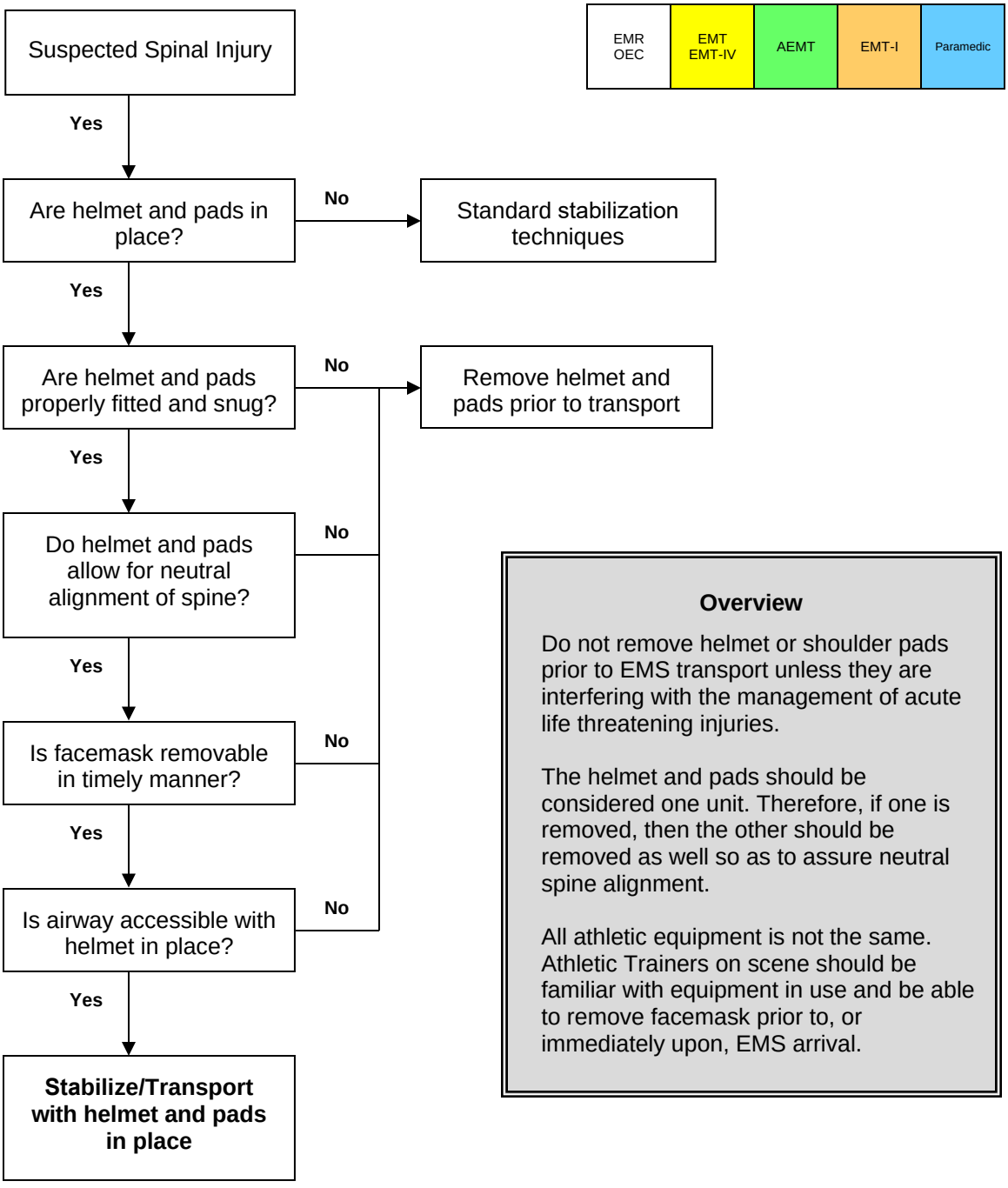
Special Note

The term “spinal motion restriction” (SMR) has been chosen as the appropriate term to use when referring to management of spinal injury. Research has established that true immobilization, requiring use of backboard and/or scoop and hard c-collar, is actually detrimental to the patient. The methods described, work to prevent changes in alignment of the vertebra while avoiding the deleterious effect of true immobilization.

Special Considerations

1. There is a difference between applying SMR for cervical and the thoracic and lumbar regions.
2. Use of the semi-fowler’s position – in the absence of neurologic deficit, increased pain, or hypotension – may help manage pain and prevent nausea/vomiting.
3. Consider improvised cervical SMR such as towel rolls and tape or a SAM splint if needed to prevent airway compromise or worsening spinal injury if the rigid cervical collar cannot be correctly sized to the patient
4. Use of a backboard or scoop to move the patient from initial area found to stretcher is recommended. Once the patient is at the stretcher, remove the backboard while maintaining spinal alignment, or separating the scoop. For penetrating trauma omit applying SMR unless patient has focal neurological deficit. The situation and assessment should dictate applying SMR. Do not delay transport for applying SMR.
5. Be prepared to tip the entire mattress or log-roll the patient if vomiting occurs.
6. Respiratory problems are common, especially if the patient has sustained a high level cord injury. Try to avoid manipulating the neck. If oral intubation needs to be done, maintain in-line SMR to minimize movement of the cervical spine.
7. Repeated use of fluid boluses to correct hypotension in presence of spinal trauma suggests presence of internal bleeding. Absence of feeling/sensation below T 4 (nipple line) impairs normal signs of intra-abdominal bleeding (pain, rigidity, etc.).
8. Victims of hanging require applying SMR and may require use of OPA/NPA to maintain open airway.

1110 SUSPECTED SPINAL INJURY WITH PROTECTIVE ATHLETIC EQUIPMENT IN PLACE



Overview

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

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

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

1120 PROCEDURE PROTOCOL: NEEDLE THORACOSTOMY FOR TENSION PNEUMOTHORAX DECOMPRESSION

EMT-I	Paramedic

Indication:

A. All of the following clinical indicators must be present:
    1. Severe respiratory distress
    2. Hypotension
    3. Unilateral absent or decreased breath sounds
B. Perform bilateral needle chest decompression in traumatic pulseless arrest

Technique:

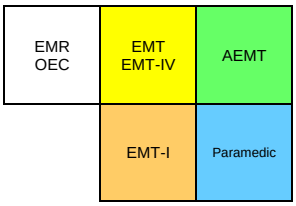
A. Expose entire chest
B. Clean skin overlying site with available skin prep
C. Insert angiocath either at 2nd intercostal space at midclavicular line, or 5th intercostal space at midaxillary line
    1. Either approach is acceptable, generally the site with the least soft tissue overlying ribs is preferred
    2. For adult, use largest, longest available angiocath. For children, a shorter angiocath is appropriate.
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
C. Extra care is needed when performing on a pediatric patient.

1130 PROCEDURE PROTOCOL: TOURNIQUET PROTOCOL

Indications



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

Precautions

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

Technique

A. First, attempt to control hemorrhage by using direct pressure over bleeding area.
B. If a discrete bleeding vessel can be identified, point pressure over bleeding vessel is more effective than a large bandage and diffuse pressure.
C. If unable to control hemorrhage using direct pressure, apply tourniquet according to manufacturer specifications and using the steps below:
    1. Cut away any clothing so that the tourniquet will be clearly visible. NEVER obscure a tourniquet with clothing or bandages.
    2. Apply tourniquet proximal to the wound and not across any joints.
    3. Tighten tourniquet until bleeding stops. Applying tourniquet too loosely will only increase blood loss by inhibiting venous return.
    4. If bleeding is not controlled with the application of a single tourniquet, a 2nd can be applied adjacent to the 1st.
    5. Mark the time and date of application on the patient's skin next to the tourniquet.
    6. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.
    7. If makeshift tourniquet placed prior to EMS arrival is effective, mark the time placed and consider leaving it in place if not easily replaced by commercial tourniquet.
    8. Pain management as needed.

1140 PROCEDURE PROTOCOL: PELVIC AND HIP STABILIZATION/SPLINTING

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

Pelvic stabilization devices include the T-POD, pelvic binder and a simple sheet, folded on the diagonal. These devices are all designed to wrap around the pelvis and secure in front. This aligns the pelvic bones, brings the iliac crests into a normal alignment and stabilizes the pelvis without encumbering the legs, the perineal area or the upper abdomen.

Indications

A. Suspected pelvic or hip injury.

Contraindications

A. If pain increases when device is being tightened, stop and release pressure.

Precautions

A. Placement of any of these devices under the patient must be done carefully to minimize unnecessary movement of the patient. Unnecessary movement may exacerbate internal bleeding.

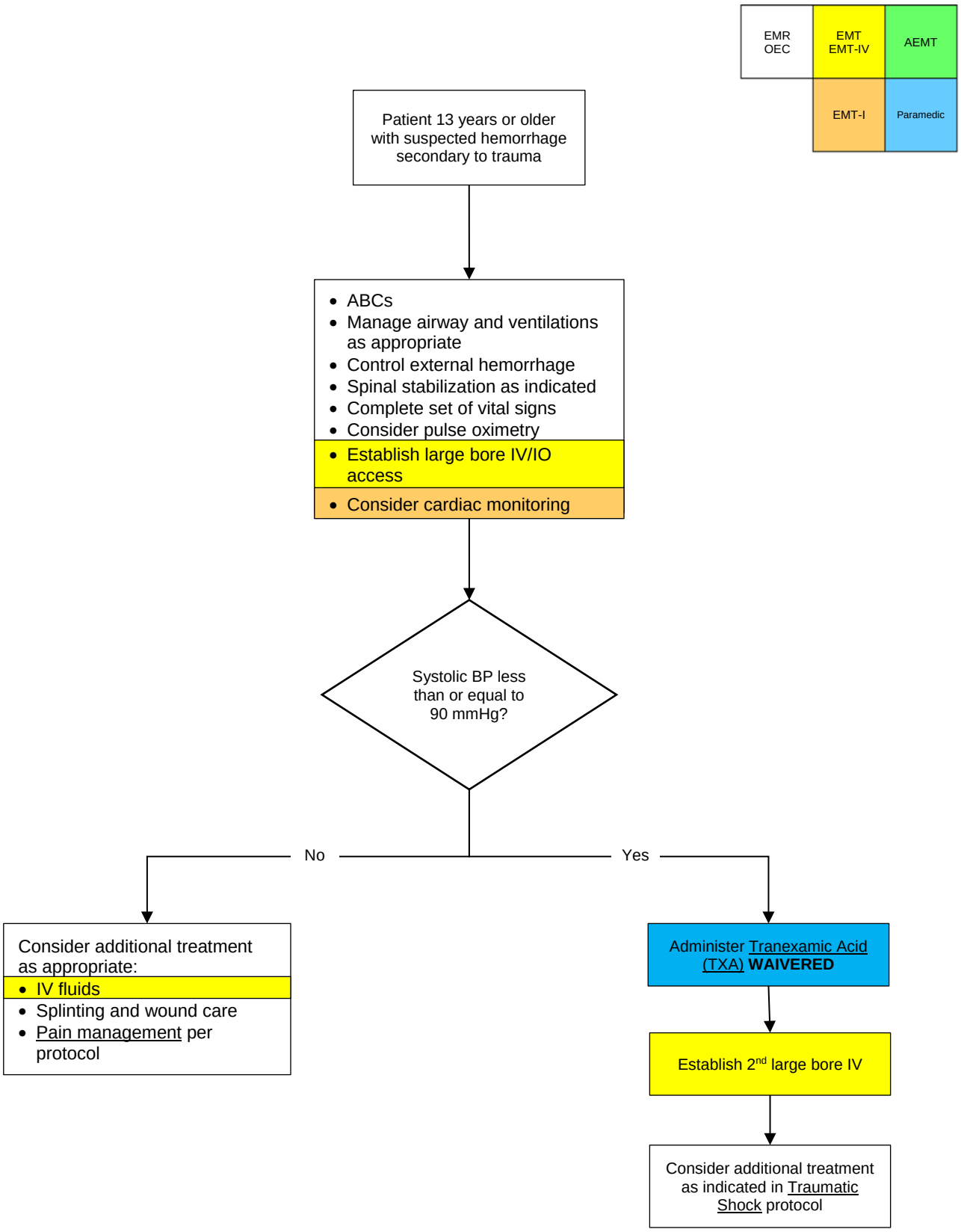
Techniques

A. Sheet: Fold the sheet on the diagonal and opposite ends to center to create a 20-24in. width.
B. Place the folded sheet under the patient, on a backboard or pram prior to moving patient.
C. Place sheet so that the top edge of the sheet is even with the top of the iliac crest.
D. Tie the sheet in a square knot, pulling both ends simultaneously to minimize movement of the patient.
E. T-POD or Pelvic Binder: Unwrap the device and disconnect the front connector
    a. Place the device under the patient, on a backboard or pram prior to moving patient
    b. Place the device so that the top edge is even with the top of the iliac crest.
    c. Wrap the edges around the pelvis and secure the edges with the Velcro of the front connector
    d. The T-POD requires tightening by use of the strings in the front.
F. Assess vital signs frequently.

Complications and Special Notes

A. When assessing the pelvis, DO NOT rock the pelvis; apply gentle inward pressure on the iliac crests and downward pressure on the iliac crest of each side.
B. Assessment of distal circulation, sensation and movement both before and after application of the splint.
C. If possible, use two people to apply and tighten the devices. This will help minimize any unnecessary movement of the patient.

1145 SUSPECTED HEMORRHAGE



1150 PROCEDURE: MENTAL HEALTH CLEARANCE FOR NON-AMBULANCE TRANSPORT

Indications

A. Patient with mental health issues not complicated by medical conditions, who need contact with mental health professionals, not necessarily those in a formal hospital environment.

Contraindications

A. Any patient with obvious or suspected organic or traumatic condition(s).

Procedure

A. If the answers to the following questions are "*YES*", the person meets the qualifications for non-ambulance transport to a mental health "walk-in" facility and does not require transport by ambulance for further evaluation at the Emergency Department.
B. If no mental health "walk-in" facility is in the area, the patient may be transported by private auto to the closest emergency department.
    1. Primary mental health or behavioral complaint/problem
    2. Not combative and does not require sedation
    3. No unexplained mental status changes
    4. No acute medical problems or medical complaints
    5. No evidence of recent trauma
    6. Heart rate between 55 and 120
    7. Systolic blood pressure between 100 and 200
    8. Diastolic blood pressure between 60 and 120
    9. Respiratory rate between 10 and 20
    10. BGL between 60 and 300
    11. No medication use exceeding prescribed dosages or OTC labels
    12. No evidence or suspicion of illegal drug use (except ETOH or Marijuana)
    13. Paramedic judgment – Will the patient be safe without ED evaluation?

Comments

A. Agencies must have this procedure approved by their agency Medical Director prior to implementation
B. Agency medical directors may include other parameters within the procedure
C. A Medical Clearance Form is in appendices

1160 PROCEDURE PROTOCOL: OROGASTRIC TUBE INSERTION WITH ADVANCED AIRWAY

Paramedic

Indications:

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

Contraindications:

- Known esophageal varices

Technique:

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

1170 PROCEDURE PROTOCOL: TASER REMOVAL AND TASERED PATIENTS

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

Indications

1. Find out what happened before the patient got tasered
   a. Consider any report of extreme, irrational behavior prior to the tasering as significant, regardless of the patient's current presentation
2. Approach the patient with caution
3. Complete a thorough physical exam and history
   a. This includes a full set of VS, basic neurological exam, skin signs, pupil assessment and a close look for traumatic injuries
   b. It is normal to find minor first-degree burns located between the Taser probes.
   c. It is abnormal to find:
      - Anything that looks worse than a mild sunburn
      - Incontinence
      - Chest pain or shortness of breath
      - Vomiting
      - Headache
4. Consider potential for sudden unexpected death syndrome.
   a. Assess for presence of excited delirium
      - Pre-existing psychiatric disorders with breakthrough psychosis
      - Non-compliance with psychiatric medications
      - History of current use of amphetamines, cocaine, PCP, LSD or ecstasy
   b. Stages of excited delirium include:
      - Stage 1 – *Euphoria*
        Episode of exertion, feeling euphoric from early rush of epinephrine release
      - Stage 2 – *Paranoia*
        As body temperature rises, brain triggers paranoia and fear responses, delusions and generalized fear occur. Due to body heat may disrobe or engage in inappropriate behaviors, like rolling in snow.
      - Stage 3 – *Rhabdomyolysis*
        Insensitivity to pain and exhaustion results in pushing muscles past normal limits. Patient may have unusual strength. The muscles begin to breakdown due to need for energy. The resulting cellular breakdown results in a phenomenon known as Rhabdomyolysis.
      - Stage 4 – *Acidosis and death*
        Prolonged anaerobic metabolism produces metabolic acidosis. Body core temperature may reach 105° F. The patient may lapse into a state of calm listlessness as toxins begin to clog the renal system. At this point the patient is at risk for lethal cardiac rhythms, unconsciousness and death.
   c. Patients who undergo a prolonged phase of agitation should be considered in danger of sudden death, even after the combativeness has resolved.

Technique

1. The barb of the Taser probe is a standard, Eagle Claw, #8 fishhook.
2. Confirm the TASER has been shut off and the barb cartridge has been disconnected.
3. The single use wires can be broken between the thumbs and forefingers or cut with trauma shears.
4. To remove the probe, grab firmly and pull straight back in a quick fashion, using the other hand as a brace and counter-pressure area on the skin surface. If probes are resistant to removal with a single, sharp but gentle tug, leave in place and transport.
5. Probes should be considered sharps and disposed of in the sharps container.
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. Cleanse the probe site and surrounding skin with betadine and apply sterile dressing.
8. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever

1170 PROCEDURE PROTOCOL: TASER REMOVAL AND TASERED PATIENTS

9. Consider treatment and transport if any of the following are present:
    a. Evidence of excited delirium prior to being tasered;
    b. For persistent, abnormal vital signs see medical hypotension/shock protocol
    c. History or physical findings consistent with amphetamine/cocaine or hallucinogenic drug use;
    d. Cardiac history
    e. Altered level of consciousness or aggressive, violent behavior including resistance to evaluation see agitated/combative patient protocol
    f. Evidence of hyperthermia see environmental hyperthermia protocol
    g. Abnormal, subjective complaints, including chest pain, shortness of breath, nausea/vomiting or headaches.

Contraindications

1. If the barbs have implanted in a sensitive area, i.e. face, throat, eye, groin, breast, dorsal hands or feet, leave them in place and pad and secure as you would any other impaled object.

1175 PROCEDURE PROTOCOL: PAIN MANAGEMENT

Goal of Pain Management

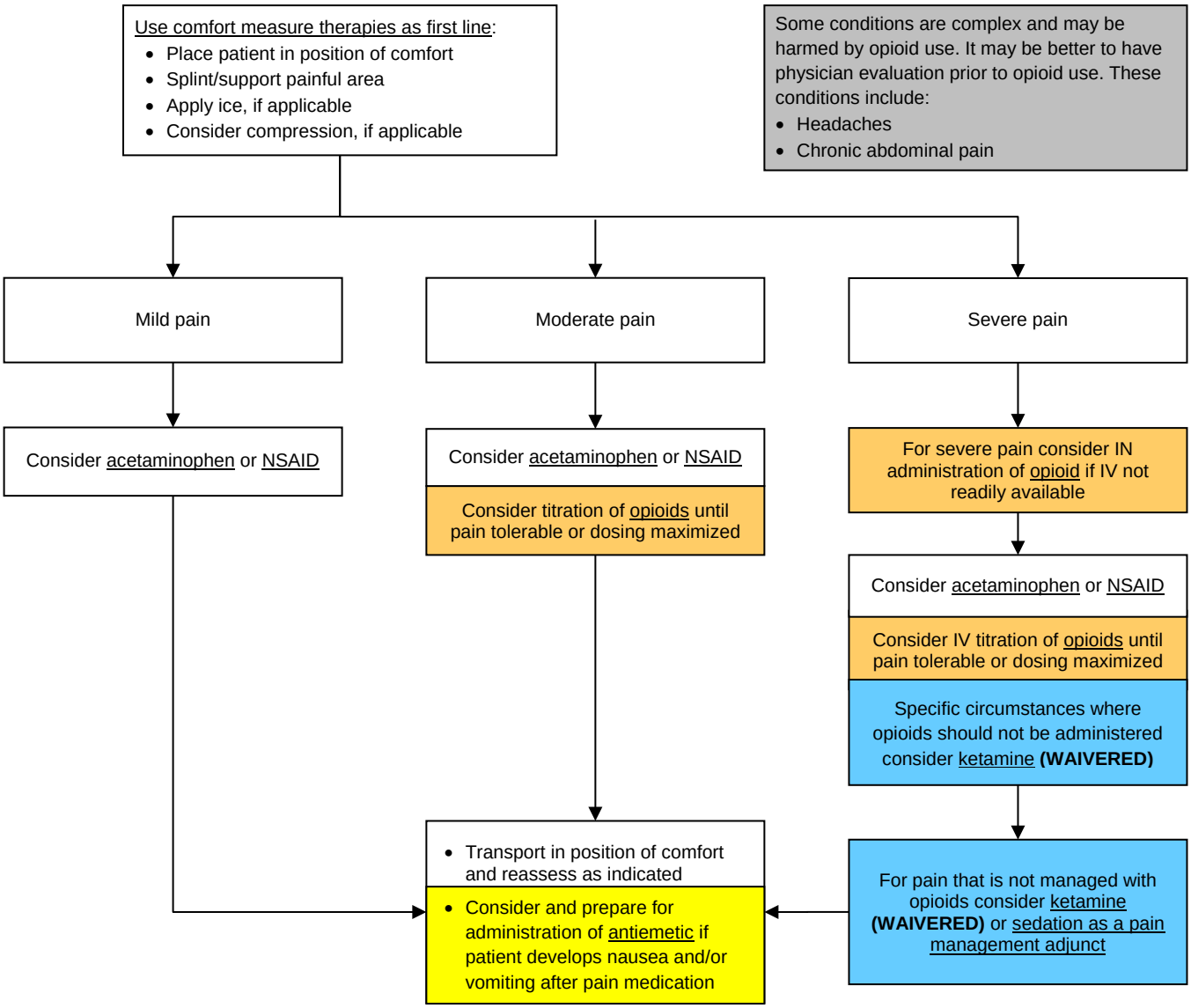
EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

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

Assessment

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

General Pain Management Technique



1175 PROCEDURE PROTOCOL: PAIN MANAGEMENT

General Information

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

Pediatric Pain Scales

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

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

Categories	Scoring		
	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid, or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging, or being talked to, distractible	Difficult to console or comfort
Each of the five categories (F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0-2, which results in a total score between zero and ten.			

Recommended Pain Scale for Ages 4-12 Years

Faces Pain Scale – Revised (FPS-R)

0 2 4 6 8 10

1180 PROCEDURE PROTOCOL: SEDATION AS PAIN MANAGEMENT ADJUNCT

Paramedic

The appropriate management of anxiety and pain is an important component of comprehensive emergency medical care. Frequently it is necessary to combine a narcotic (analgesic) and a benzodiazepine (anxiolytic) to provide adequate pain management. The combination of a narcotic and a benzodiazepine reduces the degree of anxiety, pain or awareness a patient may experience during a painful illness or injury. The patient retains their ability to maintain a patent airway independently and continuously. They maintain their protective reflexes and their ability to respond appropriately to physical stimulation and/or verbal command and are easily aroused. Using sedation as an adjunct for pain management can only be performed by ALS providers who have met the following requirements:

Completed training in the procedure and have met competency requirements set by the medical director

Remain current through continuing education and skills check-offs as determined by the medical director.

Indications

Pain management using sedation as an adjunct is indicated for conditions that require pain and anxiety management to properly care for a sick or injured patient with significant pain.

Precautions

Patients with cardiopulmonary disorders, multiple trauma, head trauma, or who have ingested a central nervous system depressant such as alcohol are at increased risk of complications and require a high level of vigilance.

Elderly patients (>65) tend to be more sensitive and therefore should always receive the low end of the dose range. Administration should be slow and titration with additional doses should be given with extreme care.

Technique

1. Place patient on the ECG monitor, oxygen, capnography, and the pulse oximeter. Obtain baseline readings. Insert an IV. Make sure airway equipment, suction and reversal agents (naloxone) are available and ready.
2. Complete an appropriate history and physical examination.
3. This includes focused exam of heart, lungs and airway evaluation; vital signs including oxygen saturation, level of consciousness/mental status exam; pain scale evaluation.
4. Determine patient's NPO status and determine risk/benefit.

Procedure

- Administer fentanyl 0.5-1 mcg/kg slow IV/IO push over 2 minutes
- Administer midazolam 1-2 mg slow IV/IO push over 2 minutes or diazepam 2.5-5 slow IV/IO push over 2 minutes
- Reassess responsiveness to command, O2 saturation, capnography waveform and value, heart rate, respiratory rate, BP, ECG, and pain scale evaluation
- Titrate additional drugs to desired effect
  - If the patient needs additional sedation, use repeat dose of 1 mg IV/IO midazolam or 2.5 mg IV/IO diazepam
  - If the patient needs additional pain relief, use repeat dose of 0.5-1 mcg/kg IV/IO fentanyl
- Monitor continuously and document the following:
  - Responsiveness to command
  - Capnography
  - O2 saturation
  - Vital signs (heart rate, respiratory rate, BP)
  - ECG rhythm
  - Pain scale evaluation

Complications and Special Notes

A. The key to minimizing complications during this procedure is the slow titration of drugs to the desired effect.
B. Both fentanyl and midazolam or diazepam should be given slowly. This may be accomplished in several ways. 1) The appropriate dose may be diluted in a 10cc syringe with normal saline and then pushed slowly over 2 minutes, or 2) the appropriate dose may be placed in a 50 ml bag of normal saline and administered over 2 minutes via a micro drip administration set.
C. Fentanyl and midazolam or diazepam should not be mixed in the same syringe.
D. The combination of opioids and benzodiazepines may cause respiratory depression.
E. If the patient has significant respiratory depression perform the following in the order given until improvement occurs. First, stimulate the patient; if necessary, then ventilate with a BVM; *only if SpO2 does not improve with BVM, consider use of* naloxone.
F. If the patient suffers hemodynamic instability administer a fluid bolus and reassess.
G. When both a benzodiazepine and an opioid are used, the opioid, which possesses the greatest risk for respiratory depression, should be given first and the benzodiazepine dose titrated.
H. Common complications include: altered mentation, sedation, dizziness and euphoria.
I. Other complications include: respiratory depression, hypotension, bradycardia, nausea and vomiting, allergic reactions and anaphylaxis, and bronchospasm.

2000 General Principles of Airway Management

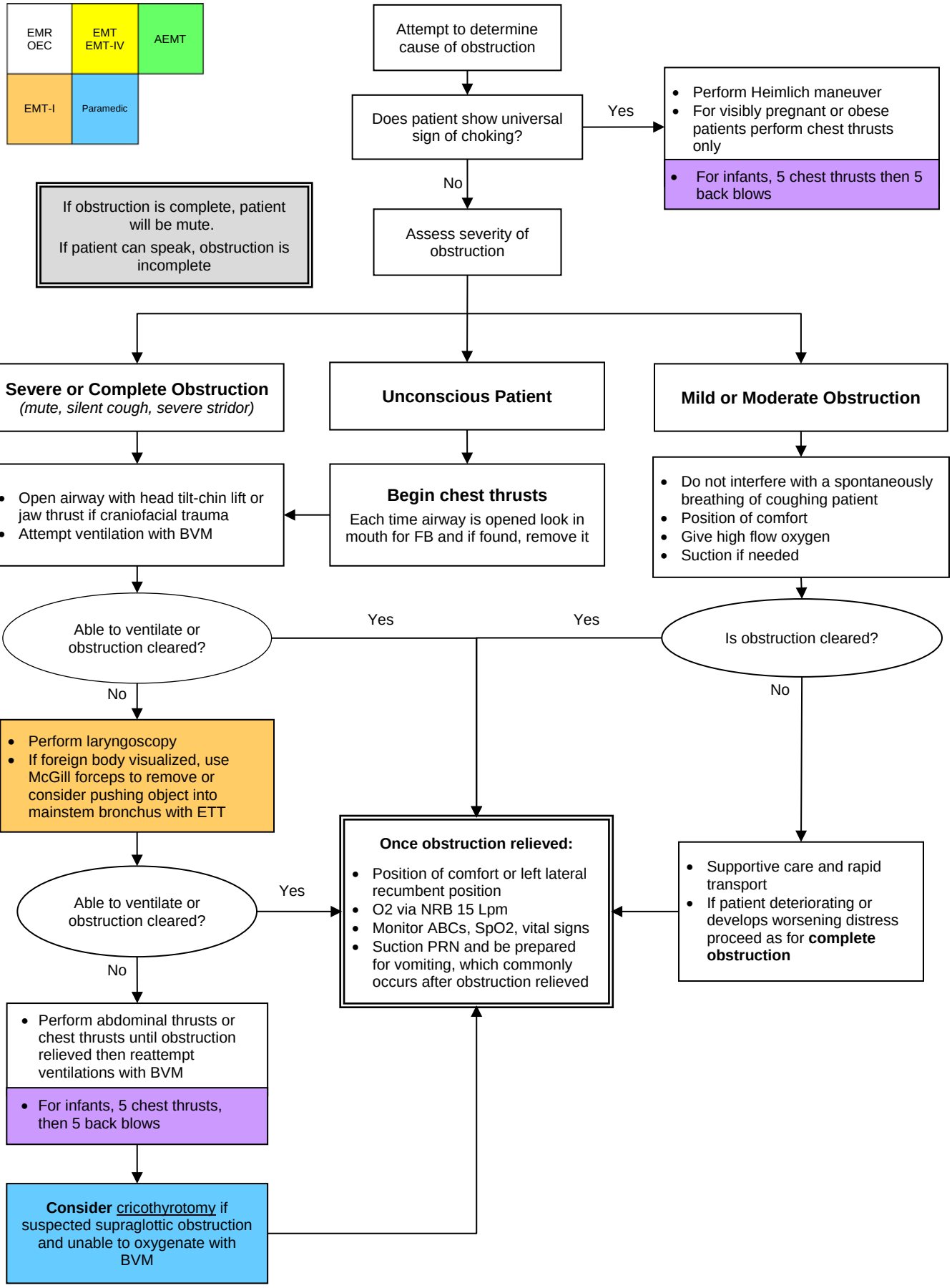
An intact airway and adequate oxygenation and ventilation are essential for all patients with medical or traumatic conditions. Throughout this protocol it is assumed that EMS personnel will maintain a patent airway and provide appropriate supplemental oxygenation.

1. Observe BSI precautions.
2. To open the airway initially, choose method most suitable for patient.
3. Assess ventilations.
    a. Begin BVM ventilation if patient is not breathing
    b. Relieve partial or complete obstruction, if present.
4. Assess oxygenation; use supplemental O_2 as needed to maintain SaO2 greater than or equal to 90%
    a. If ventilating adequately:
        i. Nasal cannula at 2-6 L/min or
        ii. Non-rebreather mask at 10-15 L/min
    b. If NOT ventilating adequately:
        i. Bag-valve-mask ventilation with 100% oxygen
        ii. Choose airway adjunct to maintain patency
        iii. Appropriately size and insert airway adjunct
        iv. Consider positioning the patient on side (if medical problem).
        v. If patient is breathing spontaneously, consider using Continuous Positive Airway Pressure (CPAP)
    c. When using pulse oximetry, adjust oxygen delivery to assure ≥ 90% oxygen saturation.
5. Consider intubation for those patients who cannot protect their own airway or who require positive pressure ventilation.
    a. Confirm endotracheal tube placement:
        i. Observe for chest rise and fall
        ii. Verify the presence of lung sounds and the absence of epigastric sounds
        iii. Attach the $EtCO_2$ monitor and verify CO_2 production by waveform
        iv. Adjust ventilation to assure $EtCO_2$ between 35-45 mmHg.
        v. Apply spinal motion restriction with a c-collar or by taping the head to prevent head movement during transport when a patient is intubated
6. If unable to intubate, maintain airway with airway adjunct and use of BVM
7. If unable to maintain airway with basic maneuvers AND unable to intubate:
    a. Consider rescue airway device (i.e. King LT-D, etc.)
    b. Consider Melker cricothyrotomy
    c. Surgical cricothyrotomy (requires extensive training and permission from medical director)

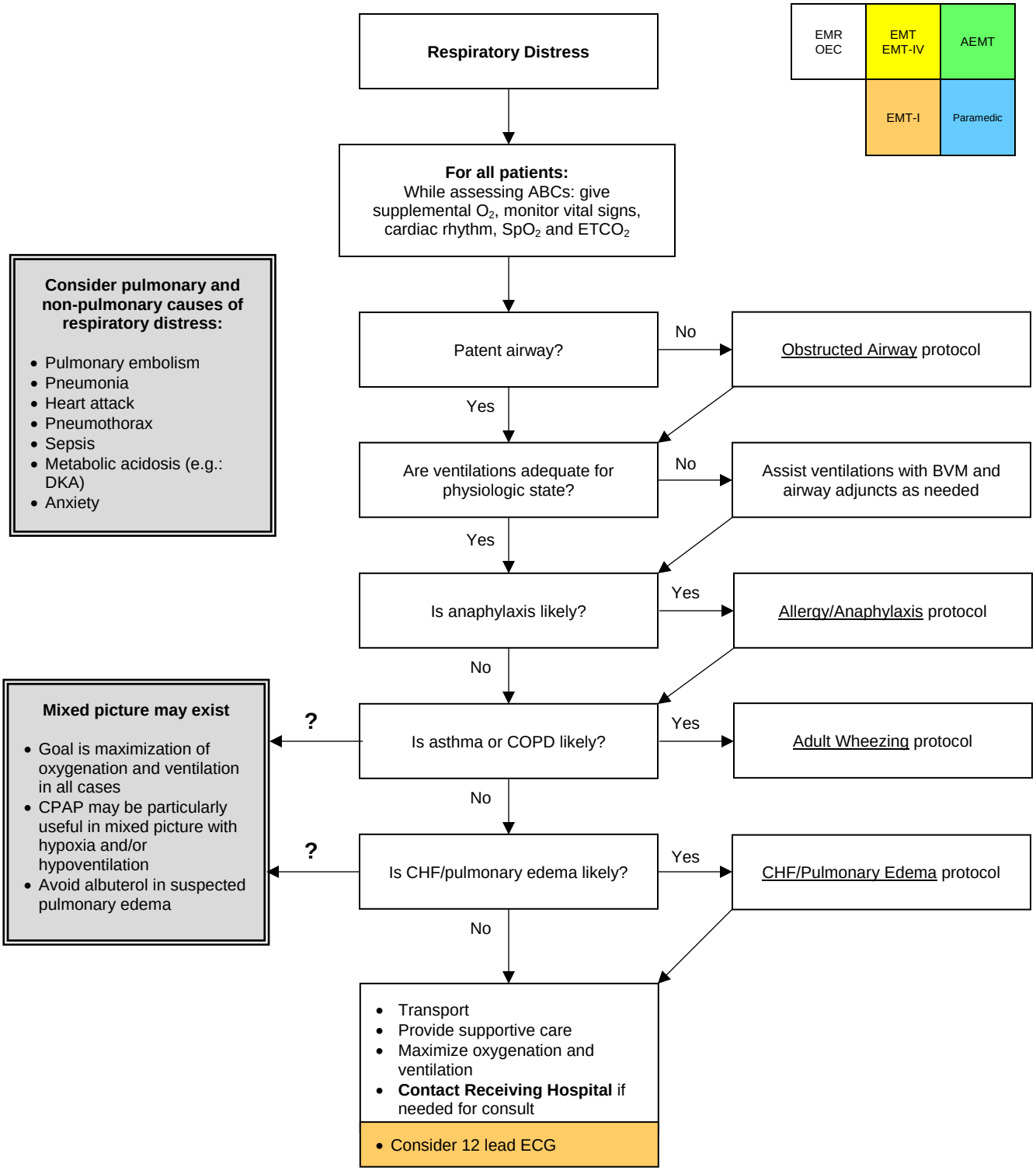
Special Considerations

1. Consider assisting ventilations in those patients whose respiratory status does not improve after receiving oxygen by non-rebreather mask.
2. Use the trauma ET intubation method with patients who have suspected compromised cervical spines.

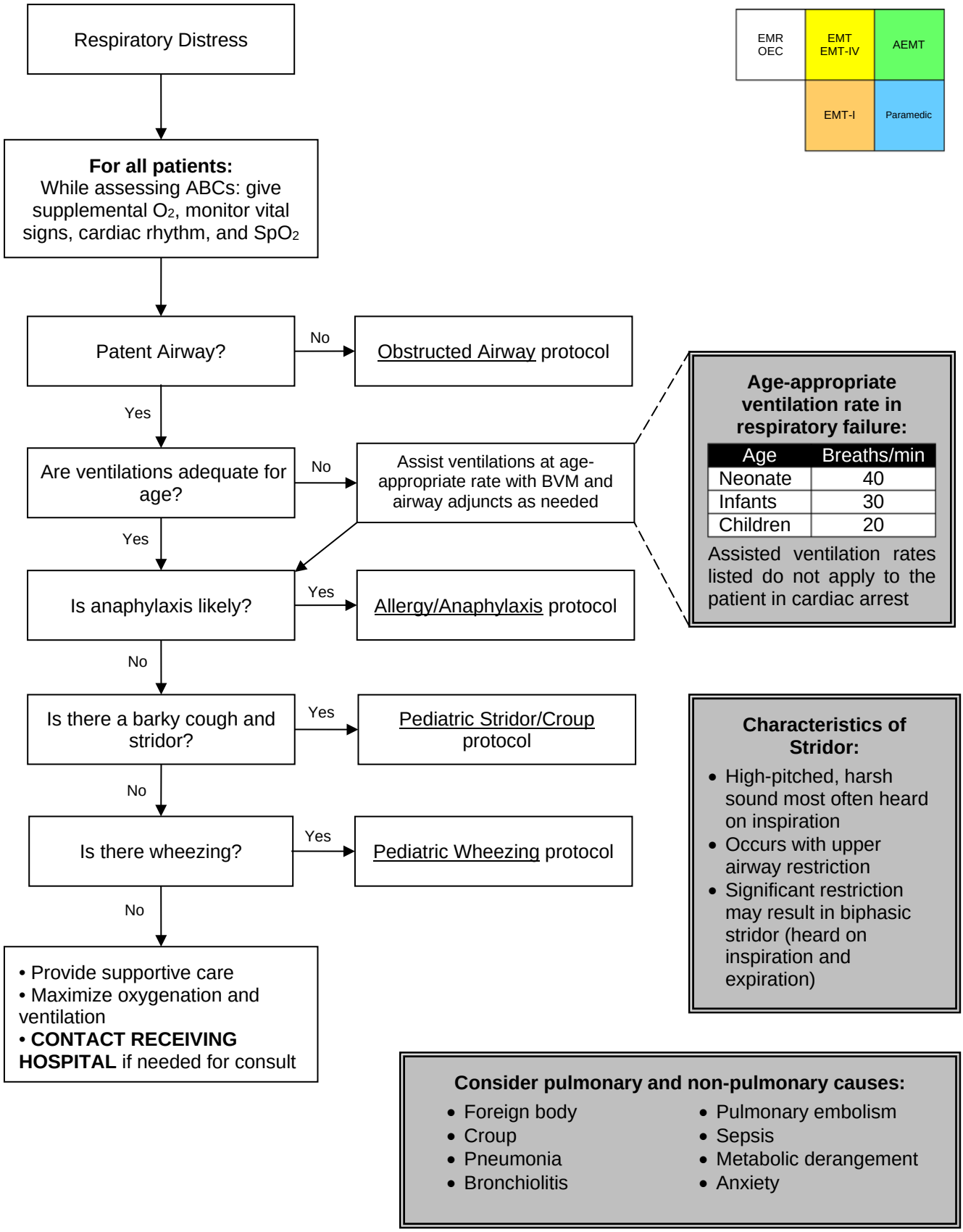
2005 OBSTRUCTED AIRWAY



2010 ADULT UNIVERSAL RESPIRATORY DISTRESS



2020 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS



2030 ADULT WHEEZING

Presentation suggests Bronchospasm: *wheezing, prolonged expiratory phase, decreased breath sounds, accessory muscle use, known hx of asthma/COPD*

→ Adult Respiratory Distress Protocol and prepare for immediate transport

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

Give oxygen, check SpO_2, & consider IV for severe respiratory distress

EMT may administer either MDI or nebulized albuterol

May give continuous albuterol neb for severe respiratory distress

Give nebulized albuterol + ipratropium

May give 1 dose of nebulized **ipratropium**

Is response to treatment adequate?

Yes

No

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

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

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

Is response to treatment adequate?

Yes

No

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

- Consider IV magnesium

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

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

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

Therapeutic Goals:

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

Consider pulmonary and non-pulmonary causes of respiratory distress:

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

COPD

- **Correct hypoxia**: do not withhold maximum oxygen for fear of CO_2 retention
- Patients with COPD are older and have comorbidities, including heart disease.
- Wheezing may be a presentation of pulmonary edema, "cardiac asthma"
- Common triggers for COPD exacerbations include: Infection, dysrhythmia (e.g.: atrial fibrillation), myocardial ischemia
- **COPD exacerbations are particularly responsive to CPAP, which may help avoid the need for intubation and should be considered early in treatment**

2040 PEDIATRIC WHEEZING

- Pediatric Universal Respiratory Distress protocol
- Assess: SpO_2, consider waveform capnography, RR, lung sounds, accessory muscle use and mental status

Consider the cause of wheezing before initiating specific therapy

Initial best indicator is age. If patient ≤ 2 years old, bronchiolitis is most likely. Age > 2 reactive airways disease is more likely.

EMR OEC | EMT EMT-IV | AEMT | EMT-I | Paramedic

Although bronchiolitis and asthma are the most common causes of wheezing in infants and children, respectively, you should consider pulmonary and non-pulmonary causes of respiratory distress, especially if patient not responding as expected to treatment:

Examples: pneumonia, pulmonary edema, congenital heart disease, anaphylaxis, pneumothorax, sepsis, metabolic acidosis (e.g.: DKA, toxic ingestion), foreign body aspiration, and croup.

Age ≤ 2 years old

Bronchiolitis most common

- Viral illness characterized by fever, copious secretions and respiratory distress typically seen November through April
- Most important interventions are to provide supplemental oxygen and suction secretions adequately
- In children > 12 months of age with a strong family history of asthma, a trial of albuterol may be warranted. If clinically responsive, consider steroids and additional bronchodilators (albuterol + ipratropium)

- Administer oxygen to obtain saturations >90%
- Nasal suction with 3 mL saline
- Transport in position of comfort
- Monitor SpO2, RR, retractions, mental status

If worsening respiratory distress despite above therapies, re-suction nostrils and assist ventilations with BVM

BLS airway preferred in pediatrics

Age > 2 years old

Asthma most common

Presentation suggests asthma: *wheezing, prolonged expiratory phase, decreased breath sounds, accessory muscle use, known hx of asthma or albuterol use*

EMT may administer either MDI or nebulized albuterol
May give continuous neb for severe respiratory distress

Give nebulized albuterol + ipratropium

Is response to treatment adequate

Yes

No

Severe exacerbation

- IM epinephrine if no response to neb and severe distress
- Start IV
- IV methylprednisolone
- 20mL/kg NS bolus

Is response to treatment adequate?

Yes

No

- Assess for pneumothorax
- Assist ventilations with BVM
- Consider magnesium sulfate

BLS airway preferred in pediatrics

- Continue monitoring and assessment en route
- Be prepared to assist ventilations as needed
- **Contact Receiving Hospital** for medical consult if deterioration

Nasal Aspirators

- Nasal aspirators are safe and effective.
- Nasal aspiration with saline significantly improves upper respiratory tract symptoms.

IV methylprednisolone

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

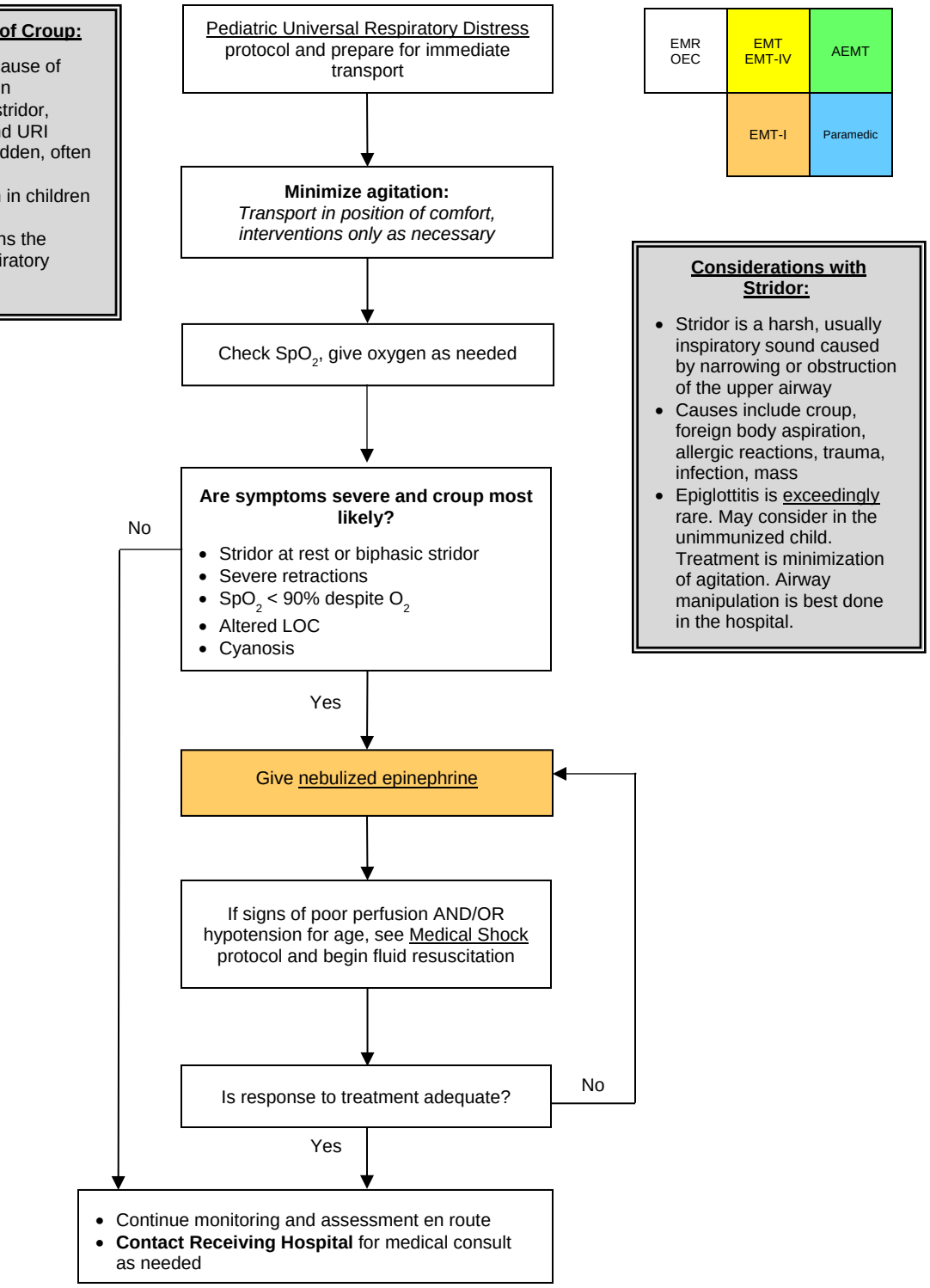
IM epinephrine

Is indicated for the most severe attacks deemed life-threatening and not responding to inhaled bronchodilators.

2050 PEDIATRIC STRIDOR/CROUP

Characteristics of Croup:

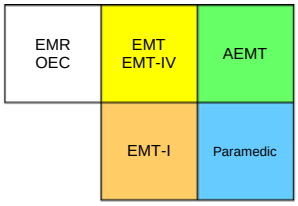
- Most common cause of stridor in children
- Child will have stridor, barky cough, and URI symptoms of sudden, often nocturnal onset
- Most often seen in children < 9 years old
- Agitation worsens the stridor and respiratory distress



Considerations with Stridor:

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

2060 CHF/PULMONARY EDEMA



Universal Respiratory Distress Protocol

CHF/Pulmonary edema

Obtain 12 lead ECG: rule out unstable rhythm, STEMI

Consider nitroglycerin (NTG)

Is oxygenation and ventilation adequate?

Yes

No

Start CPAP protocol

Is response to treatment adequate?

Yes

No

If failing above therapy:

- Remove CPAP and ventilate with BVM
- Consider pneumothorax
- Consider alternative diagnoses/complications
- Consider advanced airway

- Continue monitoring and assessment
- Transport
- **Contact Receiving Hospital** for medical consult as needed

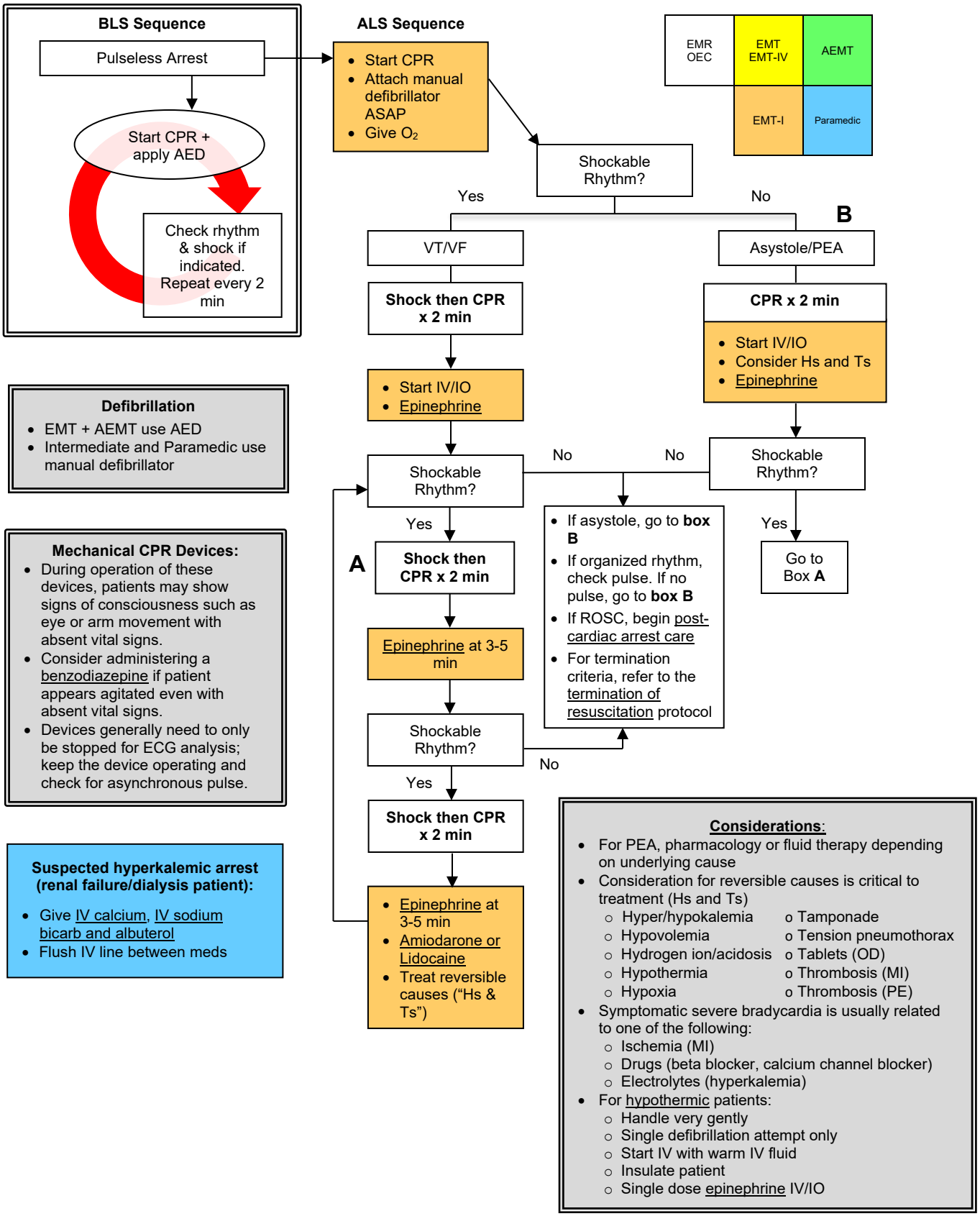
Therapeutic Goals:

- 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

3000 MEDICAL PULSELESS ARREST ALGORITHM



3010 MEDICAL PULSELESS ARREST CONSIDERATIONS

ADULT PATIENT

Compressions

- Follow current ACLS guidelines for chest compressions
- Minimize interruptions, resume compressions immediately after shocks, rhythm checks. Check pulses only if organized rhythm
- Push hard and fast and allow complete chest recoil
- Assess quality of CPR with continuous waveform capnography
- If $ETCO_2$ < 10, improve quality of compressions
- If using automated CPR devices, use manufacturer's specifications

Defibrillation

- Biphasic: manufacturer recommendation. If unknown, use maximum energy
- Monophasic: 360 J

Ventilations

- Open the airway, place NPA/OPA, place O_2 at 15 L/min for first 4 minutes of chest compressions, unless hypoxic arrest suspected (e.g.: asphyxiation, overdose, status asthmaticus), In which case begin ventilations immediately.
- Do not over ventilate
- If no advanced airway, 30:2 compressions to ventilation ratio
- If advanced airway in place ventilate at rate of 10 breaths/min

Airway

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

ROSC

- Pulse and blood pressure
- Sustained abrupt rise in $ETCO_2$, typically > 40

PEDIATRIC PATIENT

Compressions

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

Defibrillation:

- 1st shock 2 J/kg, subsequent shocks 4 J/kg
- EMT + AEMT use AED
- Intermediate and Paramedic use manual defibrillator

Ventilations

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

Airway

- BVM preferred for all pediatric patients
- An appropriately-sized supraglottic airway (e.g. i-gel) may be placed as an alternative if BVM ventilations are inadequate
- Intubation should only be performed if you are unable to manage the patient's airway with a supraglottic airway

ROSC

- Pulse and blood pressure
- Sustained abrupt rise in $ETCO_2$, typically > 40

Regarding where to work arrest and presence of family members:

- 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 unsafe
- Family presence during resuscitation is preferred by most families, is rarely disruptive, and may help with grieving process for family members. Family presence during resuscitation is recommended, unless disruptive to resuscitation efforts
- **Contact Receiving Hospital** for termination of resuscitation

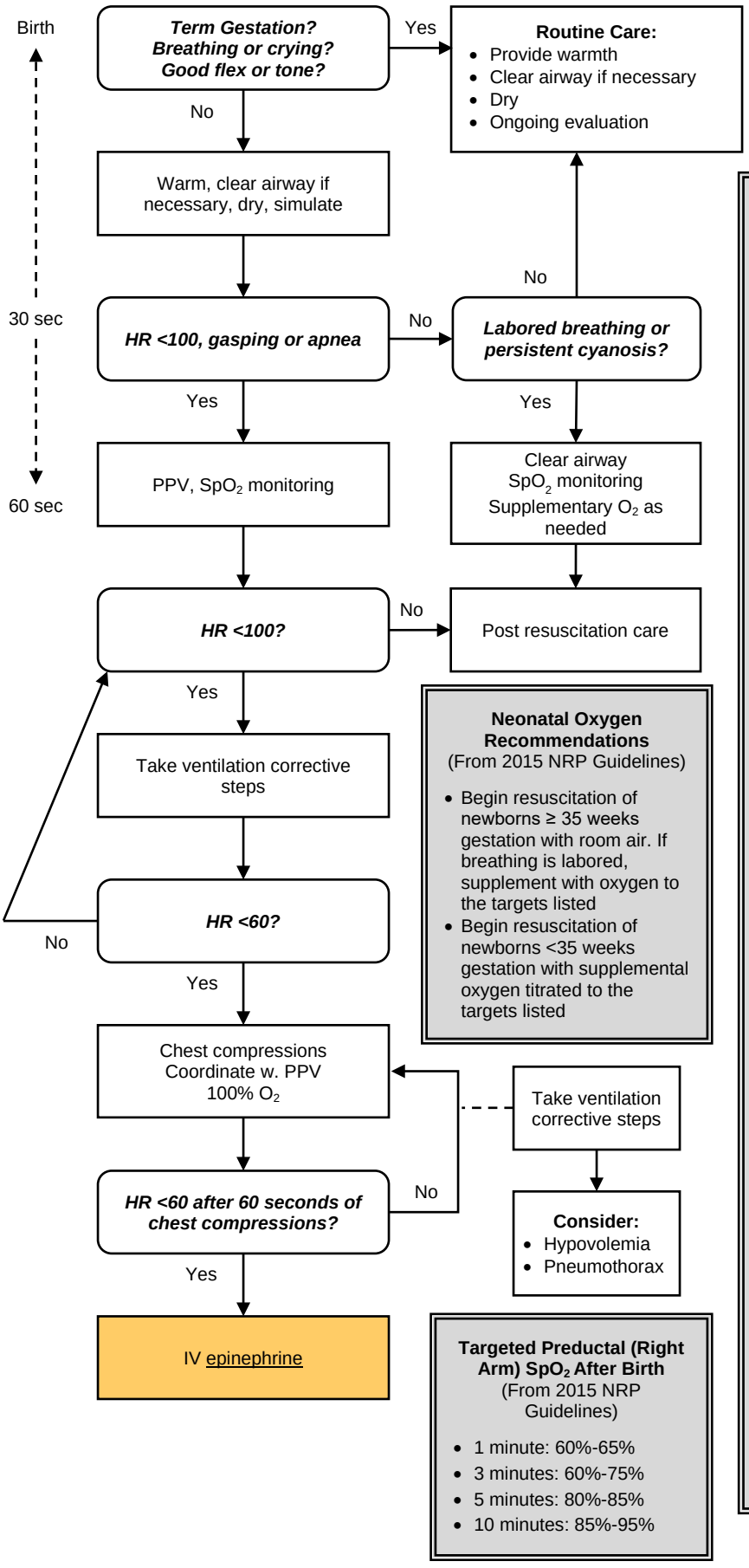
Pacing

- 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

ICD/Pacemaker patients

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

3020 NEONATAL RESUSCITATION



EMT	AEMT
EMT-I	Paramedic

Neonatal Oxygen Recommendations
(From 2015 NRP Guidelines)

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

Targeted Preductal (Right Arm) SpO_2 After Birth
(From 2015 NRP Guidelines)

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

General Considerations
(From 2015 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 skin-to-skin on mother covered to keep warm
- If answer to any of 3 questions is “no then infant should receive 1 or more of the following 4 categories of intervention in sequence:
  - Initial steps in stabilization (warm, clear airway, dry, stimulate)
  - Ventilation
  - Chest compressions
  - Administration of epinephrine and/or volume expansion
- Initial resuscitation steps should be completed within 60 seconds as illustrated
- The decision to progress beyond initial steps is based on an assessment of respirations (apnea, gasping, labored, or unlabored breathing) and heart rate (>/< 100 bpm)

Assisting Ventilations

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

Chest Compressions

- Indicated for HR < 60 despite adequate ventilation w. supplemental O_2 for 30 seconds
- 2 thumbs-encircling hands technique preferred
- Allow full chest recoil
- Coordinate with ventilations so not delivered simultaneously
- 3:1 ratio for compressions to ventilations

Medications

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

3030 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
- Survival and neurologic outcome worsen with fever, hypoxia, hypo/hypercapnia, and hypotension. Post-ROSC care should focus on prevention of these elements

Return of spontaneous circulation (ROSC) criteria:

Pulse and measurable blood pressure
Increase in $ETCO_2$ 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 after ROSC, if possible

ROSC after cardiac arrest

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

Perform 12 lead EKG

Is STEMI Present?

Yes → Initiate Cardiac Alert

No

- Assess for shock and volume status
- Peripheral access: IO/IV
- Oxygenation/Ventilation
  - o Secure advanced airway if indicated
  - o Avoid hyperventilation
  - o Avoid hyper/hypocapnia ($EtCO_2$)
  - o Correct hypoxemia
- Elevate head of bed at 30°

Is there hypotension for age and/or signs of shock?

Yes → Medical Hypotension/Shock protocol

No

Assess for dysrhythmia

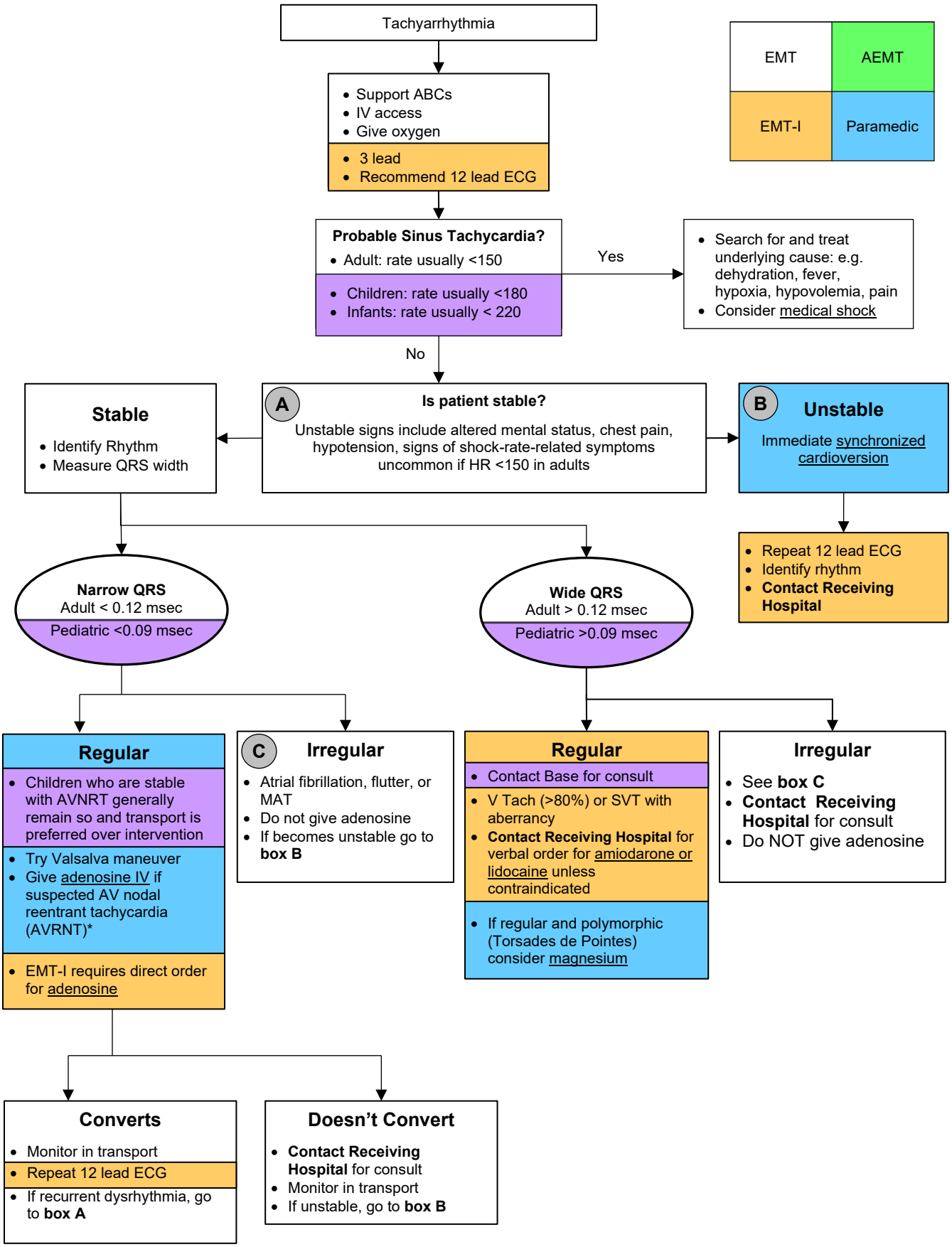
Recurrent dysrhythmia?

Yes → Treat recurrent life-threatening dysrhythmia per appropriate protocol

No

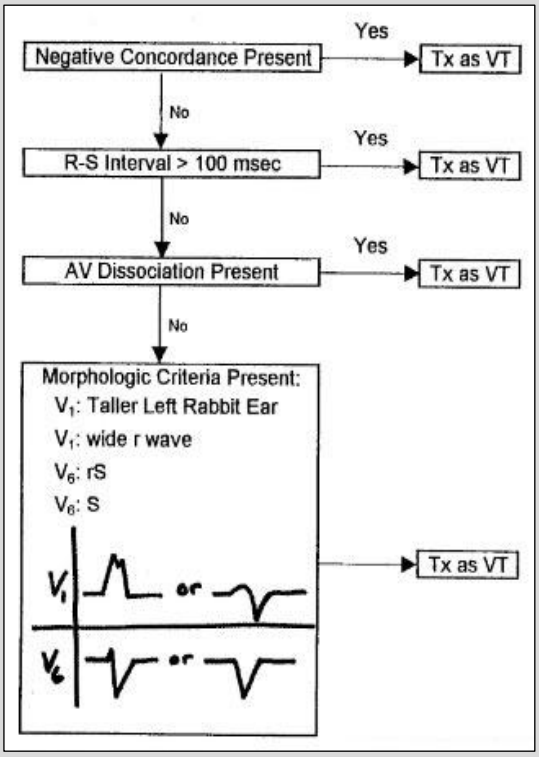
- Continuous rhythm monitoring and pulse checks
- Focused neuro exam (AVPU/GCS)
- Transfer to closest appropriate facility

3040 TACHYARRHYTHMIA WITH POOR PERFUSION



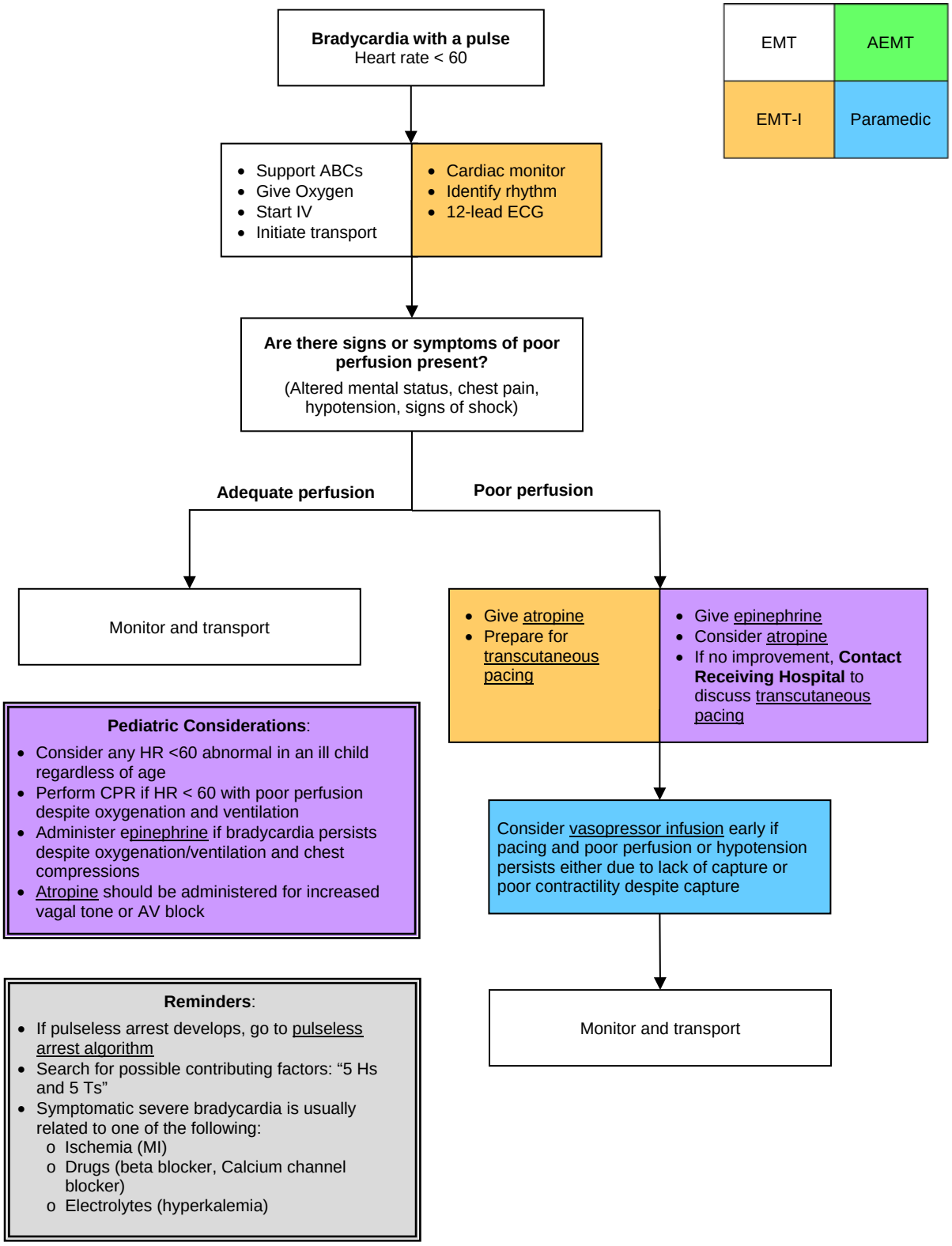
3040 TACHYARRHYTHMIA WITH POOR PERFUSION

Brugada Criteria:

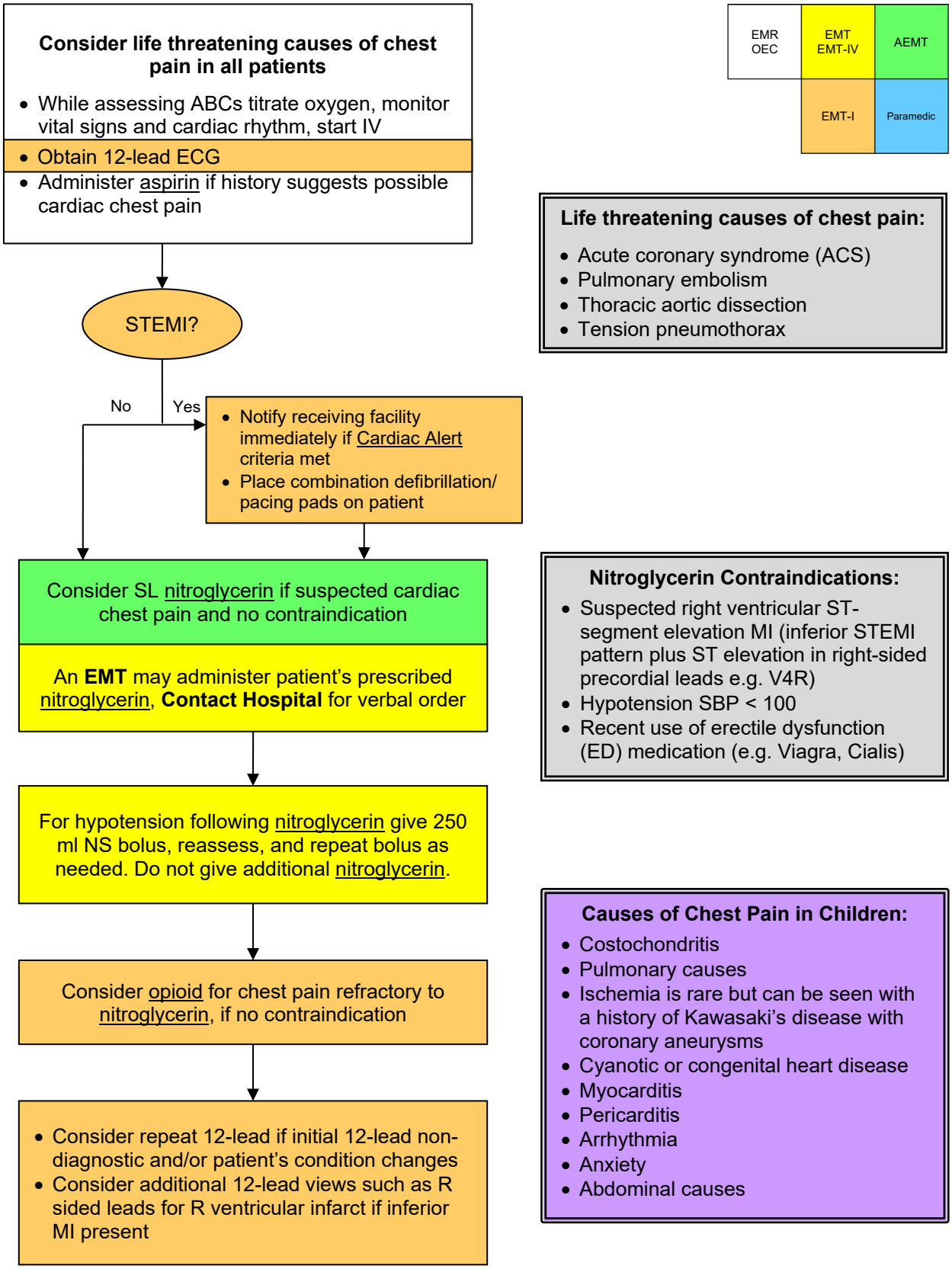


Negative concordance in V1-6 leads	95% favors VT
R-S interval> 100 msec. Measured from the beginning of the R to the deepest part of S	90% favors VT
AV Dissociation Present	90% favors VT
Taller RSr in V1	95% favors VT
Fat initial r wave in V1	90% favors VT
RSR' complex in V1	90% favors VT
rS in V6	87% favors VT
S in V6	95% favors VT
R axis	Favors VT but not strongly
Rate > 250	Favors SVT

3050 BRADYARRHYTHMIA WITH POOR PERFUSION



3060 CHEST PAIN



3070 CARDIAC ALERT

EMT-I | Paramedic

Goal:

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

Inclusion Criteria:

- Chest discomfort consistent with ACS
- 12-lead ECG showing ST-segment elevation (STE) at least 1 mm in two or more anatomically contiguous leads

Exclusion Criteria:

- Wide complex QRS (paced rhythm, LBBB, 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:

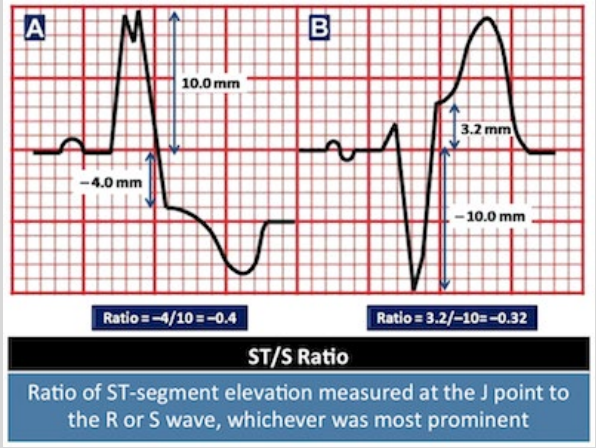
- **If patient does not meet inclusion criteria, or has exclusion criteria, yet clinical scenario and ECG suggests true STEMI (example Sgarbossa's criteria), request medical consult with receiving hospital emergency physician.**
- Treat according to chest pain protocol en route (cardiac monitor, oxygen, aspirin, nitroglycerin and opioid as needed for pain control).
- Notify receiving hospital ASAP with ETA and request CARDIAC ALERT. Do not delay hospital notification. If possible, notify ED before leaving scene.
- Start 2 large bore peripheral IVs – Preferably on patient left side
- Place combination defibrillator/pacing pads on patient
- Rapid transport

Additional Documentation Requirements:

- Time of first patient contact
- Time of first ECG

Modified Sgarbossa's Criteria:

- Concordant ST-segment elevation ≥ 1 mm in any lead
- Concordant ST-segment depression ≥ 1 mm in lead V1 – V3
- Discordant ST/S Ratio ≤ -0.25



Source: https://www.aliem.com/2013/12/modified-sgarbossa-criteria-ready-primetime/

3080 HYPERTENSION

EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

Intent:

A. Even with extremes of blood pressure, treat the medical emergency **associated** with hypertension ("treat the patient, not the number")
    1. Treat chest pain, pulmonary edema, or stroke according to standard protocols (pain control will usually improve BP significantly)
B. Do not use medication to treat asymptomatic hypertension
C. Do not treat hypertension in acute stroke

3090 VENTRICULAR ASSIST DEVICES

Ventricular Assist Device (VAD)

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

EMT	AEMT
EMT-I	Paramedic

Assess the patient

<u>It is vital to transport the patient's back-up batteries and emergency equipment with the patient.</u>

Typically, LVAD patients have no discernible pulse. Blood pressure measurement requires manual BP cuff and Doppler which the patient may have. Utilize other parameters for patient assessment:

- Level of consciousness
- Respiratory rate and work of breathing
- Signs of perfusion: skin color/temperature, capillary refill (HR >100 is hemodynamically unstable)
- Cardiac monitor, SpO_2, blood glucose level

Is the patient stable?

STABLE

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

UNSTABLE

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

Common VAD Complications

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

VAD RUNNING

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

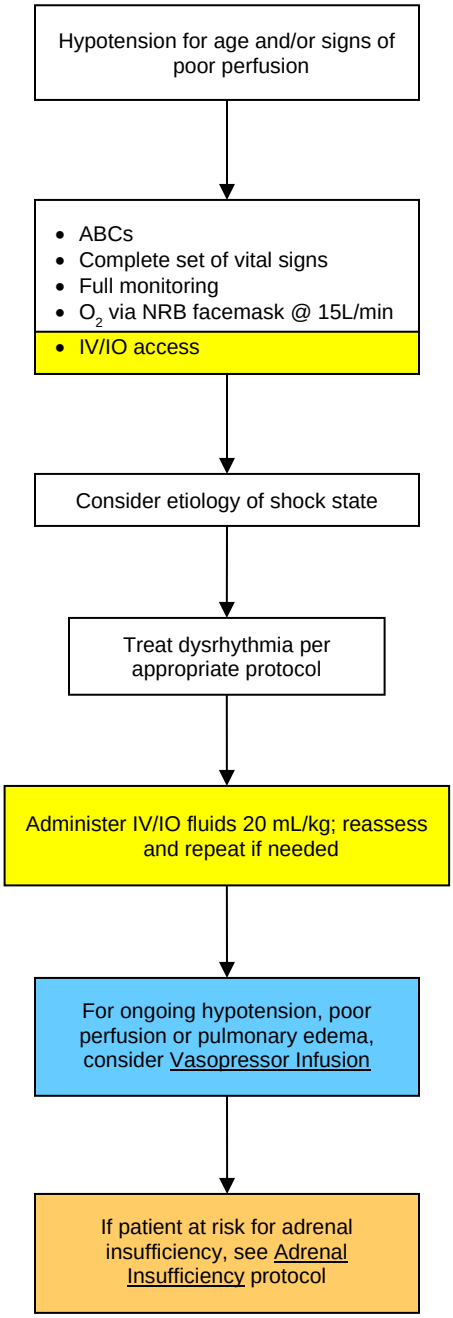
VAD NOT RUNNING

- Consider chest compressions if required
- Address VAD alarms/faults
- Consider defibrillation if required
- Notify destination of VAD patient inbound
- Initiate ACLS (PALS if patient pre-pubescent)

Key Points

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

4000 MEDICAL SHOCK PROTOCOL



EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

Hypotension for Age

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

Tachycardia for Age

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

Etiologies of Shock

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

Pediatric Fluid Administration

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

Pediatric Shock

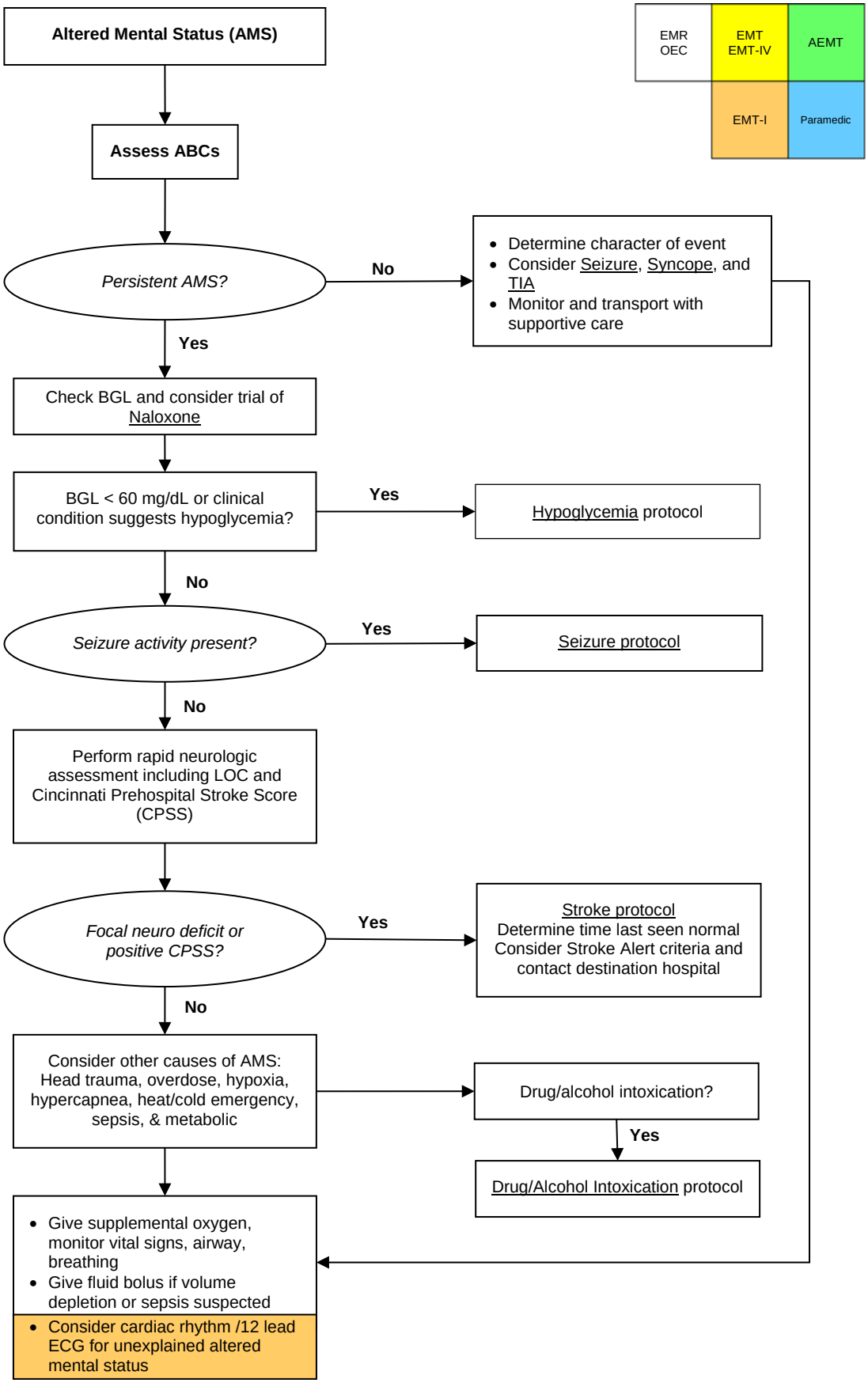
Signs of Compensated Shock

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

Signs of Decompensated Shock

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

4010 UNIVERSAL ALTERED MENTAL STATUS



4020 SYNCOPE

Universal Altered Mental Status

- Assess and stabilize ABCs, give O_2 if needed, assess vital signs
- Rule out and treat hypoxia
- Rule out and treat hypoglycemia
- Perform and document neurologic exam
- Obtain 12 lead ECG

Consider etiology and treat accordingly

All patients with syncope are advised to come to the hospital for evaluation

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

Causes of Syncope:

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

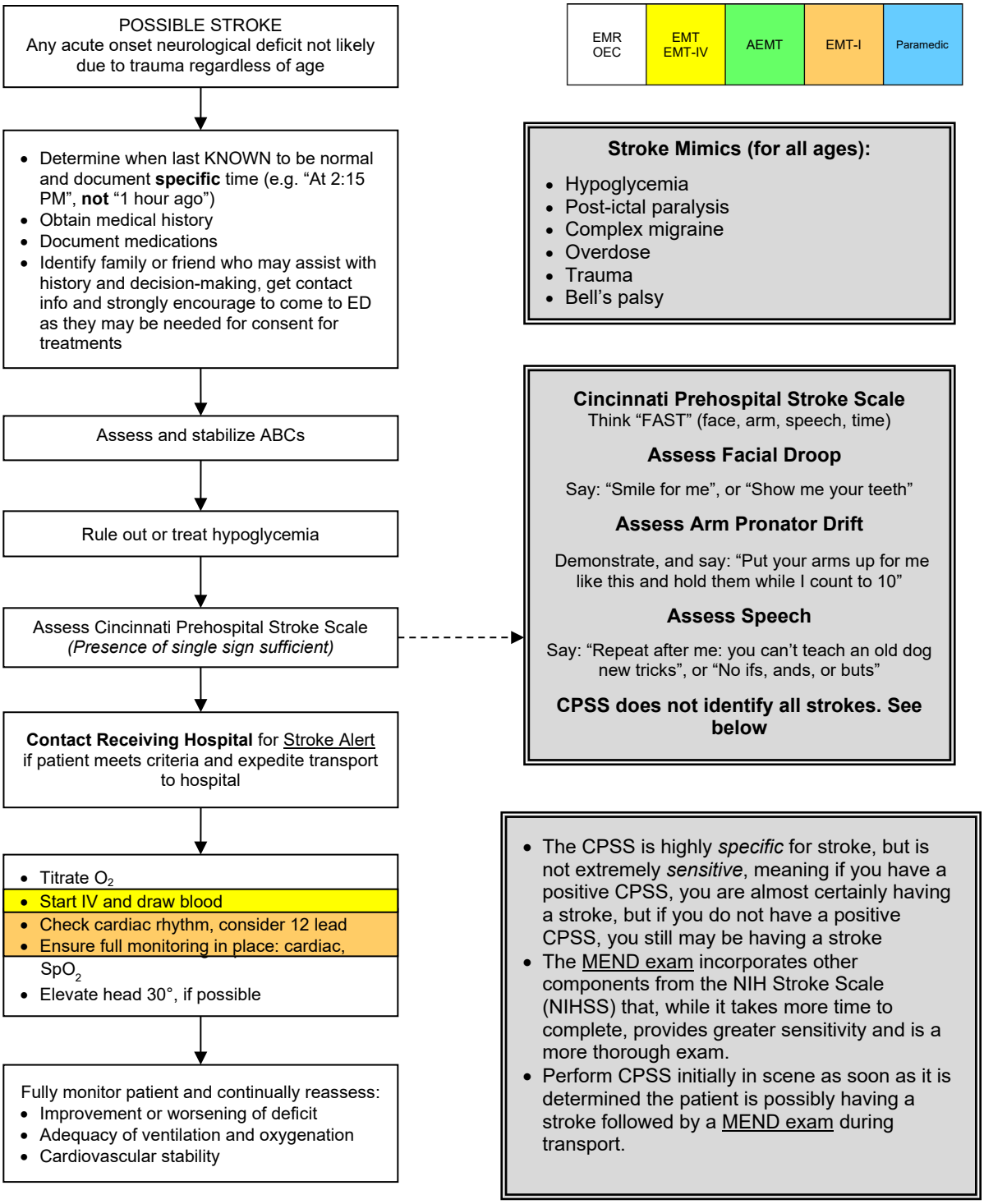
General Information:

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

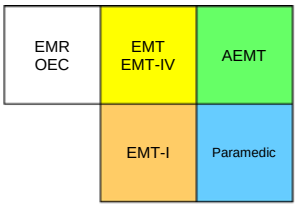
Pediatric Considerations:

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

4030 STROKE


POSSIBLE STROKE
Any acute onset neurological deficit not likely due to trauma regardless of age
EMR OEC
EMT EMT-IV
AEMT
EMT-I
Paramedic
• Determine when last KNOWN to be normal and document **specific** time (e.g. "At 2:15 PM", **not** "1 hour ago")
• Obtain medical history
• Document medications
• Identify family or friend who may assist with history and decision-making, get contact info and strongly encourage to come to ED as they may be needed for consent for treatments
Stroke Mimics (for all ages):
• Hypoglycemia
• Post-ictal paralysis
• Complex migraine
• Overdose
• Trauma
• Bell's palsy
Assess and stabilize ABCs
Rule out or treat hypoglycemia
Assess Cincinnati Prehospital Stroke Scale
(Presence of single sign sufficient)
Cincinnati Prehospital Stroke Scale
Think "FAST" (face, arm, speech, time)
Assess Facial Droop
Say: "Smile for me", or "Show me your teeth"
Assess Arm Pronator Drift
Demonstrate, and say: "Put your arms up for me like this and hold them while I count to 10"
Assess Speech
Say: "Repeat after me: you can't teach an old dog new tricks", or "No ifs, ands, or buts"
CPSS does not identify all strokes. See below
Contact Receiving Hospital for Stroke Alert if patient meets criteria and expedite transport to hospital
• Titrate O_2
• Start IV and draw blood
• Check cardiac rhythm, consider 12 lead
• Ensure full monitoring in place: cardiac, SpO_2
• Elevate head 30°, if possible
Fully monitor patient and continually reassess:
• Improvement or worsening of deficit
• Adequacy of ventilation and oxygenation
• Cardiovascular stability
• The CPSS is highly *specific* for stroke, but is not extremely *sensitive*, meaning if you have a positive CPSS, you are almost certainly having a stroke, but if you do not have a positive CPSS, you still may be having a stroke
• The MEND exam incorporates other components from the NIH Stroke Scale (NIHSS) that, while it takes more time to complete, provides greater sensitivity and is a more thorough exam.
• Perform CPSS initially in scene as soon as it is determined the patient is possibly having a stroke followed by a MEND exam during transport.

4031 STROKE ALERT



Criteria for Stroke Alert

All criteria below must be met to call a "Stroke Alert":

1. Positive CPSS/MEND finding
2. Time of onset of signs and symptoms until hospital arrival less than 12 hours
3. Patient age 18 and above
4. Blood glucose level over 60 mg/dL and under 400 mg/dL

Notes:

- Contact Receiving Hospital for physician consult if you feel patient is possibly having stroke but does not meet criteria.

Cincinnati Prehospital Stroke Scale (CPSS)

Think "FAST" (face, arm, speech, time)

Assess Facial Droop

Say: "Smile for me", or "Show me your teeth"

Assess Arm Pronator Drift

Demonstrate, and say: "Put your arms up for me like this and hold them while I count to 10"

Assess Speech

Say: "Repeat after me: you can't teach an old dog new tricks", or "No ifs, ands, or buts"

CPSS does not identify all strokes.

MEND Exam

Assess Mental Status

- Level of consciousness - AVPU
- Speech - Repeat "You can't teach an old dog new tricks." (Abnormal=wrong words, slurred speech, no speech)
- Questions - Age, month
- Commands - Close, open eyes

Assess Cranial Nerves

- Facial droop - Show teeth or smile (Abnormal = One side does not move as well as other)
- Visual fields - 4 quadrants
- Horizontal gaze - Side to side

Assess Limbs

- Motor arm - Close eyes and hold out both arms (Abnormal = arm can't move or drifts down)
- Motor leg - Open eyes and lift each leg separately
- Sensory arm - Close eyes and touch, pinch
- Sensory leg - Close eyes and touch, pinch each limb
- Coordination arm - Finger to nose
- Coordination leg - Heel to shin

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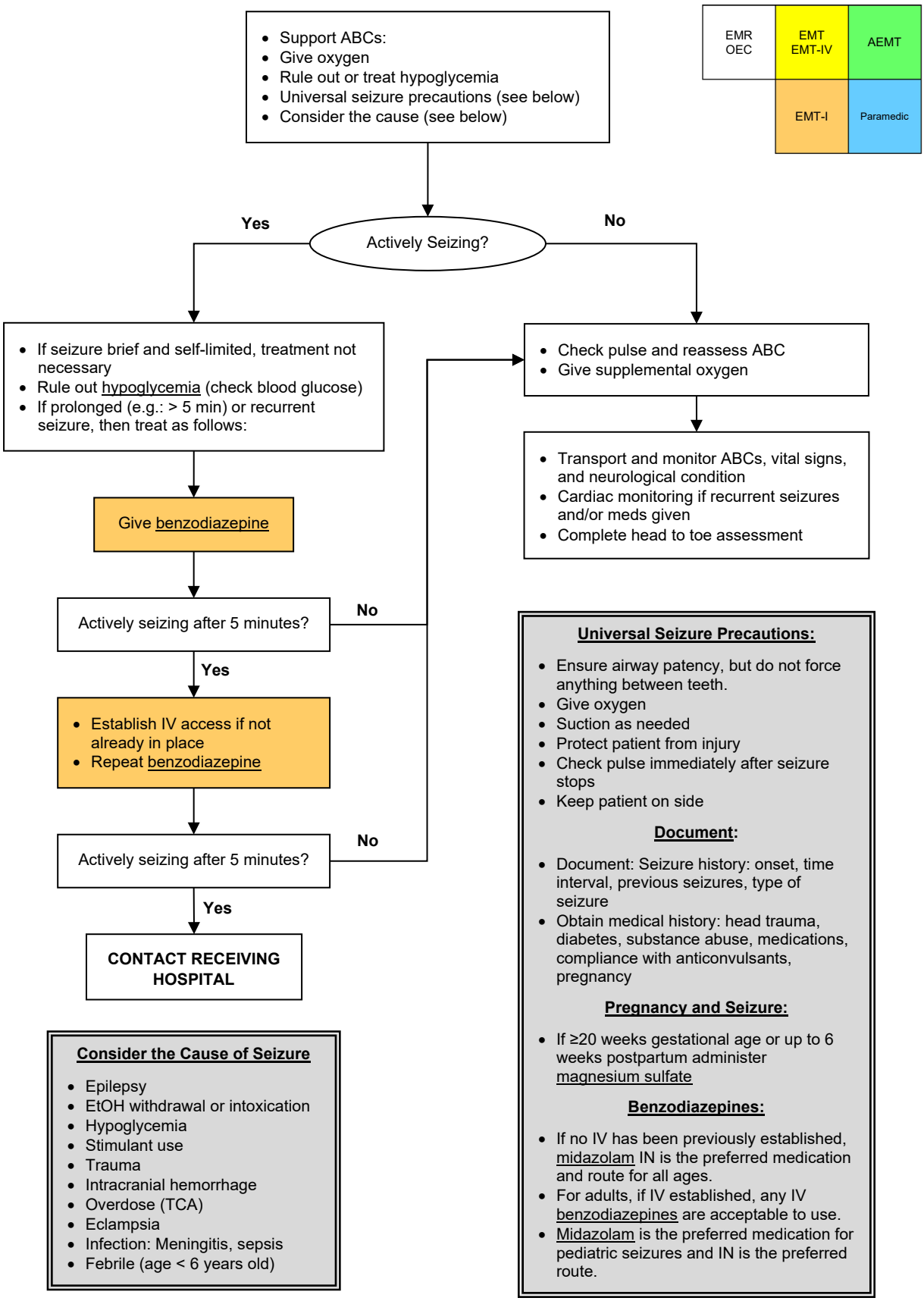
4040 SEIZURE



Consider the Cause of Seizure

- Epilepsy
- EtOH withdrawal or intoxication
- Hypoglycemia
- Stimulant use
- Trauma
- Intracranial hemorrhage
- Overdose (TCA)
- Eclampsia
- Infection: Meningitis, sepsis
- Febrile (age < 6 years old)

Universal Seizure Precautions:

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

Document:

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

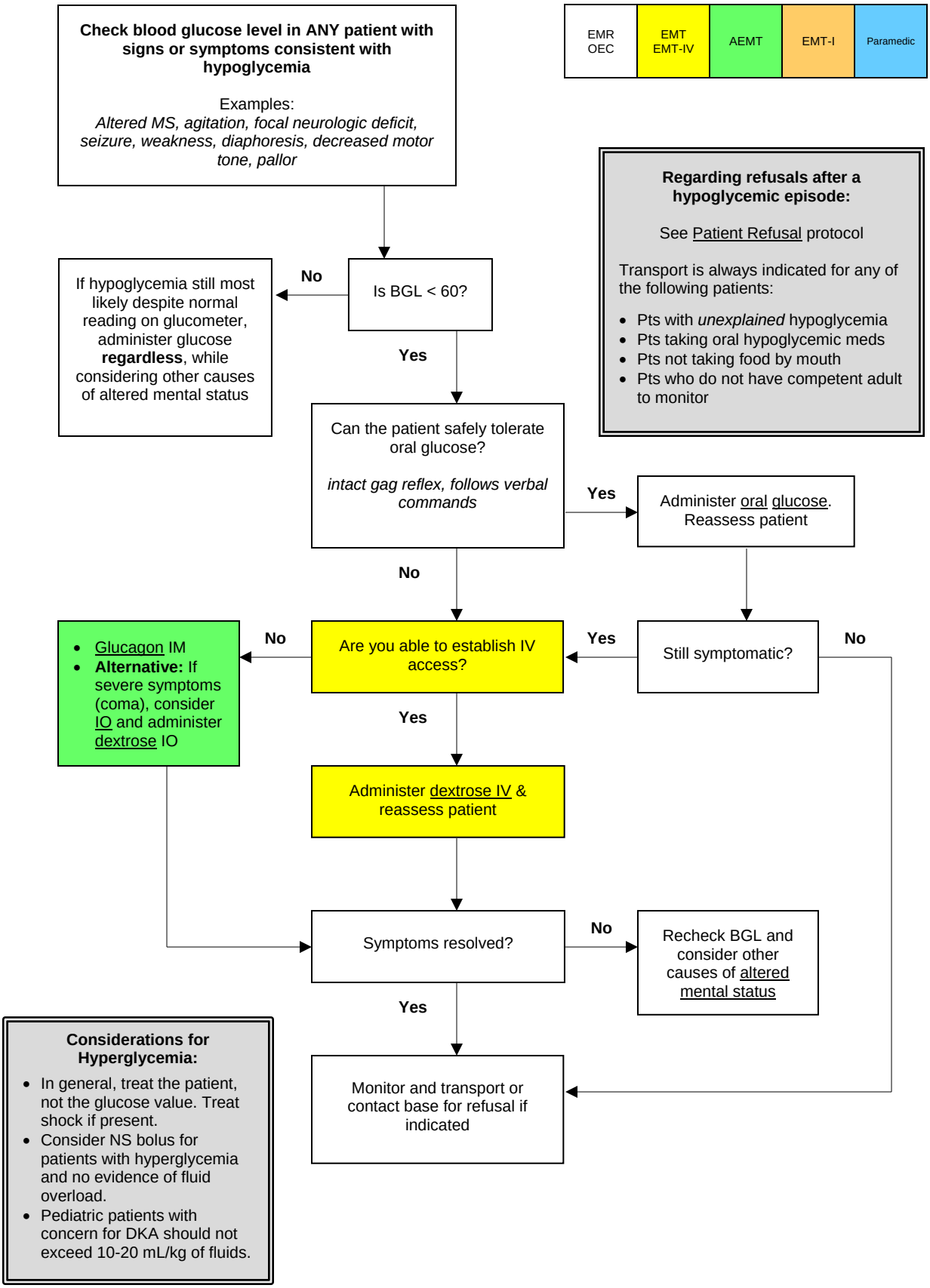
Pregnancy and Seizure:

- If ≥20 weeks gestational age or up to 6 weeks postpartum administer magnesium sulfate

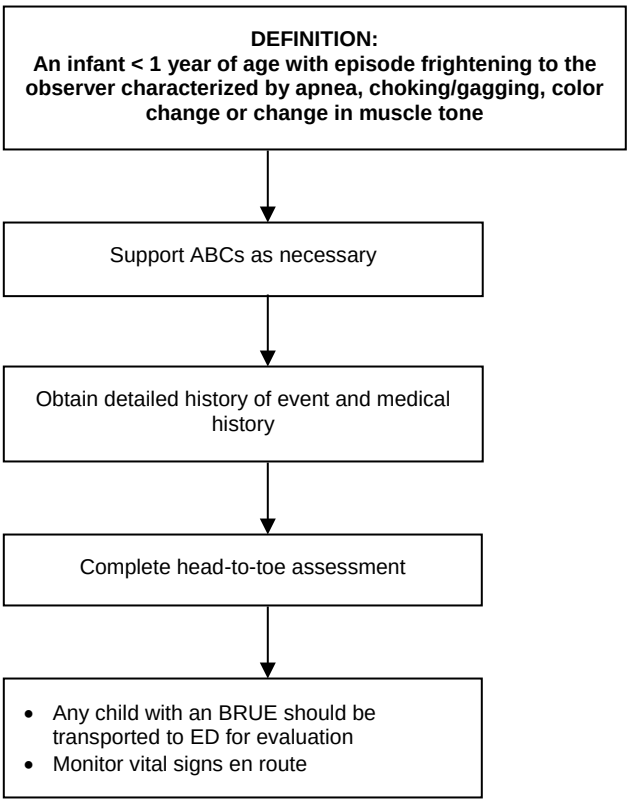
Benzodiazepines:

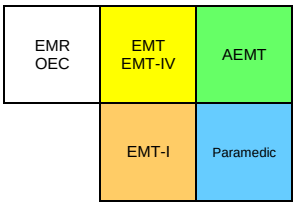
- If no IV has been previously established, midazolam IN is the preferred medication and route for all ages.
- For adults, if IV established, any IV benzodiazepines are acceptable to use.
- Midazolam is the preferred medication for pediatric seizures and IN is the preferred route.

4050 HYPOGLYCEMIA



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





Clinical history to obtain from observer of event:

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

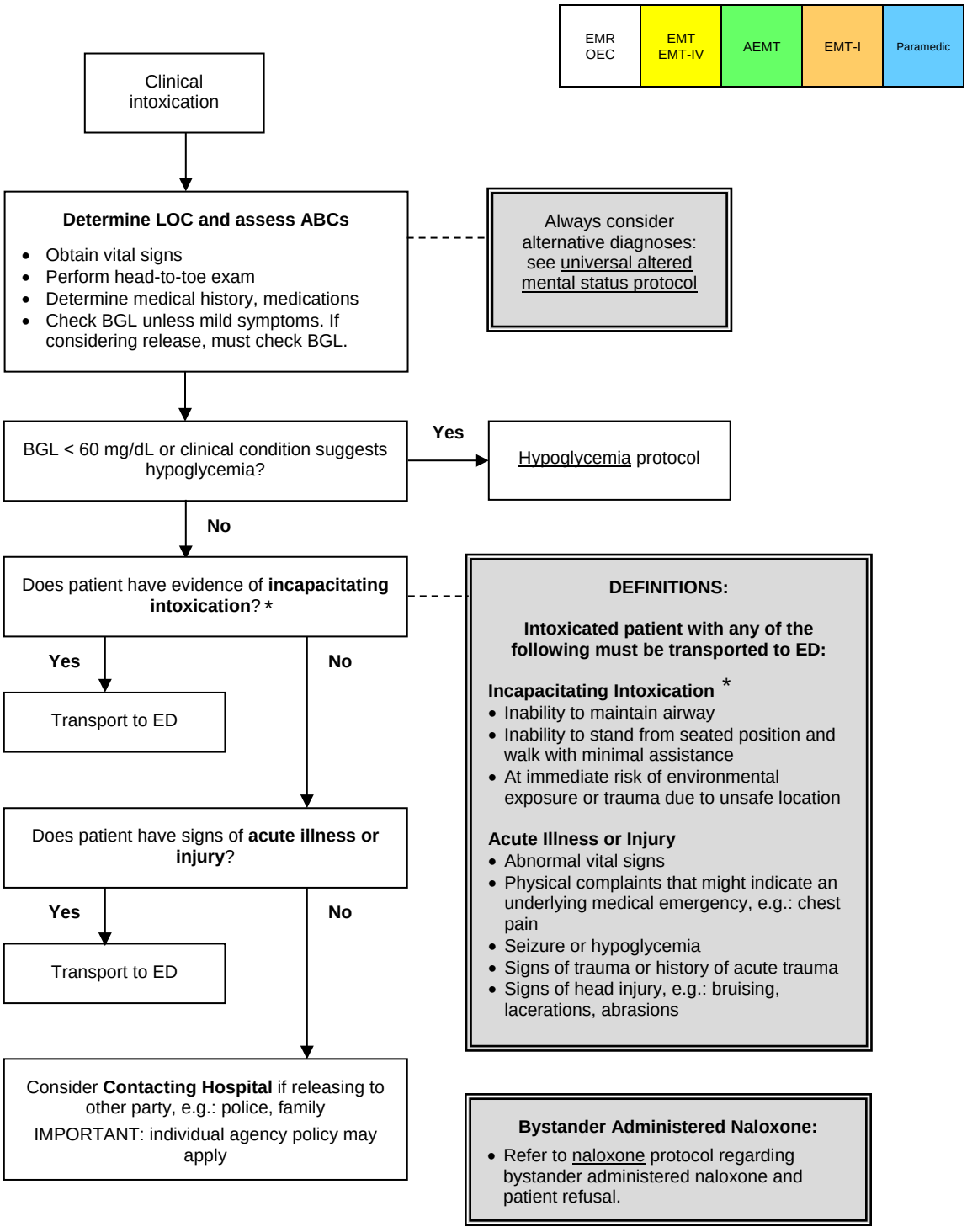
Past Medical History:

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

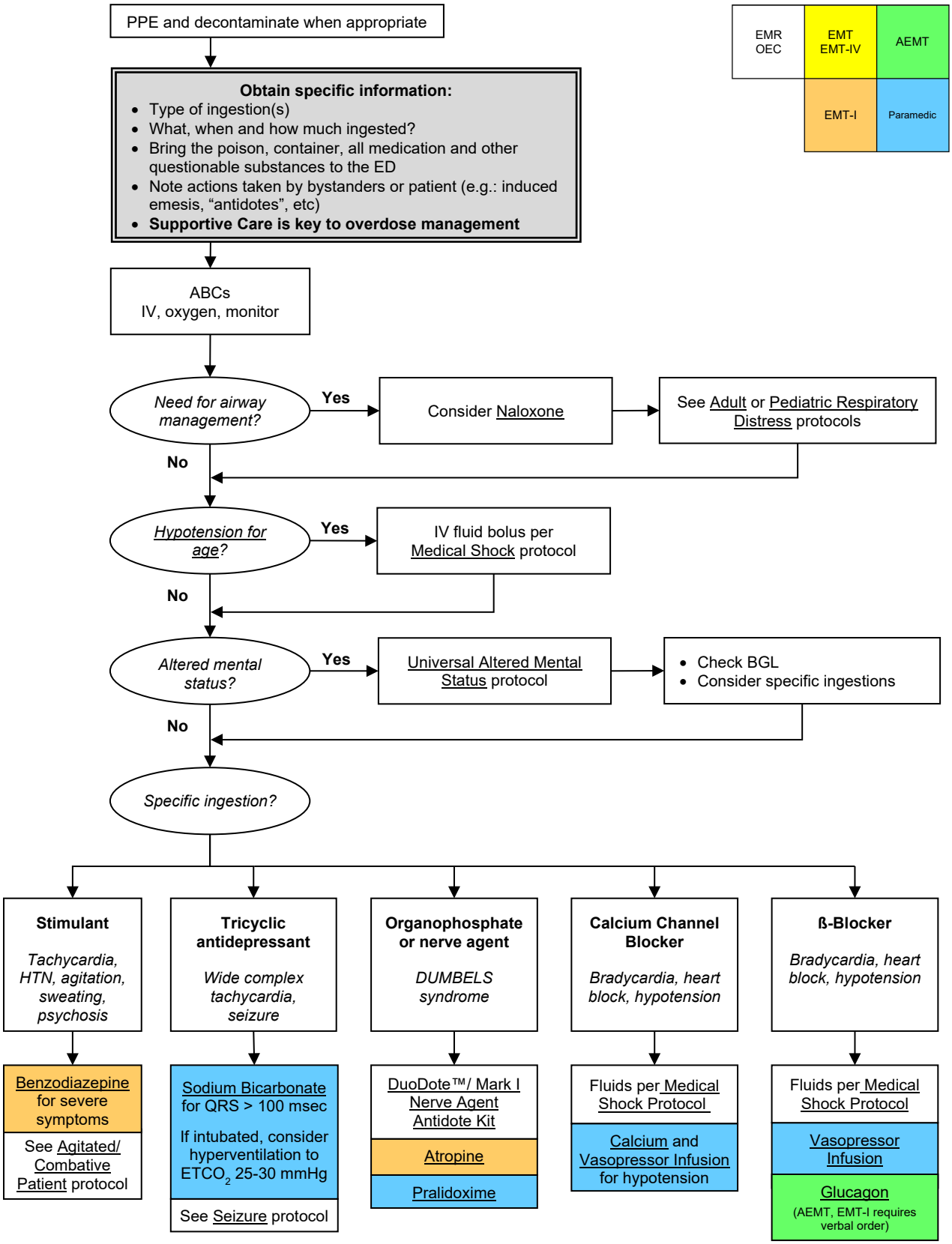
Examination/Assessment

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

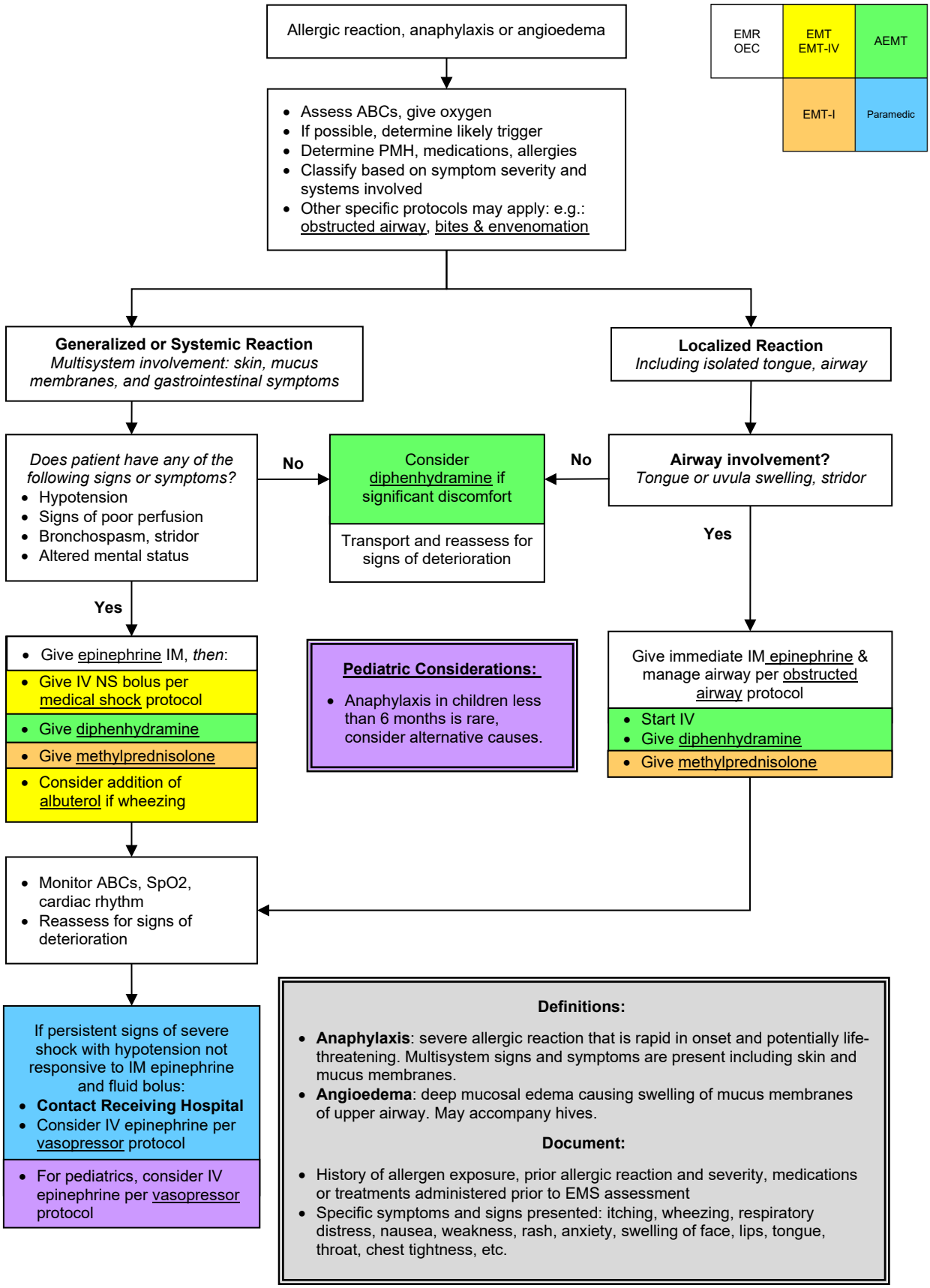
4070 DRUG/ALCOHOL INTOXICATION



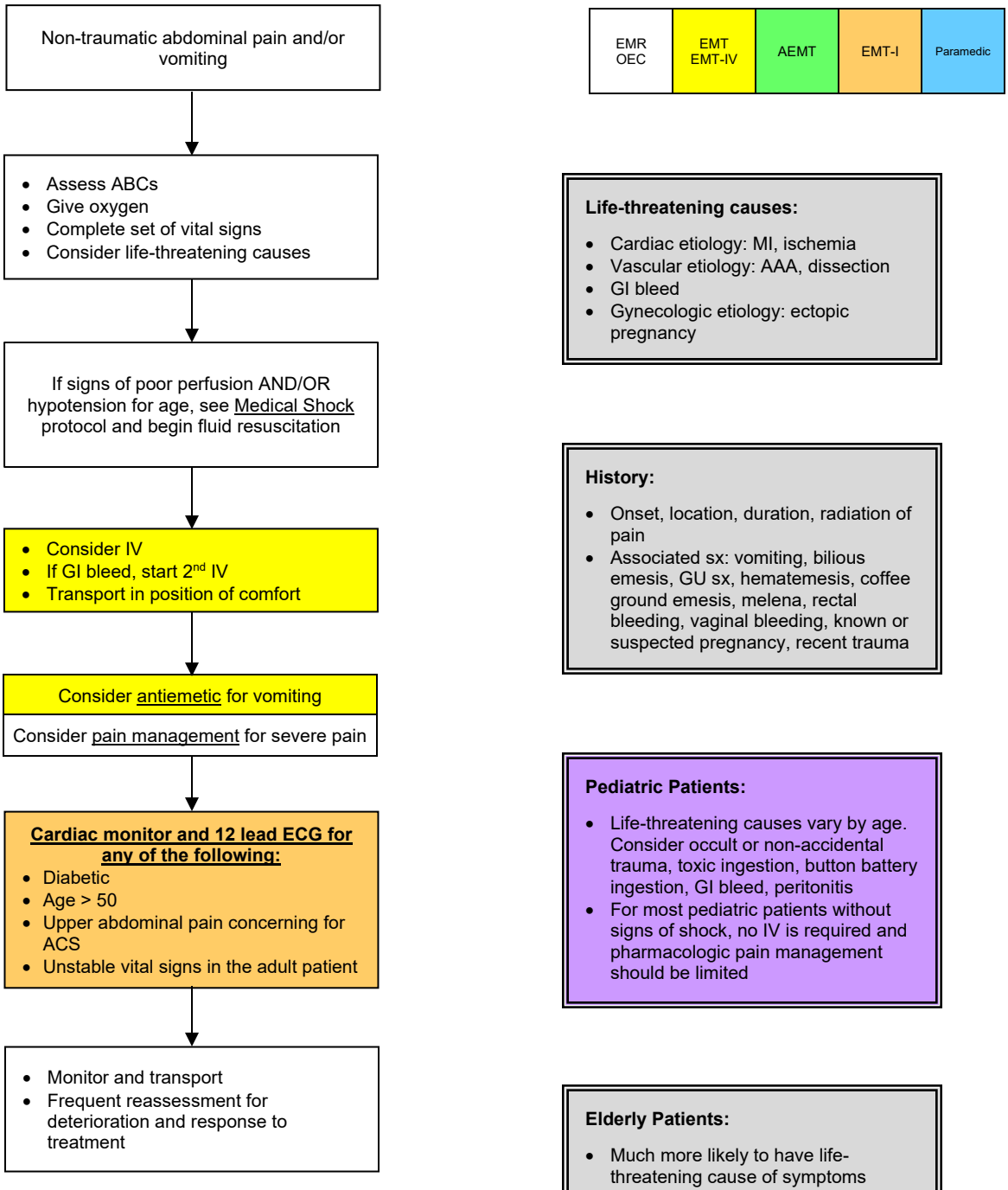
4080 OVERDOSE AND ACUTE POISONING



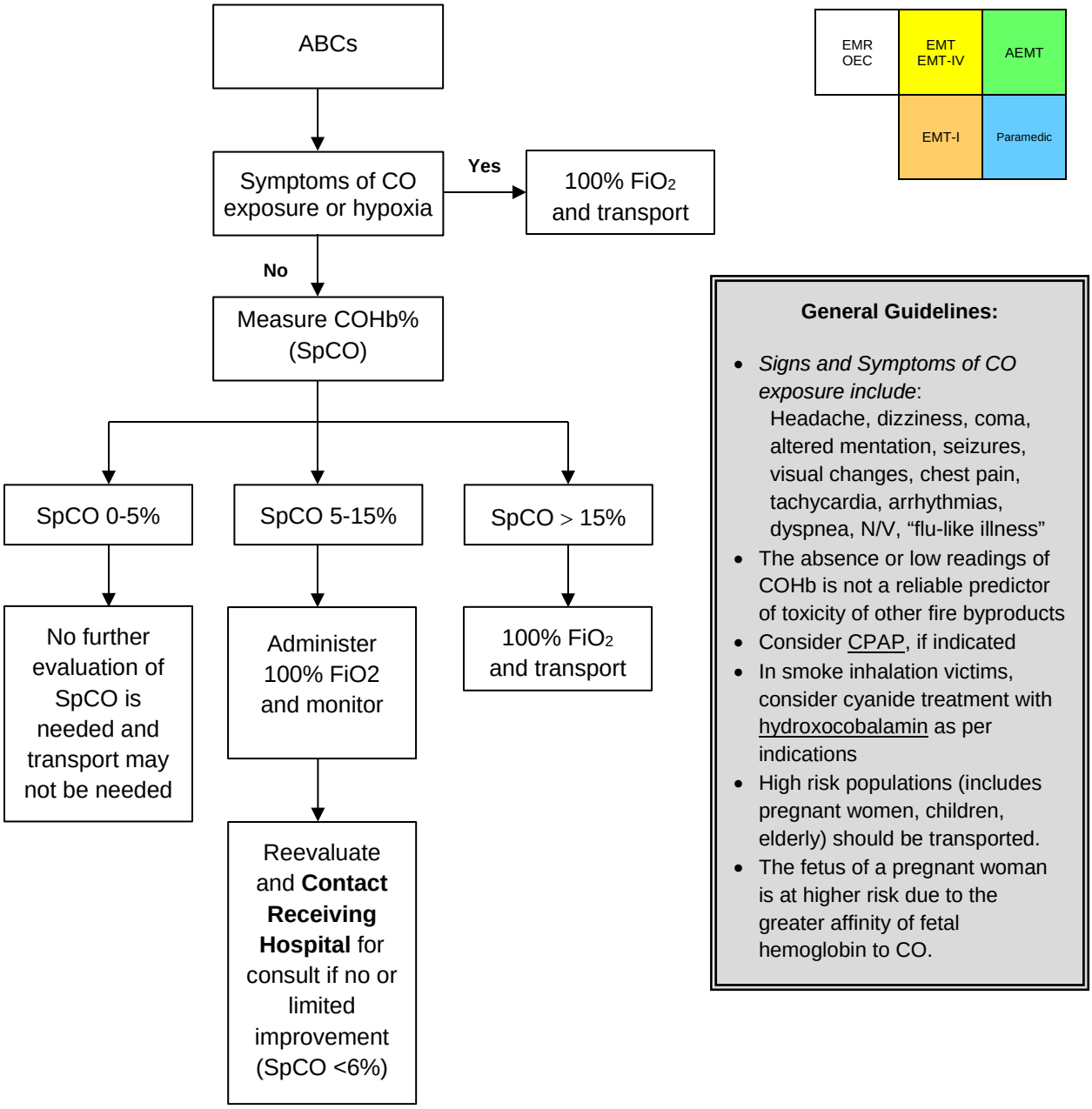
4090 ALLERGY AND ANAPHYLAXIS



4100 NON-TRAUMATIC ABDOMINAL PAIN/VOMITING



4110 SUSPECTED CARBON MONOXIDE EXPOSURE

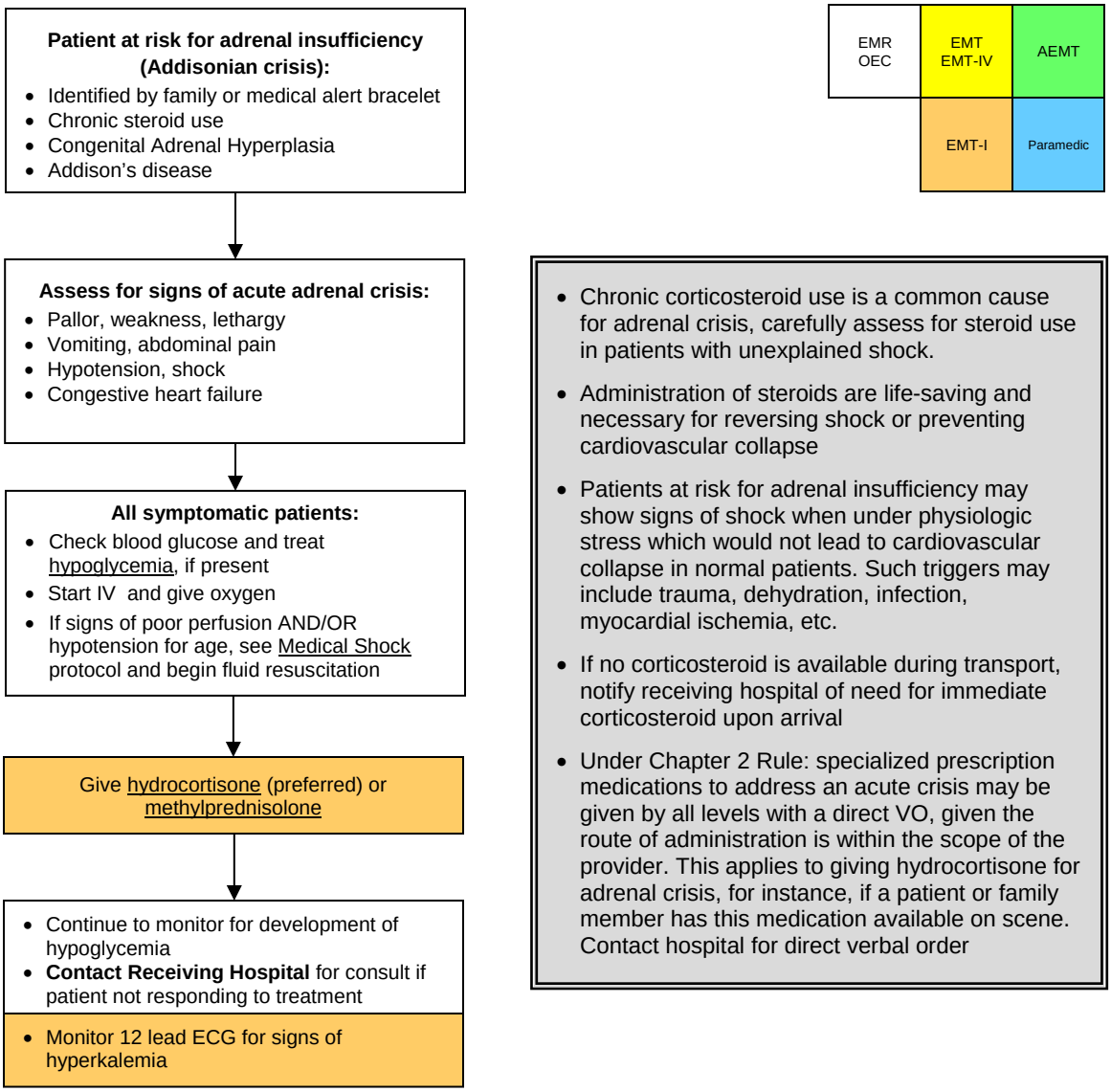


General Guidelines:

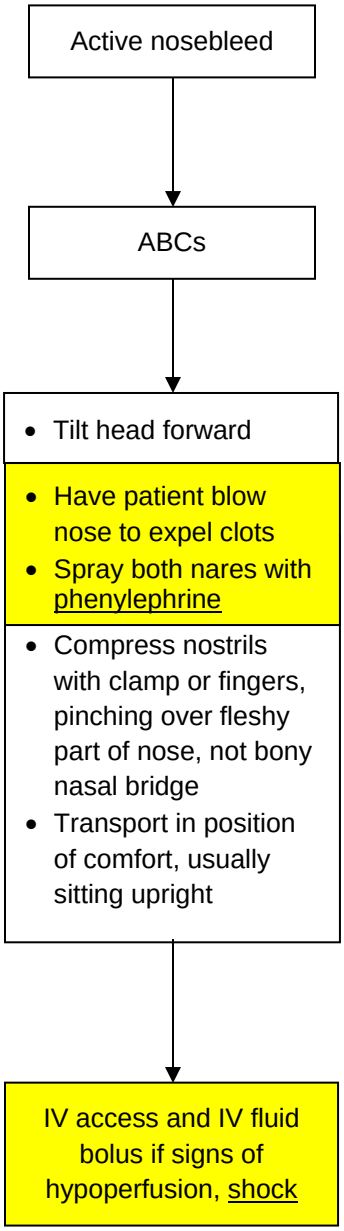
- *Signs and Symptoms of CO exposure include*: Headache, dizziness, coma, altered mentation, seizures, visual changes, chest pain, tachycardia, arrhythmias, dyspnea, N/V, "flu-like illness"
- The absence or low readings of COHb is not a reliable predictor of toxicity of other fire byproducts
- Consider CPAP, if indicated
- In smoke inhalation victims, consider cyanide treatment with hydroxocobalamin as per indications
- High risk populations (includes pregnant women, children, elderly) should be transported.
- The fetus of a pregnant woman is at higher risk due to the greater affinity of fetal hemoglobin to CO.

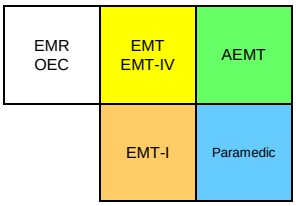
COHb	Severity	Signs and Symptoms
<15-20%	Mild	Headache, nausea, vomiting, dizziness, blurred vision
21-40%	Moderate	Confusion, syncope, chest pain, dyspnea, tachycardia, tachypnea, weakness
41-59%	Severe	Dysrhythmias, hypotension, cardiac ischemia, palpitations, respiratory arrest, pulmonary edema, seizures,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

4120 ADRENAL INSUFFICIENCY PROTOCOL



4130 EPISTAXIS MANAGEMENT





General Guidelines:

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

4140 SEPSIS PROTOCOL

- ABCs
- Complete set of vital signs
- Monitoring including SpO2
- O_2 as appropriate

EMT	AEMT	EMT-I	Paramedic

Does the patient have 2 or more of the following?

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

No

- Routine Care
- IV, O_2, monitor
- Consider fluid bolus if sepsis suspected
- Transport to closest appropriate hospital
- Continue to re-assess vital signs and perfusion

Yes

CONSIDER SEPSIS – is there suspected or confirmed infection?

Monitor waveform capnography (if available)

Is there evidence of hypoperfusion? (ANY ONE OF THE FOLLOWING):

- Hypotension for age
- Altered mental status (excluding simple febrile seizure)
- Delayed capillary refill AND mottling
- Systolic BP < 90 mmHg
- MAP <65 mmHg
- Sustained EtCO2 <25 mmHg

No

Yes

- IV fluid bolus @ 30mL/kg (if no sign of fluid overload)
- 2 large bore IV's
- Transport to closest appropriate hospital

NOTIFY HOSPITAL of potential sepsis (hospital activation criteria may vary)

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

Common Infection Sites with Severe Sepsis

- Respiratory
- Bacteremia (unspecified site)
- Genitourinary (more prevalent with females)
- Abdominal
- Device-related
- Soft tissue/wound
- Central nervous system
- Endocarditis

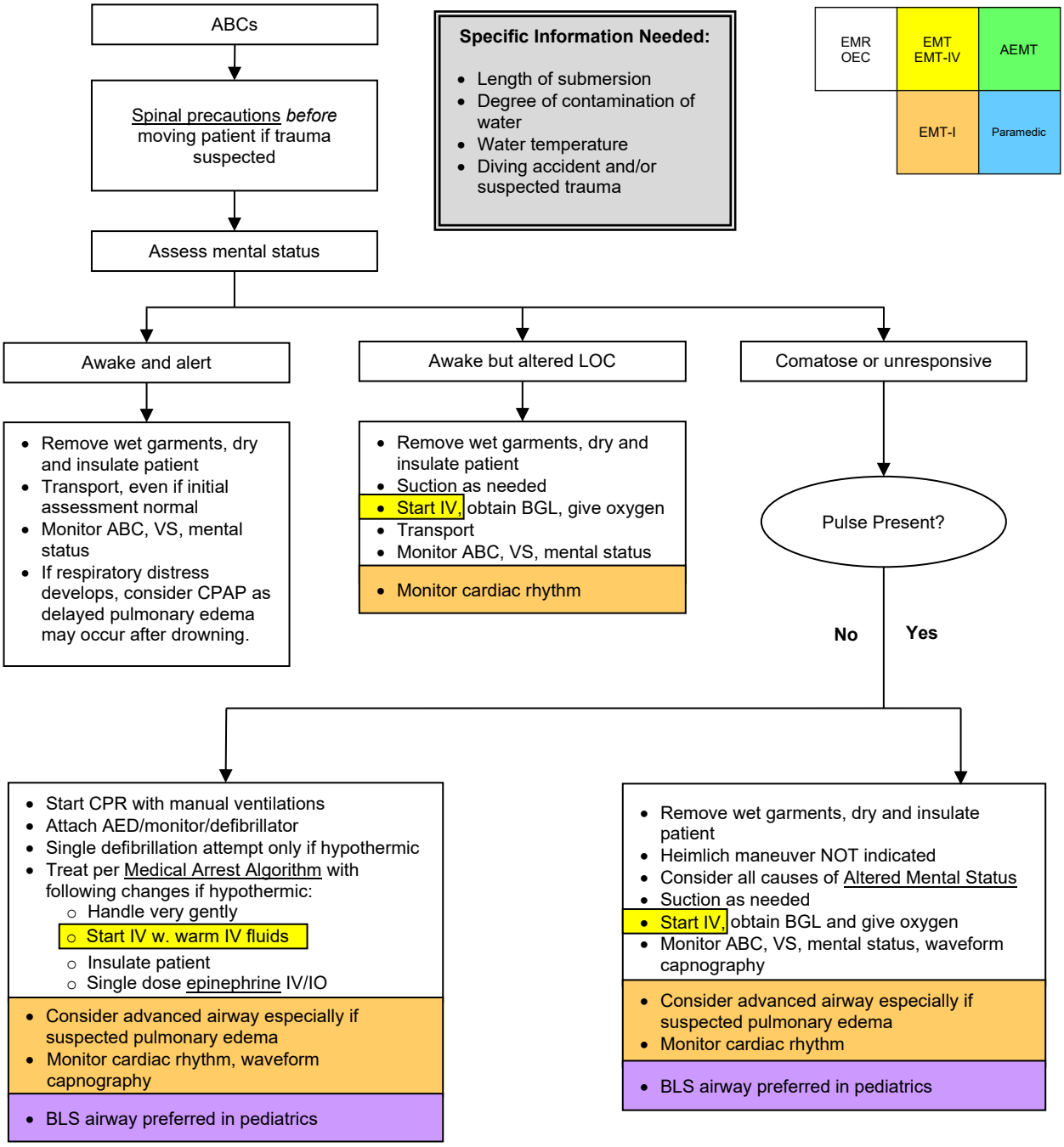
Principles of Sepsis

- Multiple studies demonstrate the benefit of early recognition and treatment of sepsis, including in the prehospital setting.
- Early hospital notification of sepsis may lead to shorter time to IV fluid and IV antibiotics and increase survival.
- Patients with septic shock require aggressive IV fluid resuscitation. Starting dose should be 30mL/kg of IV fluid.
- EtCO2 has been demonstrated to correlate with serum lactate levels and predictive of severity of sepsis. A sustained EtCO2 <25 mmHg may indicate hypoperfusion.
- Some agencies may carry lactate monitors. In that case, a lactate level of ≥4 mmol/L is indicative of hypoperfusion.

Pediatric Fluid Administration

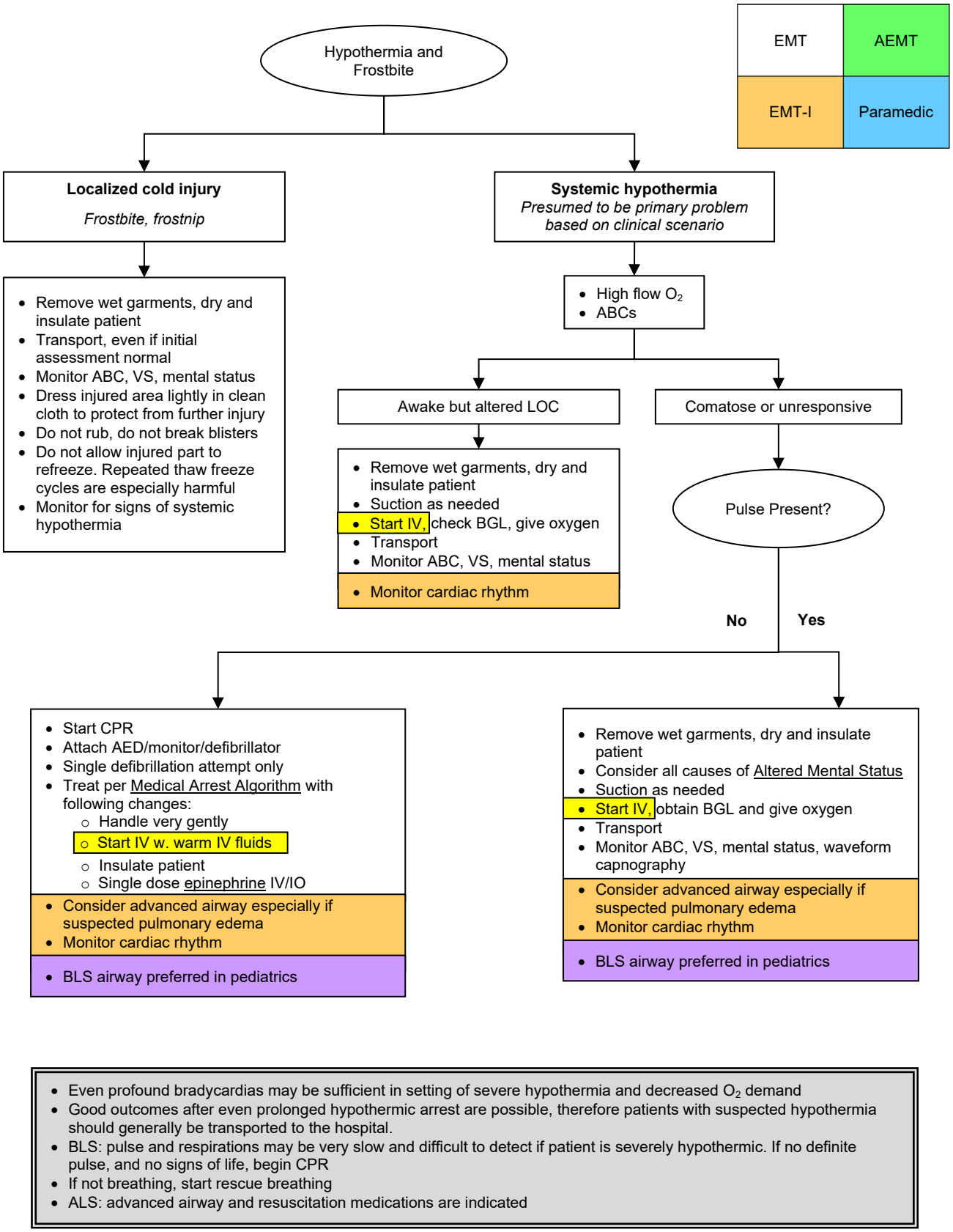
- For children <40 kg or not longer than length-based tape, hand pull/push fluid with a 60 mL syringe utilizing a 3 way stop cock.
- The treatment of compensated shock requires aggressive fluid replacement, may need to repeat fluid bolus up to 60mL/kg.
- Goal of therapy is normalization of vital signs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

5000 DROWNING



- Drowning/submersion commonly associated with hypothermia.
- Even profound bradycardias may be sufficient in setting of severe hypothermia and decreased O_2 demand
- Good outcomes after even prolonged hypothermic arrest are possible, therefore patients with suspected hypothermia should generally be transported to the hospital.
- BLS: pulse and respirations may be very slow and difficult to detect if patient is severely hypothermic. If no definite pulse, and no signs of life, begin CPR
- If not breathing, start rescue breathing
- ALS: advanced airway and resuscitation medications are indicated

5010 HYPOTHERMIA



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- BLS: pulse and respirations may be very slow and difficult to detect if patient is severely hypothermic. If no definite pulse, and no signs of life, begin CPR
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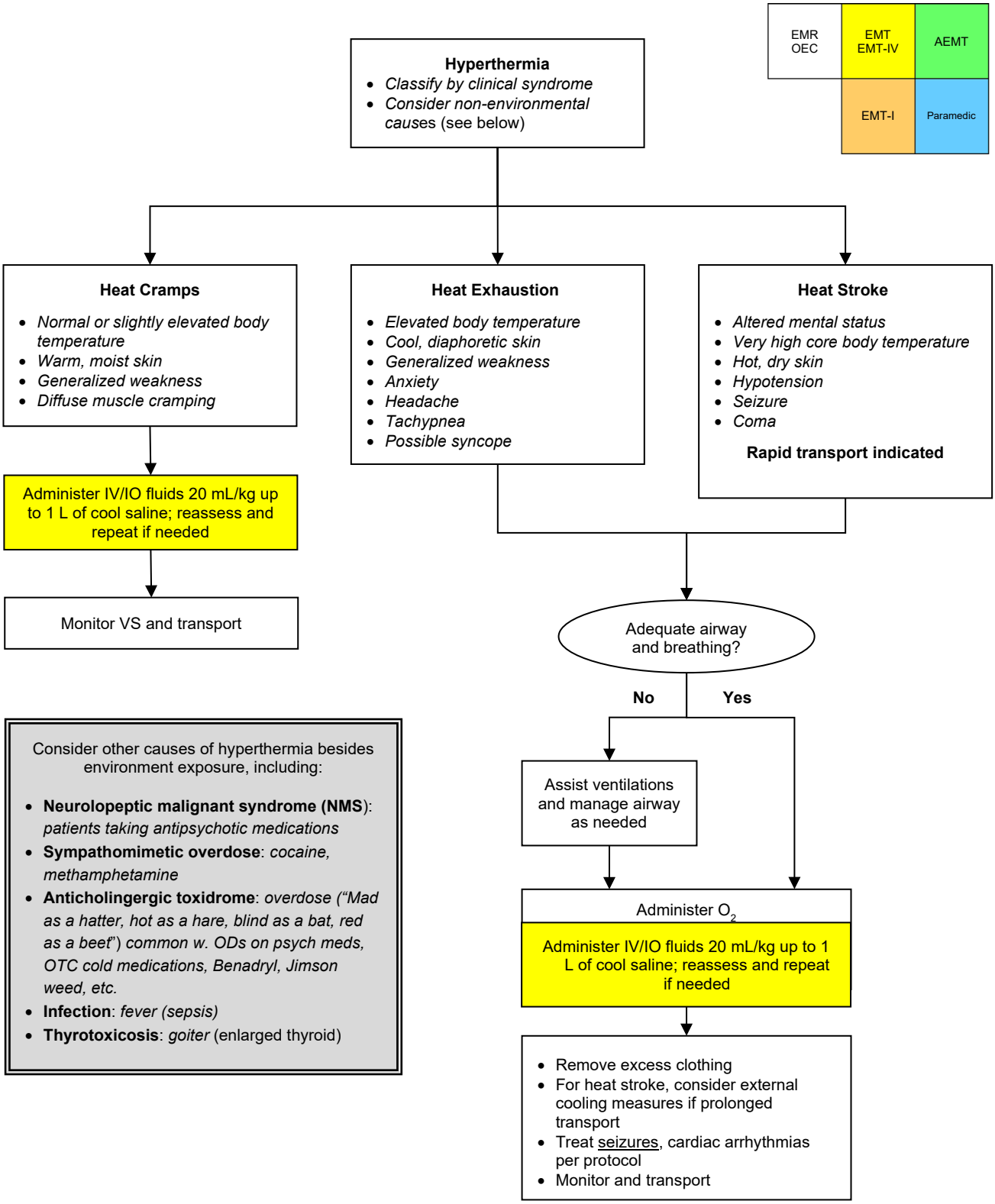
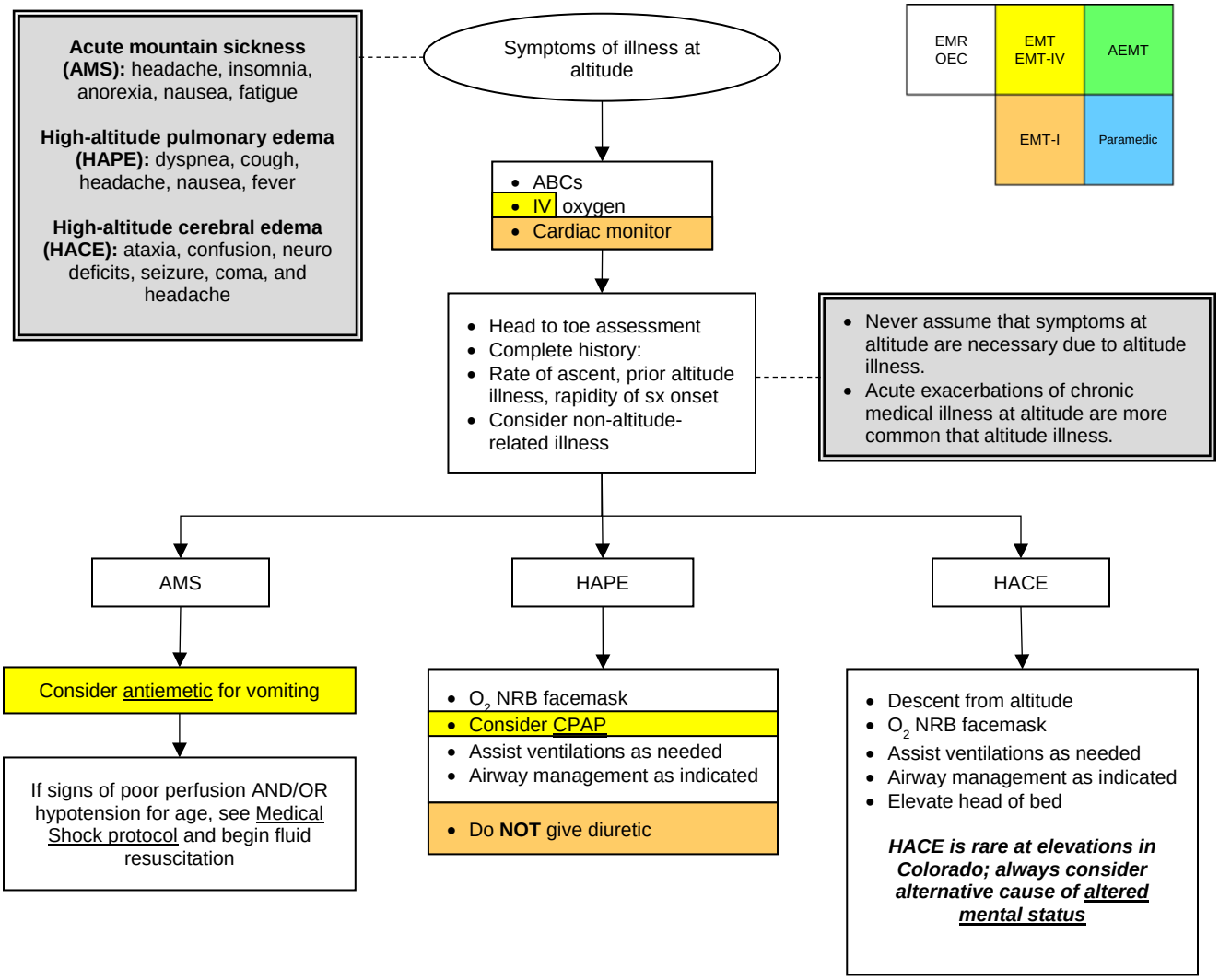
- ALS: advanced airway and resuscitation medications are indicated

5020 HYPERTHERMIA



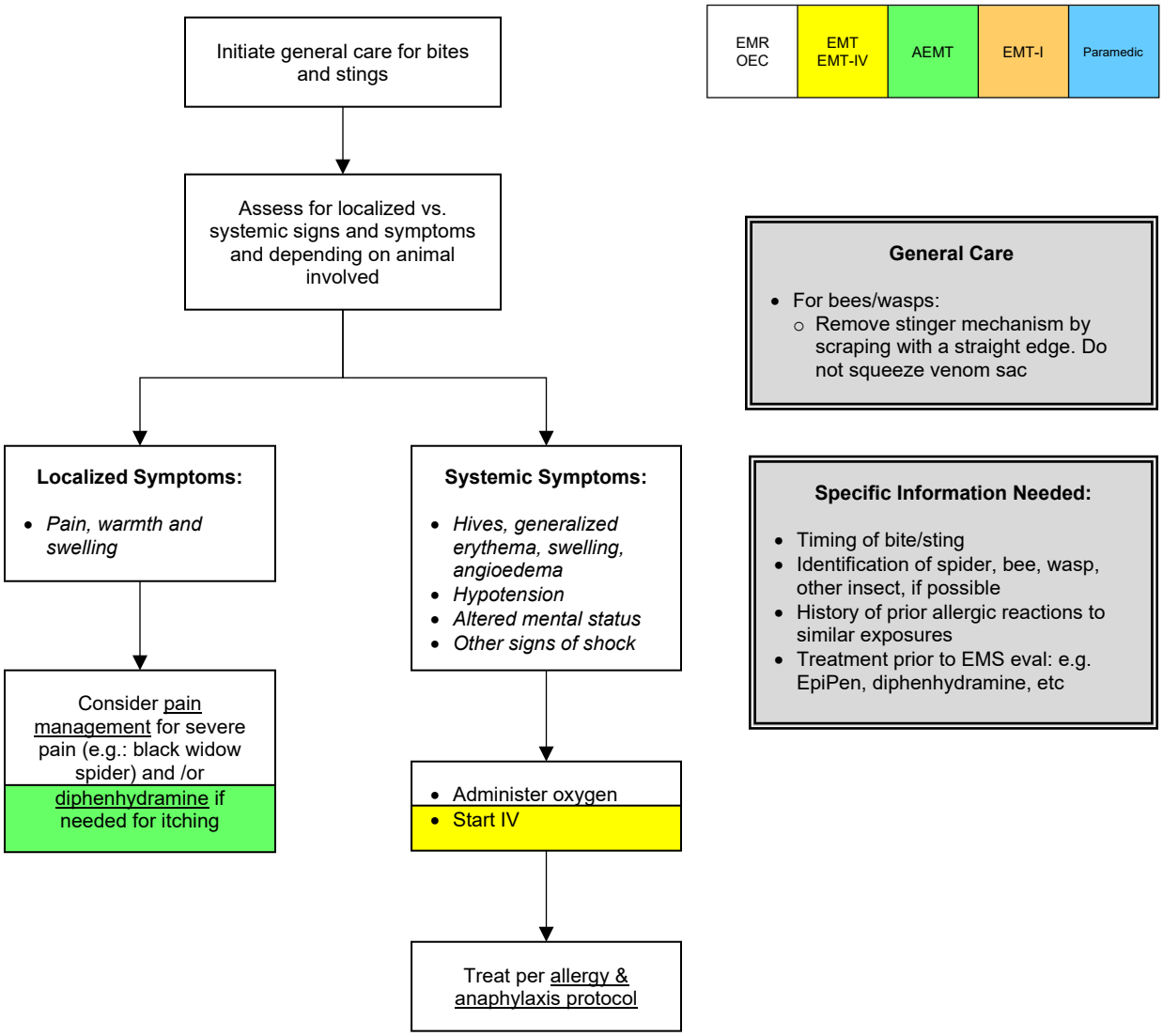
5030 HIGH ALTITUDE ILLNESS



Special Notes:

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

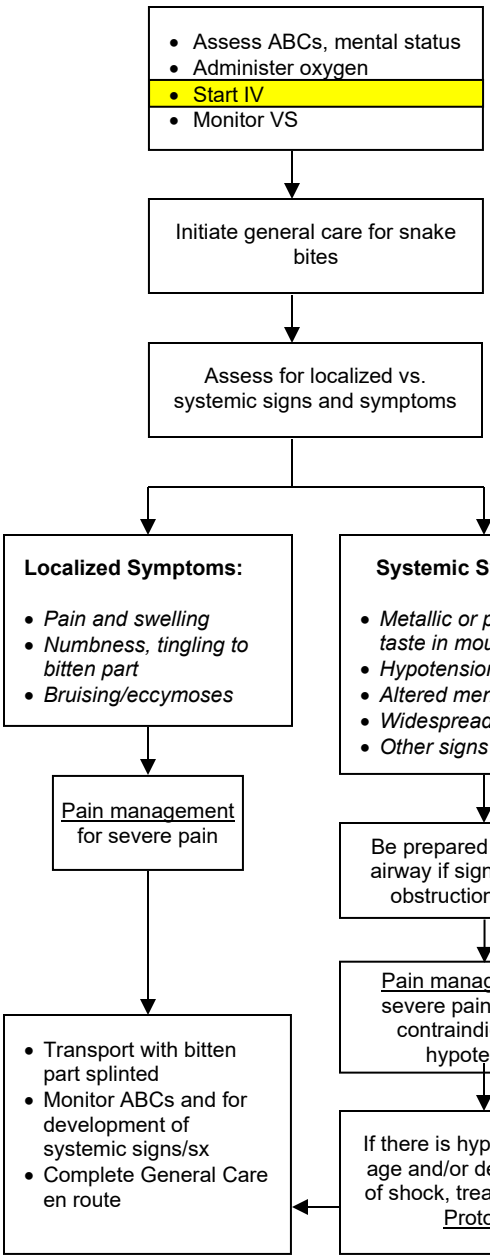
5040 INSECT/ARACHNID STINGS AND BITES PROTOCOL



Specific Precautions:

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

5050 SNAKE BITE PROTOCOL



EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

General Care:

- Remove patient from proximity to snake
- Remove all constricting items from bitten limb (e.g.: rings, jewelry, watch, etc.)
- Splint 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:

- The prairie rattlesnake is native to the Boulder region and is most common venomous snake bite in the region.
- Exotic venomous snakes, such as pets or zoo animals, may have different signs and symptoms than those of pit vipers. In case of exotic snake bite, contact base and consult zoo staff or poison center for direction.
- **Take a picture of the snake, including images of head and tail. If an adequate photo can be taken, it is not necessary to bring snake to ED.**
- Never pick up a presumed-to-be-dead snake by hand. Rather, use a shovel or stick. A dead snake may reflexively bite and envenomate.
- > 25% of snake bites are “dry bites”, without envenomation.
- 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.

6000 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

EMT	AEMT
EMT-I	Paramedic

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, especially as it relates to A.

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 s/he is, where s/he 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. Refer to Mental Health Clearance Form for determining appropriate patient destination
E. Be alert for possible elopement
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.

Transporting Patients Who Have a Psychiatric Complaint

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. Reasonable concern for suicidal or homicidal ideation, or grave disability from psychiatric decompensation, is sufficient to assume that the patient may lack medical decision-making capacity to refuse ambulance transport. Effort should be made to obtain consent for transport from the patient, and to preserve the patient's dignity throughout the process. However, the patient may be transported over his or her objections and treated under implied consent if patient does not comply.
D. Accusations of kidnapping or assault of the patient are only theoretical and rarely occur. The Boulder County Medical Directors feel strongly that the risk of abandonment of a potentially suicidal or otherwise gravely impaired patient is far greater. Be sure to document your reason for taking the patient over their objections, that you believe that you are acting in the patient's best interests, and be sure to consult a **Receiving Hospital Physician** if there are concerns.

6000 PSYCHIATRIC/BEHAVIORAL PATIENT PROTOCOL

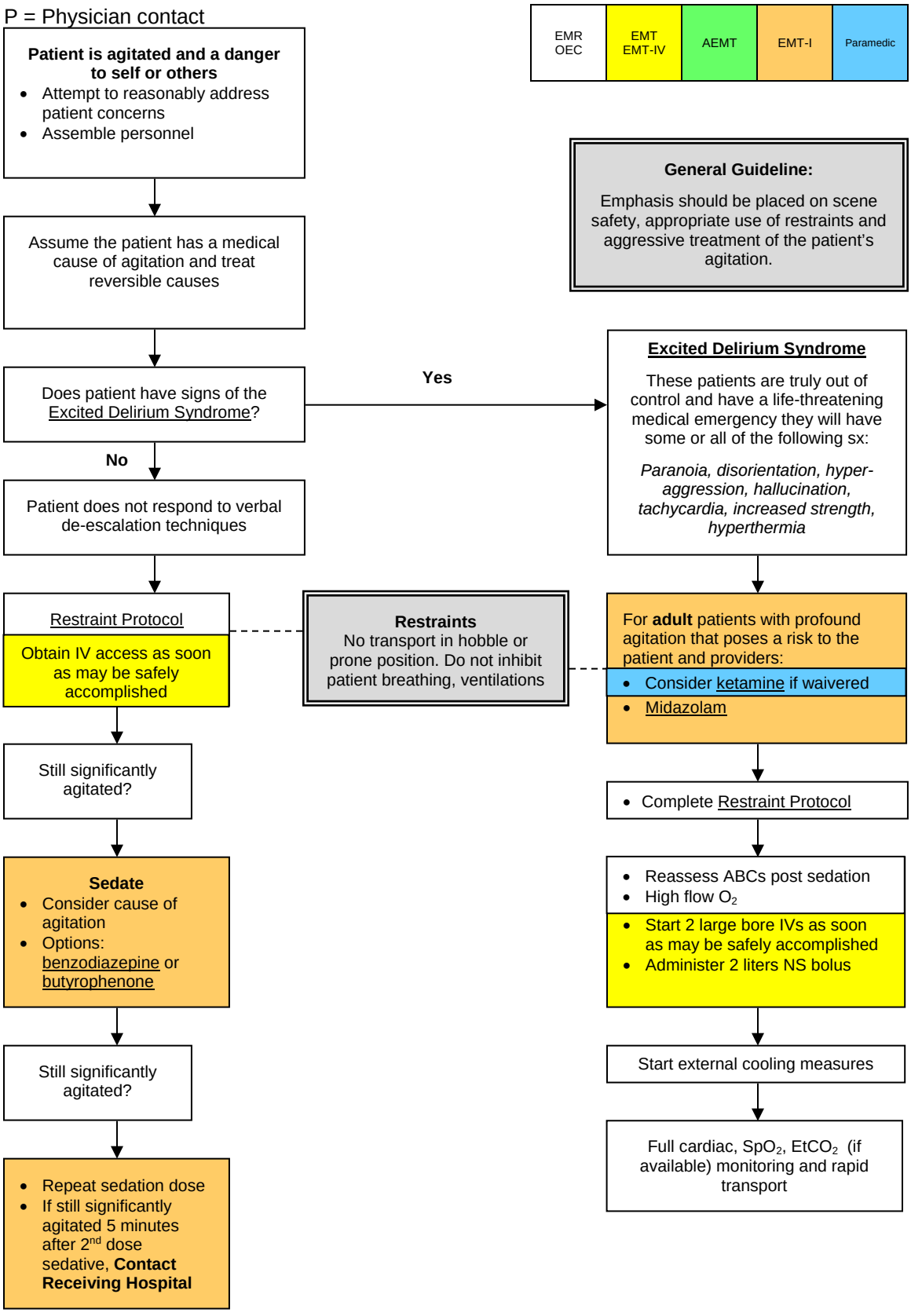
Specific Precautions

A. Patients presenting with psychiatric decompensation often have an organic etiology. Be suspicious for hypoglycemia, hypoxia, head injury, intoxication, or toxic ingestion.
B. The Boulder County EMS Medical Directors believe strongly that when a patient is assessed as a suicide risk or grave disability, the risk of patient abandonment is too high to allow these patients to refuse transport.
C. Providers transporting a patient over his or her objections should reassure the patient. The provider should strongly consider whether the patient may need restraint and/or sedation for safety. Beware of weapons. These patients can become combative.

Transporting Patients on a Mental Health Hold

A. By law, patients detained on a mental health hold may not refuse transport. Similarly, by law, patients on a mental health hold are required to be evaluated by a physician or psychologist and must be transported.
B. Although it is commonly believed that the original copy of the mental health hold (form M-1) is required to accompany the patient, a legible copy of the M-1 is also sufficient if the original cannot be found.
C. The M-1 form documenting the mental health hold should be as complete as possible, including the correct date and time that the patient was detained. The narrative portion should be completed. A signature and license or badge number is also required. Assure that the form is complete before departing.
D. The mental health hold does not need to be started on patients who are intoxicated on drugs and/or alcohol. Nor is it required for patients who are physically incapable of eloping from care, such as those who are intubated, or physically unable.
E. The patient rights form (M-2) does not need to accompany the patient. The receiving facility may complete this form if there are concerns.
F. If possible, seek direction from the sending facility regarding whether the patient may require sedation and restraint. Consider ALS transport if this is the case.
G. Recall that patients who are a danger to self/others or gravely disabled due to mental illness may be transported by EMS without a mental health hold, under implied consent.

6010 AGITATED/COMBATIVE PATIENT PROTOCOL



6020 TRANSPORT OF THE PATIENT IN LAW ENFORCEMENT CUSTODY

Purpose:

1. Guideline for the safety of care providers and the patient in custody

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 a handcuff key and that police ride behind ambulance so as to be readily available.
3. The care provider can always refuse transport if the situation is unsafe.
4. EMS personnel are not responsible for the law enforcement hold on these patients.
5. Handcuffed patients will not be placed in the prone position.
6. Handcuffs may be used with spinal stabilization. Medical priorities should take priority in the positioning of the handcuffs.

7000 CHILDBIRTH PROTOCOL

Overview:

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

ABCs
O_2 15 liters via NRB
IV access

EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

Obtain obstetrical history (see adjacent)

Specific Information Needed:

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

If suspected imminent childbirth:

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

Imminent Delivery

Delivery is imminent if there is crowning or bulging of perineum

Delivery not imminent

- Transport in position of comfort, preferably on left side to patient's requested hospital if time and conditions allow
- Monitor for progression to imminent delivery

Emergency Childbirth Procedure

- If there is a prolapsed umbilical cord or apparent breech presentation, go to obstetrical complications protocol and initiate immediate transport
- For otherwise uncomplicated delivery:
- Position mother supine on flat surface, if possible
- Do not attempt to impair or delay delivery
- Support and control delivery of head as it emerges
- Protect perineum with gentle hand pressure
- Check for cord around neck, gently remove from around neck, if present
- Suction mouth and nose only if signs of obstruction by secretions
- If delivery not progressing, baby is "stuck", see obstetrical complications protocol and begin immediate transport
- As shoulders emerge, gently guide head and neck downward to deliver anterior shoulder. Support and gently lift head and neck to deliver posterior shoulder
- Rest of infant should deliver with passive participation – get a firm hold on baby
- 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 minutes if high PARA
- The higher the PARA, the shorter the labor is likely to be
- High risk factors include: no prenatal care, drug use, teenage pregnancy, DM, htn, cardiac disease, prior breech or C section, preeclampsia, twins
- Note color of amniotic fluid for meconium staining

Postpartum Care Infant

- Suction mouth and nose only if signs of obstruction by secretions
- Respirations should begin within 15 seconds after stimulating reflexes. If not, begin artificial ventilations at 40-60 breaths/min
- If apneic, cyanotic or HR < 100, begin neonatal resuscitation
- Dry baby and wrap in warm blanket
- After umbilical cord stops pulsating, double clamp 6" from infant abdominal wall and cut between clamps with sterile scalpel. If no sterile cutting instrument available, lay infant on mother's abdomen and do not cut clamped cord
- Document 1 and 5 minute APGAR scores

Postpartum Care Mother

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

7010 OBSTETRICAL COMPLICATIONS

EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

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

Breech Delivery

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

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 O_2 via NRB, IV access
- Suspect placental abruption or placenta previa
- Initiate rapid transport
- Position patient on left side
- Note type and amount of bleeding
- IV NS bolus for significant bleeding or shock

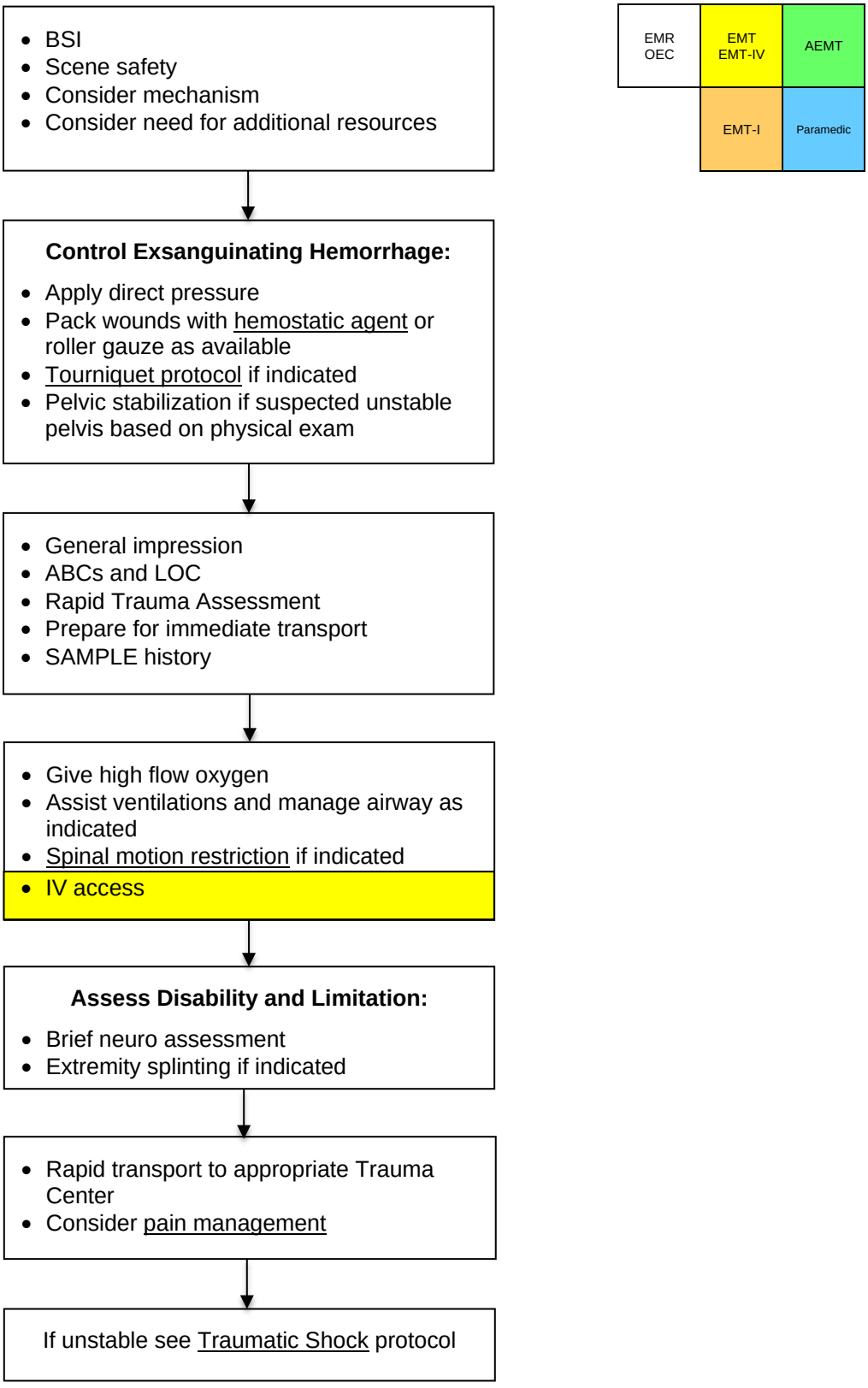
Pre-eclampsia/Eclampsia

- High flow O_2 via NRB, IV access
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort
- Treat seizures with Magnesium Sulfate
- See seizure protocol

Shoulder Dystocia

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

8000 GENERAL TRAUMA CARE



8005 TRAUMA CENTER CRITERIA – BOULDER COUNTY

Full Trauma Team Activation: Physiologic Criteria

1. **Level of consciousness:**
   - ≥ 15 years old: GCS < 10
   - < 15 years old: AVPU – Responsive to pain only or unresponsive.
2. **Airway:**
   - Unable to adequately ventilate Pt. (Unmanageable airway)
   - Use of airway adjuncts, i.e. ETT, King Airway, Combi-Tube or other Rescue Airway, OPA.
3. **Breathing:**
   - ≥ 15 y/o: Respiratory rate < 10 or > 29
   - < 15 y/o: *Any sign of respiratory insufficiency*.
   - Ventilatory assistance (Use of BVM).
4. **Circulation:**
   - ≥ 15 y/o: Systolic BP < 90.
   - < 15 y/o: *Any sign of abnormal perfusion*.
     i. Capillary refill > 2 seconds.
     ii. Systolic BP low for age.
        1. < 1 y/o: < 60 SBP
        2. 1-10 y/o: < 70 + (age x 2) SBP
        3. 10-14 y/o: < 90 SBP

Full Trauma Team Activation: Anatomic Criteria

1. Penetrating injuries to:
   - Head
   - Neck
   - Torso
   - Extremities proximal to elbow or knee
2. Flail chest
3. Two or more proximal long bone fractures
4. Unstable pelvic fracture
5. Paralysis or other evidence of spinal cord injury
6. Amputation *proximal* to wrist or ankle
7. Crushed, de-gloved or mangled extremity
8. Open and/or depressed skull fracture
9. EMS Provider judgment. Provide clinical rationale for activation.

8005 TRAUMA CENTER CRITERIA – BOULDER COUNTY

Limited Trauma Team Activation: Mechanism of Injury

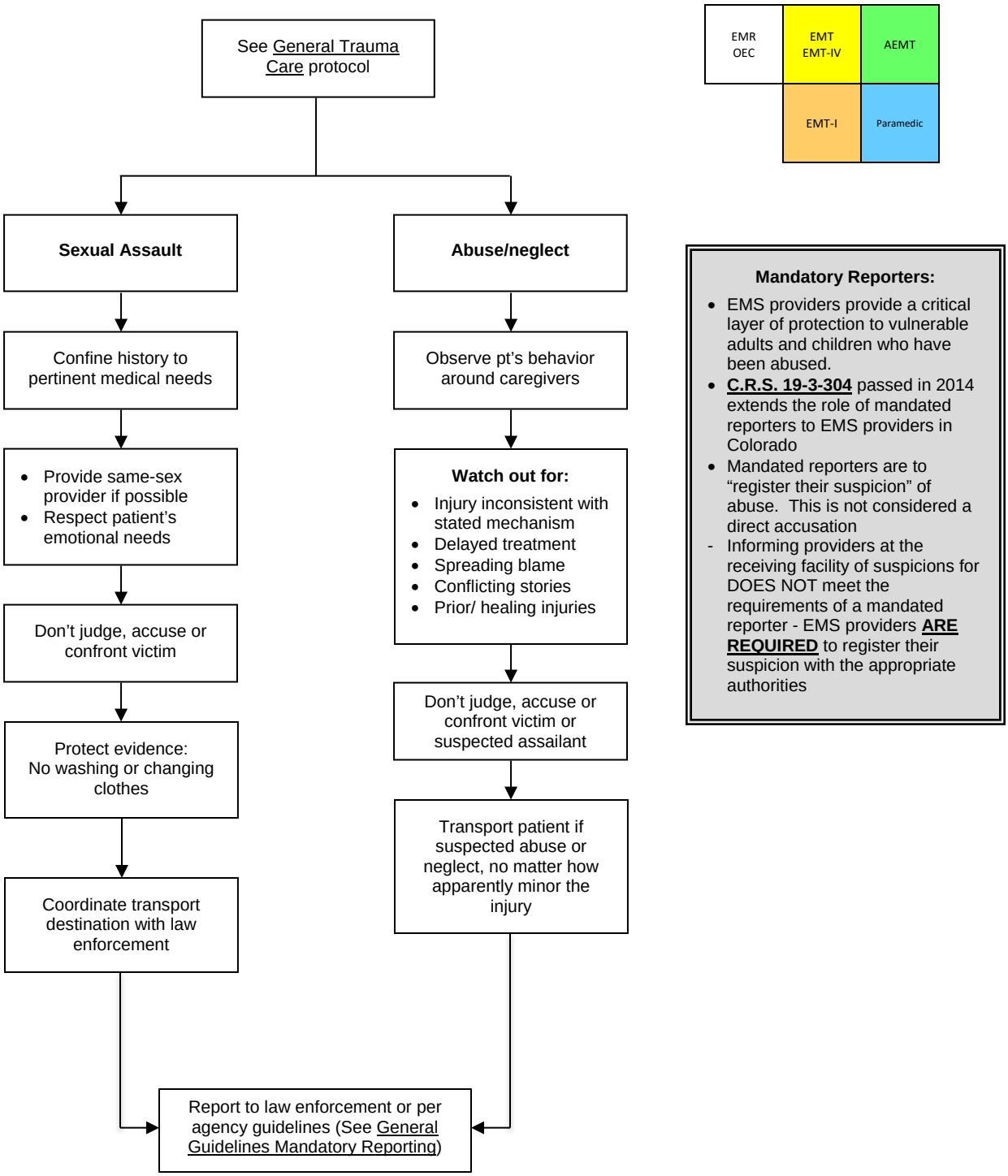
1. ≥65 y/o: <110 Systolic BP (physiologic criteria requiring limited activation)
2. Falls ≥ 15 y/o: > 20 feet (includes parachutists).
3. Falls < 15 y/o: > 15 feet or 3 x height of child.
4. High Risk Auto Crash:
    - Intrusion into passenger compartment of ≥ 12 inches
    - Intrusion anywhere on vehicle of ≥ 18 inches
    - Ejection, partial or complete, from vehicle
    - Death in same passenger compartment
    - **Specific for Pediatric patients:** Moderate/high speed crash with *unrestrained or improperly restrained* child.
5. Auto vs. pedestrian or bicyclist:
    - Thrown from point of impact
    - Run over by vehicle
    - Significant impact (≥ 20 mph)
6. Motorcycle crash ≥ 20 mph.
7. Event involving high energy dissipation:
    - Ejection from motorcycle, ATV, animal, etc.
    - Striking fixed object with significant momentum.
    - Blast or explosion
8. High energy electrical injury, including lightning.
9. Burns:
    - ≥ 10% TBSA (2nd and/or 3rd degree)
    - Burns to:
        - Hands / feet
        - Groin
        - Face (Especially with suspected inhalation injuries)
10. Drowning/Near Drowning
    - If incidence of trauma is unknown trauma activation mandated
11. Hanging/strangulation
12. Weakness, paresthesia, or history of paralysis related to the current traumatic event.
13. EMS provider judgment. Provide clinical rationale for activation.

Special considerations:

- ≥ 55 years old
- Known anticoagulation or bleeding disorders
- Dialysis patients
- Pregnancy ≥ 20 weeks: Limited with any mechanism; consider Full with suspected fetal distress. See Trauma in Pregnancy.
- Hypothermia associated with trauma.
- Suspicion of abdominal injuries with “seatbelt sign”.
    a. **Specific for Pediatric patients:** Abdominal tenderness or distention with “seatbelt sign”.

8010 SPECIAL TRAUMA SCENARIOS PROTOCOL

Coordinate transport destination with law enforcement



Mandatory Reporters:

- EMS providers provide a critical layer of protection to vulnerable adults and children who have been abused.
- **C.R.S. 19-3-304** passed in 2014 extends the role of mandated reporters to EMS providers in Colorado
- Mandated reporters are to "register their suspicion" of abuse. This is not considered a direct accusation
- Informing providers at the receiving facility of suspicions for DOES NOT meet the requirements of a mandated reporter - EMS providers **ARE REQUIRED** to register their suspicion with the appropriate authorities

8020 TRAUMA IN PREGNANCY

EMR OEC	EMT EMT-IV	AEMT
	EMT-I	Paramedic

See General Trauma Care protocol

Pregnant Trauma (EGA < 20 weeks)

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

Pregnant Trauma (EGA ≥ 20 weeks)

- Priority is mother.
- Transport all patients.
- Assure hospital is aware of pregnancy and EGA

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

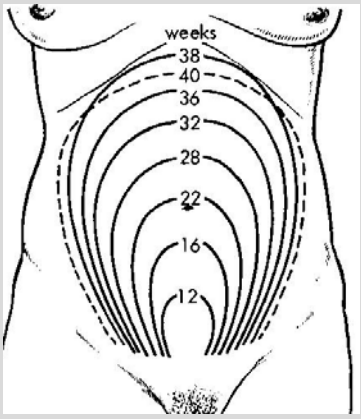
- Avoid supine position:
  - o Place in left lateral recumbent position if possible

Interpret VS with caution. Pregnant patient has:

- *Increased heart rate*
- *Decreased blood pressure*
- *Increased blood volume*

Estimated Gestational Age (EGA)

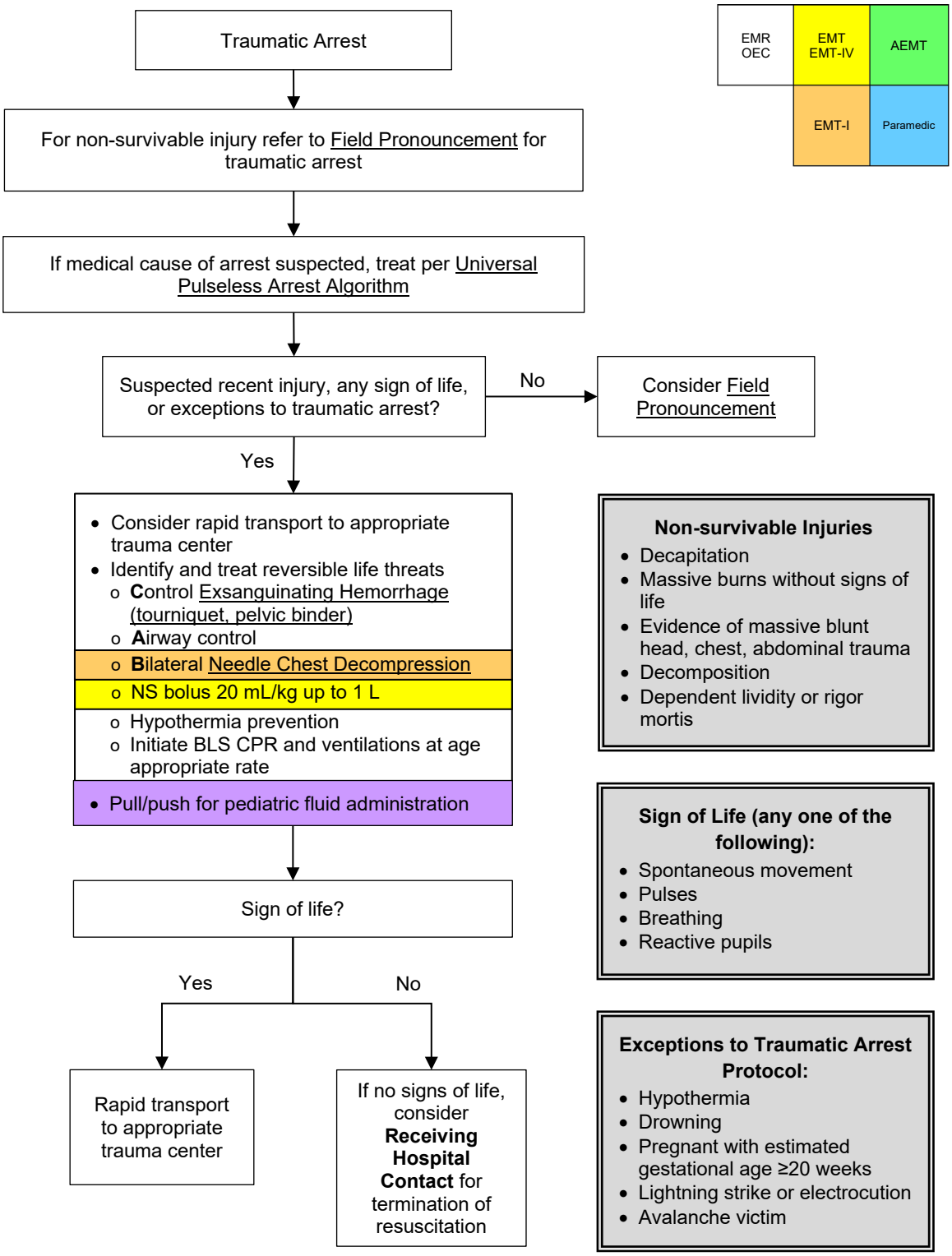
If EGA ≥ 20 weeks, consider two patients: mother and fetus. Estimation of gestational age may be made based on fundal height by palpating for top of uterus:



If uterus is at umbilicus then EGA > 20 weeks

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

8030 TRAUMATIC ARREST



8040 TRAUMATIC SHOCK

EMR OEC	EMT EMT-IV	AEMT	EMT-I	Paramedic

- Initiate rapid transport
- Treat en-route

↓

Is there hypotension for age and/or definite signs of shock?

No →

↓

- Rapid transport to appropriate trauma center.
- Identify and treat reversible life threats
  - Control exsanguinating hemorrhage
  - Consider bilateral needle chest decompression
  - 2 IVs preferred NS bolus 200-500 mL (IO if no IV access)
  - **(WAIVERED)** ≥13y/o with systolic BP ≤90 mmHg from suspected hemorrhage consider tranexamic acid (TXA)
  - Hypothermia prevention
- Consider pelvic stabilization
- Pull/push 20 mL/kg NS for pediatric fluid administration

↓

Reassess

↓

Repeat NS bolus 200-500 mL as needed for persistent hypotension for age and/or definite signs of shock

Pull/push 20 mL/kg NS for pediatric fluid administration

↓

Reassess

↓

- Treat en-route
- Complete General Trauma Care
- Keep patient warm
- Monitor ABCs, VS, mental status
- Rapid transport to appropriate trauma center
- Monitor cardiac rhythm

Shock is defined as impaired tissue perfusion and may be manifested by any of the following:

- Altered mental status
- Tachycardia
- Poor skin perfusion
- Low blood pressure

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

Routine Trendelenburg positioning is unnecessary and may impair respirations and/or aggravate injuries supine position is preferred

Pediatric Fluid Administration

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

Pediatric Shock

Signs of Compensated Shock

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

Signs of Decompensated Shock

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

Prehospital Endpoints of Fluid Resuscitation:

- Over aggressive IV fluid resuscitation may worsen bleeding, hypothermia, and coagulopathy.
- Do not withhold IV fluids in a critically injured patient but give judiciously with goal to improve signs of perfusion and mental status rather than to achieve a “normal” blood pressure. In general, 2 liters is considered a maximum total dose.
- Hypotension is particularly harmful to patients with severe TBI. In patients with TBI, more aggressive fluid resuscitation is justified to maintain a normal blood pressure
- Most pediatric trauma mortality is from TBI, therefore fluid resuscitation to normal BP is recommended

Minimum Blood Pressure for Fluid Resuscitation

Age	MAP (mmHg)	Minimum SBP (mmHg)
0-23 months	50-70	75
2-5 years	60-80	80
6-8 years	65-85	85
9-12 years	70-95	90
>12 years	≥65	≥90

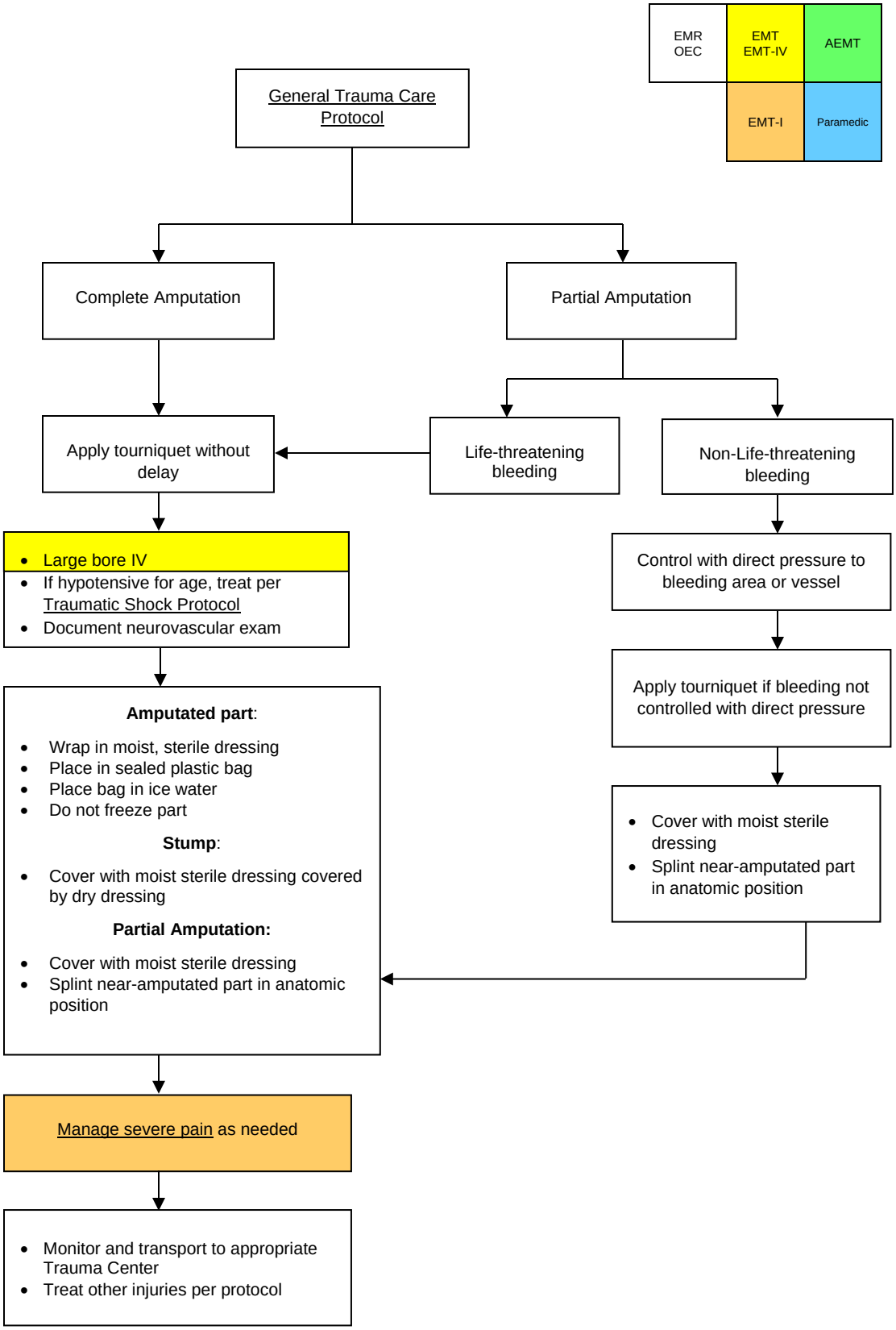
Hypotension for Age

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

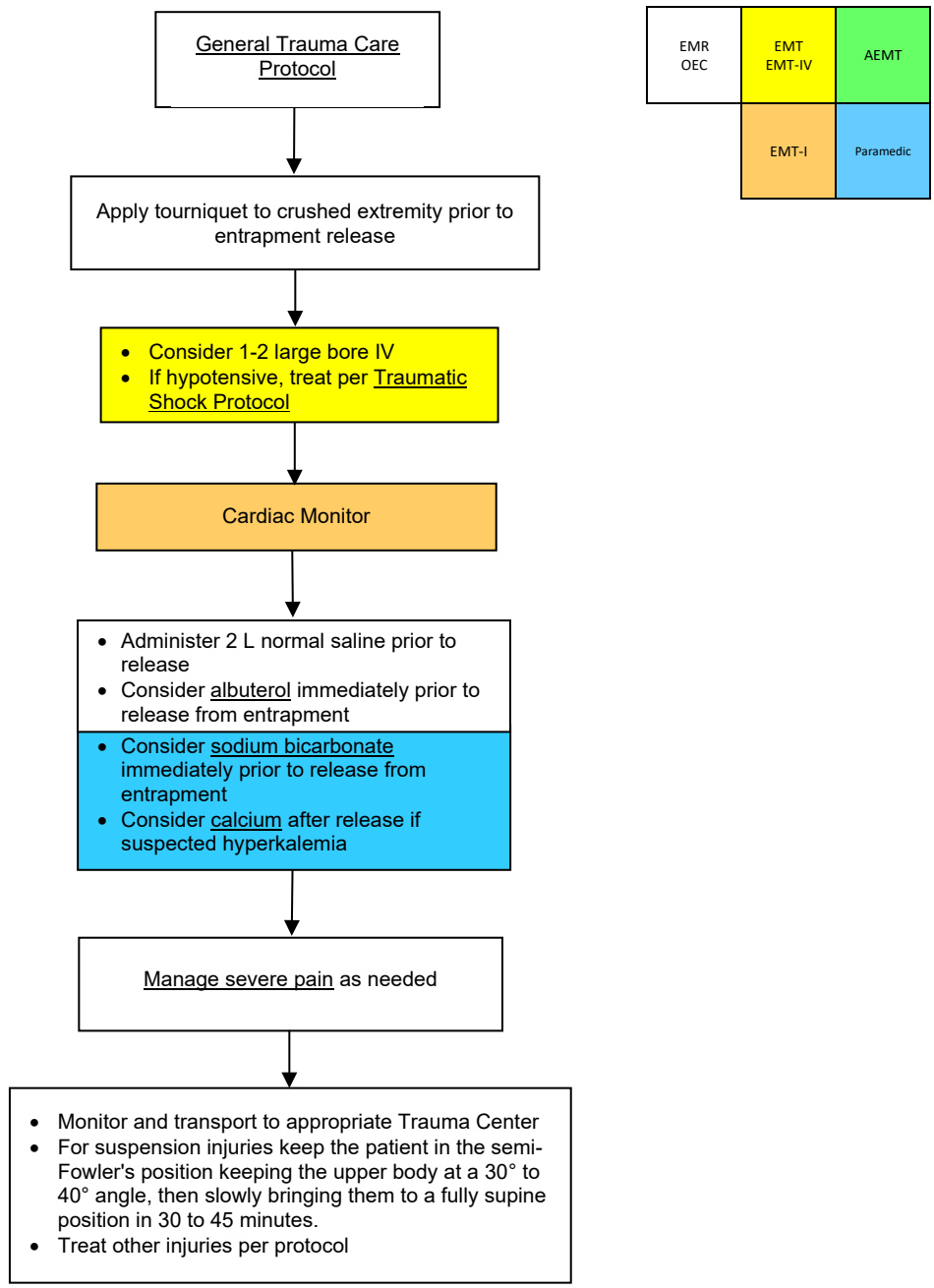
Tachycardia for Age

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

8050 AMPUTATIONS



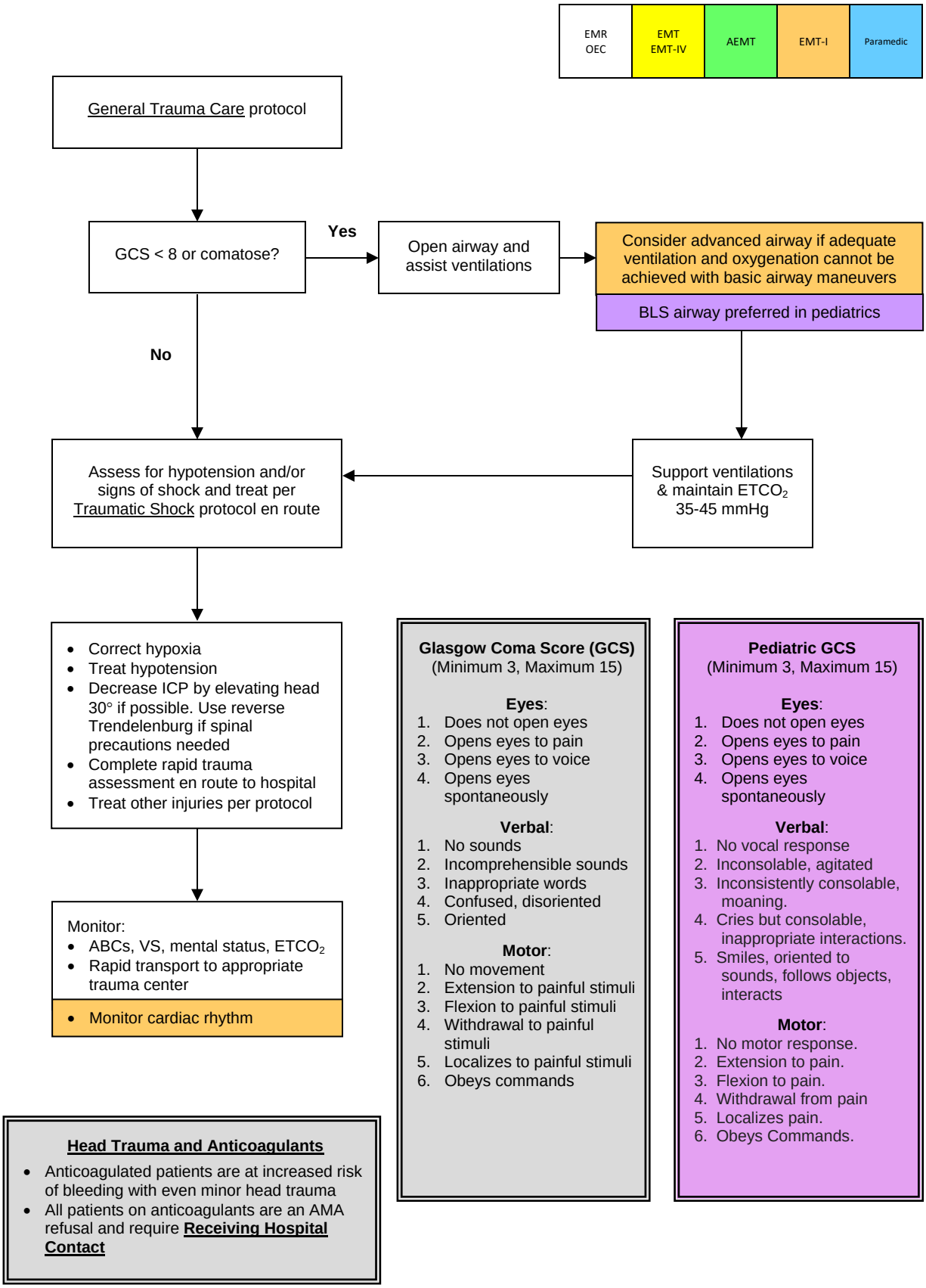
8055 CRUSH INJURIES/SUSPENSION INJURIES



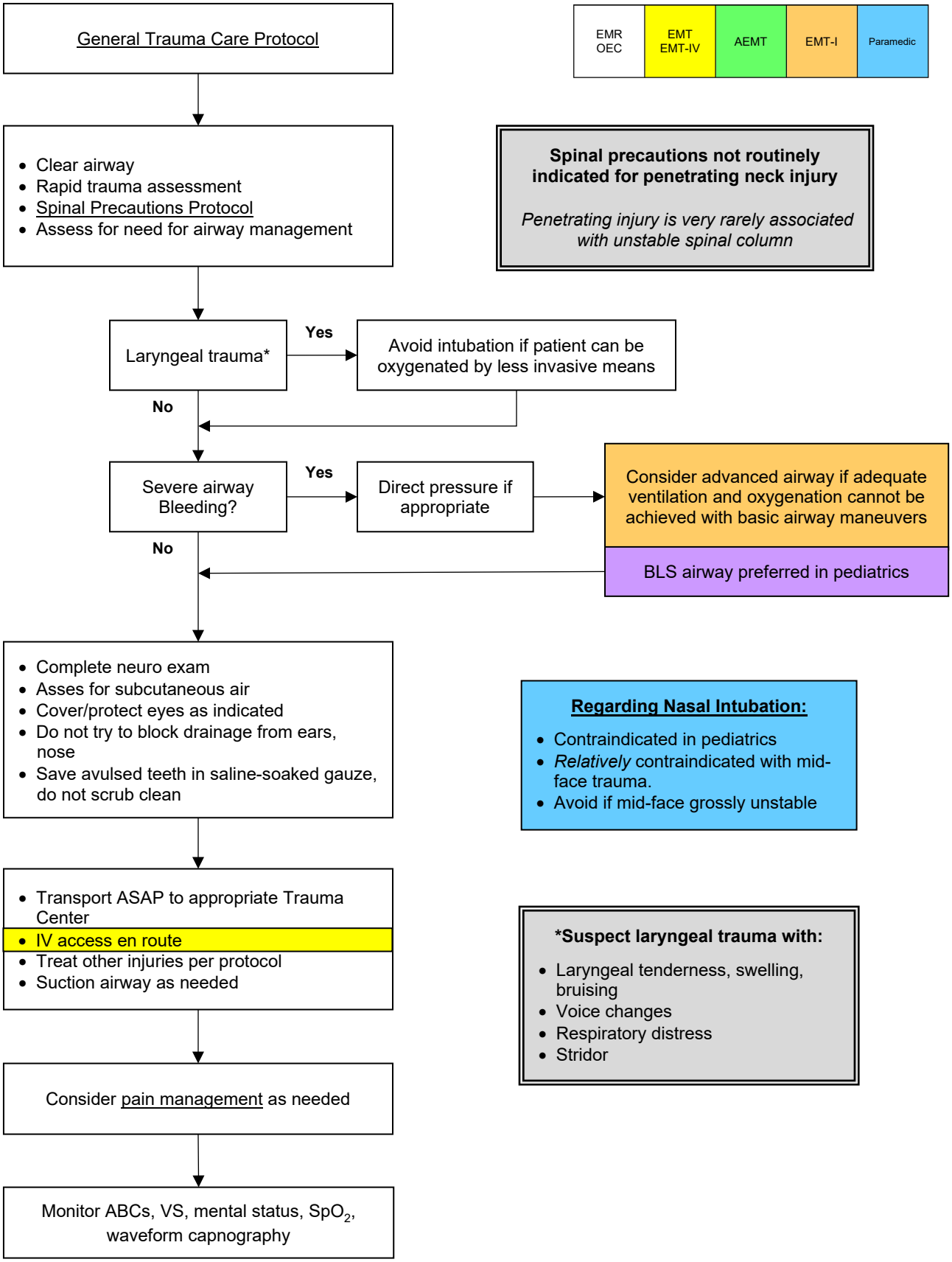
Special Considerations

- Protocol presumes patient has had a full extremity (or more) crushed, pinned, or otherwise immobile with severely impaired circulation for at least two hours or presumes patient has been suspended for at least ten minutes and is unconscious.
- **Contact receiving hospital** early and often
- Monitor the involved extremities for ischemia using the six P"'s" (Pain, Pallor, Pulseless, Paralysis, Paresthesia, Poikilothermia [attain the temperature of the environment])
- Do ***NOT*** use lactated Ringer's IV solution
- If entrapment is > 2 hours, ensure that patient has received 2 L of normal saline prior to release of entrapment
- Do not run sodium bicarbonate and calcium chloride concurrently. Either flush the line well or use a separate line.

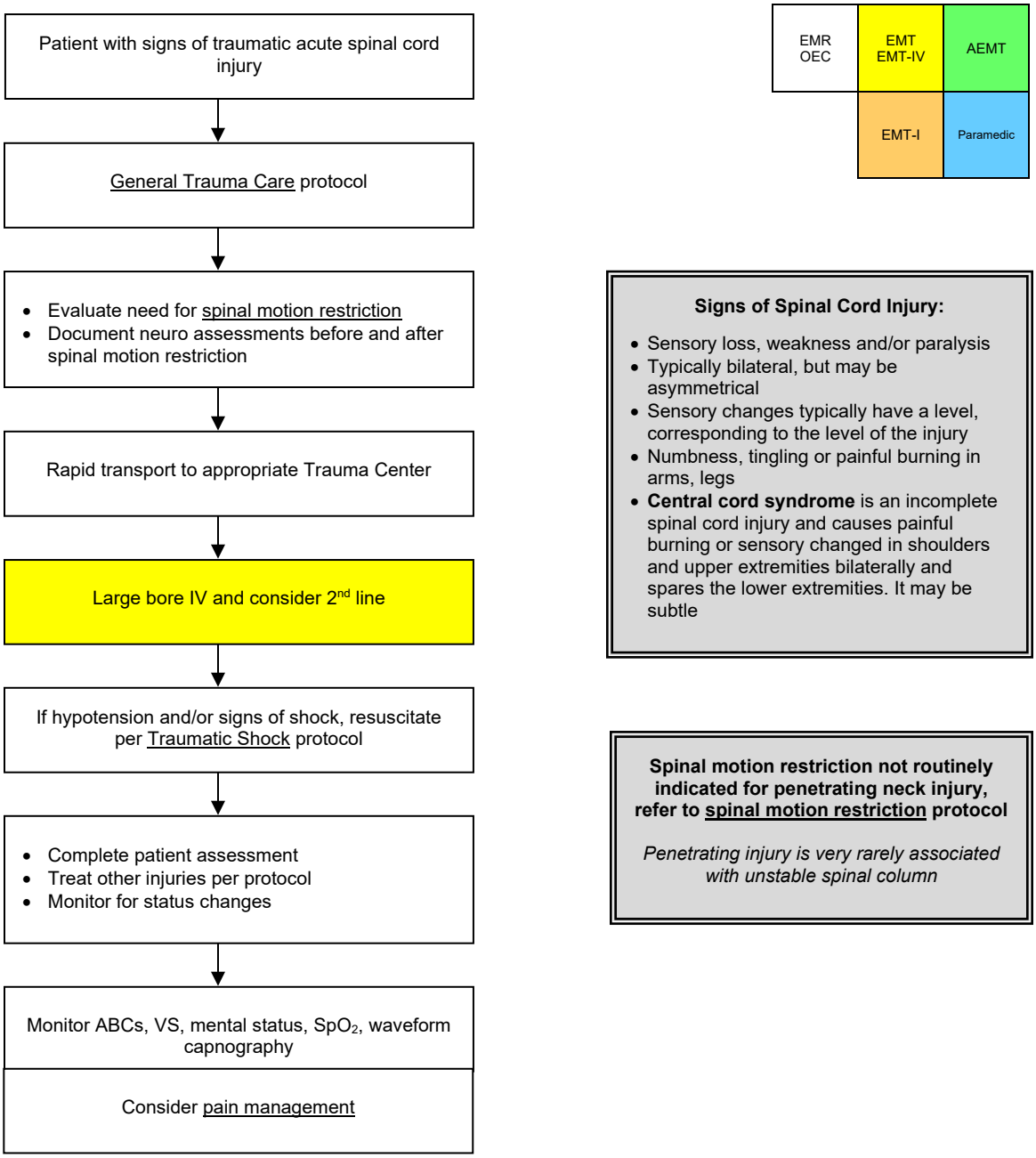
8060 HEAD TRAUMA PROTOCOL



8070 FACE AND NECK TRAUMA



8080 SPINAL TRAUMA



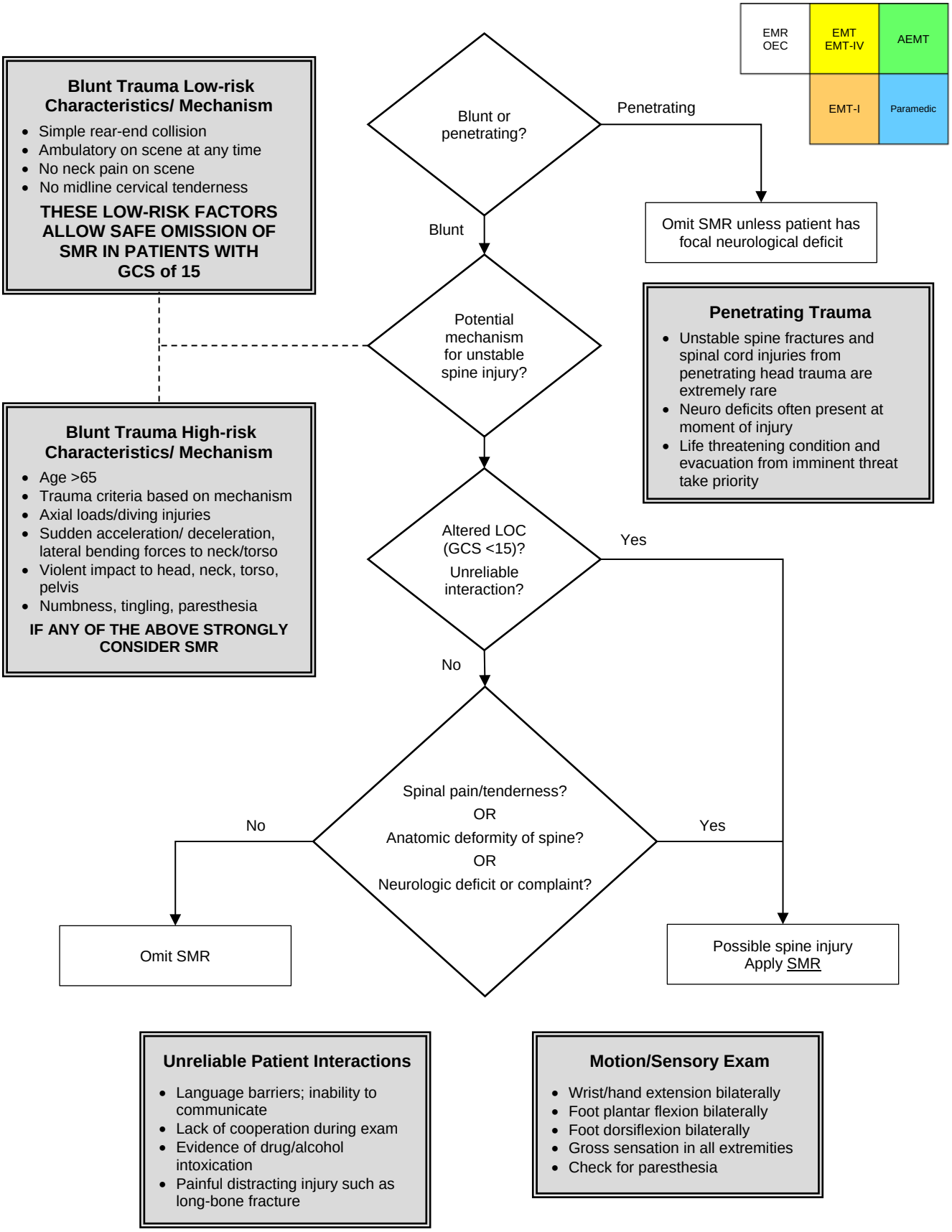
Signs of Spinal Cord Injury:

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

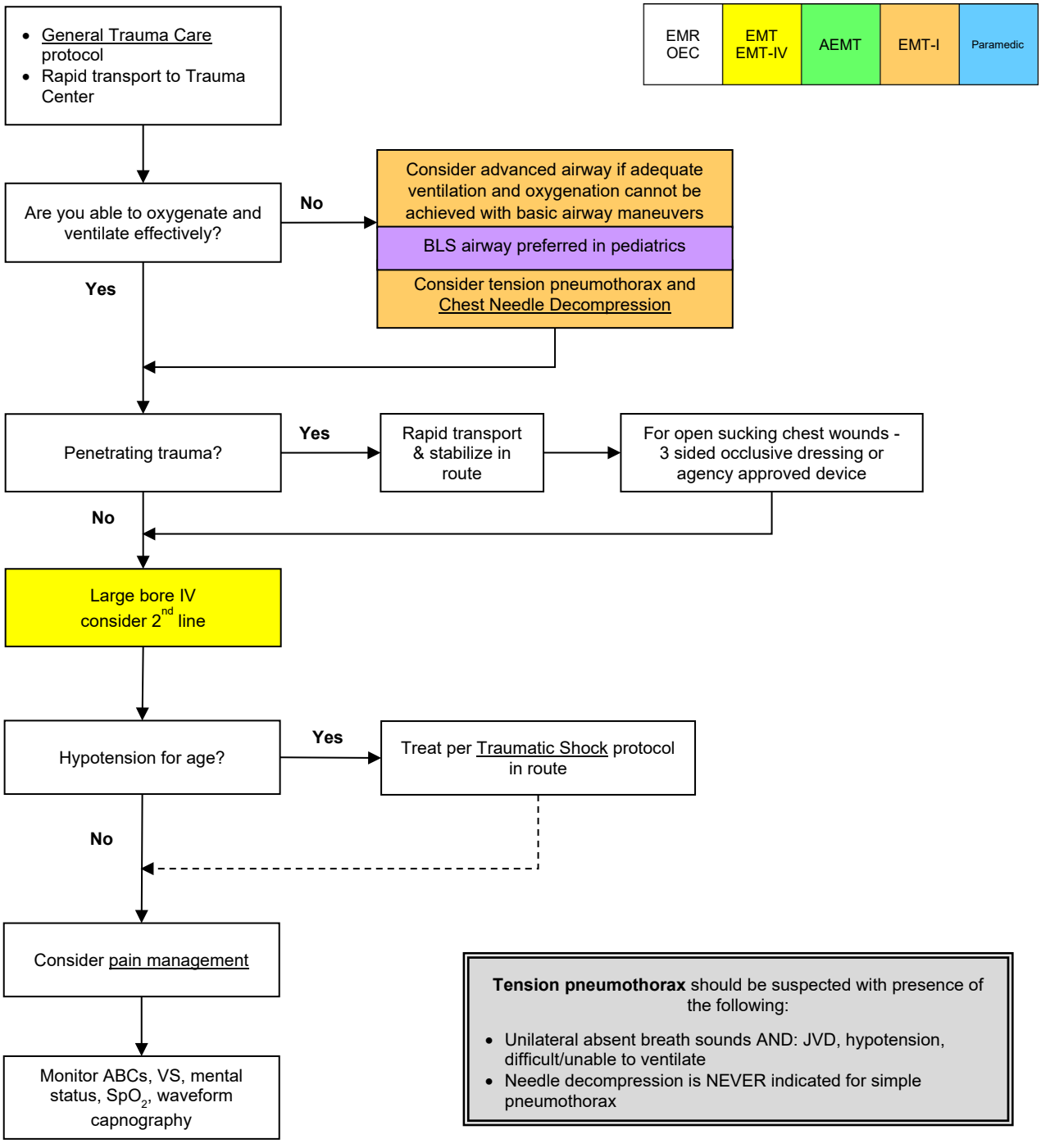
Spinal motion restriction not routinely indicated for penetrating neck injury, refer to spinal motion restriction protocol

Penetrating injury is very rarely associated with unstable spinal column

8090 SPINAL MOTION RESTRICTION



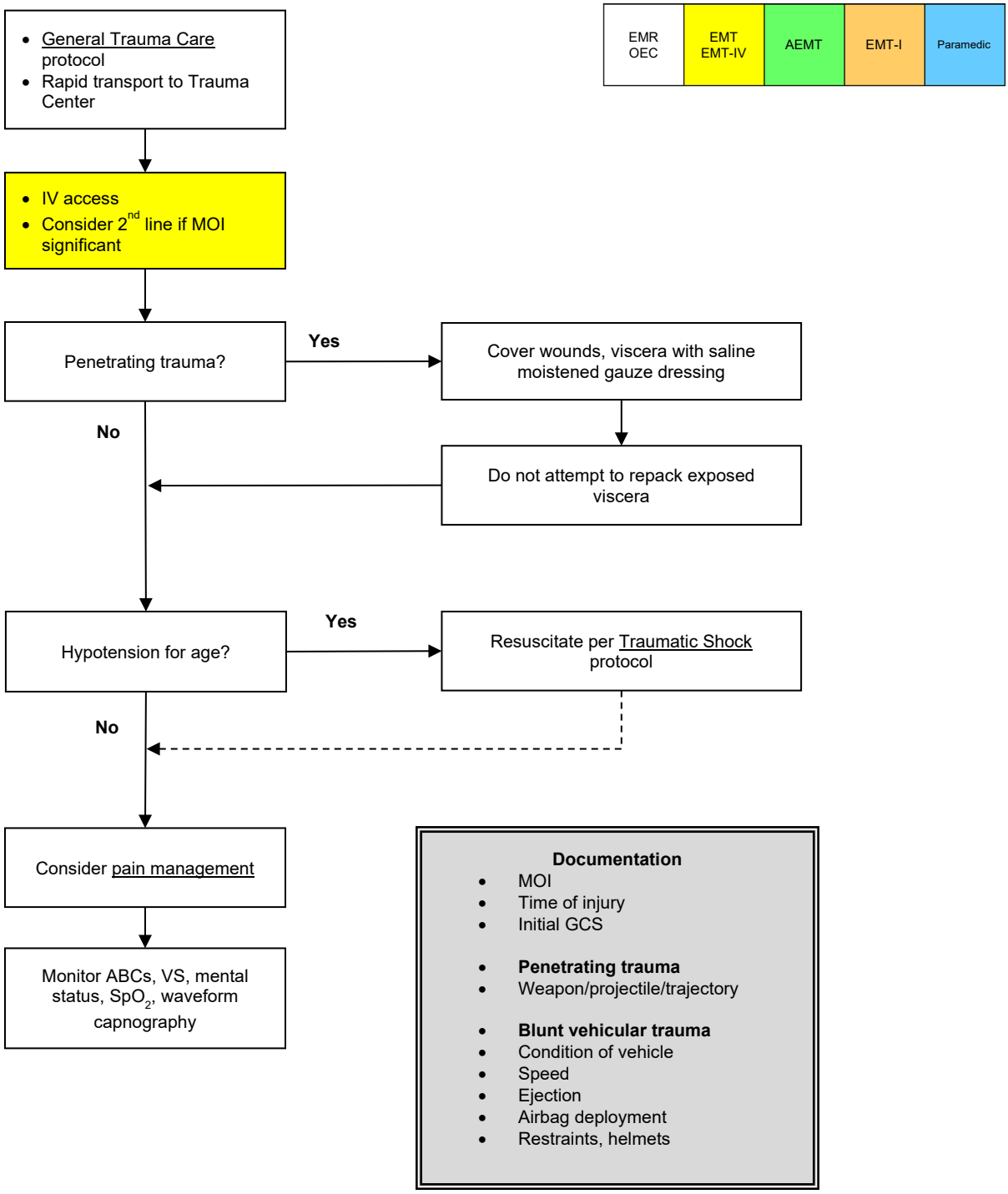
8110 CHEST TRAUMA



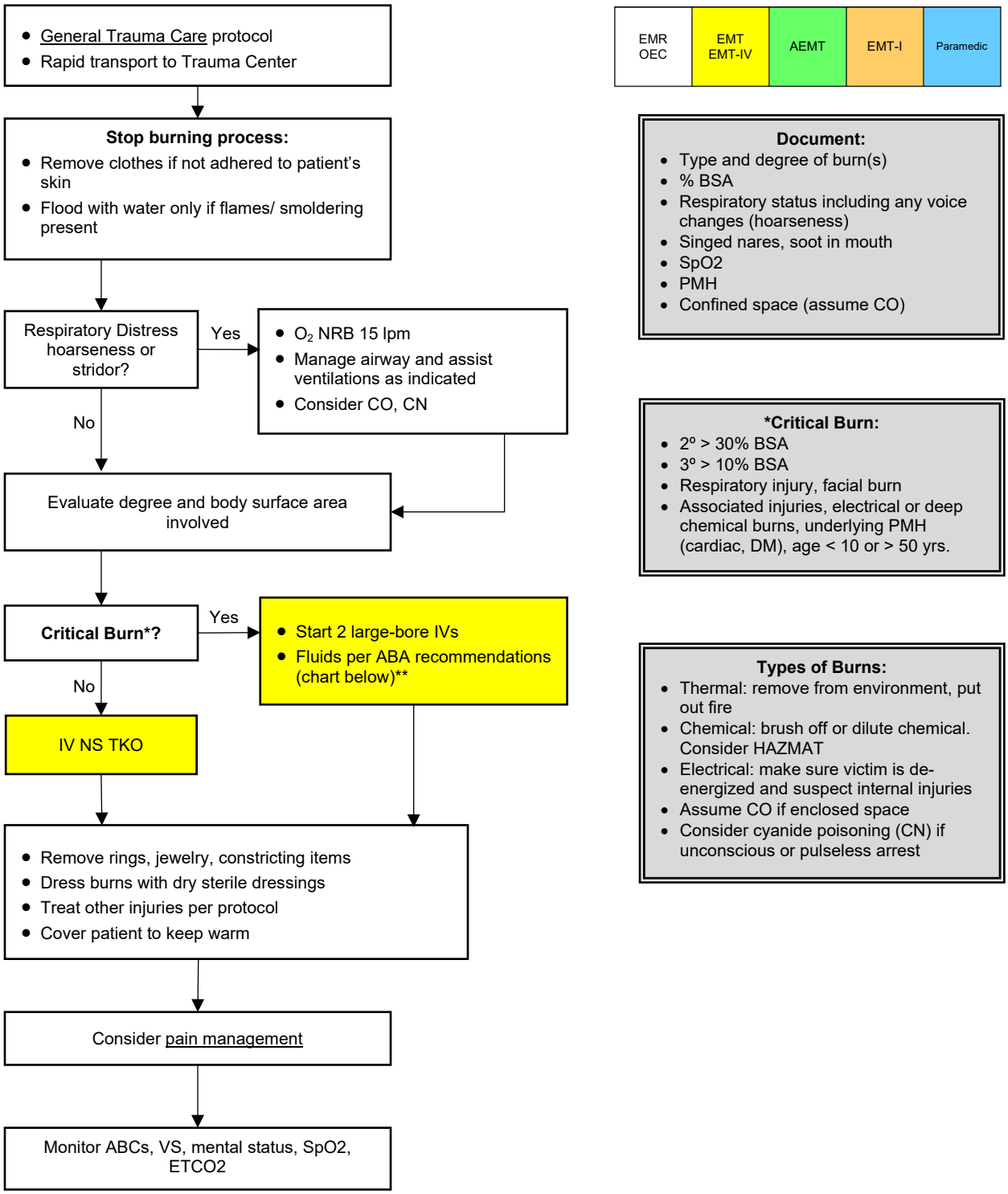
Tension pneumothorax should be suspected with presence of the following:

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

8120 ABDOMINAL TRAUMA



8130 BURNS



**** ABA Recommended Prehospital Fluid Therapy**

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

If no signs of clinical hypovolemia or shock, large volume of IV fluid not needed. For typical 30 minute prehospital time, give 250cc bolus for patient age ≥ 14.

9005 MEDICATIONS

ACETAMINOPHEN (TYLENOL)

Description

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

Onset & Duration

- Onset: 20 minutes
- Duration: 4 hours

Indications

- Mild pain

Contraindications

- Known hypersensitivity
- Known or suspected chronic liver disease

Adverse Reactions

- Acetaminophen has a wide therapeutic window. Recommended maximum therapeutic doses are less than half the toxic dose.
  - Single toxic dose in a 70 kg adult is between 7-10 gm.
  - Single toxic dose in a child is between 150-200 mg/kg.
  - Chronic supratherapeutic acetaminophen poisoning is possible as many medications contain acetaminophen.

Drug Interactions

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

Dosage and Administration

Adult:

1000 mg PO

Pediatric:

15 mg/kg PO

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

Protocol

- Pain management

9010 MEDICATIONS

ADENOSINE (ADENOCARD)

Description

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

Onset & Duration

- Onset: almost immediate
- Duration: 10 sec

Indications

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

Contraindications

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

Adverse Reactions

- Chest pain
- Shortness of breath
- Diaphoresis
- Palpitations
- Lightheadedness

Drug Interactions

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

Dosage and Administration

Adult:

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

Pediatric:

Children who are stable with AVNRT generally remain so and transport is preferred over intervention.

CONTACT RECEIVING HOSPITAL 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.

9010 MEDICATIONS

Protocol

- Tachyarrhythmia with Poor Perfusion

Special Considerations

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

9020 MEDICATIONS

ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)

Description

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

Onset & Duration

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

Indications

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

Contraindications

- Severe tachycardia is a relative contraindication

Adverse Reactions

- Tachycardia
- Palpitations
- Dysrhythmias

Drug Interactions

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

9020 MEDICATIONS

Protocol

- Adult Wheezing
- Pediatric Wheezing
- Allergy and Anaphylaxis
- Crush Injury

Special Considerations

- Consider inline nebs for patients requiring endotracheal intubation or CPAP.
- May precipitate angina pectoris and dysrhythmias
- Should be used with caution in patients with suspected or known coronary disease, diabetes mellitus, hyperthyroidism, prostatic hypertrophy, or seizure disorder
- Wheezing associated with anaphylaxis should first be treated with epinephrine IM.

9030 MEDICATIONS

ANTIARRHYTHMICS – VENTRICULAR (AMIODARONE, LIDOCAINE)

General Description

- The principal objective of antiarrhythmic drug therapy in shock-refractory VF and pulseless VT is to facilitate the restoration and maintenance of a spontaneous perfusing rhythm in concert with the shock termination of VF/VT; some antiarrhythmic drugs have been associated with increased rates of ROSC and hospital admission, but none have yet been proven to increase long-term survival or survival with good neurologic outcome.
- Wide complex tachycardias with a pulse manifest with an elevated heart rate for age, widened QRS complex on the ECG monitor, and may or may not present with associated symptoms such as palpitations, dyspnea, chest pain, syncope/near-syncope, hemodynamic compromise, altered mental status, or other signs of end organ malperfusion. Ventricular antiarrhythmics are considered if patient has symptomatic VT or undifferentiated wide complex tachycardia with a pulse. If patient is hemodynamically unstable, immediate cardioversion is the preferred treatment.
- Lidocaine may be considered as an alternative to amiodarone. Selection of specific agent as preferred ventricular antiarrhythmic is at individual agency Medical Director discretion.

General Indications

- Pulseless arrest in patients with shock-refractory or recurrent VF/VT
- Regular wide complex tachycardia not requiring immediate cardioversion due to hemodynamic instability

General Precautions

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

General Contraindications

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

General Adverse Reactions

- Hypotension
- Bradycardia

Protocol

- Medical Pulseless Arrest Algorithm
- Tachycardia with Poor Perfusion

Special Considerations

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

Amiodarone (Cordarone)

- **Specific Description**
  - Amiodarone has multiple effects showing Vaughn-Williams Class I, II, III and IV actions with a quick onset. The dominant effect is prolongation of the action potential duration and the refractory period.
- **Specific Contraindications**
  - Known hypersensitivity to amiodarone
  - Severe sinus node dysfunction
  - Avoid during breastfeeding
- **Specific Considerations**
  - Amiodarone is preferred to adenosine for treatment of undifferentiated wide complex tachycardia with a pulse.

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- **Amiodarone Dosage and Administration**

Pulseless Arrest (Refractory VT/VF)
Adult
• 300 mg IV bolus. • Administer additional 150 mg IV bolus in 3-5 minutes if shock refractory or recurrent VF/VT.
Pediatric
• 5mg/kg IV over 3-5 minutes. • **CONTACT RECEIVING HOSPITAL** for additional doses.
Symptomatic VT and undifferentiated wide complex tachycardia with a pulse:
Adult
• **CONTACT RECEIVING HOSPITAL** 150 mg IV bolus infusion over 10 minutes.
Pediatric
• **CONTACT RECEIVING HOSPITAL** 5 mg/kg (not to exceed 150 mg) over 20 minutes

Lidocaine

- **Specific Description**
  - Lidocaine is a Vaughn-Williams Class Ib antidysrhythmic that blocks sodium channels shortening the action potential of the myocardial cell.
- **Specific Contraindications**
  - Known hypersensitivity to lidocaine or other amide-type local anesthetic
  - Adam-Stokes syndrome
  - Wolff-Parkinson-White syndrome
- **Specific Side Effects**
  - Dizziness, tinnitus, tremulousness, agitation, and seizures
  - Cardiovascular effects include exacerbation of heart block, hypotension, and bradycardia
- **Specific Precautions**
  - Administer with caution in patients with congestive heart failure and liver disease.
  - Consider for patients over the age of 70 or with liver dysfunction: Use the usual adult loading dose. Repeat doses should be half the usual repeat dose.
  - Lidocaine may speed up the ventricular rate in patients with atrial fibrillation
- **Lidocaine Dosage and Administration**

Pulseless Arrest (Refractory VT/VF)
Adult
• 1-1.5 mg/kg IV bolus. May repeat once.
Pediatric
• 1 mg/kg may be considered as an alternative to amiodarone. May repeat once.
Symptomatic VT and undifferentiated wide complex tachycardia with a pulse:
Adult
• **CONTACT RECEIVING HOSPITAL** 1.5 mg/kg IV bolus. • May be repeated at 5-minute intervals for a maximum dose of 3mg/kg IV
Pediatric
• **CONTACT RECEIVING HOSPITAL** for consult.

9040 MEDICATIONS

ANTIEMETICS: ONDANSETRON (ZOFRAN), PROMETHAZINE (PHENERGAN), METOCLOPRAMIDE (REGLAN)

Description

- Ondansetron is a selective serotonin 5-HT3 receptor antagonist antiemetic. Ondansetron is the preferred antiemetic, if available.
- Promethazine is a non-selective central and peripheral H-1 type histamine antagonist with anticholinergic properties resulting in antiemetic and sedative effects.
- Metoclopramide is a dopamine antagonist that works by blocking the CNS vomiting chemoreceptor trigger zone (CRT).

Indications

- Nausea and vomiting

Contraindications

- Ondansetron: No absolute contraindication. Should be used with caution in first trimester of pregnancy and should be reserved for only those patient with severe dehydration and intractable vomiting
- Promethazine: age < 2 years, patients with respiratory or CNS depression or allergy to sulfites.
- Metoclopramide: age < 8 years or suspected bowel obstruction.

Adverse Effects:

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

Dosage and Administration

Ondansetron

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

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

Pediatric < 4 years old:
2 mg IV/PO/ODT

Promethazine

Adult:
6.25 mg IV. May repeat x 1 dose as needed.

Pediatric > 2 years old:
0.25-0.5 mg/kg IV to a maximum of 6.25 mg.

Metoclopramide

Adult:
10 mg IV/IM.

Pediatric 8-12 years old:
5 mg IV/IM.

Droperidol

Refer to droperidol protocol for dosing

Protocol

- Abdominal Pain/Vomiting
- Altitude Illness

Promethazine and Metoclopramide Side effects/Special Notes:

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

9050 MEDICATIONS

ASPIRIN (ASA)

Description

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

Indications

- Suspected acute coronary syndrome

Contraindications

- **Active** gastrointestinal bleeding
- Aspirin allergy
- Possible hemorrhagic stroke

How Supplied

Chewable tablets 81mg

Dosage and Administration

- 324mg PO

Protocol

- Chest Pain

Special Considerations

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

9060 MEDICATIONS

ATROPINE SULFATE

Description

Atropine is a naturally occurring antimuscarinic, anticholinergic substance. It is the prototypical anticholinergic medication with the following effects:

- Increased heart rate and AV node conduction
- Decreased GI motility
- Urinary retention
- Pupillary dilation (mydriasis)
- Decreased sweat, tear and saliva production (dry skin, dry eyes, dry mouth)

Indications

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

Precautions

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

Adverse Reactions

- Anticholinergic toxidrome in overdose, think “blind as a bat, mad as a hatter, dry as a bone, red as a beet”

Dosage and Administration

Hemodynamically Unstable Bradycardia

Adult:

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

Poisoning/Overdose

Adult:

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

Pediatric:

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

Protocol

- Bradycardia with poor perfusion
- Poisoning/Overdose

Special Considerations

- Atropine causes pupil dilation, even in cardiac arrest settings

9070 MEDICATIONS

BENZODIAZEPINES (DIAZEPAM, LORAZEPAM, MIDAZOLAM)

General 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.

General 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.

General Indications

- Status epilepticus
    - If no IV has been previously established, midazolam IN is the preferred medication and route for all ages.
    - For adults, if IV established, any IV benzodiazepines are acceptable to use.
    - Midazolam is the preferred medication for pediatric seizures and IN is the preferred route.
- Sedation of the severely agitated/combative patient
- Sedation for cardioversion or transcutaneous pacing (TCP)
- Skeletal muscle relaxant (diazepam preferred)
- Pain management adjunct (midazolam preferred)
- Anxiolysis (lorazepam preferred)

General Contraindications

- Hypotension
- Respiratory depression

General Adverse Reactions

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

9070 MEDICATIONS

Midazolam (Versed)

- **Specific Description**
  - Short acting and rapidly metabolized, one active metabolite, water soluble
- **Specific Onset & Duration**
  - Characterized by short duration because of rapid metabolic transformation.
- **Specific Indications**
  - Active seizure control, particularly in children (has no preventive action)
  - Sedation
  - Anxiolytic
- **Specific Contraindications**
  - Allergy
  - Glaucoma
- **Side Effects**
  - Amnesia, drowsiness,
  - IV midazolam has potential for respiratory depression
  - If taken with alcohol, will enhance absorption and action
  - May cause hypotension, if so, treat with fluid
- **Midazolam (Versed) Dosage and Administration**

Seizure or sedation for cardioversion or transcutaneous pacing	
Adult	
IV/IO route:	1-2.5 mg. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses
IN/IM route:	5 mg. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses
Pediatric	
IV/IO route:	0.1 mg/kg. Maximum single dose is 2 mg IV. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses.
IN/IM route:	0.2 mg/kg. Maximum single dose is 5 mg IN or IM. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses.
Sedation of severely agitated or combative patient	
Adult	
IV/IN/IM route:	2-5 mg. **Contact Receiving Hospital** for more than 5 mg, 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	
IV/IN/IM route:	0.1 mg/kg. Maximum single dose of 2 mg. **Contact Receiving Hospital** for additional doses.
Anxiolysis	
Adult	
IV route:	0.5-1 mg
IN/IM route:	1 mg
Sedation as pain management adjunct	
Adult	
IV/IN/IM route:	1-2 mg after fentanyl or morphine

Lorazepam (Ativan)

- **Specific Description**
  - Metabolized more slowly than other benzodiazepines, little metabolic alteration, metabolites not active
- **Specific Onset & Duration**
  - Not as likely to accumulate with repeated dosing
  - Poor correlation between half-life and duration of effects due to metabolite action
- **Specific Indications**
  - Useful for achieving rapid sedation of agitated patients, anxiolytic, control of status epilepticus and can prevent seizure activity
  - More appropriate in those with liver impairment
  - Alcohol withdrawal
  - Panic disorder
  - Anxiety
- **Specific Contraindications**
  - Allergy, known sensitivity to propylene glycol, polyethylene glycol, or benzyl alcohol; COPD; sleep apnea, shock
- **Side Effects**
  - Amnesia, drowsiness, clouding of consciousness, ataxia
  - IV lorazepam has potential for severe respiratory depression
  - If taken with alcohol, will enhance absorption and action
  - May cause significant hypotension, if so, treat with fluid
- **Lorazepam (Ativan) Dosage and Administration**

Seizure or sedation for cardioversion or transcutaneous pacing	
Adult	
IV/IO route:	1 mg. Dose may be repeated in 10 minutes
IN/IM route: (IN preferred)	2 mg. Dose may be repeated in 10 minutes
Pediatric	
IV route:	0.05 mg/kg. Max single dose of 2 mg. May repeat in 10 minutes.
IN/IM route: (IN preferred)	0.1 mg/kg. Max single dose of 2 mg. May repeat in 10 minutes
Sedation of severely agitated or combative patient	
Adult	
IV route:	2 mg
IN/IM route:	2 mg
Dose may be repeated x 1. **Contact Receiving Hospital** 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	
IV/IN/IM route:	0.05 mg/kg. Max single dose of 2 mg. **Contact Receiving Hospital** for additional doses.
Anxiolysis	
Adult	
IV route:	0.5 - 2 mg
IN/IM route:	2 mg

Diazepam (Valium)

- **Specific Description**
  - Most rapidly absorbed of all benzodiazepines; metabolized by liver, three active metabolites, most prolong clinical duration of action; metabolized slowly by elderly and those with hepatic disease; has longer half-life
- **Specific Onset & Duration**
  - Poor correlation between half-life and duration of effects due to metabolite action
- **Specific Indications**
  - Muscle spasms
  - Control of status epilepticus, note that it is effective only during active seizure and has no preventive action
  - Alcohol withdrawal
  - Anxiety
- **Specific Contraindications**
  - Allergy
  - Alcohol intoxication
  - CNS depression
- **Side Effects**
  - Respiratory depression; drowsiness, clouding of consciousness, ataxia
  - IV diazepam has potential for severe respiratory depression
  - If taken with alcohol, will enhance absorption and action
  - Relaxes muscle tone secondary to CNS sedation
  - May cause hypotension, if so, treat with fluid
- **Diazepam (Valium) Dosage and Administration**

Seizure or sedation for cardioversion or transcutaneous pacing	
Adult	
IV/IO route:	5 mg. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses.
Pediatric	
IV route:	0.3 mg/kg. Maximum single dose is 5 mg IV. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses.
Sedation of severely agitated or combative patient	
Adult	
IV route:	5 mg.
Dose may be repeated x 1. **Contact Receiving Hospital** 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	
IV route:	0.3 mg/kg. Maximum single dose of 5 mg. Contact Receiving Hospital for additional doses.

9070 MEDICATIONS

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 required when used as pain management adjunct.
- Sedative effects of benzodiazepines are increased in combination with opioids, alcohol, or other CNS depressants.
- Coadministration of opioids and benzodiazepines is limited to use as pain management adjunct.
    - See Sedation as Pain management adjunct procedure
- In elderly patients > 65 years old or small adults < 50kg, lower doses may be sufficient and effective. Consider ½ dosing in these patients.

9080 MEDICATIONS

CALCIUM

Description

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

Indications

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

Contraindications

- Known hypercalcemia
- Suspected digoxin toxicity (i.e. digoxin overdose)

Side Effects/Notes

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

Dosage and Administration

Calcium Gluconate 10% Solution

Adult:

- **Pulseless arrest assumed due to hyperkalemia:**
  - 3 g (30 mL) slow IV push
- **Suspected hyperkalemia with ECG changes or suspected hyperkalemia after release of crush or suspension injury:**
  - 3 g (30 mL) not to exceed 2 mL per minute
- **Calcium channel blocker overdose with hypotension and bradycardia:**
  - **Contact Receiving Hospital** for order. 3 g (30 mL) slow IV/IO push. Dose may be repeated every 10 minutes for total of 3 doses

Pediatric:

- **Calcium channel blocker overdose with hypotension for age and bradycardia:**
  - **Contact Receiving Hospital** for order. 60 mg/kg (0.6 mL/kg), **not to exceed 3 g** slow IV/IO push not to exceed 2 mL/minute, may repeat every 10 minutes for total of 3 doses

Calcium Chloride 10% Solution

Adult:

- **Pulseless arrest assumed due to hyperkalemia:**
  - 1 g (10 mL) slow IV push
- **Suspected hyperkalemia with ECG changes or suspected hyperkalemia after release of crush or suspension injury**
  - 1 gm IV/IO slowly over 5 minutes. Repeat at same dose if symptoms persist.
- **Calcium channel blocker overdose with hypotension and bradycardia:**
  - **Contact Receiving Hospital** for order. 1 g (10 mL) slow IV/IO push. Dose may be repeated every 10 minutes for total of 3 doses

Pediatric:

- **Calcium channel blocker overdose with hypotension for age and bradycardia:**
  - **Contact Receiving Hospital** for order. 20 mg/kg (0.2 mL/kg), **not to exceed 1 g** slow IV/IO push not to exceed 1 mL/min, may repeat every 10 minutes for total of 3 doses.

Protocol

- Universal Pulseless Arrest
- Poisoning/Overdose
- Crush/suspension injury

9090 MEDICATIONS

DEXTROSE

Description

Glucose is the body's basic fuel and is required for cellular metabolism. A sudden drop in blood sugar level will result in disturbances of normal metabolism, manifested clinically as a decrease in mental status, sweating and tachycardia. Further decreases in blood sugar may result in coma, seizures, and cardiac arrhythmias. Serum glucose is regulated by insulin, which stimulates storage of excess glucose from the blood stream, and glucagon, which mobilizes stored glucose into the blood stream.

Indications

- Hypoglycemia
- The unconscious or altered mental status patient with an unknown etiology.

Precautions

- None

Dosage and Administration

Adult:

Non arrest adult: 250 mL of a 10% solution (25 gm in 250 mL) IV/IO infusion
Arrested hypoglycemic adult: 25 gm in solution IV/IO

Pediatric:

0.5 – 1 gm/kg or 5-10 ml/kg of a 10% solution (25 gm in 250 mL)

Protocol

- Hypoglycemia
- Universal Altered Mental Status
- Seizures
- Poisoning/Overdose
- Psych/Behavioral

Special Considerations

- The risk to the patient with ongoing hypoglycemia is enormous. With profound hypoglycemia and no IV access consider IO insertion.
- Draw blood sample before administration, if possible.
- Use glucometer before administration, if possible.
- Extravasation may cause tissue necrosis; use a large vein and aspirate occasionally to ensure route patency.

9100 MEDICATIONS

DIPHENHYDRAMINE (BENADRYL)

Description

Antihistamine for treating histamine-mediated symptoms of allergic reaction. Also anticholinergic and antiparkinsonian effects used for treating dystonic reactions caused by antipsychotic and antiemetic medications (e.g.: haloperidol, droperidol, reglan, compazine, etc).

Indications

- Allergic reaction
- Dystonic medication reactions or akathisia (agitation or restlessness)

Precautions

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

Side effects

- Drowsiness
- Dilated pupils
- Dry mouth and throat
- Flushing

Drug Interactions

- CNS depressants and alcohol may have additive effects.
- MAO inhibitors may prolong and intensify anticholinergic effects of antihistamines.

Dosage and Administration

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

Protocol

- Allergy/Anaphylaxis

9110 MEDICATIONS

DROPERIDOL (INAPSINE)

Description

- Droperidol is a butyrophenone closely related to haloperidol. Droperidol produces a dopaminergic blockage, a mild alpha-adrenergic blockage, and causes peripheral vasodilation. Its major actions are sedation, tranquilization, and potent anti-emetic effect.

Onset & Duration

- Onset: 3-10 minutes after IM administration.
- Duration: 2-3 hours

Indications

- Primary use for management of agitated/combative patients.
- Second line medication for management of intractable vomiting requiring base contact.
- Combative head injured patients.

Contraindications

- Any patient with:
  - Suspected acute myocardial infarction/ACS
  - Systolic blood pressure under 100 mm/Hg, or the absence of a palpable radial pulse
  - Signs of respiratory depression

Side Effects

- Due to the vasodilation effect, droperidol can cause a transient hypotension that is usually self-limiting and can be treated effectively with leg elevated position and IV fluids. Droperidol may cause tachycardia which usually does not require pharmacologic intervention.
- Some patients may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following droperidol administration. This is called akathisia and is treated with Benadryl.
- Extra-pyramidal reactions have been noted hours to days after treatment.
- Rare instances of neuroleptic malignant syndrome have been known to occur following treatment using droperidol.

Dosage and Administration

Agitation/Combative

Adult:
IV/IM route: 5 mg slow IV or IM administration. **CONTACT RECEIVING HOSPITAL** for repeat dose if desired effect not achieved after 10 minutes.

Pediatric:
Less than 12 years, **CONTACT RECEIVING HOSPITAL**

Antiemetic:

IV/IM route:
Adult: 1.25 mg slow push.

Pediatric: CONTACT RECEIVING HOSPITAL for orders. Dose 0.05 mg/kg slow push.

Special Considerations

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

Protocol

- Agitated/Combative Patient Protocol

DuoDote™ (NERVE AGENT ANTIDOTE KIT)

Description

Nerve agents can enter the body by inhalation, ingestion, and through skin. These agents are absorbed rapidly and can produce injury or death within minutes. The DuoDote™ Nerve Agent Antidote kit consists of one auto-injector for self and/or buddy administration. One Injector contains 2.1mg atropine and 600mg pralidoxime chloride (2-PAM)

Indications

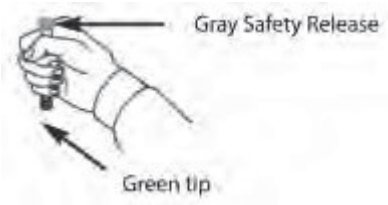
- Suspected nerve agent exposure accompanied with signs and symptoms of nerve agent poisoning

Injection sites

- Outer thigh- mid-lateral thigh (preferred site)
- Buttocks- upper lateral quadrant of buttock (gluteal) in thin individuals

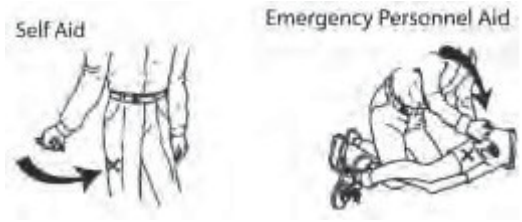
Instructions

- Place the auto-injector in the dominate hand. Firmly grasp the center of the auto injector with the green tip (needle end) pointing down.

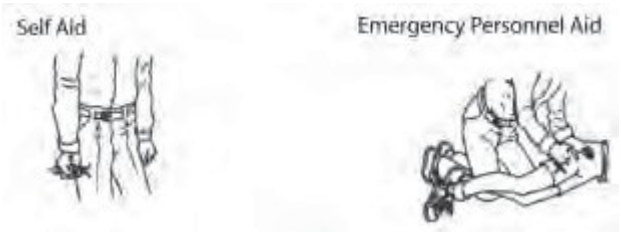


- With the other hand, pull off the gray safety release. The DuoDote™ auto-injector is now ready to be administered.

- The injection site is the mid-outer thigh. The DuoDote™ auto-injector can inject through clothing. However, make sure pockets at the injection site are empty.



- Swing and firmly push the green tip at a 90-degree angle against the mid-outer thigh. Continue to firmly push until you feel the auto injector trigger.



- No more than three (3) sets of antidotes should be administered.

Special Considerations

- Presence of tachycardia is not a reliable indicator of effective treatment due to potential nicotinic effects of nerve agent exposure. The end-point of treatment is clear dry lung sounds.
- Attempt to decontaminate skin and clothing between injections.
- The Mark I kit is a nerve agent antidote kit that contains the same medications as the DuoDote™, however it consists of two autoinjectors containing Atropine Sulfate and Pralidoxime Chloride separately. Administer both injectors in the Mark I kit the same as the single DuoDote™ injector.

Protocol:

- Overdose and Acute Poisoning

9120 MEDICATIONS

EPINEPHRINE (ADRENALIN)

Description

Endogenous catecholamine alpha, beta-1, and beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation.

Indications

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

Adverse Reactions

- Tachycardia and tachydysrhythmia
- Hypertension
- Anxiety
- May precipitate angina pectoris

Drug Interactions

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

Dosage and Administration

Adult:

Pulseless Arrest

1 mg (10 ml of a 1:10,000 solution), IV/IO bolus.
Repeat every 3-5 minutes up to maximum of 3 doses. May administer up to 3 additional doses if recurrent arrest after ROSC.

Hypotension and poor perfusion refractory to fluids or other interventions

Continuous infusion titrated to effect: see Vasopressor infusion

Asthma:

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

Systemic allergic reaction:

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

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

Continuous infusion titrated to effect: see Vasopressor infusion

ALTERNATIVE to racemic epinephrine: (for stridor at rest)

5 mL of 1:1,000 epinephrine via nebulizer x 1

Epinephrine Auto-Injector:

Systemic allergic reaction:

Adult: 0.3 mg IM with autoinjector (adult EpiPen, Auvi-Q)
Pediatric: 0.15 mg IM with autoinjector (EpiPen Jr., Auvi-Q)

Pediatric:

Pulseless arrest:

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

Hypotension and poor perfusion refractory to 60 mL/kg of fluids and other interventions

Push dose or continuous infusion: see Vasopressor infusion

Bradycardia (CONTACT RECEIVING HOSPITAL)

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
Alternative: 0.15 mg (0.15 mL of 1:1,000) for <25 kg and 0.3 mg (0.3 mL of 1:1,000) for >25 kg

Systemic allergic reaction:

0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM
Alternative: 0.15 mg (0.15 mL of 1:1,000) for <25 kg and 0.3 mg (0.3 mL of 1:1,000) for >25 kg

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

Push dose or continuous infusion: see Vasopressor infusion

ALTERNATIVE to racemic epinephrine: (for stridor at rest)

5 mL of 1:1,000 epinephrine via nebulizer x 1

Protocol

- Universal Pulseless Arrest Algorithm
- Bradycardia with poor perfusion
- Neonatal Resuscitation
- Allergy and Anaphylaxis Protocol
- Adult Wheezing
- Pediatric Wheezing
- Vasopressor Infusion

Special Considerations

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

9130 MEDICATIONS

GLUCAGON

Description

Increases blood sugar concentration by converting liver glycogen to glucose. Glucagon also causes relaxation of smooth muscle of the stomach, duodenum, small bowel, and colon.

Onset & Duration

- Onset: variable

Indications

- Altered level of consciousness where hypoglycemia is suspected and IV access is unavailable.
- Hypotension, bradycardia from beta-blocker

Side Effects

- Tachycardia
- Headache
- Nausea and vomiting

Dosage and Administration

Adult:

Hypoglycemia:

- 1 mg IM

Beta Blocker overdose with hypotension and bradycardia:

- 2 mg IV bolus

Pediatric:

Hypoglycemia:

- < 25 kg: 0.5 mg IM.
- > 25 kg: 1 mg IM

Beta Blocker overdose with hypotension for age, signs of poor perfusion and bradycardia:

- 0.1 mg/kg IV

Protocol

- Hypoglycemia
- Poisoning/Overdose

9140 MEDICATIONS

HALOPERIDOL (HALDOL)

Description

Haloperidol is a butyrophenone antipsychotic medication. Haloperidol produces a dopaminergic blockade, a mild alpha-adrenergic blockade, and causes peripheral vasodilation. Its major actions are sedation and tranquilization.

Onset & Duration

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

Indications

- Sedation of a severely agitated and/or combative patient

Contraindications

- Suspected myocardial infarction
- Hypotension
- Respiratory or CNS depression
- Pregnancy

Precautions

- Haldol may cause hypotension, tachycardia, and prolongation of the QT interval. Use with caution in severe cardiovascular disease.
- Cardiac monitor and establish an IV as soon as possible with all administrations.
- Some patients may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following haloperidol administration.
- Rare instances of neuroleptic malignant syndrome (very high fever, muscular rigidity) have been known to occur after the use of haloperidol.

Dosage and Administration

Adults:
5-10 mg IM

Pediatrics (not for use in children <6 years):
Contact Receiving Hospital
Ages 6-12: 2 mg IM

Receiving Hospital Contact must be made for additional doses (consider if no effects within 10 minutes)

Special Considerations

- Extra-pyramidal reactions have been noted hours to days after treatment, usually presenting as spasm of the muscles of the tongue, face, neck, and back. EMS should administer diphenhydramine with administration of haloperidol.
- Hypotension and tachycardia secondary to haloperidol are usually self-limiting and should be treated with IV fluid bolus.
- Use one half dose in patients age ≥ 65 who are at increased risk of complications.

Protocol

- Agitated/Combative Patient Protocol

9150 MEDICATIONS

HEMOSTATIC AGENT (QuickClot, Celox, Bloodstop, Actcel, HemCon, ChitoGauze)

Description

QuickClot Combat Gauze is a standard roller or Z-fold gauze impregnated with a clotting agent such as kaolin (a clay containing the active ingredient aluminum silicate) which works on contact with blood to initiate the clotting process (intrinsic pathway) by activating factor XII. This reaction leads to the transformation of factor XII to its' activated form XIIa, which triggers the clotting cascade.

Mucoadhesive agents such as HemCon, ChitoGauze and Celox utilize a granular chitosan salt derived from the shells of marine arthropods (which are positively charged) to react with and bind to negatively charged red blood cells rapidly forming a cross-linked barrier clot to seal the injured vessels.

Used in conjunction with direct pressure and wound packing these products lead to hemostasis.

Onset and Duration

- Onset of action is 3-5 minutes after wound exposure and clotting action remains unless the dressing and/or the clot is disturbed.

Indications

- Active bleeding from open wounds with that cannot be controlled with direct pressure. Most often involving wounds to the scalp, face, neck, axilla, groin or buttocks.

Contraindications

- Not to be used for minor bleeding that can be controlled by direct pressure.

Precautions

- Bleeding control is achieved via combination of direct pressure and hemostatic gauze packing for a minimum of 3-5 minutes.
- Not to be used to treat internal bleeding such as intra-abdominal, intra-thoracic or vaginal bleeding
- Stabilize patient per General Trauma Care protocol.
- If a tourniquet is indicated (refer to Tourniquet protocol), it should be applied first, before application of hemostatic agent.
- **DO NOT USE LOOSE GRANULAR OR POWDERED HEMOSTATIC AGENTS**. These are out date and will produce exothermic reactions that may cause burns and additional tissue damage.

Procedure

Manufacturers may have different recommendations on application of their products. Follow specific manufacturer guidelines for the particular product carried.

9155 MEDICATIONS

HYDROCORTISONE (SOLU-CORTEF)

Description

Solu-Cortef Sterile Powder is an anti-inflammatory glucocorticoid that contains hydrocortisone sodium succinate as the active ingredient.

Action

- Anti-inflammatory, replaces absent glucocorticoids, suppresses immune response.

Indications

- Suspected Addisonian crisis (cardiovascular collapse in patient at risk for adrenal insufficiency)

Contraindications

- Systemic fungal infections
- Hypersensitivity to the drug

Side Effects

- ECG changes
- Hypertension
- Headache

Dosage and Administration

Adults:

100 mg IM or IV over 30 seconds

Pediatric:

<5 ft tall (<35 kg/75lbs) 2 mg/kg (max of 100 mg) IV or IM over 30 seconds

Special Considerations

- Must be reconstituted and used immediately

Protocols

- Medical Hypotension/Shock
- Adrenal Insufficiency

9160 MEDICATIONS

HYDROXOCOBALAMIN (CYANOKIT)

Description

- Cyanide inhibits cytochrome oxidase, thereby arresting cellular respiration and forcing anaerobic metabolism, which leads to lactate production and acidosis and ultimately death. Hydroxocobalamin binds cyanide ions to form cyanocobalamin which is excreted in urine.

Indications

- Adult or pediatric patient with suspected cyanide poisoning from any route, including smoke inhalation in an enclosed space, with any of the following clinical signs:
  - Pulseless arrest
  - Coma/unresponsiveness
  - Signs of shock

Precautions

- Administer only after basic life support measures have been initiated and always in conjunction with other supportive treatment modalities.

Adverse Reactions

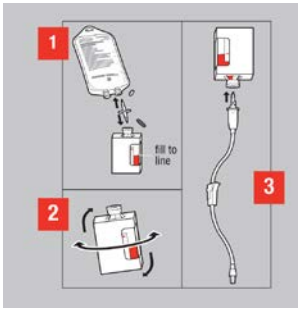
- Hypertension
- Allergic reaction/anaphylaxis

Dosage and Administration

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

Average Weight by Group	Grey 4 kg	Pink 6.5 kg	Red 8.5 kg	Purple 10.5 kg	Yellow 13 kg	White 16.5 kg	Blue 21 kg	Orange 26.5 kg	Green 33 kg	Adult
Dose	275mg (11mL)	450mg (18mL)	600mg (24mL)	725mg (29mL)	900mg (36mL)	1150mg (46mL)	1475mg (59mL)	1850mg (74mL)	2300mg (92mL)	5000mg (200mL)

- 5 gm vial instructions:
  1. The Cyanokit consists of a 5 gm vial of hydroxocobalamin
  2. Reconstitute: Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride Injection* to the vial using the transfer spike. Fill to the line. *0.9% Sodium Chloride Injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's Solution and 5% Dextrose Injection have also been found to be compatible with hydroxocobalamin.
  3. Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
  4. Infuse Vial: Use vented intravenous tubing, hang and infuse desired dose over 15 minutes.



Special Considerations

- It is understood that Cyanokit may not be available to all agencies at all times and therefore is not considered standard of care. Notify receiving facility if Cyanokit used.

Protocols

- Carbon Monoxide Exposure
- Burns

9165 MEDICATIONS

IBUPROFEN (ADVIL, MOTRIN)

Description

Ibuprofen is a non-steroidal anti-inflammatory drug (NSAID) that inhibits synthesis of prostaglandins in body tissues by inhibiting at least 2 cyclo-oxygenase (COX) isoenzymes, COX-1 and COX-2. May inhibit chemotaxis, alter lymphocyte activity, decrease proinflammatory cytokine activity, and inhibit neutrophil aggregation; these effects may contribute to anti-inflammatory activity

Onset & Duration

- Onset: 30-60 minutes
- Duration: 6-8 hours

Indications

- Mild pain

Contraindications

- Aspirin or NSAID allergy
- Peptic ulcer disease
- Chronic kidney disease
- Anticoagulated patient

Adverse Reactions

- Allergy/anaphylaxis
- Hives, angioedema, bronchospasm, rash, hypotension, etc.

Drug Interactions

- Avoid concomitant administration with other NSAID within past 6 hours.

Dosage and Administration

Adult:

600 mg PO

Pediatric:

10 mg/kg PO

Age	Weight	Dose (100 mg/5 mL)
n/a	< 6 months	Do not give
5-8 kg	6 months-12 months	3 mL (60 mg)
9-11 kg	1-2 years	4 mL (80 mg)
12-16 kg	2-3 years	5 mL (120 mg)
17-21 kg	4-5 years	7.5 mL (150 mg)
22-27 kg	6-8 years	10 mL (200 mg)
28-33 kg	9-10 years	15 mL (300 mg)
34-43 kg	11-12 years	20 mL (400 mg)

Protocol

- Pain management

9170 MEDICATIONS

IPRATROPIUM BROMIDE (ATROVENT)

Description

Ipratropium is an anticholinergic bronchodilator chemically related to atropine.

Onset & Duration

- Onset: 5-15 minutes.
- Duration: 6-8 hours.

Indications

- Bronchospasm

Contraindications

- Soy or peanut allergy is a contraindication to the use of Atrovent metered dose inhaler, not the nebulized solution, which does not have the allergen contained in propellant.

Adverse Reactions

- Palpitations
- Tremors
- Dry mouth

How Supplied

Premixed Container: 0.5 mg in 2.5ml NS

Dosage and Administration

Adult
Bronchospasm:

Ipratropium (0.5 mg/2.5 ml) along with albuterol in a nebulizer

Child (2 yrs – 12 yrs)
Moderate and Severe Bronchospasm

Ipratropium (0.5 mg/2.5 ml) along with albuterol in a nebulizer
Not indicated for repetitive dose or continuous neb use

Child (1 yr -2 yrs)
Moderate and Severe Bronchospasm

Ipratropium (0.25 mg/1.25 ml) along with albuterol in a nebulizer
Not indicated for repetitive dose or continuous neb use

Protocol

- Adult Wheezing
- Pediatric Wheezing

9175 MEDICATIONS

KETAMINE – State Issued Protocol Waiver ONLY FOR APPROVED PROVIDERS

Description

Ketamine is a non-competitive NMDA receptor antagonist and dissociative, amnestic, analgesic anesthetic agent.

Onset & Duration

- Onset: 1-5 minutes after IM administration.
- Duration: 10-15 minutes

Indications

- Adult patient with signs of excited delirium where the safety of patient and/or providers is of substantial concern
- For analgesia of adult patient when longer acting effects are desired, situations where opiates are not desired, or due to scene logistics

Contraindications

- Relatively contraindicated in penetrating eye trauma

Side Effects

- Laryngospasm: this very rare adverse reaction presents with stridor and respiratory distress. After every administration of ketamine:
    a. Prepare to provide respiratory support including bag-valve-mask ventilation and suction which are generally sufficient in rare cases of laryngospasm.
    b. Institute cardiac monitoring, pulse oximetry and continuous waveform capnography
    c. Establish IV or IO access, check blood glucose
    d. Establish and maintain physical restraint.
- Emergence reaction: presents as anxiety, agitation, apparent hallucinations or nightmares as ketamine is wearing off. For severe reactions, consider benzodiazepine.
- Nausea and Vomiting: always have suction available after ketamine administration. Give antiemetic as needed.
- Hypersalivation: Suction usually sufficient. If profound hypersalivation causing airway difficulty, administer atropine 0.5 mg IV.

Dosage and Administration

Adults: **(FOR AGE 13 YEARS AND OLDER)**

Agitated Delirium

- 4 mg/kg IM. May repeat once PRN at half dose
    - Small Dose: 250 mg IM
    - Medium Dose: 300 mg IM
    - Large Dose: 400 mg IM

Analgesia

- 0.3 mg/kg IV repeat PRN (likely every 20 minutes)
    - Dose for a typical **adult female** (60-80kg): 18 mg – 21 mg
    - Dose for a typical **adult male** (70-100): 21 mg – 30 mg
- 0.5 mg/kg IN repeat PRN (likely every 20 minutes)
    - Dose for a typical **adult female**: 30 mg – 40 mg
    - Dose for a typical **adult male**: 35 mg – 50 mg
- **CONTACT RECEIVING HOSPITAL** after 3 doses

Pediatric:

- Ketamine is not currently waivered for pediatrics.

Special Considerations

- Excited delirium is a medical emergency. Expedite rapid and safe transport.
- Ketamine is provided for IM administration in 100 mg/mL concentration
- All cases of ketamine use will be reviewed by the Medical Director.

Protocol

- Agitated/Combative Patient Protocol
- Psychiatric/Behavioral Protocol
- Pain management
- Restraints
- Benzodiazepine

9180 MEDICATIONS

LIDOCAINE 2% SOLUTION

Description

Local anesthetic for relief of pain during intraosseous fluid administration.

Indications

- Analgesic for intraosseous infusion

Side Effects

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

Lidocaine Jelly 2%:

- Indication – Anesthetic lubricant for nasotracheal intubation
- Contraindication – Known history of hypersensitivity to local anesthetics
- Dosage and Administration
  - Apply a moderate amount of jelly to the endotracheal tube shortly before use.
  - Avoid introducing the jelly into the lumen of the tube
  - If jelly has dried before insertion, reapply

Precautions

- Lidocaine is metabolized in the liver. Elderly patients and those with liver disease or poor liver perfusion secondary to shock or congestive heart failure are more likely to experience side effects

Dosage and Administration

Adult: initial dose 40 mg (2 mL) followed by 20 mg

1. Prime extension set with lidocaine (approximately 1 mL) and once attached to hub administer 1 mL of lidocaine over 60 seconds
2. Attach normal saline (NS) syringe
3. Displace lidocaine in extension set with NS 1 mL over 60 seconds
4. Dwell 60 seconds, then flush with 5-10 mL of NS
5. Attach lidocaine syringe and displace NS in extension set with lidocaine 1 mL
6. Attach NS syringe and displace lidocaine in extension set with 1 mL NS over 60 seconds
7. Total time to complete administration procedure is ≥4 minutes

Pediatric: initial dose 0.5 mg/kg (up to a maximum 40mg) followed by half the initial dose

1. Carefully attach lidocaine syringe directly to hub and administer initial dose over 120 seconds then dwell for 60 seconds
2. Carefully attach normal saline (NS) syringe directly to hub and administer a 2-5 mL rapid NS flush
3. Administer half the initial dose of lidocaine directly to hub over 60 seconds
4. Attach primed extension set
5. Total time to complete administration procedure is ≥4 minutes

Protocol

Intraosseous Procedure

Special Notes

- Prior to administration observe contraindications for lidocaine and confirm dose per solution.
- 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

9190 MEDICATIONS

MAGNESIUM SULFATE

Description

Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. In cardiac patients, it stabilizes the potassium pump, correcting repolarization. It also shortens the Q-T interval in the presence of ventricular arrhythmias due to drug toxicity or electrolyte imbalance. In respiratory patients, it may act as a bronchodilator in acute bronchospasm due to asthma or other bronchospastic diseases. In patients suffering from eclampsia, it controls seizures by blocking neuromuscular transmission and lowers blood pressure as well as decreases cerebral vasospasm.

Indications

Antiarrhythmic

- Torsade de pointes associated with prolonged QT interval

Respiratory

- Severe bronchospasm unresponsive to continuous albuterol, ipratropium, and IM epinephrine.

Obstetrics

- Eclampsia: Pregnancy ≥20 weeks gestational age or up to 6 weeks post-partum with seizures

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Precautions

- Bradycardia
- Hypotension
- Respiratory depression

Adverse Reactions

- Bradycardia
- Hypotension
- Respiratory depression

Dosage and Administration

- **Torsades de Pointes suspected caused by prolonged QT interval:**
  - 2 gm, IV bolus.
- **Refractory Severe Bronchospasm:**
  - Adult
    - 2 gm, IV bolus, over 2 minutes.
  - Pediatric (2 yrs and older)
    - 40 mg/kg IV, maximum dose of 2 gm, over 15 minutes
- **Eclampsia:**
  - 2 gm, IV bolus slowly
  - Mix 4 gm, diluted in 50 mL of Normal Saline (0.9 NS), IV drip over 15-30 minutes.

Magnesium Concentration and Pediatrics

Care should be taken when utilizing higher concentrations of magnesium sulfate for lower dosing with pediatrics.

Protocol

- Universal Pulseless Arrest Algorithm
- Adult wheezing
- Obstetric Complications

9200 MEDICATIONS

METHYLPREDNISOLONE (SOLU-MEDROL)

Description

Methylprednisolone is a synthetic steroid that suppresses acute and chronic inflammation and may alter the immune response. In addition, it potentiates vascular smooth muscle relaxation by beta-adrenergic agonists and may alter airway hyperactivity.

Indications

- Anaphylaxis
- Severe asthma
- COPD
- Suspected Addisonian crisis (cardiovascular collapse in patient at risk for adrenal insufficiency)

Contraindications

- Evidence of active GI bleed

Adverse Reactions

Most adverse reactions are a result of long-term therapy and include:

- Gastrointestinal bleeding
- Hypertension
- Hyperglycemia

Dosage and Administration

Adult:

125 mg, IV/IO bolus, slowly, over 2 minutes

Pediatric:

2 mg/kg, IV/IO bolus, slowly, over 2 minutes to max dose of 125 mg

Protocol

- Adult Wheezing
- Pediatric Wheezing
- Allergy and Anaphylaxis
- Medical Hypotension/shock
- Adrenal Insufficiency

Special Considerations

- Must be reconstituted and used immediately
- The effect of methylprednisolone is generally delayed for several hours.
- Methylprednisolone is not considered a first line drug. Be sure to attend to the patient's primary treatment priorities (i.e. airway, ventilation, beta-agonist nebulization) first. If primary treatment priorities have been completed and there is time while in route to the hospital, then methylprednisolone can be administered. Do not delay transport to administer this drug

9210 MEDICATIONS

NALOXONE (NARCAN)

Description

Naloxone is a competitive opioid receptor antagonist

Onset & Duration

Onset: Within 5 minutes
Duration: 1-4 hours

Indications

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

---

Adverse Reactions

- Tachycardia
- Nausea and vomiting
- Pulmonary Edema

Dosage and Administration

Adult:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 4 mg total
In cases of severe respiratory compromise or arrest, 2-4 mg bolus IV/IO/IM is appropriate, otherwise drug should be titrated

With some newer synthetic opioid formulations, higher doses of naloxone may be required. In rare cases of confirmed or strongly suspected opioid overdose with insufficient response to 2-4 mg, higher doses may be used, titrate to effect. Routine use of high dose naloxone should be avoided.

Pediatrics:

0.5 mg IV/IO/IM/IN and titrate to desired effect, up to 2-4 mg total

---

Protocol

- Universal Altered Mental Status
- Drug/Alcohol Intoxication
- Poisoning/Overdose

Special Considerations

- Not intended for use unless respiratory depression or impaired airway reflexes are present. Reversal of suspected mild-moderate opioid toxicity is not indicated in the field as it may greatly complicate treatment and transport as narcotic-dependent patients may experience violent withdrawal symptoms
- Patients receiving EMS administered naloxone **should** be transported to a hospital.
- In the State of Colorado, bystanders, law enforcement, and other first responders can administer naloxone if they feel a person is experiencing an opiate-related drug overdose event (Colorado Revised Statutes §12-36-117.7).

(**continued next page**)

9210 MEDICATIONS

- There are significant concomitant inherent risks in patients who have received naloxone, including:
    - Recurrent respiratory/CNS depression given short half-life of naloxone
    - Co-existing intoxication from alcohol or other recreational or prescription drugs
    - Acetaminophen toxicity from combination opioid/acetaminophen prescriptions
    - Non-cardiogenic pulmonary edema associated with naloxone use
    - Acute psychiatric decompensation, overdose, SI/HI or psychosis requiring ED evaluation
    - Sudden abrupt violent withdrawal symptoms which may limit decision making capacity
- Given the above risks, it is strongly preferred that patients who have received naloxone be transported and evaluated by a physician. However, if the patient clearly has decision-making capacity he/she does have the right to refuse transport. If adamantly refusing, patients must be warned of the multiple risks of refusing transport.
- If the patient is refusing transport **Contact Receiving Hospital.**

9220 MEDICATIONS

NITROGLYCERIN (NITROSTAT, NITROQUICK, etc)

Description

Short-acting peripheral venodilator decreasing cardiac preload and afterload

---

Onset & Duration

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

Indications

- Pain or discomfort due to suspected Acute Coronary Syndrome
- Pulmonary edema due to congestive heart failure

Contraindications

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

Adverse Reactions

- Hypotension
- Headache
- Syncope

Dosage and Administration

- **Chest Pain:** 0.4 mg (1/150 gr) sublingually, every 5 minutes
  PRN up to a total of 3 doses for persistent CP
- **Pulmonary Edema:** 0.4 mg (1/150 gr) sublingually or spray, every 5 minutes PRN titrated to symptoms and blood pressure
- **Nitropaste:** system specific protocol

Protocol

- Chest Pain
- CHF/Pulmonary Edema

9230 MEDICATIONS

OPIOIDS (FENTANYL, MORPHINE, HYDROMORPHONE)

Description

Opioid analgesics with desired effects of analgesia, euphoria and sedation as well as undesired effects of respiratory depression and hypotension. A synthetic opioid, fentanyl is 100 times more potent than morphine, and is less likely to cause histamine release or hypotension.

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.

Contraindications

- Hypersensitivity to any agent
- Hypotension, hemodynamic instability or shock (with the exception of Fentanyl)
- Respiratory depression

Caution/Comments:

- With the exception of Fentanyl, all other opioids should only be given to hemodynamically stable patients and titrated slowly to effect.
- The objective of pain management is not the removal of all pain, but rather, to make the patient's pain tolerable enough to allow for adequate assessment, treatment and transport.
- Respiratory depression, including apnea, may occur suddenly and without warning, and is more common in children and the elderly. **Start with ½ traditional dose in the elderly.**
- Place patients on oxygen for saturations less than 90%.
- Use of sedation as a pain management adjunct is described in the procedures protocol.
- Chest wall rigidity has been reported with rapid administration of fentanyl.
- Both Fentanyl and Morphine can be nebulized. Dilute dose with 5 ml saline or sterile water.

Dosage and Administration

FENTANYL:

- **Adult doses may be rounded to nearest 25 mcg increment**
- **Initial dose in adults typically 100 mcg**
- **Strongly consider ½ typical dosing in elderly or frail patient**

Adult:

IV/IO/IN/IM/Nebulized route: 1-4 mcg/kg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 4 mcg/kg for transporting agency.
- Additional dosing requires contact with receiving hospital
- If using nebulizer as route, dilute with 5 ml sterile saline/water
- For IN administration limit fluid amount to 1 mL per nare, per dose

Pediatric:

IV/IO/IN/IM/Nebulized route: 1-2 mcg/kg.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg for transporting agency.
- If using nebulizer as route, dilute with 5 ml sterile saline/water
- Additional dosing requires contact with receiving hospital
- For IN administration limit fluid amount to 1 mL per nare, per dose

9230 MEDICATIONS

MORPHINE:

Adult:

IV/IO/IM/IN/Nebulized routes: 2-5 mg.

- ACS chest pain – 2 to 5 mg IV, may repeat if needed or systolic BP 90 mmHg.
- Peripheral pain - Initial dose should be 5 mg IV/IM/IO/Intranasal. Repeat until pain is manageable or until systolic BP 90 mmHg.
- If using nebulizer as route, dilute with 5 ml sterile saline/water

Pediatric (1-12 years):

IV/IO/IM/IN/Nebulized 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 0.4 mg/kg for transporting agency.
- If using nebulizer as route, dilute with 5 ml sterile saline/water
- Additional cumulative dosing requires contact with receiving hospital.

Pediatric < 1 year: CONTACT RECEIVING HOSPITAL

HYDROMORPHONE:

Adult:

IV/IO/IM routes: 0.5 mg

- Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 1.5 mg for transporting agency.
- Additional cumulative dosing requires contact with receiving hospital.

Pediatric

Not indicated for pediatric patients

NOTE: IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect. IO/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.

Protocol

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

9240 MEDICATIONS

ORAL GLUCOSE (GLUTOSE, INSTA-GLUCOSE)

Description

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

Indications

- Known or suspected hypoglycemia and able to take PO

Contraindications

- Inability to swallow or protect airway
- Unable to take PO meds for another reason

Administration

All ages: One full tube 15 g buccal.

Protocol

- Universal Altered Mental Status
- Hypoglycemia

9250 MEDICATIONS

OXYGEN

Description

Oxygen added to the inspired air increases the amount of oxygen in the blood, and thereby increases the amount delivered to the tissue. Tissue hypoxia causes cell damage and death. Conversely, hyperoxia has been linked with worsened outcomes, such as with acute coronary syndromes and stroke. Therefore, oxygen should not be viewed as a harmless drug where more is better. EMS personnel should add additional oxygen when hypoxia, shock, or respiratory distress are present titrating to pulse oximetry. However, 100% oxygen is indicated in some circumstances, such as with carbon monoxide poisoning or pre-intubation oxygenation.

Indications

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

Precautions

- If the patient is not breathing adequately, the treatment of choice is assisted ventilation, not just oxygen.
- When pulse oximetry is available, titrate SpO_2.
- Do not withhold oxygen from any patient in respiratory distress, including COPD patients.

Administration

- Use the appropriate oxygen delivery method and flow rate to achieve SpO_2 of 94% to 99% when oxygen therapy is indicated.

Special Notes

- Do not use permanently mounted humidifiers. If the patient warrants humidified oxygen, use a single patient use device.

9260 MEDICATIONS

PHENYLEPHRINE (INTRANASAL)

Description

- Phenylephrine is an alpha adrenergic agonist. When administered intranasally, it causes vasoconstriction in the nasal mucosa and subsequently decreased bleeding and nasal decongestion.

Indications

- Prior to nasotracheal intubation to induce vasoconstriction of the nasal mucosa
- Nosebleed (epistaxis).

Precautions

- Avoid administration into the eyes, which will dilate pupil.

Dosage and Administration

- Instill two drops of 1% solution, or 2 sprays, in the nostril prior to attempting nasotracheal intubation.
- For patients with active nosebleed, first have patient blow nose to expel clots. Then, administer 2 sprays into affected naris(es).

Protocol

- Nasotracheal intubation
- Epistaxis

9270 MEDICATIONS

RACEMIC EPINEPHRINE

Description

Racemic epinephrine 2.25% is an aqueous solution that delivers 11.25 mg of racemic epinephrine per 0.5mL for use by **inhalation only**. Inhalation causes local effects on the upper airway as well as systemic effects from absorption. Vasoconstriction may reduce swelling in the upper airway, and ß effects on bronchial smooth muscle may relieve bronchospasm.

Onset & Duration

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

Indications

- Stridor at rest

Side Effects

- Tachycardia
- Palpitations
- Muscle tremors

Dosage and Administration

0.5 ml racemic epinephrine (acceptable dose for all ages) mixed in 3 mL saline, via nebulizer at 6-8 LPM to create a fine mist and administer over 15 minutes.

Protocol

- Pediatric Stridor/Croup

Special Considerations

- Racemic epi is heat and photo-sensitive
- Once removed from the refrigerator, the unopened package is stable at room temperature until the expiration date stated on the package.
- Do not confuse the side effects with respiratory failure or imminent respiratory arrest.
- If no racemic epinephrine is available, consider 5 mL of 1:1,000 epinephrine x 1 via nebulizer at 6-8 LPM to create a fine mist and administer over 15 minutes.

9280 MEDICATIONS

SODIUM BICARBONATE

Description

Sodium bicarbonate is an alkalotic solution, which neutralizes acids found in the body. Acids are increased when body tissues become hypoxic due to cardiac or respiratory arrest.

Indications

- Tricyclic overdose with arrhythmias, widened QRS complex or hypotension.
- Suspected hyperkalemic pulseless arrest: consider in patients with known renal failure/dialysis.
- Crush injuries with entrapment

Contraindications

- Metabolic and respiratory alkalosis
- Hypocalcemia
- Hypokalemia

Adverse Reactions

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

Drug Interactions

- May precipitate in calcium solutions.
- Alkalization of urine may increase half-lives of certain drugs.
- Vasopressors may be deactivated.

Dosage and Administration

Adults and children (> 10 kg), 8.4%

Tricyclic OD with hypotension or prolonged QRS > 0.10 sec or suspected hyperkalemia-related pulseless arrest:

- 1 mEq/kg slow IV push. Repeat if needed in 10 minutes.

Crush injury with entrapment

- 1 mEq/kg immediately prior to release

Protocol

- Universal Pulseless Arrest
- Poisoning/Overdose
- Crush Injury

Special Considerations

- Sodium bicarbonate administration increases CO_2 which rapidly enters cells, causing a paradoxical intracellular acidosis.
- Sodium bicarb is no longer recommended for routine use in prolonged cardiac arrest. Its use in pulseless arrest should be limited to known or suspected hyperkalemia (e.g. dialysis patient), or arrest following tricyclic overdose.

9290 MEDICATIONS

TOPICAL OPHTHALMIC ANESTHETICS

Description

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

Indications

- Pain secondary to eye injuries and corneal abrasions.
- Topical anesthetic to facilitate eye irrigation.

Contraindications

- Known allergy to local anesthetics.
- Globe lacerations or rupture.

Precautions

- Transient burning/stinging when initially applied.

Dosage and Administration

- Instill 2 drops into affected eye. **CONTACT RECEIVING HOSPITAL** for repeat dosing.

Special Considerations

- This is single patient use. Unused portions should be discarded and only new bottles may be used.
- Do not administer until patient consents to transport and transport has begun.
- Topical ophthalmic anesthetics should never be given to a patient for self-administration.

9295 MEDICATIONS

TRANEXAMIC ACID (TXA) – State Issued Protocol Waiver ONLY FOR APPROVED PROVIDERS

Description

Tranexamic acid is an anti-fibrinolytic hemostatic agent. It prevents clot degradation and decreases extravascular bleeding by binding fibrin to plasminogen so that fibrinolysis cannot take place. There is no evidence of a thrombogenic effect.

Action

- Anti-inflammatory, replaces absent glucocorticoids, suppresses immune response.

Indications

- Patients ≥ 13 years old with suspected hemorrhage secondary to trauma and a systolic blood pressure ≤ 90 mmHg.

Contraindications

- TXA should not be administered if the injury occurred more than three hours prior
- Hypersensitivity to tranexamic acid

Side Effects

- ECG changes
- Hypertension
- Headache

Dosage and Administration

Adults:

Mix 1 gram in 50-100 mL D5W or NS and infuse over 10 minutes via IV or IO drip

Special Considerations

- The dosage administered and the time the infusion was initiated should be communicated to the receiving facility.
- The receiving facility may administer a maintenance dose infused over 8 hours.

Protocols

- Suspected Hemorrhage
- Traumatic Shock

9300 MEDICATIONS

VASOPRESSOR ADMINISTRATION

Description:

Epinephrine: Preferred vasopressor for all indications.

- Endogenous catecholamine alpha, beta-1, and beta-2 adrenergic receptor agonist. Causes dose-related increase in heart rate, myocardial contractility and oxygen demand, peripheral vasoconstriction and bronchodilation

---

Indications:

Epinephrine:

- Severe Allergic Reaction/Anaphylaxis
- Hypotension with poor perfusion refractory to adequate fluid resuscitation (typically 30 mL/kg crystalloid)
- Bradycardia with signs of poor perfusion
- For administration in pediatric patients, **CONTACT RECEIVING HOSPITAL**

Adverse Reactions

- Dysrhythmia
- Hypertension
- Anxiety
- Angina

Drug Interactions

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

Dosage and Administration:

Epinephrine - Infusion

- **Mix**: Inject amount of epinephrine into normal saline size bag per table below to achieve 1mcg/mL concentration. Use macro drip set for infusion.

Normal Saline Volume	Epinephrine Amount	Epinephrine 1:1,000 Concentration Amount	Epinephrine 1:10,000 Concentration Amount
1000 mL	1 mg	1 mL	10 mL
500 mL	0.5 mg	0.5 mL	5 mL
250 mL	0.25 mg	0.25 mL	2.5 mL

- **Adult IV/IO**: Begin IV/IO infusion wide open to gravity to give small aliquots of fluid. **Typical volumes are less than 100 mL of total fluid**, as typical doses are expected to be < 100 mcg. Titrate to desired hemodynamic effect with goal BP of > 90 mmHg systolic, improved respiratory status (bronchodilation), and improved perfusion/mentation.

- **Pediatric IV/IO**: **CONTACT RECEIVING HOSPITAL**

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

Epinephrine – Push dose

- **Mixing Instructions:**
  1. Take 10 mL of 1:10,000 dump out 9 mL to have 0.1 mg; refill with normal saline
  2. Makes a 1:100,000 concentration of epinephrine for 10 mcg/mL
- **Adult Dose**: 1 mL per minute (10 mcg/min), repeat as needed
- **Pediatric Dose**: 1 mL per minute with maximum dose by age in following table.

Maximum Push Dose Epinephrine Amount by Age	
Age	Amount
Premature	2 mL
Newborn	4 mL
4 months	6 mL
6 months	8 mL
1 year and older	10 mL

Protocol

- Post-Resuscitation Care with ROSC
- Bradycardia with Poor Perfusion
- Allergy and Anaphylaxis
- Medical Hypotension/Shock
- Overdose and Acute Poisoning

Special Considerations

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

Appendix A: Documentation Standard

Boulder County Documentation Standard

An EMS Care report shall be completed for every incident where Fire/EMS personnel participate in, or witness, patient care or assessment. Every individual on scene who has any injury or illness, or identifies themselves as such, is a patient, and when Fire/EMS personnel participate in, or witness, patient care or assessment a patient care report will be documented by Fire/EMS personnel. It is the responsibility of the person in charge to ensure that an accurate, correct, and complete report is done in a timely fashion. The caregiver who had primary patient care and/or contact should write the sections of the report pertaining to patient care.

General Principles of Documentation

A. A patient care report must be completed for every patient contact. This shall include any personal information as can be reasonably obtained, such as: name, sex, DOB or estimated age, address, etc.

B. The following information should be included in the report:

1. Chief Complaint
   - General Appearance
   - Position patient found in
   - Symptoms in the patient's own words (OPQRST)
   - If the mentation is altered or the patient is unconscious, then that is the chief complaint
   - Level of distress
   - Pertinent Negatives (e.g. chest pain, shortness of breath, recent trauma, neural deficits, syncope, loss of consciousness, nausea, dizziness, neck or back pain, etc.)

2. Pertinent history of events leading to the chief complaint.
   - What was the patient doing at the time of the onset of the complaint?
   - Where and How did the injury occur
   - Description of scene (to include description of vehicle for MVC, distance and landing surface for falls)
   - Any changes in the complaint since onset

3. Physical assessment
   - Mentation (How does the patient respond to stimuli)
   - Skin color, moisture, and temperature
   - Head (to include pupils)
   - Neck
   - Spine (traumatic mechanism)
   - Thorax, Chest, Trunk
   - Abdomen
   - Extremities
   - Back

4. Vital signs with time performed
   - Blood Pressure, Pulse Rate, Respiratory Rate, Pain Scale,
   - Pupils, Mentation (Glasgow Coma Scale), Perfusion, Movement of Extremities – document what was assessed

5. Other diagnostic tests

Appendix A: Documentation Standard

- Blood Glucose Level, Cardiac Rhythm, Abnormalities, 12 Lead, Pulse Oximetry, End Tidal CO_2 Level, and Temperature as appropriate for the agency
- A copy of the 12-lead will be included with the PCR
- A copy of End Tidal CO2 waveform will be included with the PCR

6. Allergies, Medications, and Past Medical History

7. Therapeutic interventions and response to treatment, with time performed.
   - Circulation, Sensation and Movement of Extremities post splinting, including spinal stabilization

8. Disposition of patient
   - Patient condition at time of transfer of care
   - Who patient care was transferred to
   - Was a patient status report given at the time of transfer of care?
   - Amount of fluid infused at time of transfer

9. Anything pertinent you observe on scene or any pertinent interaction with patient or bystanders who witnessed the incident.

10. Patient Contact Time

C. Any physician authorization for direct order procedures will be recorded with the name of the physician

D. When appropriate, a 6 second EKG strip shall be attached to the report

E. The patient narrative shall be written in either the SOAP or CHART format.

<u>Documentation of a Refusal</u>

A. Any patient who is not transported shall have a refusal form completed by the caregiver. Documentation shall include the following:

1. Mentation
   - Alert, oriented to person, place, time and event
   - Logical, coherent and clear speech
2. Behavior
   - Cooperative, obeys command
   - If uncooperative or belligerent, use direct quotes
3. The presence or denial of alcohol or other recreational drugs
4. Steady gait, presence or absence of odor of alcohol
5. Explanation of the potential consequences (in general, and specific to the injury or illness) of refusing treatment and/or transport
6. Patient statement of an understanding of the consequences of refusing treatment or transport
7. Patient informed of potentially dangerous symptoms that may develop
8. Patient instructed to call 911 should they change their mind or if their symptoms persist or change

B. For persons identified as “victims” a PCR or refusal does not have to be done. However, documentation (general response record is agency specific) shall include that aid was offered and if the need arises, they should seek emergency service.

Appendix A: Documentation Standard

Documentation of use of Restraints

A. Document carefully the reason for the restraint, the type of restraint used, the result of the use of the restraint, and any injuries the patient sustained during the restraint process.
B. Assess and document the circulation, sensation, and movement distal to the restraint, immediately after restraint placement and upon transfer of care.

Documentation of Special Situations

A. Stroke
    1. Cincinnati Pre-hospital Scale must be assessed and documented for all patients with suspected stroke

B. Selective C-Spine Stabilization
    1. Document pertinent negatives regarding mental status, language barriers, etc. according to the protocol.
    2. Document the physical assessment, specifically the spinal nerve root assessment, in detail

C. Intubation
    1. Capnography waveform and amount shall be documented.
    2. A strip will be obtained at the time of the intubation and prior to transfer of care, and included with the PCR.

D. Trauma Team Activation
    1. When a full or limited trauma team activation is done, the type of activation and the time of activation shall be documented

Table of Contents

Boulder County Agency Patient Record / Agency reporting _____

Date	Location of incident	Pt. Name
Run #	Dispatch Information	Age DOB Sex □ **M** □ **F**
Time Toned	Chief Complaint	Pt. Address
Enroute	Call Address Toned	
Arrival	Location □ Residence □ Traffic > 55 mph > 55 mph□ Rec Area □ Other *	
Lv Scene	□Abd pain □All reaction □Behavioral □Chest Pain □Choking □ Stroke/ TIA	
Destination	□Diabetic □Dyspnea □Dysrhythmia □GI Bleed □Hypothermia □SZ	Telephone #
Cancel/ Ins	Medical □ Trauma□ □ Other	Next of Kin / Guardian

Vital Signs * Explain All Abnormal findings in Narrative

Time	Pulse	B.P.	Resp	Skin	SpO2	*Pupils*	*GCS*	*Time*	*Pulse*	*B.P.*	Resp	Skin	SpO2	*Pupils*	*GCS*

Protection:
□Shoulder Belt
□Lap Belt
□Child Seat
□Helmet □Airbag
□None

Chief Complaint/ Mechanism of Injury/ Nature of Illness:_____

_____

_____

_____

Past Medical History:	**Medications**(Include new meds over past 30 days**)**
Allergies:	

Assessment Findings Including: Mental Status/ Neuro, HEENT, Chest, Lungs, Heart, Abdomen, GU/GI,OB/GYN, Extremities, Back

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Intervention	**Time**	**Action**
Airway		□Open □Clear □Secure □Suction □SpO2 Room Air____ with O2____ @ __ B.S. □Clear □Equal □Wheeze □Course □_____
		ADJUNCTS : □NPA □OPA □NRB □Nasal Cannula □BVM O2 @ ____LPM _____ □King size____ □CPAP____
		INTUBATION: □Oral □Nasal ET Size___ Attempts x___ □EtCO2 □ Nebulized w/□Albuterol __ x__ □ Ipratropium ___Time_____
Monitor		□4 Lead □12 Lead _____
AED/ Defib		□AED □No Shock □CPR □Defib (Energy & Times) _____
Spinals		□C-Collar □Backboard □Scoop □KED □Vacuum Splint □Other_____ SMOE: □Pre-Spinals x _____ □Post-Spinals x_____
Splint		□Traction □Rigid □ _____ □RA □LA □RL □LL CMS: Pre-Splint □Circ □Move □Sense / Post-Splint: □Circ □Move □Sense
IV/IO		Gauge___ Location _____ Rate ____ Solution: □NSS □LR □Other_____ BGL____ mg/dl Attempts: ____ By:_____
IV/IO		Gauge___ Location _____ Rate ____ Solution: □NSS □LR □Other_____ Attempts: ____ By:_____

Time	Rx	Dose	Route	Response	Time	Rx	Dose	Route	Response

Call Outcome: Transferred to □Facility □Agency_____ □Cancelled □Refusal □Treat &Release □Field DOA □CPR ____ ALS Arrival_____

Responders Name_____ Signature_____ Certification Level_____

White: Agency Copy Yellow& Pink Copies: Pre-hospital 01/2015

Table of Contents

EMS Patient Refusal Form

Incident Date: _____Call #:_____ Time of Call :_____
Incident Location: _____
Patient Name: _____DOB: _____Phone # :_____
Patient Address: _____City:_____ST_____Zip_____
Chief Complaint or Reason Called:_____

Check marks in shaded areas require consult with Medical Control before patient release

Patient Assessment

Suspected serious injury or illness based on patient history, mechanism of injury, or physical exam?	**__Yes**	**__No**
Patient demonstrates Appropriate Decision Making Capacity?	**__Yes**	**__No**
Understands nature of illness?	**__Yes**	**__No**
Understands risk of refusal?	**__Yes**	**__No**

18 Years of age or older?	**__Yes**	**__No**	Minor Injury (eg., isolated extremity)	**__Yes**	**__No**
Drug/ETOH involvement?	**__Yes**	**__No**	Motor Vehicle collision with injury?	**__Yes**	**__No**
Possible head injury?	**__Yes**	**__No**	Language Barrier? Contact BCSO 303-441-4444	**__Yes**	**__No**

Vital Signs	Allergies	Medications
Pulse		
**BP / **		
Resp.		
SpO2 %		

Risks explained to patient: _____

_____

Patient has plan to seek further medical evaluation :____Yes ____No
Medical Control: Physician Name:_____Facility:_____Time:_____
Physician's orders:_____
MC spoke to patient: ____Yes ____No If MC not contacted, state why:_____

Patient Outcome:

____Patient refuses treatment and transport to a hospital against agency's advice.
____Patient accepts treatment but refuses transport to hospital against agency's advice.
(Specify treatments given:_____)
___Patient does not desire transport to hospital by ambulance, agency believes alternative treatment/transport plan is reasonable.
If any treatment was provided, list here:_____
___Patient did not call for help and denies injury or illness. Refuses treatment and transport.

This form is being provided to me because I have refused assessment, treatment and /or transport by _____personnel for myself or on behalf of this patient. I understand that _____personnel are not physicians and are not qualified or authorized to make a diagnosis and that their care is not a substitute for that of a physician. I recognize that there may be a serious injury or illness that could get worse without medical attention. I understand that I may change my mind and re-contact_____ or call 9-1-1 if treatment or assistance is needed later. I also understand that treatment is available at an emergency department 24 hours a day. I affirm that this advice has been explained to me by _____. I also understand I have read this form completely and understand its terms. My signature below indicates
That I have been provided with the above listed information and that I hereby release _____ and its employees ,administrative officers and directors as well as medical directors from any liability and /or medical claims resulting from my refusal of medical treatment and/or transportation to a healthcare facility.

Signature: _____Agency Responder Signature:_____

_____Witness Signature:_____
If other than patient, print name and relationship to patient on line above

Date:_____ Date:_____

Jan 2015

Emergency Medical Services
Mental Health Patient – Medical Clearance Form for Non-Ambulance Transport

Agency Completing Form:					
Date:		Run Number:			
Incident Location:					
Last Name:		First Name:			
DOB:		Age:		Sex:	
Address:					

PMHx:	Meds:	Allergies:

BP:		HR:		RR:		BGL:	

If the answer to all of the below questions are "YES", the party may be directed to the Walk-In Crisis Center and does not require transport by ambulance for further evaluation at the Emergency Department:

	YES	NO
1. Primary mental health or behavioral complaint/problem		
2. Not combative and does not require sedation		
3. No unexplained mental status changes		
4. No acute medical problems or medical complaints		
5. No evidence of recent trauma		
6. Heart rate between 55 and 120		
7. Systolic blood pressure between 100 and 200		
8. Diastolic blood pressure between 60 and 120		
9. Respiratory rate between 10 and 20		
10. BGL between 60 and 300		
11. No medication use exceeding prescribed dosages or OTC labels		
12. No evidence or suspicion of illegal drug use (except ETOH & Marijuana)		
13. Paramedic judgment – Will the patient be safe without ED evaluation?		

Additional Comments:

Party released to: (Agency & officer name, if appropriate)	

Primary Attendant:	**Secondary Attendant:**	**Patient:**
Signature	*Signature*	*Signature*
Name:	Name:	Name:
Date:	Date:	Date:

*****THIS FORM MUST BE ATTACHED TO THE PATIENT CARE REPORT*****

Emergency Medical Services
Alcohol Patient – Medical Clearance Form for Non-Ambulance Transport

Agency Completing Form:					
Date:		Run Number:			
Incident Location:					
Last Name:		First Name:			
DOB:		Age:		Sex:	
Address:					

PMHx:	Meds:	Allergies:

BP:		HR:		RR:		BGL:	

An intoxicated party **does not** require Ambulance Transport or Emergency Department evaluation if all of the following are affirmative:	**YES**	**NO**
1. Able to walk with only minimal assistance		
2. Over the age of 18		
3. Not combative and willing to participate in screening exam		
4. Heart rate between 55 and 120		
5. Blood pressure between 100 and 200 systolic		
6. BGL between 60 and 300		
7. No evidence or report of recent trauma		
8. No acute medical problems or medical complaints		
9. Not incontinent of stool or covered in vomit		
10. No evidence or suspicion of other intoxicants (marijuana excepted)		
11. Did not consume large quantities of alcohol in the last hour		
12. Not taking any blood thinners (aspirin excepted)		
13. Medical judgment – Will the party be safe without being seen in the Emergency Department?		

Additional Comments:

Party released to: (Agency & officer name, if appropriate)	

Primary Attendant:	**Secondary Attendant:**	**Patient:**
Signature	*Signature*	*Signature*
Name:	Name:	Name:
Date:	Date:	Date:

*****THIS FORM MUST BE ATTACHED TO THE PATIENT CARE REPORT*****

Boulder County Firefighter Rehab Guidelines and Procedure

This guideline is intended to ensure the continued health and safety of members operating at the scene of an incident or training. This guideline applies to all operations and training exercises where strenuous physical activity or exposure to heat and cold exist.

Firefighters shall be assigned by command to the designated rehab area if any of the following exist:

- Firefighter has meet or exceeded 45 minutes of strenuous activity
- Firefighter has used two 30 minute bottles
- Firefighter has had an unprotected exposure to an IDLH (Immediately Dangerous to Life and Health) atmosphere
- Firefighter has a complaint or injury

Once in rehab, firefighter should remove PPE and be evaluated by the EMS/Rehab provider. Firefighter should stay in rehab for a minimum of 20 minutes and have normalization of vital signs (see below) before they can be re-assigned by command. Firefighter may be kept longer and/or transported if the EMS/Rehab supervisor deems necessary. See Rehab Form A.

Assessment in rehab should include but is not limited to:

Vitals (Pulse, BP, RR, SPO2), **CO** (CO Monitor), **Mental Status**, **Heat exposure symptoms**

Hold firefighter in rehab for longer than 20 min. and treat if any of the following exist: See Rehab Form B.

- Vitals – Pulse >110, BP >160 or <100 systolic, Respirations > 24
- CO – > 12 (Please refer to CO protocol)
- Delayed cognitive processing
- Heat exposure symptoms (nausea, vomiting, cramps etc)

Transport is mandatory for firefighters that meet the following criteria after 20 minutes:

- Vitals – Pulse > 130, BP >180 or <90 systolic, respirations >28
- CO – level 13 – 25 (Please refer to CO protocol)
- Altered mental status
- Extreme heat exposure symptoms

For Firefighters entering Rehab, CO monitoring is mandatory. Due to the incidence of hydrogen cyanide (CN) and cumulative effect of CO, the following guidelines regarding CO values obtained by the CO monitor, are to be followed:

If the firefighter entering rehab is ***not*** symptomatic –

1. < 6% - No tx necessary
2. 6-12% - Rest and ambient air should be sufficient, use NRB to lesson time
   A value < 6% should occur within 1-5 minutes
3. 13-25% - Use NRM @ 15 Lpm or CPAP (NOTE: CPAP preferred for firefighters to lessen the chance for further cumulative effect of CO)
4. 25% - Treat & Transport

If the firefighter entering rehab ***is symptomatic*** –

1. Start an IV and infuse 500 ml of fluid for hydration
   a. If symptoms abate completely, the firefighter was dehydrated
   b. Ensure that the firefighter can take oral hydration without n/v
   c. Ensure that pulse is < 100 bpm and BP is perfusing
2. Obtain a CO value
   a. Follow guidelines for values above
3. If after hydration and O2 therapy firefighter has remaining signs/symptoms, i.e. nausea/vomiting, or tachycardia at rest, or hypertension at rest or CO values > 12 persist after O2: Transport

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Boulder County Firefighter Rehabilitation Log

Rehab Log A

Incident Location:

Rehab Unit:

Date:

Name	Agency	Checked by	Time In	Time Taken	Blood Pres.	Pulse	Temp	Resp	SpO_2	SpCO	Notes
Good value 20 minutes post-exit*					100-160/	< 110	<99.5°F	< 24	> 90%	< 12%	
1					/						
					/						
2					/						
					/						
3					/						
					/						
4					/						
					/						
5					/						
					/						
6					/						
					/						
7					/						
					/						
8					/						
					/						
9					/						
					/						
10					/						
					/						
Good value 20 minutes post-exit*					100-160/	< 110	<99.5°F	< 24	> 90%	< 12%	

** Firefighters not meeting these minimum requirements will not be permitted to reengage, and rehab log B should be used (1 per firefighter)*

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Boulder County Firefighter Rehabilitation Log

Rehab Log B

Incident Location: _____

Rehab Unit: _____

Date: _____

Name: _____

Agency: _____

Age: _____ **Date of Birth:** _____

Medical history: _____

Medications: _____

Allergies: _____

Fireground Activity:

No. of SCBA Bottles Used	Time In	Time Out	Minutes of Work	Notes

Fireground Log: _____

Reason for using Rehab Log B: _____

Vitals:

	Time	Pulse	BP	SpO_2	SpCO	Skin	Temp	Notes	Checked by
1									
2									
3									
4									
5									
6									
7									
8									

Assessment Table	Trigger Points: (Check applicable)		Disposition: (Check one)
ALS Assessment and/or treatment and/or transport of this individual is recommended if any of these conditions are met after 20 minutes in rehab:	O Pulse:	>130	O Return to fireground
	O BP Systolic:	>180 or <90	O Hold in rehab
	O Respiration:	>28	O Off duty
	O CO level:	>12%	O Transferred care to ambulance
Retain individual for an additional 20 minutes if:	O Pulse:	>110	O Return to fireground
	O BP Systolic:	>160 or <100	O Hold in rehab
	O Respiration:	>24	O Off duty
	O CO level:	>12%	O Transferred care to ambulance

Notes:

Appendix F: Interfacility Transport

Interfacility Transport Categories:

A. *Stable patients with therapies within the scope of protocols* – These transports do not require any special considerations and are considered routine.
B. *Stable patients with therapies outside the scope of protocols* – No treatment outside of protocol should be provided, however, these patients may still be transported provided one of the requirements in the 911 System Response to Request for Interfacility Transport protocol is met.
C. *Unstable patient* – These patients have been examined and an emergency medical condition has been identified where transfer is medically indicated and in the best interest of the patient. Hemodynamically unstable patients may require special monitoring, multiple cardioactive/vasoactive medications, or specialized critical care equipment.
    1. Unstable patients should be referred to a specialty care program experienced in the management of acutely ill and/or complex patient therapies whenever possible.
    2. There are instances where a specialty care program is not available, and the responding unit may be called upon to transport a patient requiring time sensitive definitive care at another facility
        a) The responding crew should ensure reasonable attempts have been made to locate a specialty care program able to provide the transport.
        b) If a specialty care program is unavailable and the patient therapies are within the scope of these protocols the patient may be transported by responding unit.
        c) If a specialty care program is unavailable and the patient has any therapies outside of protocol scope refer to the 911 System Response to Request for Interfacility Transport protocol
        d) If none of the criteria in the 911 System Response to Request for Interfacility Transport protocol can be met the patient must remain at the sending facility for transport by a specialty care program.
    3. For the transport of any potentially unstable patient consider an addition of supplemental personnel to ensure at least two providers are available to care for the patient in addition to the vehicle operator.

EMS Provider Right to Decline Transport

An EMS provider may decline to transport any patient that they deem to require a level of care beyond their capabilities. “The hemodynamically unstable patient or patient who may require Intensive Care Unit level of treatment, regardless if coming from an Intensive Care Unit, who requires special monitoring (e.g. central venous pressure, intracranial pressure), multiple cardioactive/vasoactive medications, or specialized critical care equipment (i.e. intra-aortic balloon pump) should remain under the care of an experienced critical care practitioner, and every attempt should be made to transport that patient while maintaining the appropriate level of care. The capabilities of the institution, the capabilities of the transporting agency and, most importantly, the safety of the patient should be considered when making transport decisions.” (Code of Colorado Regulations, 6 CCR 1015-3, Chapter 2, Section 15.4)

Vasoactive Medication Interfacility Transport

If a facility has started a vasoactive medication on a patient, this patient has essentially declared critical illness, and would be best served by critical care transport to complement this. It is within scope of practice for paramedics with critical care endorsement to monitor certain vasoactive medications listed in Code of Colorado Regulations, 6 CCR 1015-3, Chapter 2 rules. This, however, does not affect a paramedic’s ability to administer vasopressors in the setting of a 911 response.

Appendix F: Interfacility Transport

Patient Monitored Therapies

Some medications, nutrition systems, and medical devices can be transported even though you do not have training, experience, or a protocol to monitor, adjust, or discontinue. These medications and medical devices are things a patient or caregiver, with minimal instruction from a healthcare provider, can self-monitor at home. Physician contact must be made before altering or discontinuing the therapy/device.

Transfer Orders

The goal is to continue care based on the physician's assessment. To accomplish this, the sending physician needs to provide clear and concise orders that provide guidance and restrictions.

A. Physician transfer orders provide guidance on maintaining, initiating, and discontinuing treatments. In addition, they can define required patient monitoring during transport (e.g. ECG, continuous pulse oximetry).
B. Transfer orders must be completed and signed by a physician, nurse practitioner, or physician assistant. These providers are also responsible for making any edits to the transfer orders. A nurse may not provide or edit orders without review and approval.
C. For changes to orders while enroute, contact the **Sending Physician** first. If sending physician is not available, **Contact Receiving Hospital**.

Quick Reference for Interfacility Transport Procedures and Medications

Inter-facility transport patients require a different approach to care than the emergent 911 patients that are commonly dealt with by the EMS provider. Medications or procedures outside of this list are only allowed by waiver from the Emergency Medical Practice Advisory Council (EMPAC). It is expected that any EMS provider be trained and validated in the maintenance or monitoring of any therapy that is in place within scope before accepting these transports. "P-CC" stands for "Paramedic with Critical Care Endorsement" which is an additional endorsement from the State of Colorado and is authorized to provide acts in accordance with rules pertaining to EMS practice and medical oversight (C.R.S 25-3.5-206).

Abbreviations	S = Standing order	P = Physician contact/order	W = Waivered

Interfacility Transport – Facility Initiated Procedures	EMT	EIV	AEMT	I	PM	P-CC
Urinary catheter monitoring	S	S	S	S	S	S
Continuous positive airway pressure (CPAP)	S	S	S	S	S	S
Gastric tube maintenance				S	S	S
Use of established central line (including PICC) for fluid and medication administration (must have appropriate equipment, e.g. Huber needle, and training to access subcutaneous ports)				S	S	S
Chest tube maintenance					S	S
Manual transport ventilator						P
Blood chemistry interpretation						P

Interfacility Transport – Facility Initiated Medications	EMT	EIV	AEMT	I	PM	P-CC
Acetylcysteine (Mucomyst)						P
Alteplase (Activase)						P
Amiodarone – Infusion				P	P	P
Antibiotic and antivirals				P	P	P
Bivalirudin (Angiomax)						P
Blood/blood products – Maintenance and initiation of medical facility supplied with sending physician order					P	P
Colloids (non-blood component) infusions				P	P	P
Crystalloid infusions		P	P	P	P	P
Diltiazem (Cardizem)					P	P

Appendix F: Interfacility Transport

Interfacility Transport – Facility Initiated Medications	EMT	EIV	AEMT	I	PM	P-CC
Dobutamine						P
Epinephrine – Continuous infusion initiated by sending facility						P
Esmolol (Brevibloc)						P
Etomidate (Amidate)						P
Fosphenytoin (Cerebyx)						P
Glycoprotein IIB/IIIA Inhibitors						P
Heparin – Infusion					P	P
Insulin – Infusion					P	P
Labetalol (Normodyne)						P
Levetiracetam (Keppra)						P
Lidocaine – Infusion					P	P
Magnesium Sulfate						
• Electrolyte infusion					P	P
• Pre-eclampsia/eclampsia/tocolysis					P	P
Mannitol					P	P
Methylprednisolone (Solu-Medrol)					P	P
Metoprolol (Lopressor)						P
Nicardipine (Cardene)					P	P
Nitroglycerin					P	P
Norepinephrine (Levophed)						P
Octreotide (Sandostatin)					P	P
Oxytocin (Pitocin) - Infusion					P	P
Pantoprazole (Protonix)					P	P
Phenytoin (Dilantin)						P
Potassium chloride – Infusion					P	P
Propofol (Diprivan)						P
Rocuronium (Zemuron)						P
Sodium bicarbonate – Antidote infusion					P	P
Succinylcholine (Anectine)						P
TNKase (Tenecteplase)						P
Total parenteral nutrition (TPN) and/or vitamins				P	P	P
tPA Infusion						P
Vecuronium (Norcuron)						P