# Boulder County EMS Protocols

## Released April 7, 2025

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

These protocols would not be possible without the contributions, input, review, and approval of the Boulder County Medical Directors listed below:

**Boulder County Medical Directors April 2025**

Shannon Sovndal, M.D. – Chair
Colleen Foster, M.D.
Joshua Poles, M.D.
Andrew Pugh, M.D.
Tyler Vaughn, M.D.

The Boulder County Protocols are also based on the work, research, and revisions of the following persons:


Paul Johnson – Chair

Brittany Buss
Chris Chi
Bill Clark
Barb Foster
Rachel Glantz
Denton Hanson
Mark Johnson
Jenn Kiley
Claudia Kutscher
Aaron Miller
Chris O'Brien
Richard O'Neil
Val Peaslee
Paige Schuenke
Greg Schwab
Neil Sheets
Stephanie Sovndal
Shawn Stark
Jenna Steege
Chris Williams
Blake Wollenberg

The Boulder County Protocol Committee is provided technical assistance for the publishing of this protocol set by the Foothills and Mile-High RETAC Regional Medical Direction Program.

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 Denver Metro EMS Medical Directors 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.

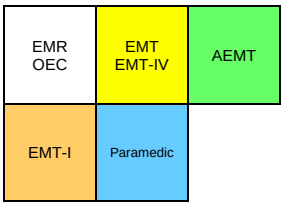
The protocols are presented in an algorithm format. An algorithm is intended to reflect real-life decision points visually. An algorithm has certain limitations, and not every clinical scenario can be represented. Although the algorithm implies a specific sequence of actions, it may often be necessary 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.

## 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.

# 0015 GENERAL GUIDELINES: AGE DEFINITIONS

## INTRODUCTION

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

## ADULT

Adult patients are considered 12 years of age or older.

## GERIATRICS

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

Geriatric Protocol

## PEDIATRICS

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

Pediatric Protocol

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

# 0020 GENERAL GUIDELINES: CONFIDENTIALITY

## CONFIDENTIALITY

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

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

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

   1. Exceptions

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

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

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

C. Additional Considerations:

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

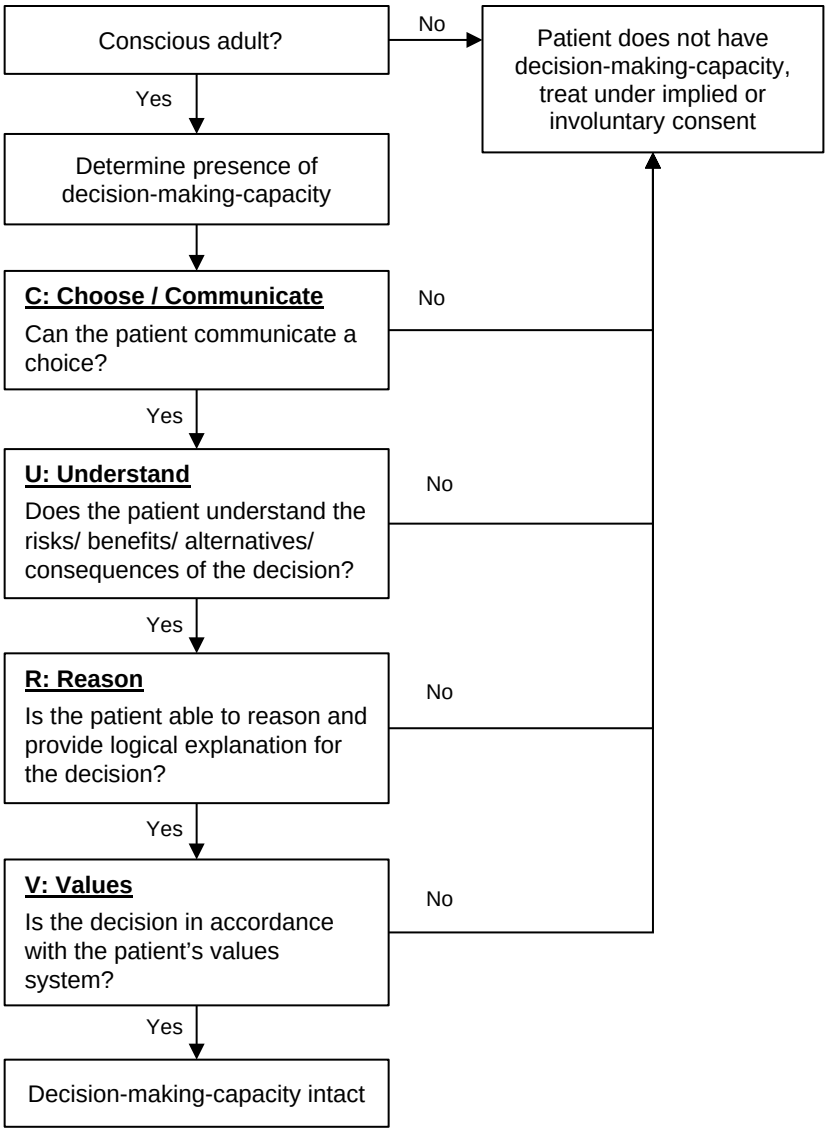
# 0030 General Guidelines: Consent

## General Principles

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

## Values

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




## Involuntary Consent

In rare circumstances a person other than the patient may authorize consent. This may include:

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

**Contact Receiving Hospital** if there are any questions or concerns about decision-making-capacity.

# 0030 General Guidelines: Consent

## General Principles: Minors

A. A parent, including a parent who is a minor, may consent to medical or emergency treatment of his/her child. There are exceptions:
    1. Neither the child nor the parent may refuse medical treatment on religious grounds if the child is in imminent danger as a result of not receiving medical treatment, or when the child is in a life-threatening situation, or when the condition will result in serious handicap or disability.
    2. Minors may seek treatment for medical care related to the intended live birth of a child; contraception; abortion; prevention, diagnosis, and treatment for sexually transmitted infections/HIV; evaluation and/or treatment after sexual assault; and treatment for addiction to or use of drugs, emergency treatment for intoxication, and treatment for alcoholism without consent of parents.
    3. Minors 15 years or older may seek treatment for mental health without parents' consent.
    4. The consent of a parent is not necessary to authorize hospital or emergency health care when a first responder in good faith relies on a minor's consent, if the minor is at least 15 years or older, and
        a. Is living separate and apart from his or her parents, and managing his or her own financial affairs; or
        b. They have contracted a lawful marriage
B. When in doubt, your actions should be guided by what is in the minor's best interests and **Contact Receiving Hospital**.

## 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, law enforcement). 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, notify law enforcement to respond and assist.

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

## Purpose

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

## General Principles

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

## Procedure

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

## Special notes

A. Every situation may be different, based on the physician, the scene, and the condition of the patient.
B. **CONTACT 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:

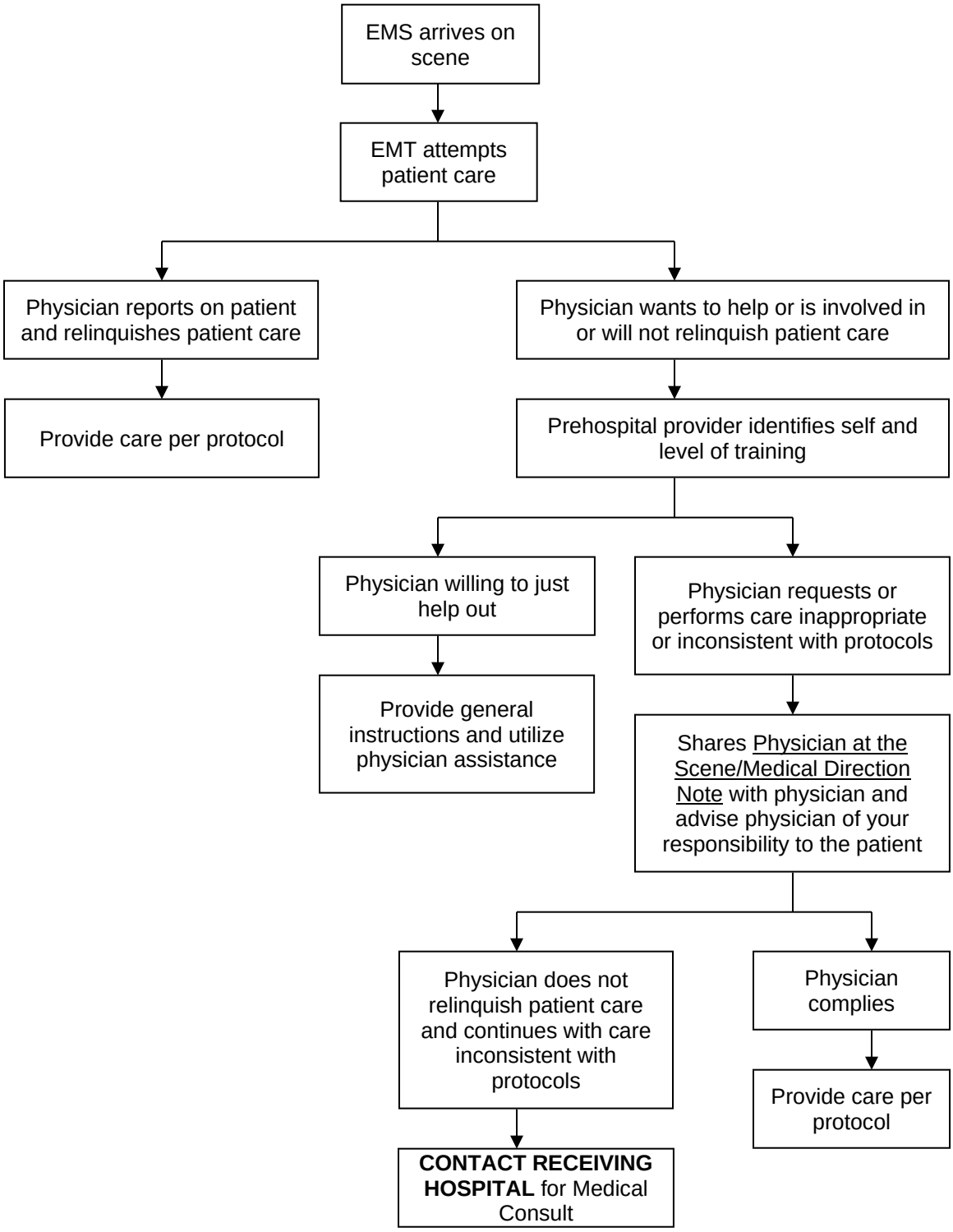
1. Offer your assistance or suggestions, but the prehospital care providers will remain under the medical control of their **receiving hospital** physician, or
2. With the assistance of the prehospital care providers, talk directly to the **receiving physician** and offer to direct patient care and accompany 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 (TOR) for patients in medical pulseless arrest in the prehospital setting. EMS may transport any patient perceived to be viable, or if scene dynamics or public perception necessitates transport.
B. For termination of efforts of newly born after field delivery, refer to the Neonatal Resuscitation protocol.

## General Principles

A. 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

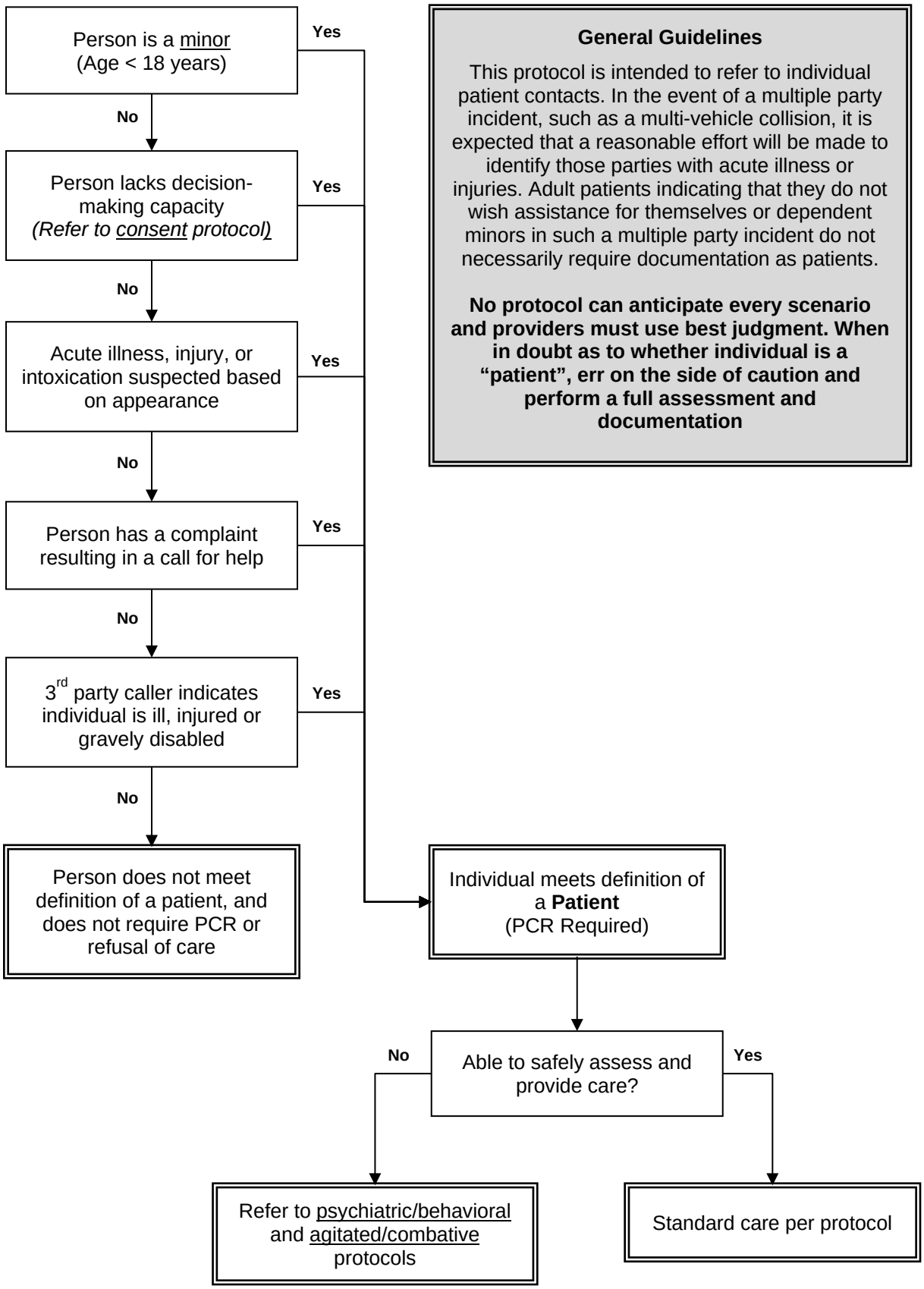
## General Principles:

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 Colorado 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 Receiving Hospital**.
6. "Do Not Resuscitate" does not mean "do not care." A dying patient for whom no resuscitation effort is indicated should still be provided with comfort care which may include the following:
    a. Clearing the airway (including stoma) of secretions.
    b. Provide oxygen using nasal cannula or facemask and other non-invasive measures to alleviate respiratory distress.
    c. Pain management.
    d. Transport to the hospital as needed to manage symptoms with the No CPR directive in place

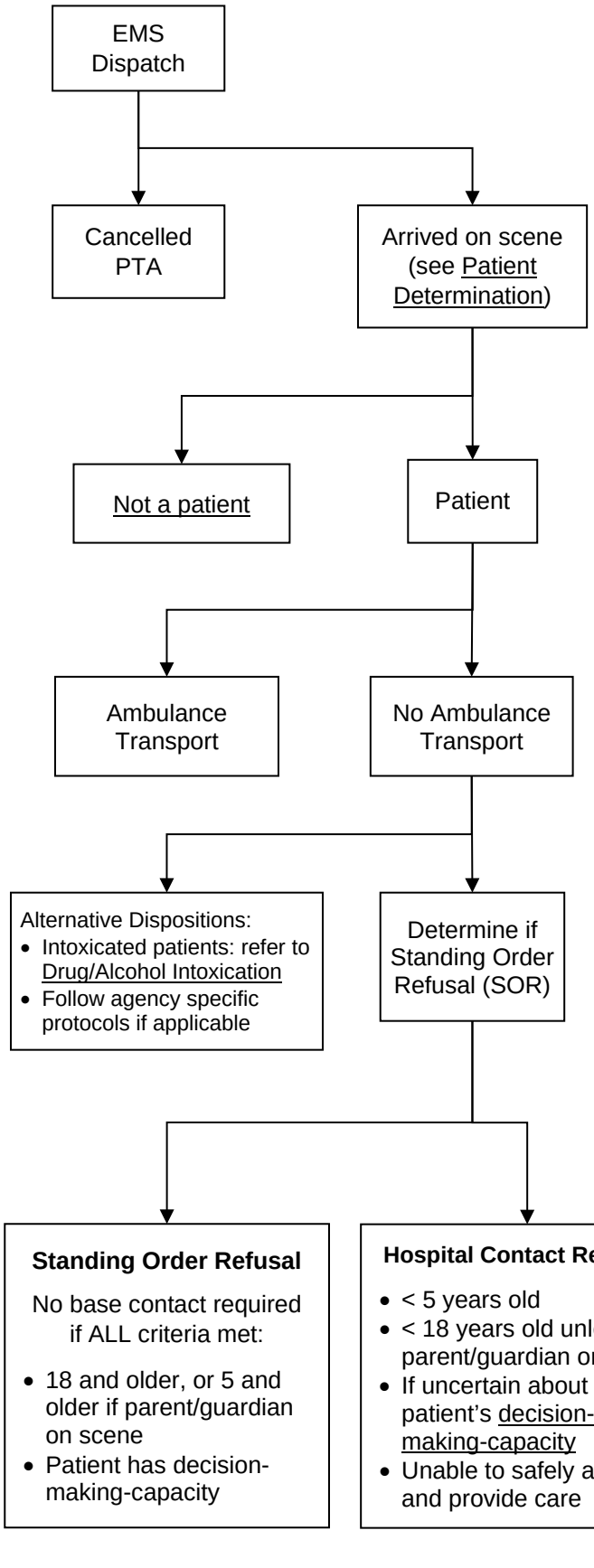
## Additional Considerations

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

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



# 0080 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL




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

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

If in doubt about patient decision-making-capacity, **Contact Receiving Hospital** for physician consult.

**Documentation Requirements for Refusal**

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

**High Risk Patients**

**Hospital Contact** 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.

## Definition of Abuse and Reporting Requirements:

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

## Types of Abuse:

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

## Role of Mandated Reporter:

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

## What to report:

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

## Additional Information:

A. Protecting patient confidentiality does not legally justify a failure to report.
B. There is established immunity for reporters "acting in good faith".
C. For children, the Colorado Child Abuse and Neglect Hotline is 1-844-CO-4-KIDS (844-264-5437).
D. For at-risk elder or at-risk adult with intellectual and developmental disability contact information for Adult Protective Services can be found at https://cdhs.colorado.gov/aps

# 0095 GENERAL GUIDELINES: ADULT VICTIMS OF DOMESTIC VIOLENCE, TRAFFICKING, AND SEXUAL ASSAULT

## Purpose:

The purpose of this protocol is to provide guidance regarding circumstances involving adult victims of domestic violence, trafficking, and sexual assault. This protocol does not supersede any agency guidelines for these types of cases.

## Adult Domestic Violence:

A. Purpose
   1. To provide guidance on managing response to a domestic violence complaint
   2. This does not supersede any agency policy/guidelines, rather it is intended to serve as a guidance for managing these often difficult to manage scenarios.

B. Definition of domestic violence
   1. Any act or threatened act of violence on a person with whom the actor is or was involved with in an intimate relationship.
   2. An intimate relationship is defined as any type of romantic relationship, past or present, between two people. It does not require them to be married.
   3. Domestic violence is not limited to physical violence. It can also include stalking, harassment, or coercion.

C. Reporting
   1. Reporting is required if: (Refer to mandatory reporting protocol)
      a. The person is under the 18 years-old
      b. The person is "at-risk" adult (intellectually disabled) or elderly
      c. There is evidence of suspected serious bodily injury (SBI, see definition below) you are required to report cases of abuse.
   2. Reporting for domestic violence is not required if the person is 18 years or older, when there is no evidence of suspected SBI, and the victim is not considered an "at-risk" adult or elderly. (Colorado Revise Statutes §12-240-139)

D. Adult domestic violence without suspected SBI
   1. Recommend involving law enforcement but do not push the person to report the incident. There may be many factors that preclude the victim from reporting at this time. The goal is to establish trust so the victim will be willing to reach out for help in the future.
   2. Refer the person to a victim's advocate or provide information about services to victims of abuse in your area.
   3. If the person refused contacting law enforcement document what was observed, the request not to contact law enforcement, and list of the resources offered to the victim of the abuse.
   4. **Contact Receiving Hospital** with any questions or for consultation.

E. Adult domestic violence with SBI or suspected SBI
   1. Serious bodily injury (SBI) is defined as an injury that at the time of injury or at a later time there is:
      a. Substantial risk of death
      b. Substantial risk of serious permanent disfigurement
      c. Substantial risk of protracted loss or impairment of the function of any part of or organ of the body
      d. Fractures
      e. 2nd or 3rd degree burns
   2. Follow agency guidelines regarding release of information to law enforcement in these cases.
   3. **Contact Receiving Hospital** with any questions or for consultation.

## Victims of Trafficking

A. Purpose
   1. To provide guidance on identifying potential victims of human trafficking
   2. This does not supersede any agency policy, rather it is intended to serve as a guidance for managing these often difficult to manage scenarios.

# 0095 GENERAL GUIDELINES: ADULT VICTIMS OF DOMESTIC VIOLENCE, TRAFFICKING, AND SEXUAL ASSAULT

B. Definition of human trafficking
   1. Those who are actively being exploited for labor or sex by means of force, fraud, or coercion.

C. Reporting
   1. If the person is under 18 years old or is an "at-risk" adult or elderly, you are required to report cases of abuse. Refer to mandatory reporting protocol.
   2. If the person is 18 years or older, report only with consent of the victim.

D. Adult victims of trafficking
   1. Recommend involving law enforcement but do not push the person to report the incident. There may be many factors that preclude the victim from reporting at this time. The goal is to establish trust so the victim will be willing to reach out for help in the future.
   2. Provide the person with information about services available to victims of human trafficking.
   3. Colorado's Human Trafficking Hotline is 866-455-5075. It is available to victims as well as anyone who has questions about a potential case of human trafficking.
   4. **Contact Receiving Hospital** with any questions or for consultation.

## Adult Victims of Sexual Assault

A. Purpose
   1. To provide guidance on managing response to sexual assault
   2. This does not supersede any agency policy, rather it is intended to serve as a guidance for managing these often difficult to manage scenarios.

B. Reporting
   1. If the person is under 18 years old or is an "at-risk" adult or elderly, you are required to report cases of abuse. Refer to mandatory reporting protocol.
   2. If the person is 18 years or older, report only with consent of the victim. Colorado has no mandatory reporting of sexual assault for intellectually competent adults.

C. Adult victims of sexual assault
   1. Recommend involving law enforcement but do not push the person to report the incident. There may be many factors that preclude the victim from reporting at this time. The goal is to establish trust so the victim will be willing to reach out for help in the future.
   2. Refer the person to a victim's advocate or provide information about services to victims of sexual assault in the area.
   3. If the person refused contacting law enforcement document what was observed, the request not to contact law enforcement, and list of the resources offered to the victim.
   4. **Contact Receiving Hospital** with any questions or for consultation.

# 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.

# 0115 GENERAL GUIDELINES: EMERGENCY DEPARTMENT ED DIVERT & CAPACITY NOTIFICATIONS (OPEN, ADVISORY, CRITICAL, ED DIVERT, CLOSED)

## Purpose

A. To provide a standard approach to EMS destination decision making that is practical for field use and maintains equity for patients, EMS, and hospitals.
B. To facilitate unobstructed access to hospital emergency departments (ED) for ambulance patients
C. To allow for optimal destination policies in keeping with general EMS principles and Colorado State Trauma System Rules and Regulations.

## General EMS Principles

A. EMResource, an internet-based tracking system, is used to manage diversion in the Denver Metro area. The EMResource screen should be routinely monitored for situational awareness of ED capacities to receive patients.
B. The RETAC Prehospital Trauma Triage Algorithm Guidelines should be followed
C. The only time an ambulance can be diverted from a hospital is when that hospital is posted on EMResource as being on official **ED Divert** (**RED**) or **Closed** (**BLACK**) status.
D. The following are appropriate reasons for an EMS provider to **override ED Divert** (**RED**) and, therefore, deliver a patient to an emergency department that is on **ED Divert** status:
    1. All alerts (trauma, cardiac, stroke, sepsis, etc), cardiac arrests, imminent OB or imminent airway emergencies.
    2. Specialty care needs such as pediatric, obstetric, and burn patients
    3. If the patient's condition and/or system constraints do NOT allow transport to a hospital outside of the EMS agency's service area.
    4. EMS providers always have the discretion to override and transport to the closest facility if they determine the patient's condition warrants.
E. There are EMResource notifications that are considered **Advisory** (YELLOW) or **Critical** (ORANGE). These notifications are informational only and are intended to inform field personnel that a hospital on an **Advisory** or **Critical** status may not be able to optimally care for a patient due to a specific resource limitation (such as Psych, ICU) or overall capacity limitation in the availability of staffed ED beds (ED)
F. The following resource limitations may be seen with **Advisory** (YELLOW) or **Critical** (ORANGE) and listed in the Comment section of EMResource:
    1. ICU (Intensive Care Unit)
    2. Psych (Psychiatric)
    3. OB (Obstetrics)
    4. OR (Operating Room)
    5. Trauma, Stroke, STEMI
    6. ED (Emergency Department staffed beds)
G. Prehospital personnel should take into consideration hospital ED capacity notifications, when possible, considering the patient's condition, travel time, weather, and system constraints. Patients with specific problems that fall under a specific resource limitation (such as Psych) should be transported to a hospital not experiencing that resource limitation when feasible.

## EMResource Hospital ED Load Leveling Rotation Board Notifications

| | |
|---|---|
| **Open** | <80% Staffed ED beds occupied |
| **Advisory** | 80-100% Staffed ED beds occupied |
| **Critical** | >100% of staffed ED beds occupied and >1 ESI2 patient unable to be roomed |
| **Divert** | >120% of staffed ED beds occupied and >1 ESI2 patient unable to be roomed and no longer able to safely care for high acuity patients, OR department discretion due to acute incident |
| **Closed** | Unable to care for patients due to infrastructure damage, active shooter, etc |

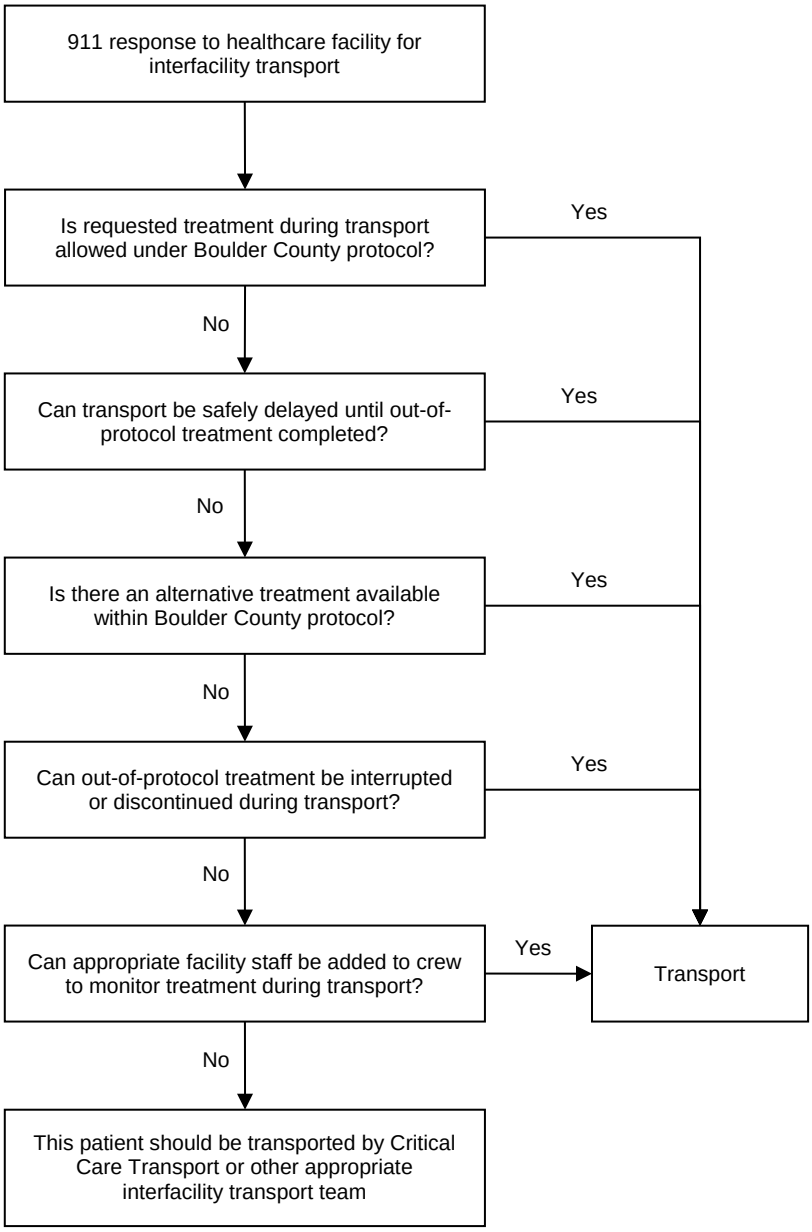
# 0115 GENERAL GUIDELINES: EMERGENCY DEPARTMENT ED DIVERT & CAPACITY NOTIFICATIONS (OPEN, ADVISORY, CRITICAL, ED DIVERT, CLOSED)

## Denver Metro Patient Load Leveling Guideline

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

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

# 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 may not include all Medical Director specific waivers or receiving hospital 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 | CCP |
|---|---|---|---|---|---|---|---|
| Public health related oral/nasal swab sample collection | | S | S | S | S | S | S |
| Pulse oximetry/carbon monoxide oximetry | S | S | S | S | S | S | S |
| Capnography | S | S | S | S | S | S | S |
| Oral/Nasal airway | S | S | S | S | S | S | S |
| Supraglottic airway | | S | S | S | S | S | S |
| Continuous positive airway pressure (CPAP) | | S | S | S | S | S | S |
| Orotracheal intubation | | | | | S | S | S |
| Nasotracheal intubation | | | | | | S | S |
| Percutaneous cricothyrotomy | | | | | | S | S |
| Bougie assisted surgical cricothyrotomy | | | | | | S | S |
| Pediatric needle cricothyrotomy | | | | | | S | S |
| Needle thoracostomy for tension pneumothorax decompression | | | | | S | S | S |
| Orogastric tube insertion with advanced airway | | | | | | S | S |
| Tracheobronchial suctioning | | | | S | S | S | S |
| Upper airway suctioning | S | S | S | S | S | S | S |
| Tracheostomy maintenance – Airway management only | | S | S | S | S | S | S |
| Tracheostomy maintenance – Including replacement | | | | | | S | S |

| Cardiovascular Procedures | EMR / OEC | EMT | EIV | AEMT | I | PM | CCP |
|---|---|---|---|---|---|---|---|
| Tourniquet | S | S | S | S | S | S | S |
| ECG - Acquire (including 12-lead) | | S | S | S | S | S | S |
| ECG - Interpretation (including 12-lead) | | | | | S | S | S |
| Blood glucose monitoring | S | S | S | S | S | S | S |
| IV – Peripheral | | | S | S | S | S | S |
| IV – External jugular | | | | S | S | S | S |
| IO | | | | | | | S |
| • Rescue or primary vascular access device when peripheral IV access not obtainable in a patient with critical illness | | | S | S | S | S | S |
| • Utilization of IO access for all other patients | | | | S | 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 |
| Automated / Semi-automated external defibrillator (AED) | S | S | S | S | S | S | S |
| Defibrillation – Manual | | | | | S | S | S |
| Valsalva maneuver | | | | | | S | S |
| Synchronized cardioversion | | | | | | S | S |
| Transcutaneous cardiac pacing | | | | | | | |
| • Adult | | | | | S | S | S |
| • Pediatric | | | | | P | P | S |

| Medications | EMR / OEC | EMT | EIV | AEMT | I | PM | CCP |
|---|---|---|---|---|---|---|---|
| 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 | P |
| Acetaminophen | | | | | | | |
| • PO | S | S | S | S | S | S | S |
| • Adult IV | | | | S | S | S | S |
| Adenosine (Adenocard) | | | | | | | |
| • Adult | | | | | P | S | S |
| • Pediatric | | | | | P | P | S |
| Albuterol sulfate (MDI and nebulizer) | | S | S | S | S | S | S |

# 0990 Quick Reference for Procedures and Medications Allowed by Protocol

| Medications | EMR / OEC | EMT | EIV | AEMT | I | PM | CCP |
|---|---|---|---|---|---|---|---|
| Amiodarone | | | | | | | |
| • Pulseless arrest (Refractory VT/VF) | | | | | P | S | S |
| • Adult symptomatic VT and undifferentiated wide complex tachycardia with a pulse | | | | | P | S | S |
| • Pediatric Symptomatic VT and undifferentiated wide complex tachycardia with a pulse | | | | | P | P | S |
| Antiemetic | | | | | | | |
| • Ondansetron (Zofran) ODT | | S | S | S | S | S | S |
| • Ondansetron (Zofran) IV/IO | | | S | S | S | S | S |
| • Promethazine (Phenergan) | | | | | P | S | S |
| • Metoclopramide (Reglan) | | | | | P | S | S |
| • Droperidol – Adult only | | | | | P | S | S |
| Aspirin | S | S | S | S | S | S | S |
| Atropine sulfate | | | | | | | |
| • Hemodynamically unstable bradycardia | | | | | P | S | S |
| • Organophosphate poisoning | | | | | P | S | S |
| Benzodiazepines (midazolam, diazepam, lorazepam) | | | | | | | |
| • Seizure – Midazolam IN | | | | S | S | S | S |
| • Seizure – All medications and routes in protocol | | | | | S | S | S |
| • Sedation for transcutaneous pacing or cardioversion | | | | | S | S | S |
| • Sedation for severely agitated or combative patient – Adult | | | | | S | S | S |
| • Sedation for severely agitated or combative patient – Pediatric | | | | | S | S | S |
| • Adjunctive agent for treatment of severe pain / muscle spasms | | | | | | S | S |
| • Anxiolysis | | | | | | S | S |
| Butyrophenones (droperidol, haloperidol) | | | | | | | |
| • Sedation for severely agitated or combative patient – Adult | | | | | S | S | S |
| • Sedation for severely agitated or combative patient – Pediatric (8-11 years old) | | | | | S | S | S |
| • Droperidol for nausea/vomiting – Adult only | | | | | P | S | S |
| Calcium | | | | | | | |
| • Pulseless arrest assumed due to hyperkalemia | | | | | | S | S |
| • Known or suspected hyperkalemia with ECG changes or suspected hyperkalemia after release of crush injury/suspension syndrome | | | | | | S | S |
| • Calcium channel blocker overdose | | | | | | P | S |
| Crystalloids (D5W, LR, NS) – Initiation/ Maintenance | | | S | S | S | S | S |
| Dextrose | | | S | S | S | S | S |
| Diphenhydramine (Benadryl) | | | | S | S | S | S |
| DuoDote™ / Mark I Kits | S | S | S | S | S | S | S |
| Epinephrine | | | | | | | |
| • Pulseless arrest – IV/IO | | | | | S | S | S |
| • Asthma – IM | | | | | P | S | S |
| • Systemic allergic reaction – IM | | S | S | S | S | S | S |
| • Stridor at rest (alternative to racemic epinephrine) | | | | | S | S | S |
| • Pediatric bradycardia – IV/IO | | | | | P | S | S |
| • Epinephrine Auto-injector – Patient's prescribed | S | S | S | S | S | S | S |
| • Epinephrine Auto-injector – Agency supplied | | S | S | S | S | S | S |
| • Severe systemic allergic reaction – IV drip or push dose | | | | | P | S | S |
| • Refractory asthma – IV drip or push dose | | | | | P | S | S |
| • Hypotension refractory to fluid resuscitation – IV drip or push dose | | | | | P | S | S |
| • Bradycardia with signs of poor perfusion – IV drip or push dose | | | | | P | S | S |
| Glucagon | | | | | | | |
| • Hypoglycemia | | | | S | S | S | S |
| • Beta Blocker overdose | | | | P | P | S | S |
| Hemostatic agents | S | S | S | S | S | S | S |
| Hydrocortisone (Solu-Cortef) | | | | | S | S | S |
| Hydroxocobalamin (Cyanokit) | | | | | S | S | S |
| Ipratropium Bromide (Atrovent) | | S | S | S | S | S | S |

# 0990 Quick Reference for Procedures and Medications Allowed by Protocol

| Medications | EMR / OEC | EMT | EIV | AEMT | I | PM | CCP |
|---|---|---|---|---|---|---|---|
| Ketamine | | | | | | W | S |
| Lidocaine | | | | | | | |
| • Pulseless arrest (Refractory VT/VF) | | | | | P | S | S |
| • Adult symptomatic VT and undifferentiated wide complex tachycardia with a pulse | | | | | P | S | S |
| • Pediatric symptomatic VT and undifferentiated wide complex tachycardia with a pulse | | | | | P | P | S |
| • Anesthetic for IO needle insertion | | | | S | S | S | S |
| • Topical anesthetic for nasotracheal intubation | | | | | | S | S |
| Magnesium sulfate | | | | | | | |
| • Torsades de pointes associated with prolonged QT interval | | | | | | S | S |
| • Refractory severe bronchospasm | | | | | | S | S |
| • Eclampsia | | | | | S | S | S |
| Methylprednisolone (Solu-Medrol) | | | | | S | S | S |
| Naloxone (Narcan) | | | | | | | |
| • Auto-injector and/or IN route | S | S | S | S | S | S | S |
| • IV route | | | S | S | S | S | S |
| • IO route | | | | S | S | S | S |
| Nitroglycerin (Nitrostat, Nitroquick) | | | | | | | |
| • Sublingual, patient assisted | P | P | P | S | S | S | S |
| • Sublingual, agency supplied | | | | S | S | S | S |
| • Nitroglycerin paste | | | | P | P | S | S |
| NSAID | | | | | | | |
| • Ibuprofen | S | S | S | S | S | S | S |
| • Ketorolac (Toradol) | | | | | | S | S |
| Opioids | | | | | | | |
| • Fentanyl – Adult and pediatric 1 year and older | | | | P | S | S | S |
| • Fentanyl – <1 year old | | | | P | P | P | S |
| • Morphine – Adult and pediatric 1 year and older | | | | S | S | S | S |
| • Morphine – <1 year old | | | | P | P | P | S |
| • Hydromorphone – Adult only | | | | | | S | S |
| Oral glucose (Glutose, Insta-glucose) | S | S | S | S | S | S | S |
| Oxygen | S | S | S | S | S | S | S |
| Phenylephrine (Intranasal) | | | | | | | |
| • Epistaxis | | S | S | S | S | S | S |
| • Prior to nasotracheal intubation | | | | | | S | S |
| Racemic epinephrine (Vaponepherine) | | | | | S | S | S |
| Sodium bicarbonate | | | | | | | |
| • Pulseless arrest suspected due to hyperkalemia (typically in patient with dialysis, end-stage renal disease) | | | | | P | S | S |
| • Sodium channel blocker overdose with wide QRS >120 ms or ventricular arrhythmia | | | | | | S | S |
| • Known or suspected hyperkalemia with ECG changes | | | | | | S | S |
| • Severe agitation that develops wide QRS >120 ms | | | | | | S | S |
| • Crush injury/suspension syndrome | | | | | | S | S |
| Topical ophthalmic anesthetics | | | | | S | S | S |
| Tranexamic acid (TXA) | | | | | | W | S |

# 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
- Cuffed endotracheal tube preferred, manometer to measure cuff pressure is recommended.

**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 is a relative contraindication

**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 blind nasotracheal intubation, 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.
- 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 (see needle cricothyrotomy protocol) 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. Stabilize the larynx with the thumb and middle finger of your 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:**

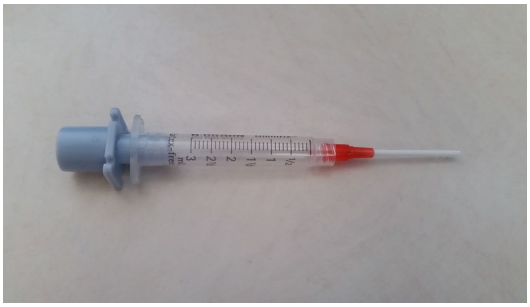
- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage from the carotid or jugular vessels, or their branches.

# 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. Stop advancing the needle at this point.
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.
14. Monitor for signs of barotrauma and pneumothorax.

# 1030 PROCEDURE PROTOCOL: SUPRAGLOTTIC AIRWAY

| EMT<br>EMT-IV | AEMT |
|---|---|
| EMT-I | Paramedic |

**Indications**:

- Airway management needed
- Designated advanced airway for EMTs

**Contraindications**:

- Intact gag reflex
- Proximal airway occlusion
- Caustic ingestion

**Technique:**

1. Select proper size supraglottic airway based on manufacturer's specifications
2. Assemble and prepare equipment based on manufacturer recommendations. Lubricate posterior aspect distal tip with water-soluble lubricant.
3. Suction airway and preoxygenate
4. If trauma: have assistant hold in-line spinal stabilization in neutral position
5. If no trauma, sniffing position or slight cervical hyperextension is preferred
6. Place supraglottic airway utilizing device-specific technique
7. Confirm tube placement by auscultation, chest movement, and $EtCO_2$ (if available)
8. Continuously monitor waveform capnography (if available), $SpO_2$, 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.

# 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<br>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

## Indications:

| | |
|---|---|
| EMT-IV ONLY | AEMT |
| EMT-I | Paramedic |

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
    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

## Contraindications:

A. Fracture of target bone
B. Infection at area of insertion
C. Inability to identify landmarks
D. IO access or attempted IO access in target bone within previous 48 hours
E. Prosthesis or orthopedic procedure near insertion site

## Complications:

A. Fracture
B. Compartment syndrome
C. Infection

## Technique:

A. Site of choice – Utilize site 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, consider 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.

## 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.

## 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.

A. To withdraw the catheter, remove the extension/drip set and dressing.
B. Attach a Luer lock syringe to the hub.

## 1060 PROCEDURE PROTOCOL: INTRAOSSEUS CATHETER PLACEMENT

C. 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.
D. Apply pressure as needed and dress the site.
E. 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.

# 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.

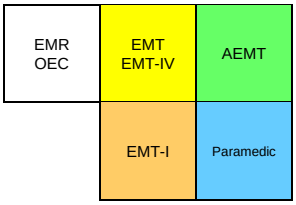
## Technique

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. Verbal de-escalation should be used first if the situation allows.
B. Consider pharmacological sedation for agitated patients that require transport and are behaving in a manner that poses a threat to him/herself or others. See Agitated/Combative Patient Protocol
C. Restraints may be indicated for patients who meet the following criteria:
    1. A patient who is significantly impaired (e.g., intoxication, medical illness, injury, psychiatric condition, etc.) and lacks decision-making capacity regarding his or her own care.
    2. A patient who exhibits violent, combative, or uncooperative behavior who does not respond to verbal de-escalation.
    3. A patient who is suicidal and considered to be a risk for behavior dangerous to his or herself or to healthcare providers.
    4. A patient who is on a mental health hold if there is a concern for elopement.

## Precautions:

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

## Technique:

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

## Documentation

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

# 1090 PROCEDURE PROTOCOL: RESTRAINT PROTOCOL

**Complications:**

A. Aspiration: continually monitor patient's airway
B. Nerve injury: assess neurovascular status of patient's limbs during transport
C. Complications of medical conditions associated with need for restraint - Patients may have underlying trauma, hypoxia, hypoglycemia, hyperthermia, hypothermia, drug ingestion, intoxication, or other medical conditions

# 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 if patient is being resuscitated and any trauma to trunk.

## Technique:

A. Expose entire chest
B. Clean skin overlying site with available skin prep
C. 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
D. For adult, use largest, longest available angiocath. For children measuring Red or greater on a length-based tape, use 14g or 16g angio catheter.
E. Notify receiving hospital of needle decompression attempt

**Pediatric specific chest decompression needle size:**

- If patient fits on length-based tape (LBT) and measures Red (6 month) or higher: 14g or 16g angiocath
  (recommended maximum length 1.5 inches)
- Gray (2 month) or Pink (4 month) on LBT: 22g angiocath
  (recommended maximum length 0.75 inches)
- Neonatal: 24g butterfly needle
  (recommended maximum length 0.75 inches)

## Neonatal/Young Infant Technique:

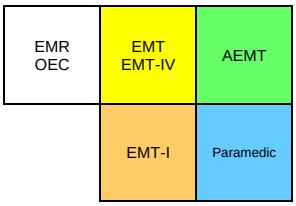
A. Expose entire chest
B. Clean skin overlying site with available skin prep
C. Assemble appropriate needle (see box), 3-way stopcock, 20-30 mL syringe
D. Identify 3rd rib at midclavicular line, keeping index finger of non-dominant hand on rib. Insert assembled needle system into the 2nd intercostal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

## Precautions:

A. Angiocath may become occluded with blood or by soft tissue
B. A simple pneumothorax is NOT an indication for needle decompression

# 1130 PROCEDURE PROTOCOL: TOURNIQUET PROTOCOL

## Indications




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

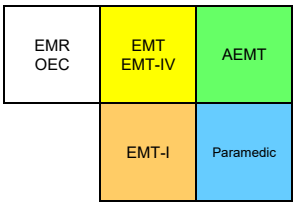
## Precautions

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 2$^{nd}$ can be applied adjacent to the 1$^{st}$.
    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




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.
   a. Place the folded sheet under the patient, on a backboard or pram prior to moving patient.
   b. Tie the sheet in a square knot, pulling both ends simultaneously to minimize movement of the patient.

B. 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. Wrap the edges around the pelvis and secure the edges with the Velcro of the front connector
   c. The T-POD requires tightening by use of the strings in the front.

C. 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.

# 1150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT GUIDELINE

## Introduction

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

## Medical Criteria for Behavioral Health Unit

A. The following conditions, if currently present, are absolute contraindications to admission until resolved:

1. Uncontrolled bleeding
2. Severe respiratory distress (increased use of accessory muscles/retractions/nasal flaring, pale and/or cyanotic, hypoxia)
3. Open wounds or sores that cannot be covered
4. Communicable disease that can be transmitted through casual contact
5. Parasitic infestation (bed bugs, lice)
6. Symptoms of shock
7. Active tuberculosis
8. Level of consciousness below client's baseline
9. Any condition warranting an inpatient medical hospital admission
10. Any condition that would cause admission to the crisis stabilization unit (versus self-care at home) to negatively impact the client's physical health status

B. The following conditions, if currently present, are absolute contraindications to admission until fully evaluated and treated:

1. Unexplained and/or untreated seizures
2. Chest pain
3. GI bleeding
4. Respiratory distress (shortness of breath, wheezing, current asthma attack, exacerbated emphysema)
5. Severe, unexplained pain
6. Suspected fracture
7. Significant open wounds and/or sores
8. Significant allergic reaction (respiratory difficulty, angioedema, hives)
9. Rash consistent with a communicable viral illness, parasitic infestation, or allergic reaction
10. Diabetic with current s/s of hypoglycemia or ketonuria
11. Positive TB test without treatment
12. Untreated elevated blood pressure causing symptoms.

C. Clients with following conditions will be considered for admission with caution, and admission may be denied based on the individual's presentation:

1. Current cancer treatment with chemo or radiation therapy
2. Feeding tube
3. Urinary catheter (intermittent or indwelling)
4. Colostomy
5. High risk pregnancy
6. Surgery in the past two weeks
7. Unmanaged fecal and/or urinary incontinence, unmanaged enuresis and/or encopresis

8. Difficulty managing activities of daily living

**Substance Abuse Criteria for Withdrawal Management Units**

A. The following conditions, if currently present, are absolute contraindications to admission until resolved:

1. The client is on methadone maintenance or buprenorphine for the treatment of an opioid use disorder without the ability to either obtain or administer these medications.
2. Use of phencyclidine (PCP) within the past 72 hours
3. Active detoxification from alcohol or opiates.

B. Clients who have positive recent use history and/or urine toxicology screen for the following substances will be evaluated for admission. The presence/use of these substances is not, in and of itself, a contraindication to admission. However, the impact of the substance use on the client's current health and behavior will be considered as part of the admission decision.

1. Methamphetamine
2. Amphetamines
3. Cocaine
4. Recreational benzodiazepines
5. Recreational opiates
6. Recreational barbiturates

C. The following will be assessed when the above substances are present, and, if present, each presents a contraindication to admission:

1. Client is currently intoxicated/under the influence
2. Client's use of /withdrawal from the substance potentially complicate a co-occurring medical condition and places the client at significant risk of morbidity or mortality over the next five days
3. Client has a history of violence when withdrawing from the substance, and this reaction is likely to recur
4. Client is unable to participate in programming due to withdrawal.

D. Clients who have a positive recent use history and/or urine toxicology screen for the following substances will be evaluated for admission. The presence/use of these substances is not a contraindication to admission unless client is currently under the influence.

1. THC
2. Lysergic acid diethylamide (LSD/Acid)
3. Methylenedioxymethamphetamine (MDMA/Ecstasy/Molly)

**Clinical Considerations:**

A. The following are a contraindication to admission until resolved:

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

# 1150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT GUIDELINE

## Walk-in Clinic Behavioral Admit Criteria Checklist Form

**Indications:**

Patient with an expressed or suspected behavioral health condition needing an evaluation at a behavioral health facility.

**Inclusions/Exclusions:**

If the patient meets all of the following criteria ("yes" to every question), they are appropriate for transport to a behavioral walk-in clinic (WIC). Law enforcement transport of the patient is an acceptable option if available, able to do so, and present on scene.

| **Medical:** | | | | |
|---|---|---|---|---|
| • Blood Pressure: systolic of 90-180, diastolic of 50-100 | YES | ☐ | NO | ☐ |
| • Pulse: 60-120 | YES | ☐ | NO | ☐ |
| • Respiratory Rate: 12-25 | YES | ☐ | NO | ☐ |
| • Oxygen Saturation: 90% or above on room air or prescribed oxygen | YES | ☐ | NO | ☐ |
| • Blood Glucose: 60-125 if diabetic | YES | ☐ | NO | ☐ |
| • No acute medical conditions warranting emergency medical treatment | YES | ☐ | NO | ☐ |
| • No injuries needing medical attention beyond basic first aid | YES | ☐ | NO | ☐ |
| • No change in LOC, neurologically intact | YES | ☐ | NO | ☐ |
| **Substance:** | | | | |
| • Blood alcohol level <0.05 (not mandatory, only if law enforcement performs prior to arrival) | YES | ☐ | NO | ☐ |
| • Not under the influence of/impaired by recreational substance use | YES | ☐ | NO | ☐ |
| **Psychiatric:** | | | | |
| • Agrees to WIC level of care and understands that transfer to an emergency department may be necessary prior to placement in a higher level of care (if applicable). | YES | ☐ | NO | ☐ |
| • No physically aggressive behavior | YES | ☐ | NO | ☐ |
| • No verbally aggressive behavior not responsive to redirection | YES | ☐ | NO | ☐ |
| • Able to engage in a coherent exchange of information | YES | ☐ | NO | ☐ |
| • Can maintain safety without active intervention | YES | ☐ | NO | ☐ |

**Personnel Conducting Patient Assessment**

Assessment Date: _____ Assessment Time: _____

Patient Name: _____ Date of Birth: _____

EMS Provider (if involved): _____ Signature: _____

Law Enforcement Officer (if involved): _____ Signature: _____

Other Licensed Provider (if involved): _____ Signature: _____

# 1150 BEHAVIORAL HEALTH WALK-IN CLINIC / WITHDRAWAL MANAGEMENT UNIT ADMIT GUIDELINE

## Withdrawal Management Unit Admit Criteria Checklist Form

**Indications:**

A patient with a substance abuse condition that would benefit from an evaluation at a withdrawal management unit.

**Inclusions/Exclusions:**

- If the patient meets all the following criteria ("yes" to every question), they are appropriate for transport to a withdrawal management unit.
- These are general guidelines to help assess the initial placement of a person (18 years of age and older) under the influence of alcohol and/or other drugs, or in any stage of withdrawal from alcohol or drugs. **Each organization/withdrawal management program will complete a secondary screening on site which may result in a denied admission.**

| **Vitals (if known):** | | | | |
|---|---|---|---|---|
| • Blood Pressure: systolic of 90-180, diastolic of 50-100 | YES | ☐ | NO | ☐ |
| • Pulse: 60-100 | YES | ☐ | NO | ☐ |
| • Respiratory Rate: 10-26 | YES | ☐ | NO | ☐ |
| • Oxygen Saturation: 88% or above on room air | YES | ☐ | NO | ☐ |
| • Blood Glucose: 60-250 | YES | ☐ | NO | ☐ |
| • Blood alcohol level ≤ 0.400 (not mandatory, only if law enforcement performs prior to arrival) | YES | ☐ | NO | ☐ |
| **Other Medical:** | | | | |
| • No history of withdrawal seizure or seizure disorder | YES | ☐ | NO | ☐ |
| • Ability or willingness to perform self-care (includes medical devices) | YES | ☐ | NO | ☐ |
| • No respiratory difficulties | YES | ☐ | NO | ☐ |
| • No injuries needing medical attention | YES | ☐ | NO | ☐ |
| • No change in level of consciousness | YES | ☐ | NO | ☐ |
| **Other:** | | | | |
| • No aggressive or combative behavior | YES | ☐ | NO | ☐ |
| • No bizarre behavior not explained by intoxication | YES | ☐ | NO | ☐ |
| • Not on a mental health hold | YES | ☐ | NO | ☐ |
| • Patient in a pregnant woman with atypical symptoms | YES | ☐ | NO | ☐ |

**Personnel Conducting Patient Assessment**

Assessment Date: _____ Assessment Time: _____

Patient Name: _____ Date of Birth: _____

EMS Provider (if involved): _____ Signature: _____

Law Enforcement Officer (if involved): _____ Signature: _____

Other Licensed Provider (if involved): _____ Signature: _____

# 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® PROBE REMOVAL

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

## Indications

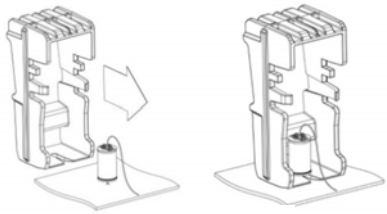
- Patient with TASER® probe(s) embedded in skin.

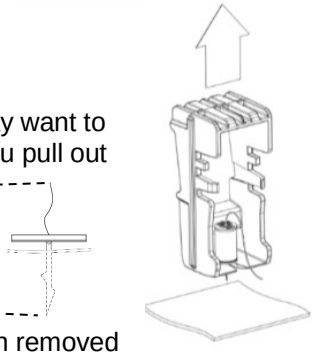
## Contraindications

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

## Technique

1. Be alert for any medical conditions which may ensue following physical struggle. Refer to agitate/combative protocol for appropriate assessment and treatment.
2. Verify with officer if special tool is required for probe removal
3. Procedure for removal of standard TASER® probes
    a. Confirm the TASER® has been shut off and the barb cartridge has been disconnected.
    b. Using a pair of shears cut the TASER® wires at the base of the probe.
    c. Place one hand on the patient in area where the probe is embedded and stabilize the skin surrounding the puncture site. Using the other hand (or use pliers) firmly grasp the probe.
    d. In one uninterrupted motion, pull the probe out of the puncture site maintaining a 90° angle to the skin. Avoid twisting or bending the probe.
    e. Repeat the process for any additional probes.
4. Procedure for removal of TASER® 7 cartridge probe
    a. The barbs have a round cylinder above the probe. DO NOT PULL it out by the cylinder, it will detach and leave the barb in the skin/muscle. If not removed properly the probe could stay embedded in the person and may cause some infection and/or complicate removal issues.
    b. The TASER® 7 Cartridge safety clip is used to remove the probes. The safety clip has a notch at on one end.
    c. Slide the safety clip between the probe and the skin.
    d. Pull the safety clip straight out. DO NOT TWIST. You may want to place your thumb on top of the cylinder to stabilize it as you pull out the probe.
    e. If the cylinder has broken off there is a disc that remains and can be used to anchor the probe for removal. Slide the Safety clip between the disc and the skin to remove the probe.







5. 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.
6. Cleanse the probe site and surrounding skin and apply sterile dressing.
7. Advise patient to watch for signs of infection including increased pain at the site, redness swelling or fever.

# 1175 PROCEDURE PROTOCOL: PAIN MANAGEMENT

## Goal of Pain Management

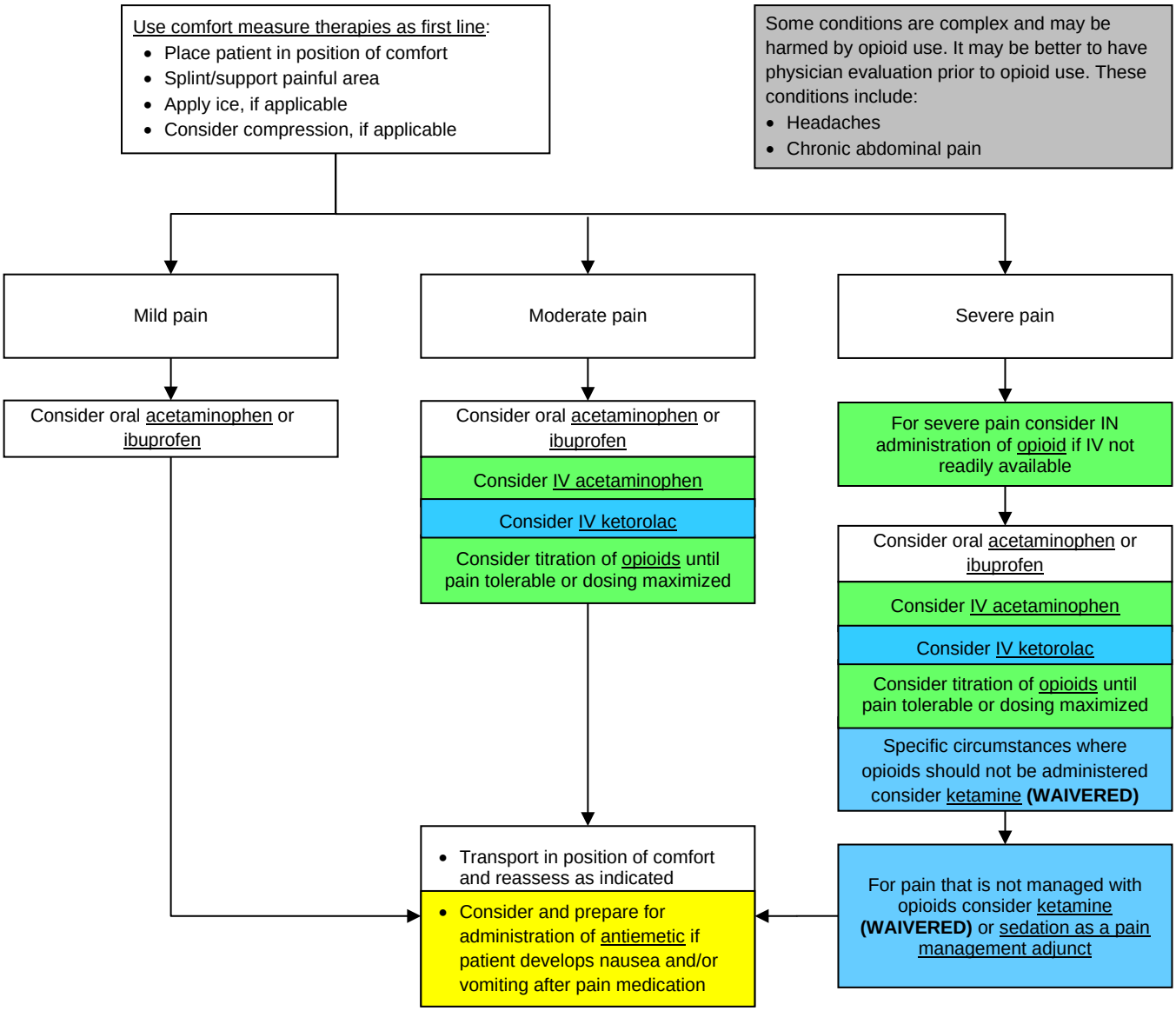
| EMR<br>OEC | EMT<br>EMT-IV | AEMT |
|---|---|---|
| | EMT-I | Paramedic |

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. Multi-modal analgesia is reasonable with goal of avoiding combinations of sedating agents reducing the overall need for opiates. It is safe to combine acetaminophen or NSAIDS with opioids or other sedating agents.
C. Strongly consider ½ typical dosing in the elderly or frail patient
D. When opioids are administered to a pregnant patient in active labor or breastfeeding mother it can lead to central nervous system depression, including respiratory depression, in the newborn or the breastfed infant. In these circumstances opioids should only be administered after informed consent is received from the mother and limited to a single dose.

## 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

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# 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 an opioid (analgesic) and a benzodiazepine (sedation) to provide adequate pain management. The combination of an opioid 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: 1) Completed training in the procedure and have met competency requirements set by the medical director. 2) Remain current through continuing education and skills checkoffs 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 adult 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.

## Complications

A. Common complications include:
   1. Altered mentation
   2. Sedation
   3. Dizziness
   4. Euphoria

B. Other complications include:
   1. Respiratory depression
   2. Hypotension
   3. Bradycardia
   4. Nausea and vomiting
   5. Allergic reactions and anaphylaxis
   6. Bronchospasm

## 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 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

A. Administer opioid for analgesia
   - o Fentanyl 0.5-1 mcg/kg IV/IO, or
   - o Morphine 2-5 mg IV/IO.

B. Administer benzodiazepine for sedation, start at lowest effective dose
   - o Midazolam 1-2 mg slow IV/IO push over 2 minutes, or
   - o Diazepam 2.5-5 slow IV/IO push over 2 minutes, or
   - o Lorazepam 0.5-2 mg slow IV/IO push over 2 minutes.

C. Reassess before and after each administration: responsiveness to commands, $O_2$ saturation, capnography waveform and value, heart rate, respiratory rate, BP, ECG, and pain scale evaluation

D. Titrate additional drugs to desired effect
   - o If the patient needs additional sedation, use same initial benzodiazepine:
     - Midazolam 1 mg slow IV/IO push over 2 minutes, or
     - Diazepam 2.5 mg slow IV/IO push over 2 minutes, or
     - Lorazepam 0.5 mg slow IV/IO push over 2 minutes.
   - o If the patient needs additional analgesia, use repeat dose of same initial opioid:
     - Fentanyl 0.5-1 mcg/kg IV/IO, or
     - Morphine 2-5 mg IV/IO.

# 1180 PROCEDURE PROTOCOL: SEDATION AS PAIN MANAGEMENT ADJUNCT

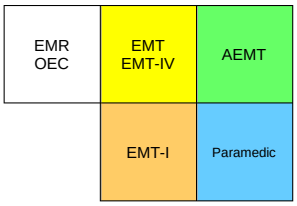
E. Monitor continuously and document the following:

- Responsiveness to command
- Capnography
- Oxygen saturation
- Vital signs (heart rate, respiratory rate, BP)
- ECG rhythm
- Pain scale evaluation

## Special Notes

A. The combination of opioids and benzodiazepines may cause respiratory depression.
B. 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.
C. If the patient has significant respiratory depression perform the following in the order given until improvement occurs.
    1. First, stimulate the patient;
    2. If necessary, then ventilate with a BVM;
    3. *Only if SpO2 does not improve with BVM, consider use of* naloxone.
D. If the patient suffers hemodynamic instability administer a fluid bolus and reassess.
E. The key to minimizing complications during this procedure is the slow titration of drugs to the desired effect.
F. Opioids and benzodiazepines should be given slowly. This may be accomplished in several ways.
    1. The appropriate dose may be diluted in a 10 mL syringe with normal saline and then pushed slowly over 2 minutes,
    2. Or the appropriate dose may be placed in 50 mL of normal saline and administered over 2 minutes.
G. Opioids and benzodiazepines should not be mixed in the same syringe.

# 1190 NALOXONE LEAVE BEHIND




**Recipient meets all the following criteria:**

- Be alert and oriented
- Understand how to recognize opiate overdose and administer naloxone
- Meet at least one criteria for leave-behind naloxone
- Patient does not have an allergy to naloxone hydrochloride

**Criteria for distribution of leave-behind naloxone:**

- Individual at risk of opiate overdose.
- Individual in a position to assist a family member, friend, or other person at risk of opiate overdose.
- Employee or volunteer of a harm reduction program.
- Law enforcement or first responder employee or volunteer

**Provider actions:**

- Screen recipient for allergy
- Provide opiate overdose education, including:
  - Risk factors for opioid overdose
  - Recognition of opioid overdose
- Review directions for use of naloxone, including:
  - Onset and duration of naloxone
  - Steps for use:
    - Call 911 .
    - If patient is unconscious and breathing normally:
      - ABC
      - Administer naloxone according to instructions
      - Repeat doses every three minutes.
    - If patient is unconscious and not breathing normally:
      - Start chest compressions
- Review possible adverse events:
  - Opioid withdrawal symptoms
  - Adverse effects beyond opioid withdrawal are rare.
- Distribute naloxone kit and explain contents
- Follow up instructions to recipient:
  - Contact a medical provider if questions, concerns or problems arise.
  - Refill naloxone as needed.
  - Encourage communication with primary care regarding:
    - Overdose
    - Use of naloxone
    - Available behavioral health services

# 2000 General Principles of Airway Management

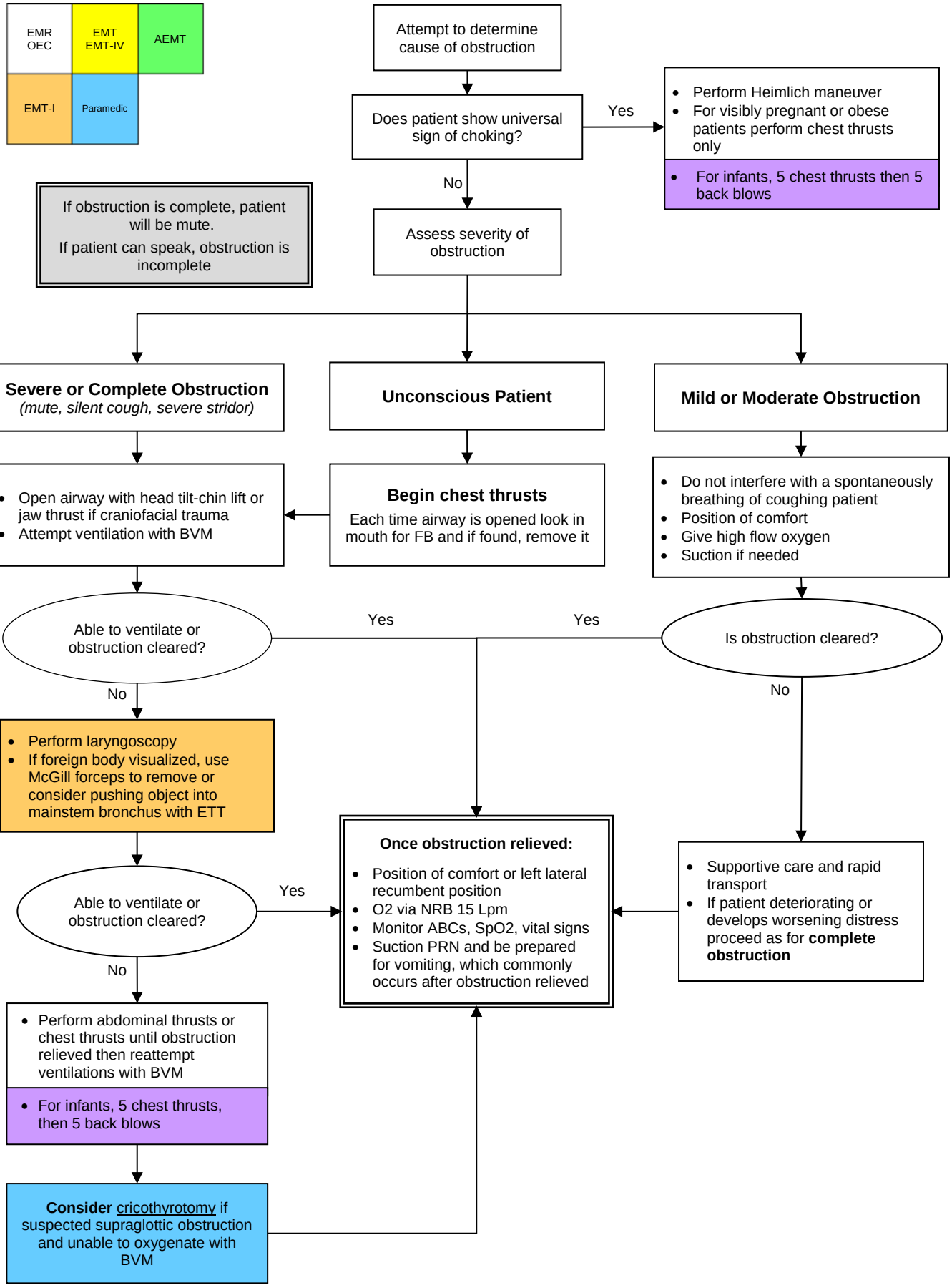
An intact airway, adequate oxygenation, and ventilation are essential for all patients with medical or traumatic conditions. Throughout this protocol it is assumed that EMS personnel will maintain a patent airway and provide appropriate supplemental oxygenation.

1. Observe BSI precautions and use appropriate level of protection when performing any aerosol generating procedures.
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 airway obstruction, if present.
4. Assess oxygenation; use supplemental oxygen as needed to maintain saturation per protocol.
    a. If ventilating adequately, provide supplemental oxygen per protocol.
    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 and conscious, consider using Continuous Positive Airway Pressure (CPAP).
    c. When using pulse oximetry, adjust oxygen delivery to maintain saturation per oxygen protocol.
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 supraglottic airway
    b. Consider cricothyrotomy (requires extensive training and permission from medical director)

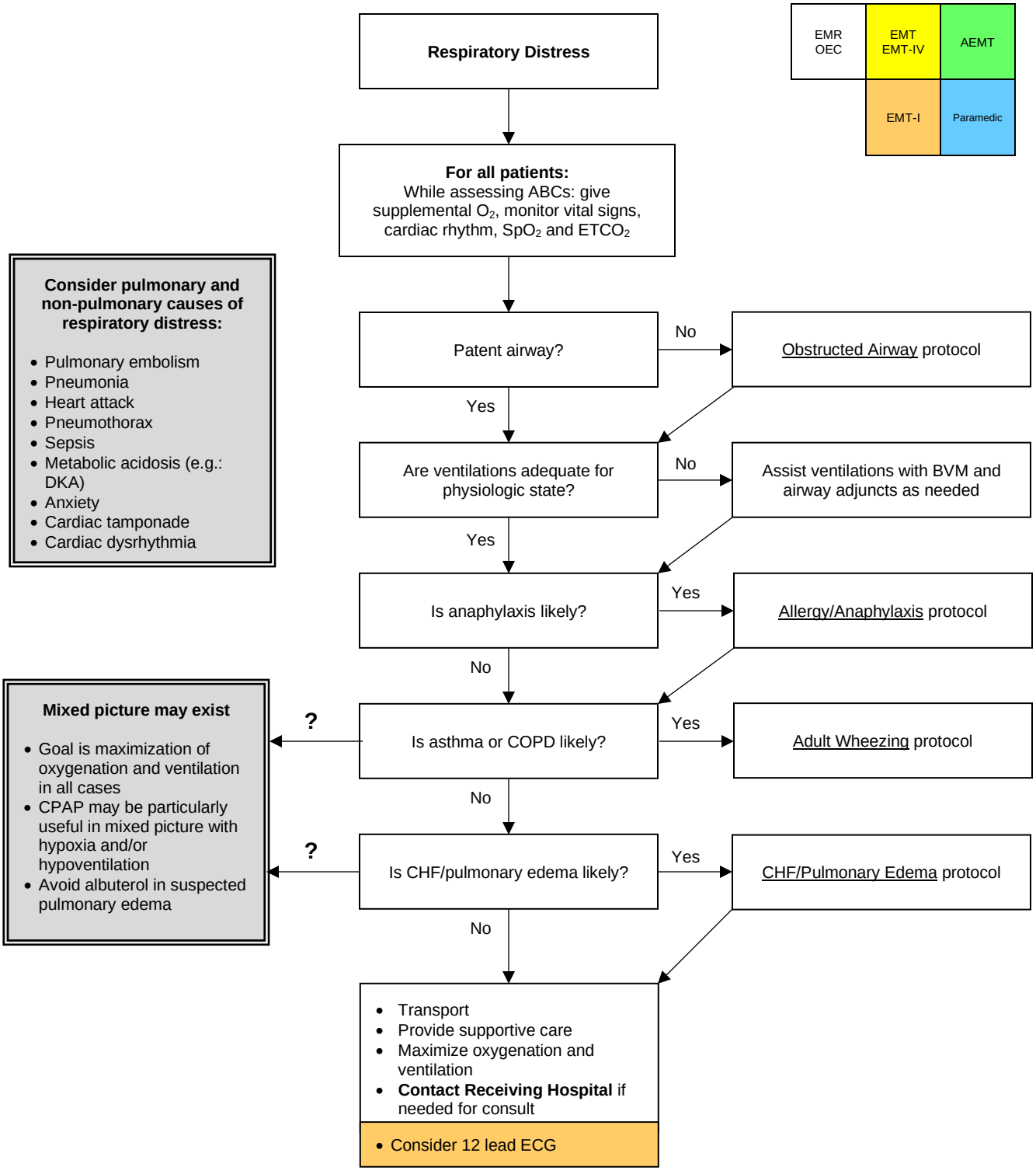
## Special Considerations

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

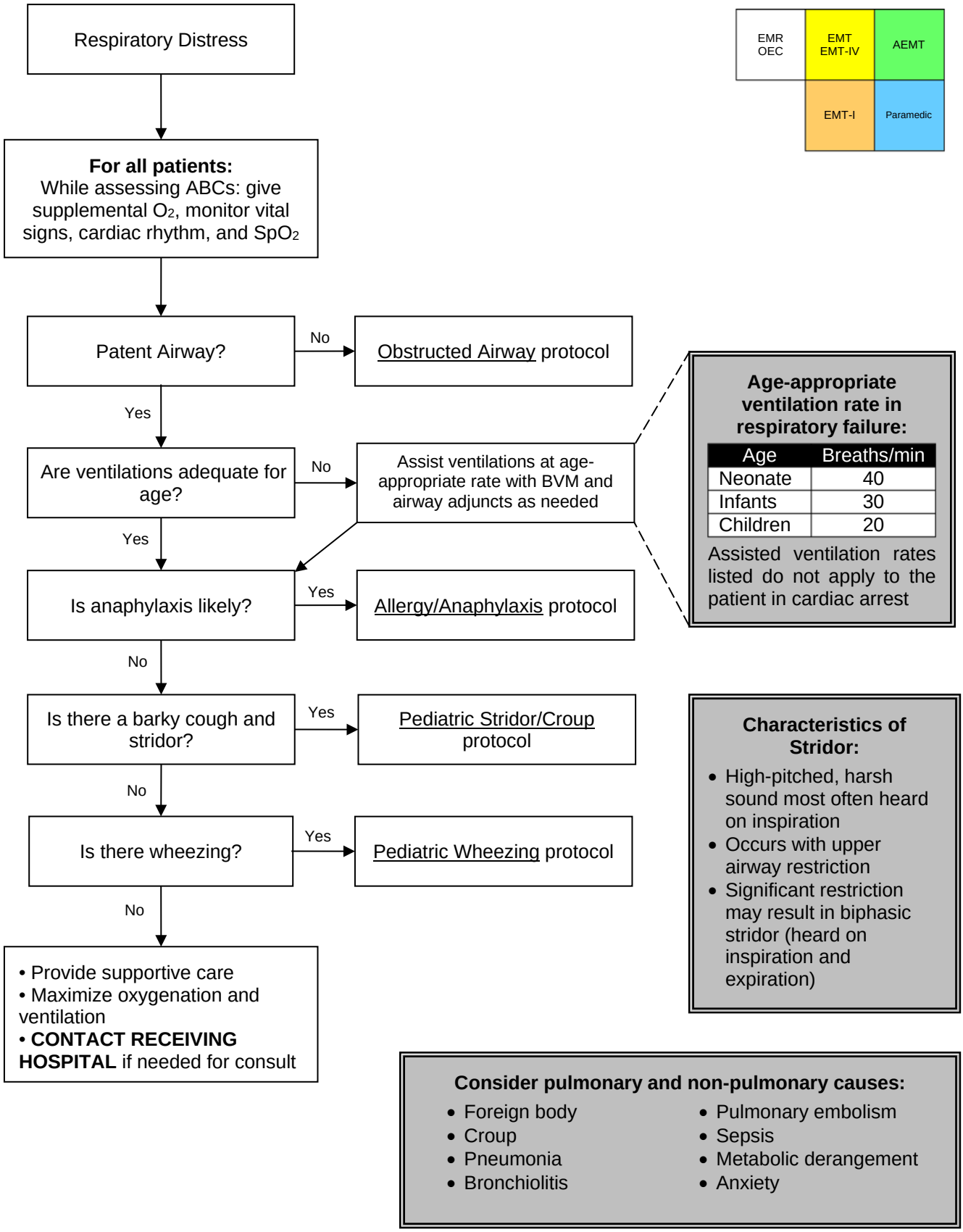
# 2005 OBSTRUCTED AIRWAY



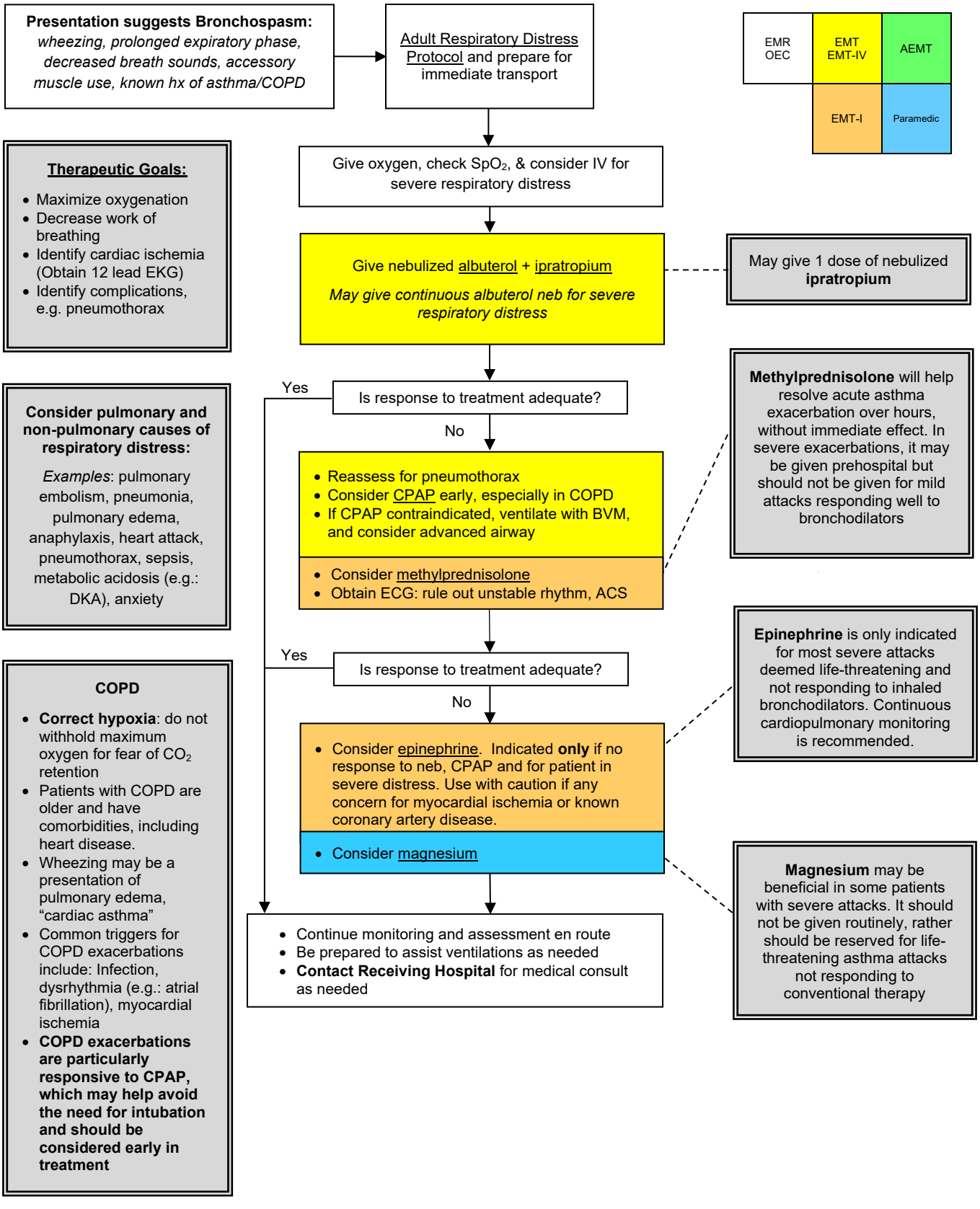
# 2010 ADULT UNIVERSAL RESPIRATORY DISTRESS



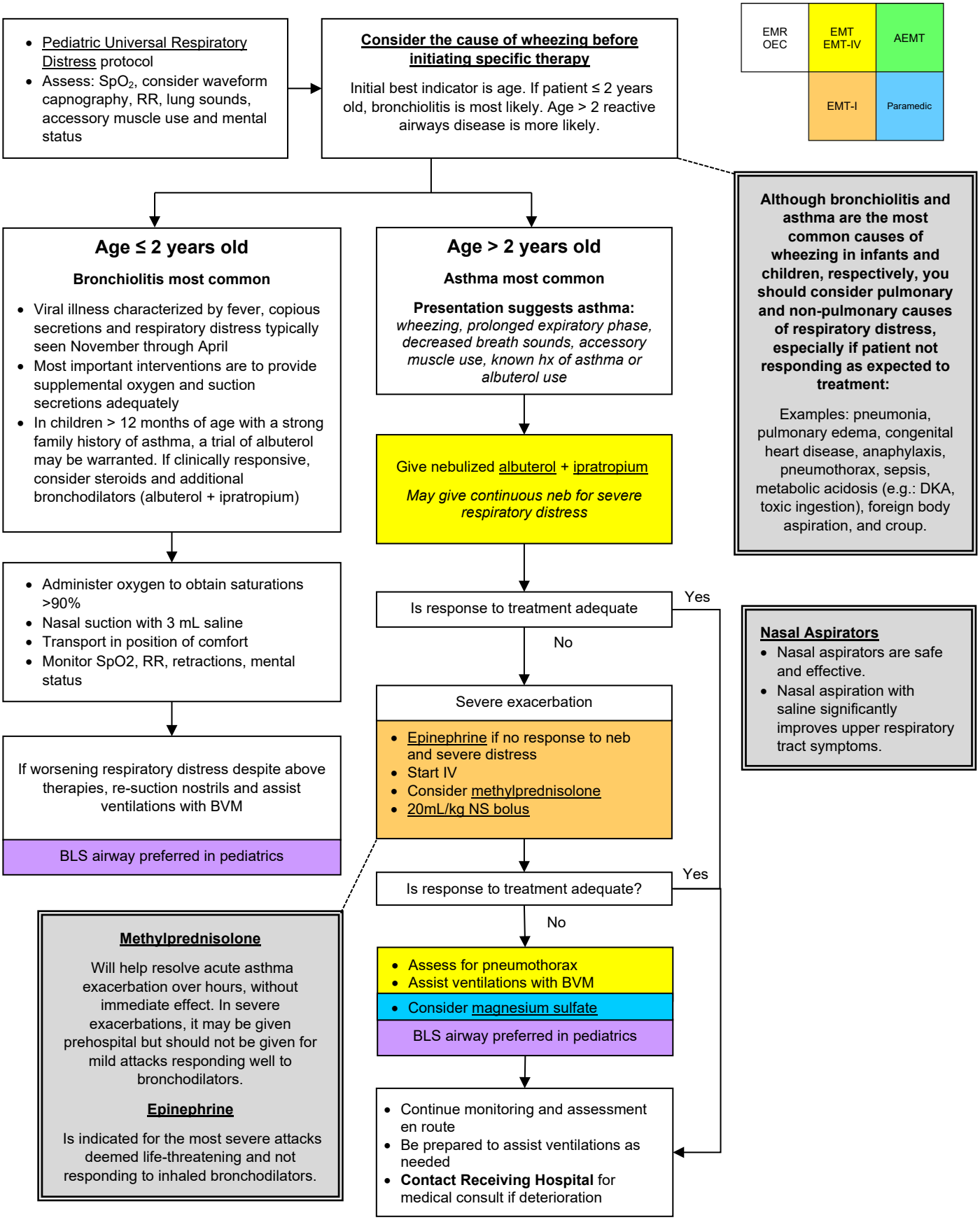
# 2020 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS



# 2030 ADULT WHEEZING



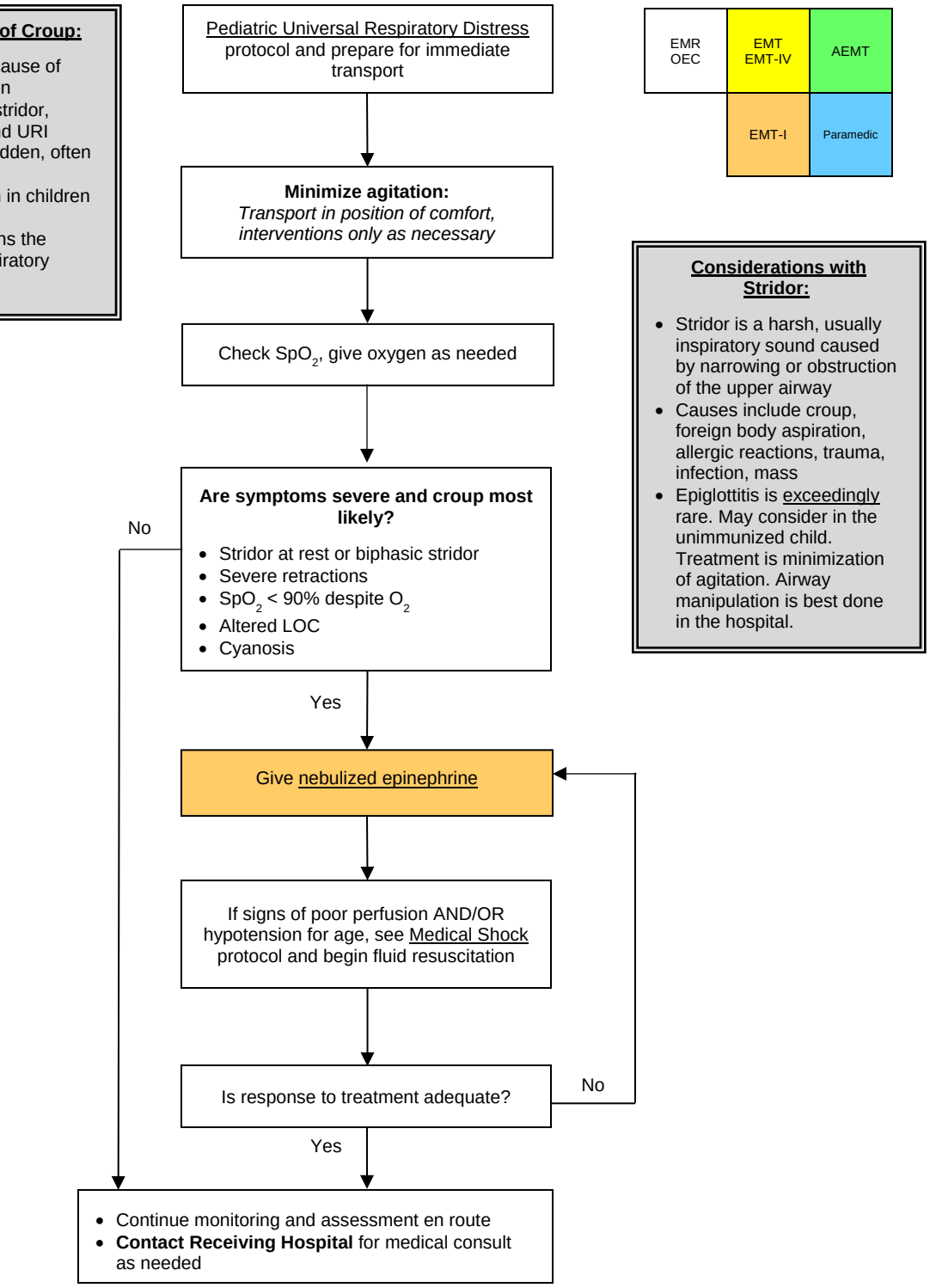
# 2040 PEDIATRIC WHEEZING



# 2050 PEDIATRIC STRIDOR/CROUP

**Characteristics of Croup:**

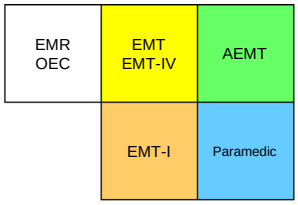
- Most common cause of stridor in children
- Child will have stridor, barky cough, and URI symptoms of sudden, often nocturnal onset
- Most often seen in children < 9 years old
- Agitation worsens the stridor and respiratory distress

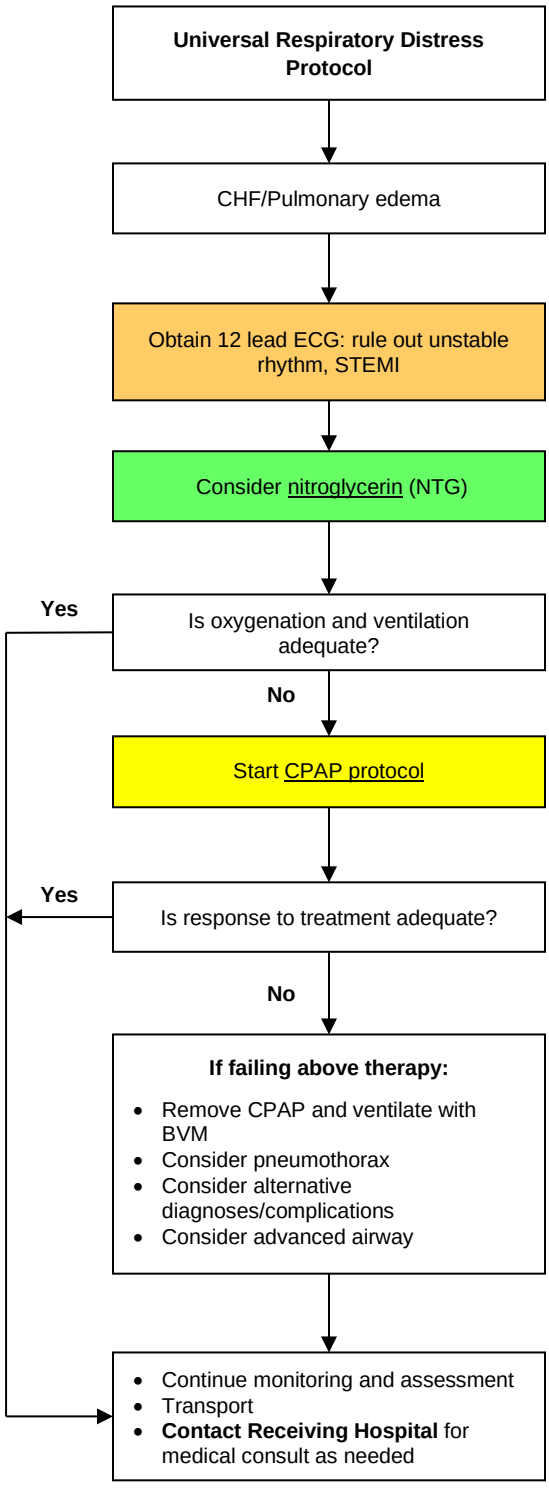



**Considerations with Stridor:**

- 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




**Therapeutic Goals:**

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

**Special Notes:**

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

# 2070 TRACHEOSTOMY EMERGENCIES

Adult or Pediatric Universal Respiratory Distress Protocol

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

## Tracheostomy in Place

Attempt repositioning and supplemental oxygen

If gurgling, rhonchi, or mucous present:

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

If patient still has signs of inadequate oxygenation and ventilation:

- Remove tracheostomy, deflating cuff if needed
- If patient has additional tracheostomy tubes readily available, gently insert the same size tracheostomy tube with the obturator in place. Do not force the tube.
- If the tracheostomy tube cannot be inserted easily, withdraw the tube, and attempt to pass a smaller size tracheostomy tube, if available.
- If smaller tracheostomy tube is not available, or cannot be inserted easily, place ETT in stoma if trach is mature (at least 6 weeks old) and advance until balloon is within trachea
- Confirm placement by continuous waveform capnography, presence, and symmetry of breath sounds, and rising $SpO_2$

## Tracheostomy Removed

- Attempt to replace the tracheostomy tube if trach is mature (at least 6 weeks old)
- If the tracheostomy tube cannot be inserted easily, withdraw the tube, and attempt to pass a smaller size tracheostomy tube, if available.
- If smaller tracheostomy tube is not available, or cannot be inserted easily, place ETT in stoma if trach is mature (at least 6 weeks old) and advance until balloon is within trachea
- Confirm placement by continuous waveform capnography, presence, and symmetry of breath sounds, and rising $SpO_2$

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

If unable to oxygenate or ventilate, attempt to place advanced airway through mouth and occlude stoma with gloved finger.

If oral ETI is performed, advance ETT balloon below level of stoma

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

### ETT Recommended Sizes – Length Based

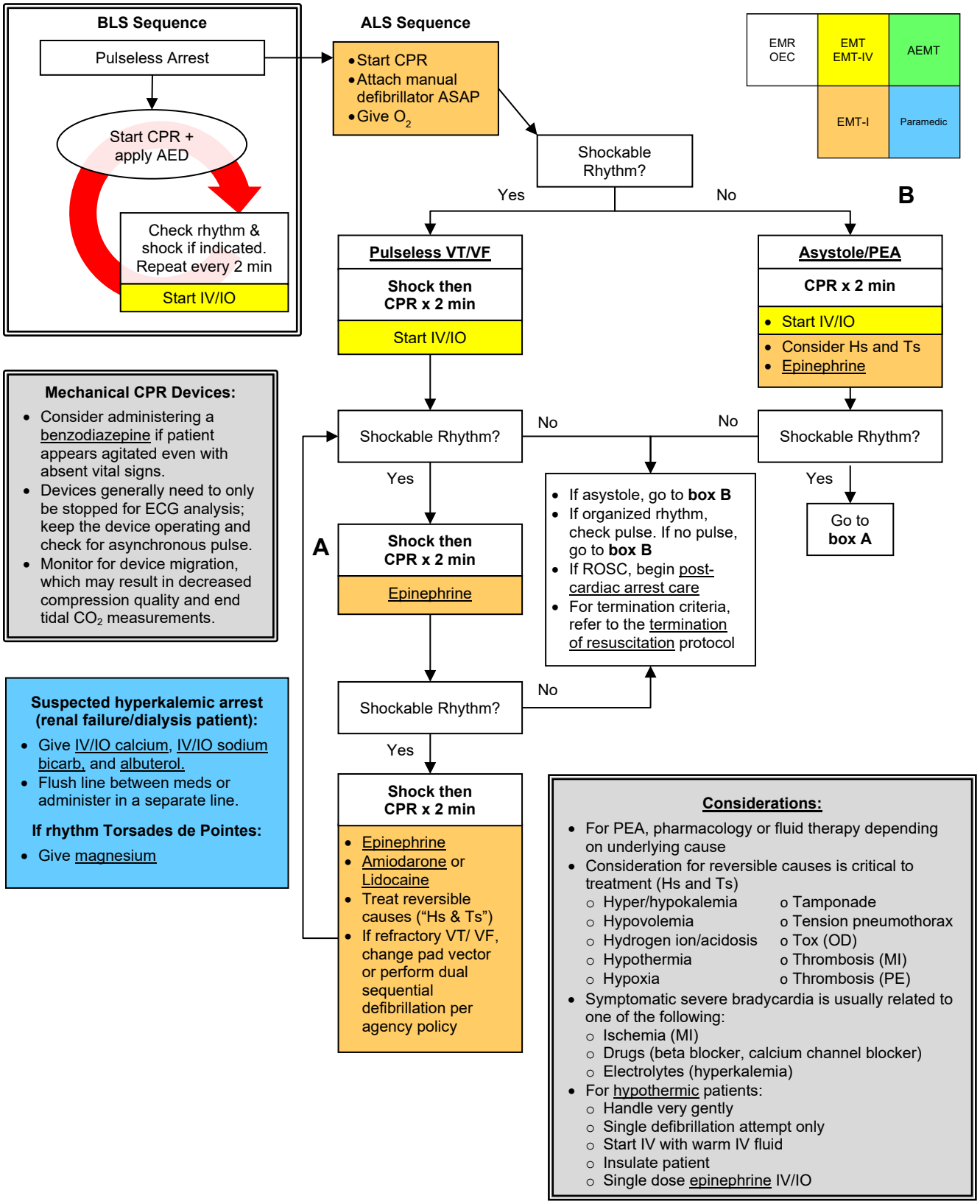
- Color Pink to Blue (Newborn to <7 years): 3.5 cuffed
- Color Orange to Adult (7 years and up): 6.0 cuffed

### Stomas <6 weeks old

- An established tracheostomy is a tracheostomy that was surgically placed longer than 6 weeks ago. Never replace anything into a stoma that is less than 6 weeks of age.
- For stomas <6 weeks old, if patient has an upper airway, occlude stoma and BVM via traditional method. If patient does not have an upper airway, use neonate mask over stoma site.

- Always utilize family members, both for information and for assistance
- Types of tracheostomies include cuffed, uncuffed, fenestrated (allowing for speech), and unfenestrated
- Ask if family has a suction catheter and use theirs if available to ensure appropriate size. If none available, inquire as to size. If size unknown, estimate by doubling the inner diameter of the tracheostomy tube and rounding down to the available size catheter
- Never force suction catheter. When inserting, allow catheter to gently follow the curvature of the tracheostomy
- If tracheostomy tube is a double lumen tube, the inner cannula must be in place to attach the bag-valve-mask. Remove the inner cannula to suction and then re-insert. If outer flange becomes removed, it requires a Paramedic to replace.
- Apply suction only while withdrawing catheter from the tracheostomy tube, never during insertion and always <100mmHg of suction

# 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.
- Compress at a rate of 100-120 per minute with a depth of 2 inches and allow for full chest recoil.
- The use of a metronome is highly recommended.
- Assess quality of CPR with continuous waveform capnography.
- If $ETCO_2$ < 10 mmHg, assess quality of compressions.
- If using automated CPR devices, use manufacturer's specifications.

### Defibrillation

- Defibrillate at manufacturer recommended settings. If unknown, use maximum energy.
- After 3 unsuccessful defibrillation attempts, change pad vector or perform dual sequential defibrillation per agency policy.

### Ventilations

- If no advanced airway, 30:2 compressions to ventilation ratio or ventilate at rate of 10 breaths/min (1 breath every 6 seconds) per agency policy.
- Consider passive oxygenation per agency policy, unless hypoxic arrest suspected (e.g., asphyxiation, overdose, status asthmaticus) in which case begin ventilations immediately.
- If advanced airway in place ventilate at rate of 10 breaths/min (1 breath every 6 seconds).
- Do not over ventilate. Use of a metronome is highly recommended.

### Airway

- An advanced airway (supraglottic airway, ETT) may be placed at any time provided placement does not interrupt compressions.

### ROSC

- Sustained abrupt rise in $ETCO_2$, typically > 40 mmHg may indicate ROSC.
- Refer to post cardiac arrest protocol.

## 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.
- Compress at a rate of 100-120 per minute with a depth of ≥ 1/3 of anteroposterior chest diameter and allow for full chest recoil.
- The use of a metronome is highly recommended.
- Assess quality of CPR with continuous waveform capnography.
- If $ETCO_2$ < 10 mmHg, assess quality of compressions.

### Defibrillation:

- 1st shock 2 J/kg, subsequent shocks 4 J/kg.

### Ventilations

- If no advanced airway, 15:2 compressions to ventilation ratio.
- If advanced airway in place, ventilate at rate of 10 breaths/minute (1 breath every 6 seconds).
- Do not over ventilate. Use of a metronome is highly recommended.

### Airway

- BLS airway (BVM or supraglottic airway) preferred for all pediatric patients.
- Intubation should only be performed if you are unable to manage the patient's airway with a bag-valve mask or supraglottic airway.

### Medications

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

### ROSC

- Sustained abrupt rise in $ETCO_2$, typically > 40 mmHg may indicate ROSC.
- Refer to post cardiac arrest protocol.

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

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

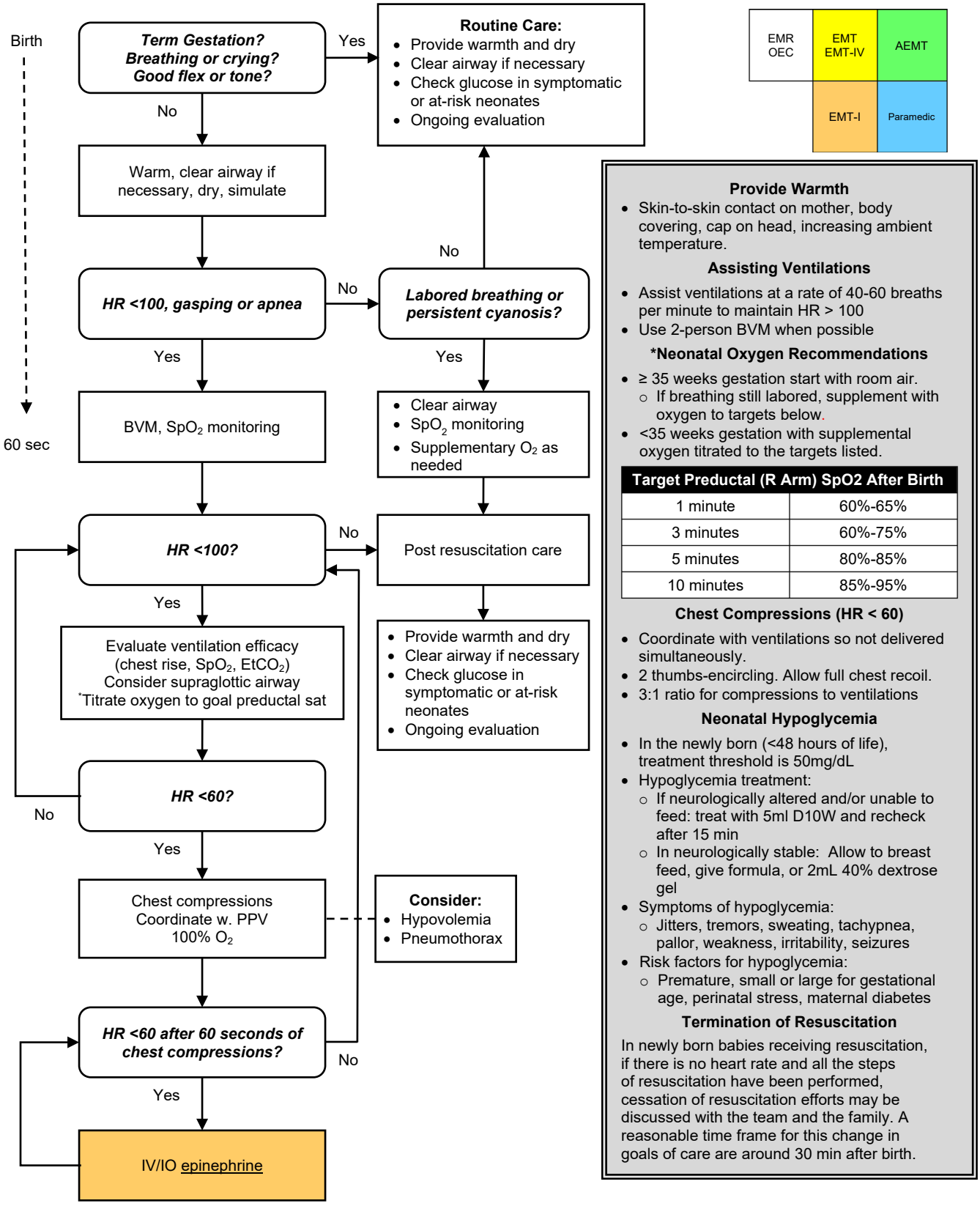
### Pacing

- Pacing is not recommended in cardiac arrest.

### ICD/Pacemaker patients

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

# 3020 NEONATAL RESUSCITATION




**Provide Warmth**

- Skin-to-skin contact on mother, body covering, cap on head, increasing ambient temperature.

**Assisting Ventilations**

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

***Neonatal Oxygen Recommendations**

- ≥ 35 weeks gestation start with room air.
  - If breathing still labored, supplement with oxygen to targets below.
- <35 weeks gestation with supplemental oxygen titrated to the targets listed.

| Target Preductal (R Arm) SpO2 After Birth | |
|---|---|
| 1 minute | 60%-65% |
| 3 minutes | 60%-75% |
| 5 minutes | 80%-85% |
| 10 minutes | 85%-95% |

**Chest Compressions (HR < 60)**

- Coordinate with ventilations so not delivered simultaneously.
- 2 thumbs-encircling. Allow full chest recoil.
- 3:1 ratio for compressions to ventilations

**Neonatal Hypoglycemia**

- In the newly born (<48 hours of life), treatment threshold is 50mg/dL
- Hypoglycemia treatment:
  - If neurologically altered and/or unable to feed: treat with 5ml D10W and recheck after 15 min
  - In neurologically stable: Allow to breast feed, give formula, or 2mL 40% dextrose gel
- Symptoms of hypoglycemia:
  - Jitters, tremors, sweating, tachypnea, pallor, weakness, irritability, seizures
- Risk factors for hypoglycemia:
  - Premature, small or large for gestational age, perinatal stress, maternal diabetes

**Termination of Resuscitation**

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

# 3030 POST CARDIAC ARREST CARE

**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

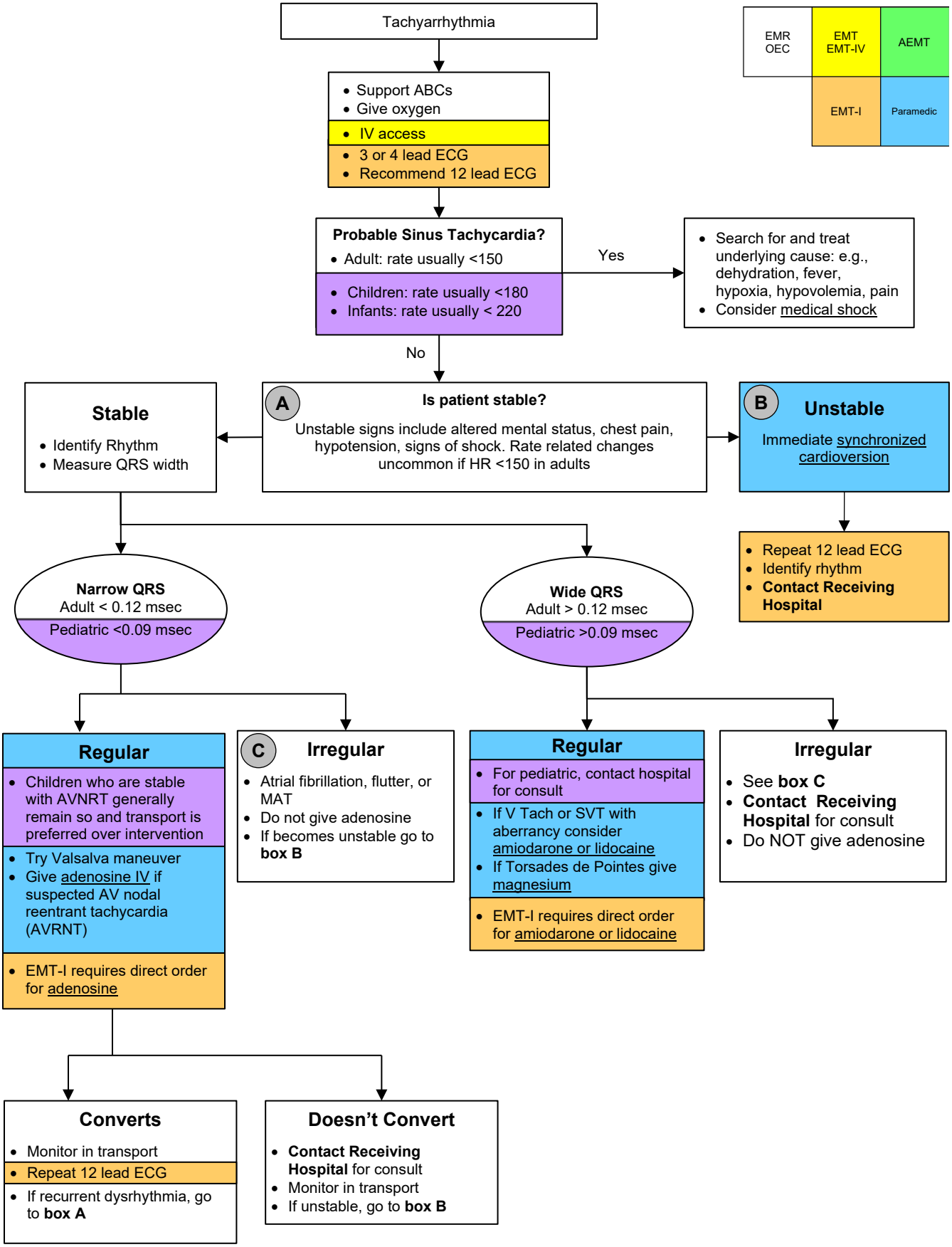
***Recurrent dysrhythmia?***

Yes → Treat recurrent life-threatening dysrhythmia per appropriate protocol

No

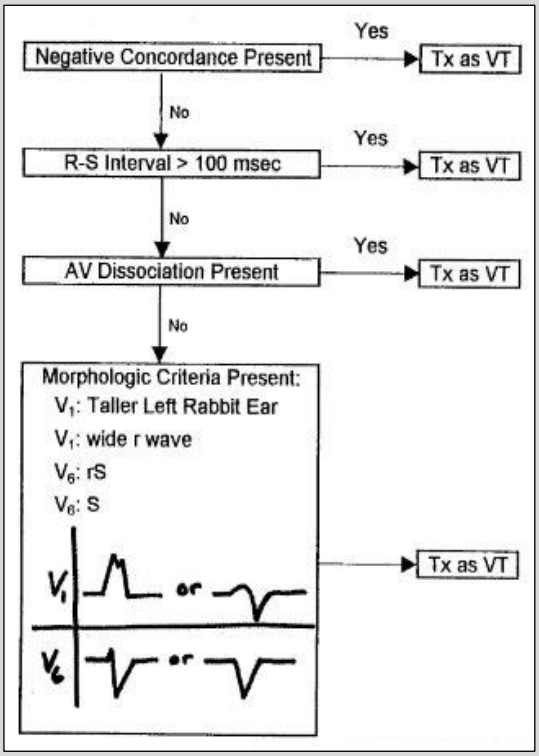
- Continuous rhythm monitoring and pulse checks
- Target PaCO2 35-45 mmHg
- Focused neuro exam (AVPU/GCS)
- If febrile, place ice packs to neck, axillae, groin if needed for fever
- Transfer to closest appropriate facility

# 3040 TACHYARRHYTHMIA WITH POOR PERFUSION



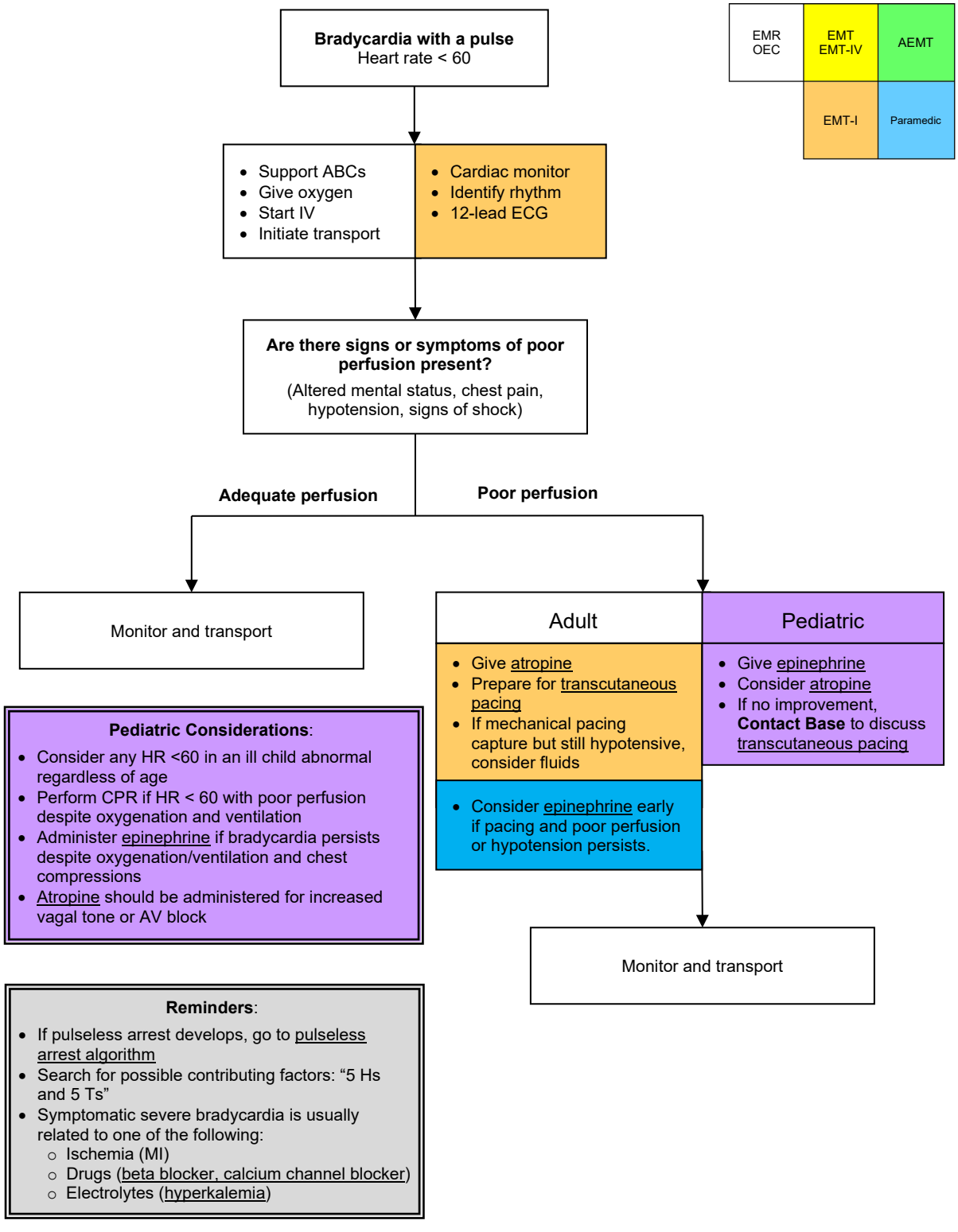
# 3040 TACHYARRHYTHMIA WITH POOR PERFUSION

**Brugada Criteria:**

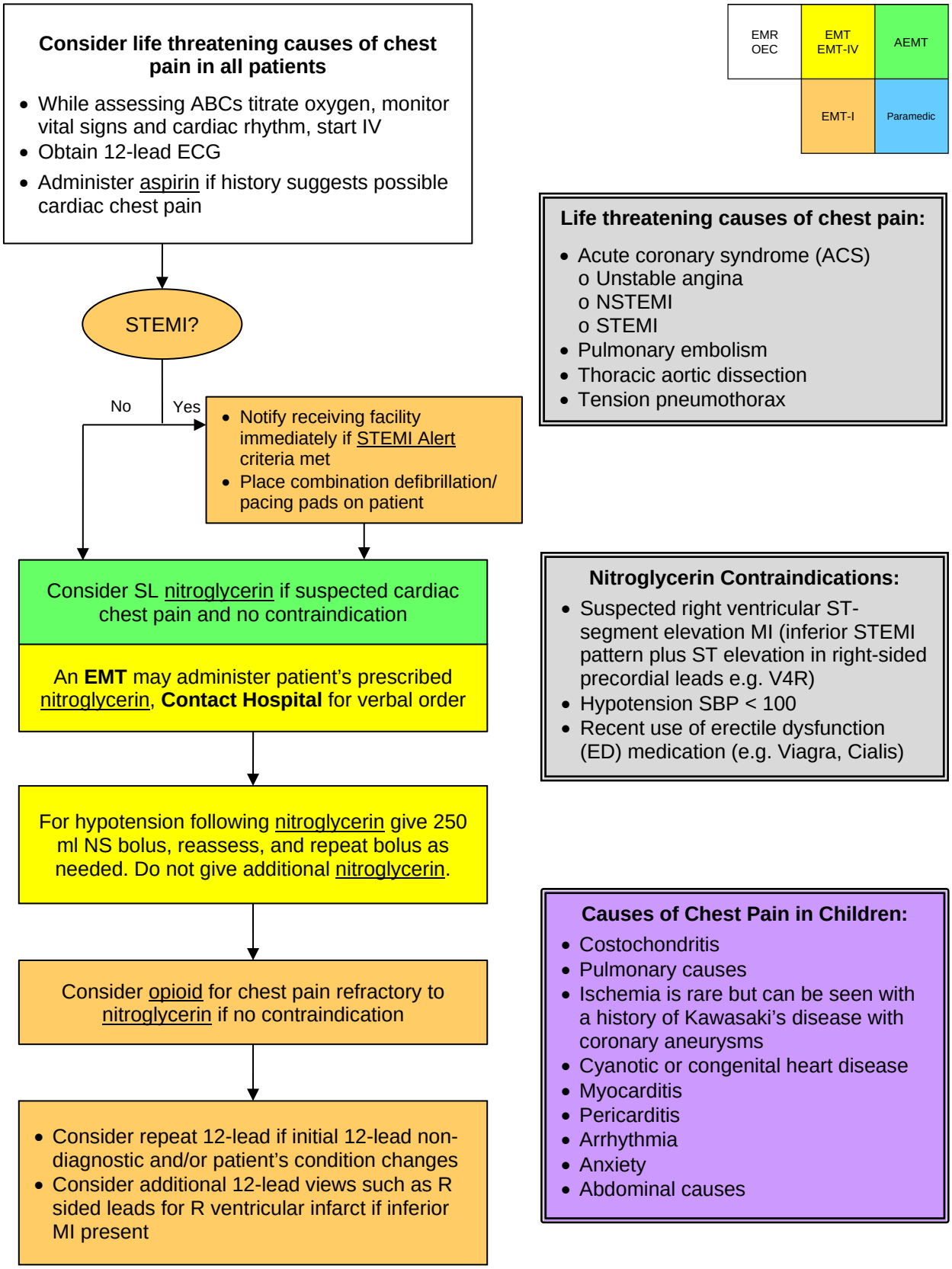



| | |
|---|---|
| Negative concordance in V1-6 leads | 95% favors VT |
| R-S interval> 100 msec. Measured from the beginning of the R to the deepest part of S | 90% favors VT |
| AV Dissociation Present | 90% favors VT |
| Taller RSr in V1 | 95% favors VT |
| Fat initial r wave in V1 | 90% favors VT |
| 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 STEMI 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)
- If patient does not meet inclusion criteria yet clinical scenario and ECG suggests true STEMI or equivalent, request medical consult with receiving hospital emergency physician.

**Inclusion Criteria**: *all 3 criteria must be met for prehospital activation*

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

If patient does not meet all three STEMI alert criteria yet clinical scenario suggestive of STEMI **Consult the Receiving Hospital Emergency Physician** for override

**Actions**:

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

**Additional Documentation Requirements**:

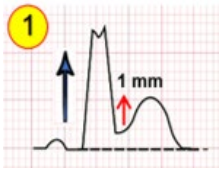
- Time of first patient contact
- Time of first ECG

**Other Considerations**:

- Examples of findings where patient does not meet inclusion criteria but clinical scenario and ECG suggests possible STEMI and you should consider consult with receiving hospital physician includes:
    - Wide complex QRS meeting the modified Sgarbossa's criteria
    - Posterior STEMI
    - De Winter sign
    - Hyperacute T waves

# 3070 STEMI ALERT - Modified Sgarbossa's Criteria

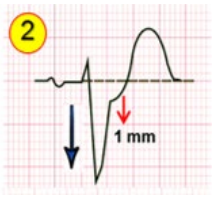
Patient does not meet inclusion criteria for STEMI Alert, but clinical scenario suggests AMI with left bundle branch block or paced rhythm




**Criterion 1**
Concordant ST elevation ≥1mm in any lead

Yes

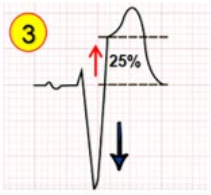
No




**Criterion 2**
Concordant ST depression ≥1mm in V1, V2, or V3

Yes

No




**Criterion 3**
Discordant ST elevation in any lead with ≥ 1 mm ST elevation, as defined by ≥ 25% of the depth of the preceding S-wave

Yes

No

EKG does not meet modified Sgarbossa criteria for acute ischemia. Advise hospital of high clinical suspicion for ACS, consider repeat EKGs to monitor for dynamic changes

EKG meets modified Sgarbossa Criteria for acute ischemia. Consult with the receiving hospital Emergency Physician to discuss activation of prehospital STEMI Alert.

# 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.

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

## Assess the patient

***It is vital to transport the patient's back-up batteries and emergency equipment with the patient.***

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

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

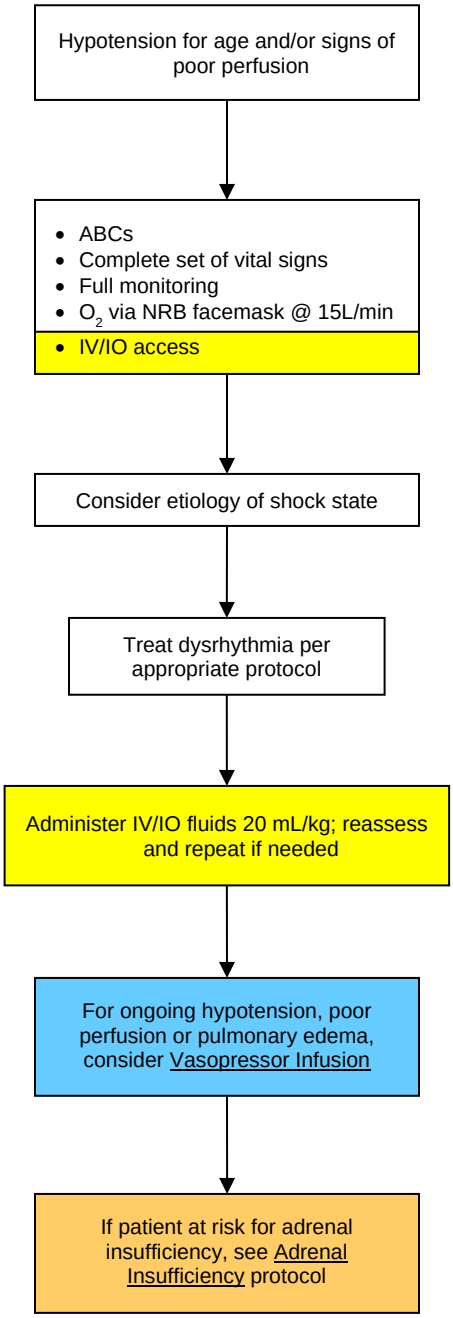
### VAD NOT RUNNING

- 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 # (720) 848-5823. For pediatric patients contact the Children's Hospital Colorado transplant coordinator pager at (303) 890-3503.** Provide patient name, DOB, condition & ETA at destination for consultation and/or if transporting to University of Colorado Hospital. VAD coordinator will call back.
- VAD patient family members are excellent resources to assist with patient history and evaluation/repair of VAD alarms/faults.
- **It is vital to transport the patient's back-up batteries and emergency equipment with the patient.**
- Device specific information for EMS can be found at: https://www.mylvad.com/medical-professionals/essential-resources

# 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

# 4005 BLOOD ALERT

For trauma patients, refer to trauma alert criteria protocol.

Paramedic ONLY

**Does the Patient Have Life-Threatening Non-Traumatic Hemorrhage?**

- Suspected non-traumatic hemorrhage
- Extremity hemorrhage
- Active GI bleeding
- Vaginal bleeding or obstetrical hemorrhage
- Other internal or external source of bleeding

Yes

**Does the patient have signs of hemorrhagic shock?**

- Sustained SBP <90 mmHg
  **OR**
- Shock Index > 1 (HR/SBP)

*Adult >65 years old: Consider for SBP <110 mmHg

- Pediatric: Sustained tachycardia and hypotension (see chart)

No

- Continue routine care
- Alert hospital of concern for hemorrhage
- Monitor for signs of decompensation

Yes

**Procedure**

- Notify ED of **"Blood Alert"** and criteria met along with usual pre-arrival report information.
- Treat for hemorrhagic shock per protocol, limit scene time, and transport emergently.

**Hypotension for Age**

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

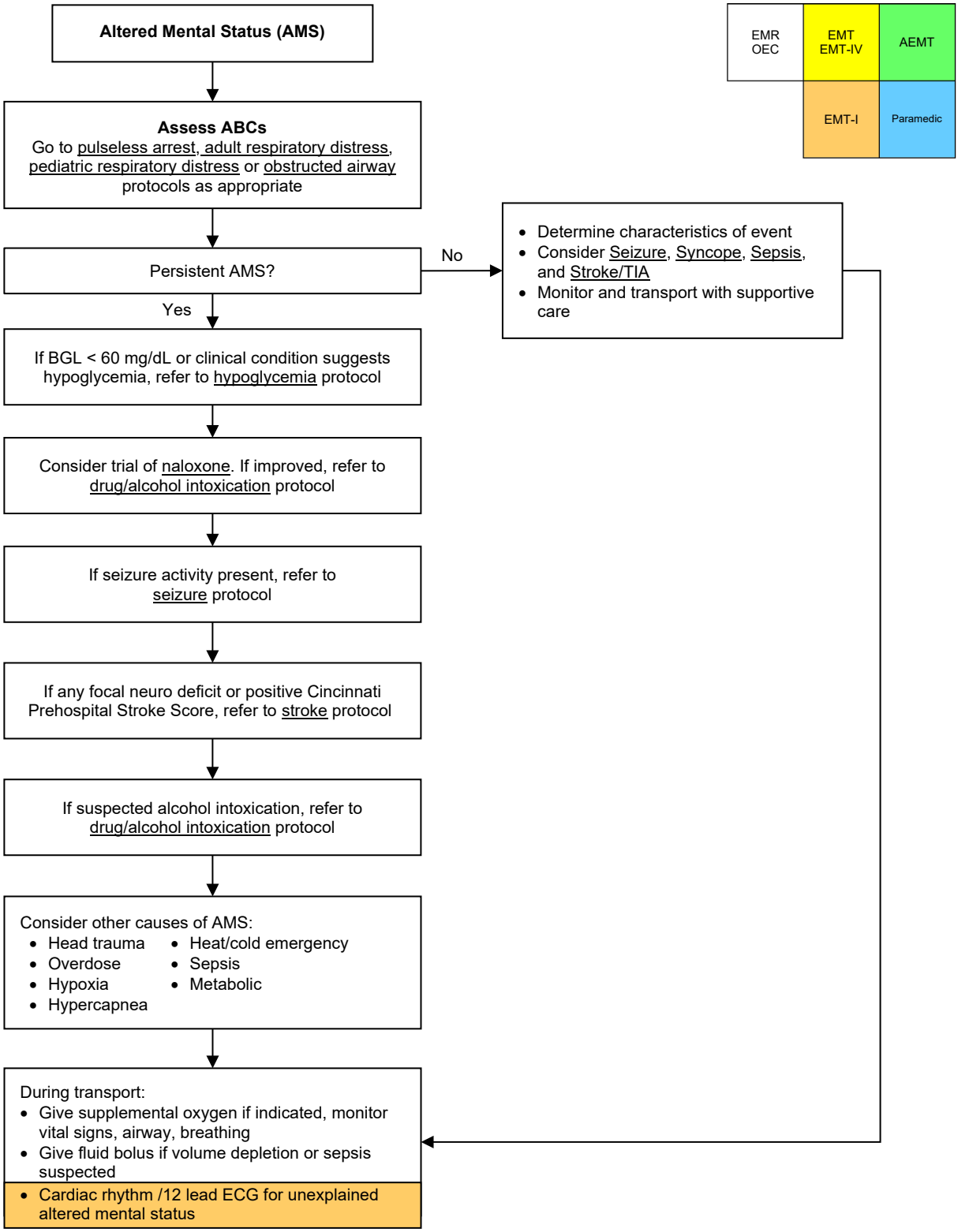
**Tachycardia for Age**

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

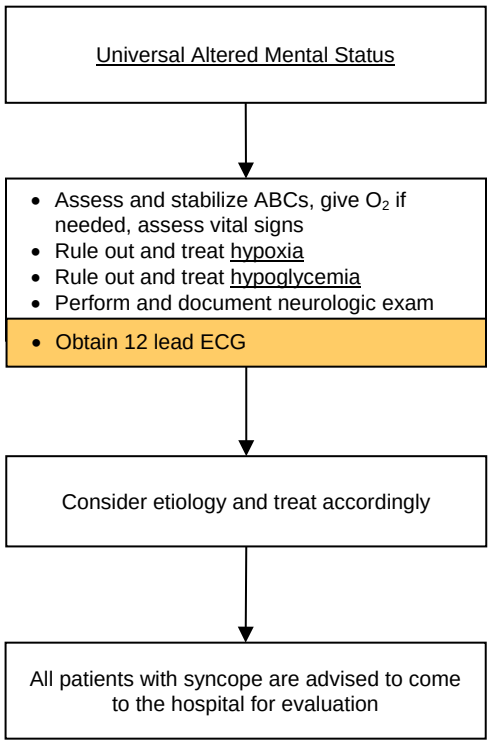
**Other Protocols for Reference**

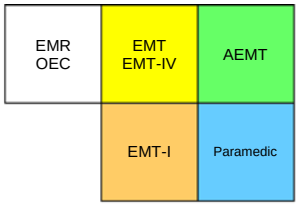
- Tourniquet
- Medical Shock
- Obstetrical Complications

# 4010 UNIVERSAL ALTERED MENTAL STATUS



# 4020 SYNCOPE




**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

Assess and stabilize ABCs

↓

POSSIBLE STROKE
Any acute onset neurological deficit not likely due to trauma regardless of age

↓

Assess Cincinnati Prehospital Stroke Scale
*(Presence of single sign sufficient)*

↓

If patient has any positive finding on Cincinnati Prehospital Stroke Scale,
**IMMEDIATELY TRANSPORT TO HOSPITAL**

↓

Rule out or treat hypoglycemia

↓

**While working towards expedited transport:**

- 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

↓

**Contact Receiving Hospital *during transport*** for Stroke Alert if patient meets criteria

↓

- Titrate $O_2$, monitor $SpO_2$
- Start IV and draw blood
- Check and monitor cardiac rhythm, consider 12 lead
- Elevate head 30°, if possible

↓

Fully monitor patient and continually reassess:

- Improvement or worsening of deficit
- Adequacy of ventilation and oxygenation
- Cardiovascular stability

**Stroke Mimics (for all ages):**

- Hypoglycemia
- Postictal paralysis
- Complex migraine
- Overdose
- Trauma
- Bell's palsy

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

**Cincinnati Prehospital Stroke Scale**

**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.**
**Think "BE-FAST"**
(Balance, Eyes, Face, Arm, Speech, Time)

- 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 on scene as soon as it is determined the patient is possibly having a stroke followed by a MEND exam ***during transport***.

**If time permits, perform 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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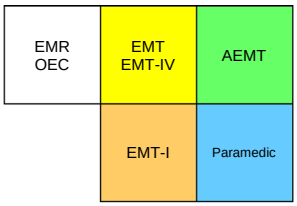
# 4031 STROKE ALERT




## 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 24 hours
3. Blood glucose level over 60 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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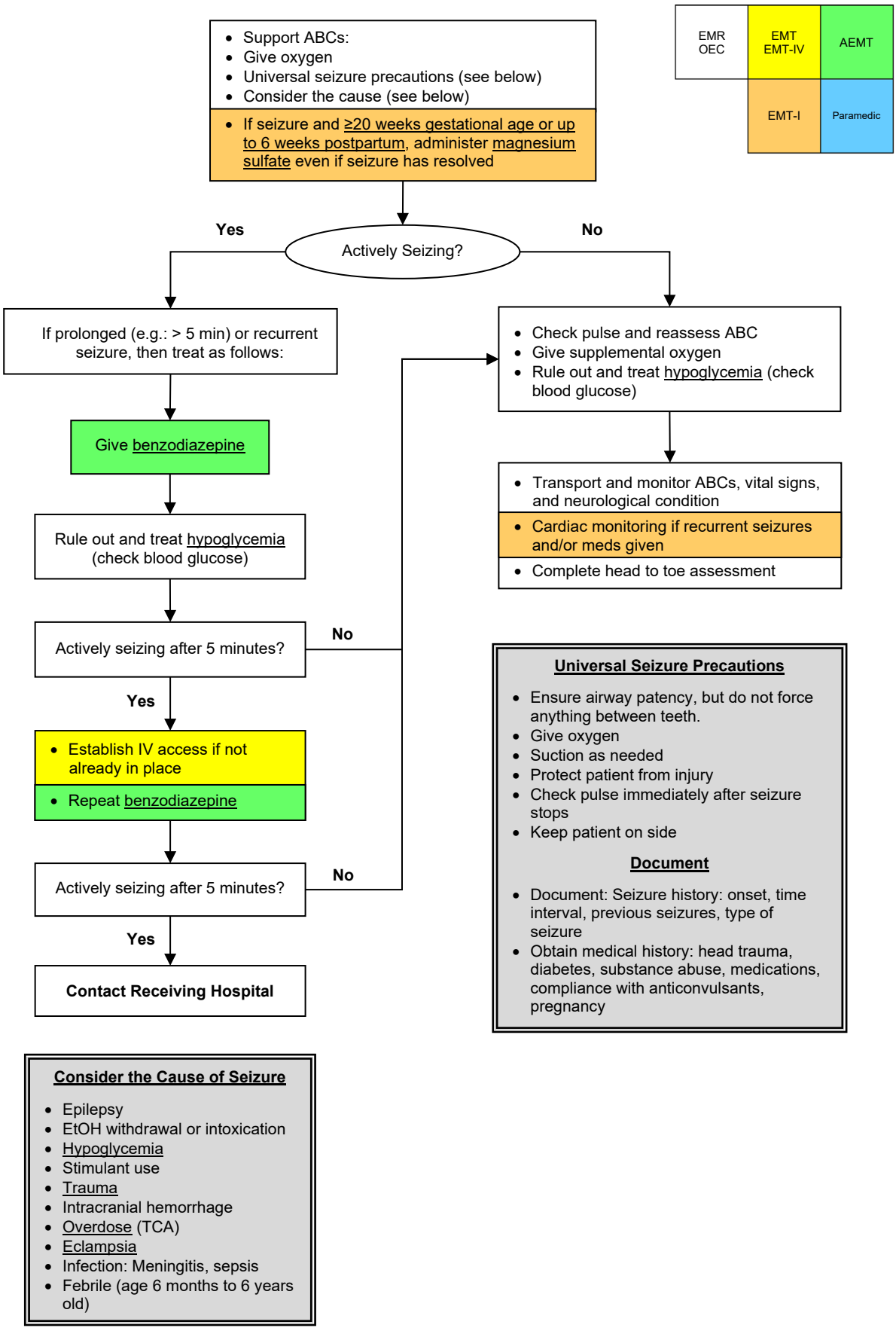
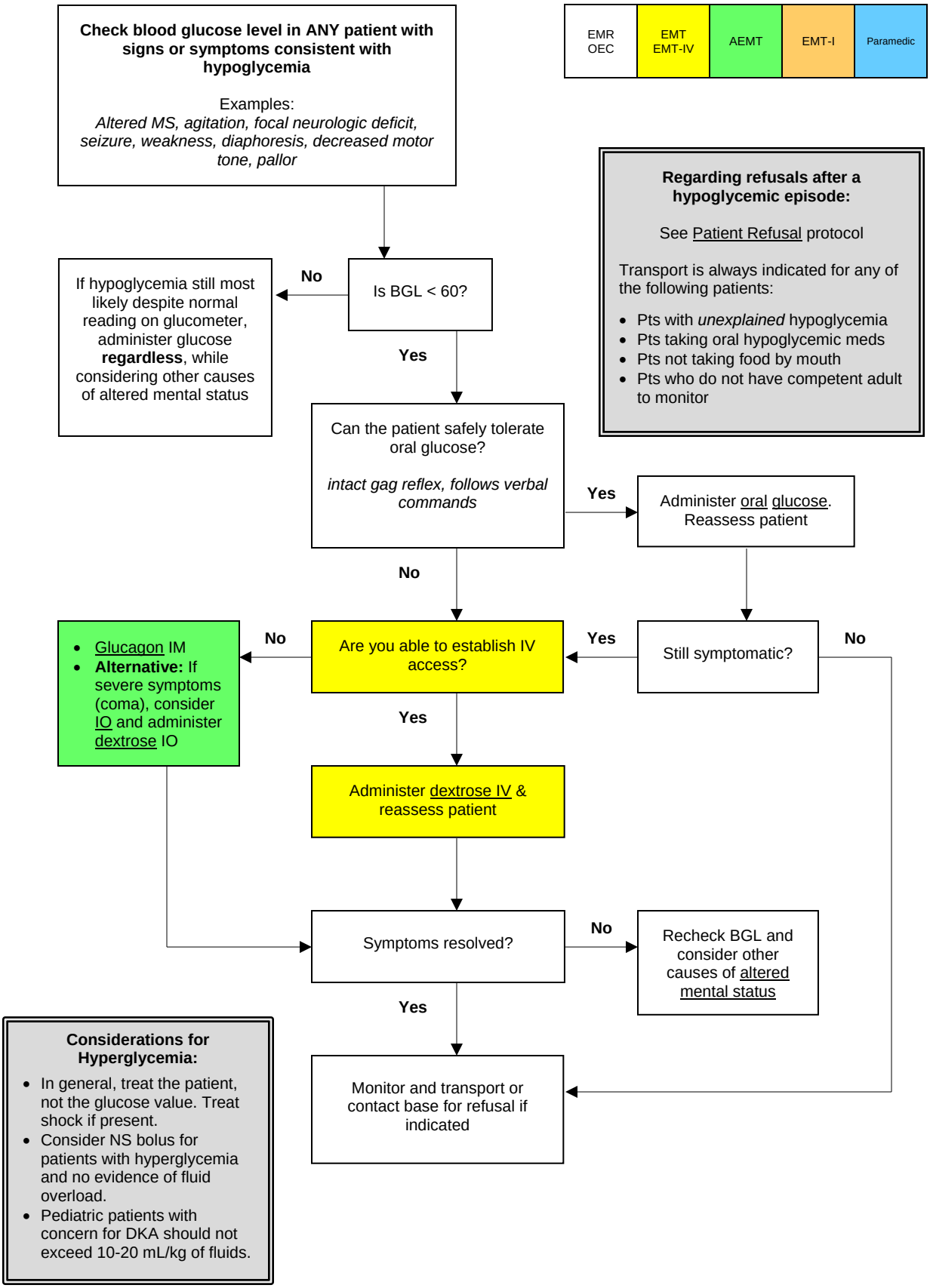
# 4040 SEIZURE



# 4050 HYPOGLYCEMIA



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

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

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

↓

Support ABCs as necessary

↓

Obtain detailed history of event and medical history

↓

Complete head-to-toe assessment

↓

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

**Clinical history to obtain from observer of event:**

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

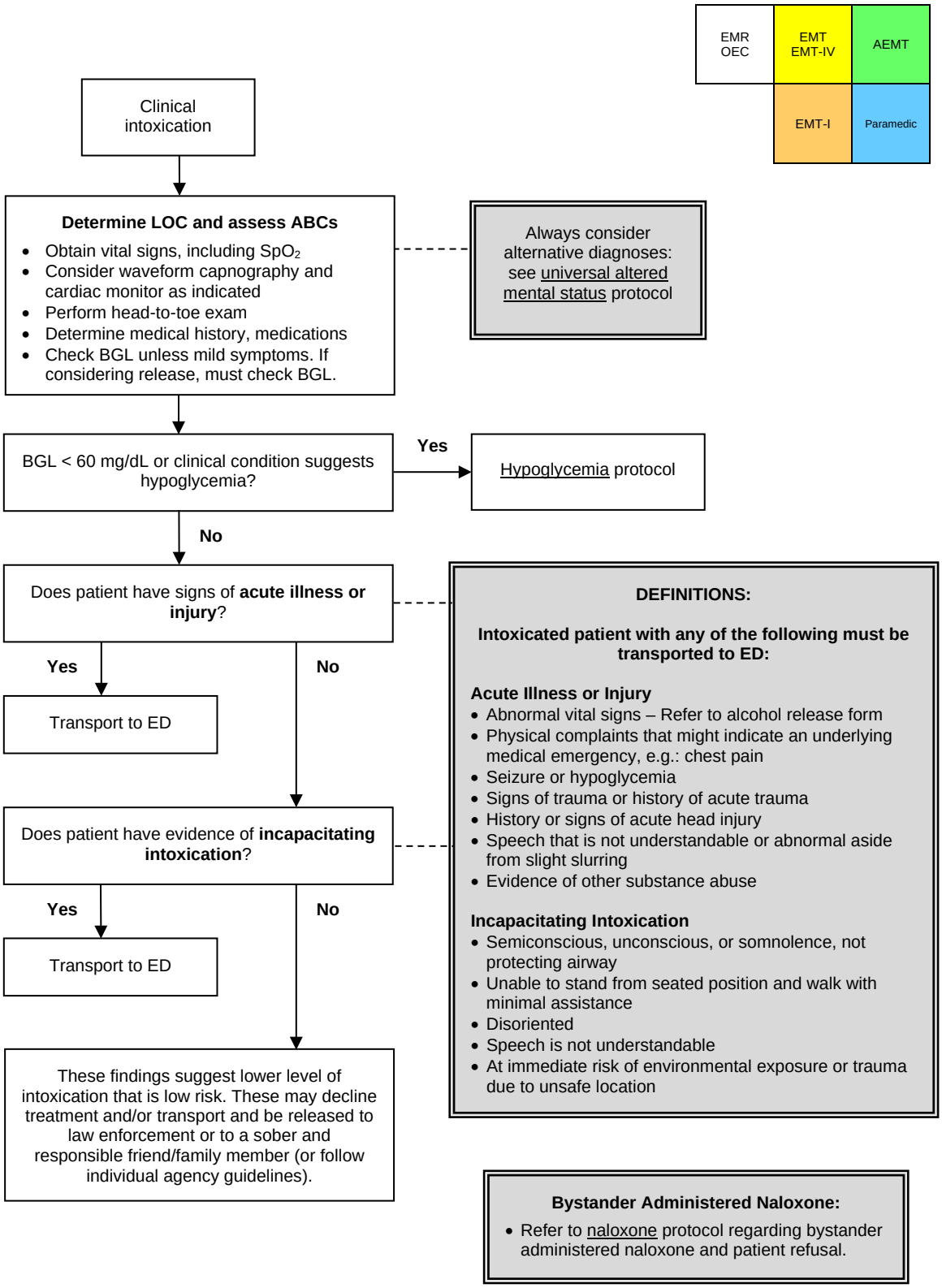
**Past Medical History:**

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

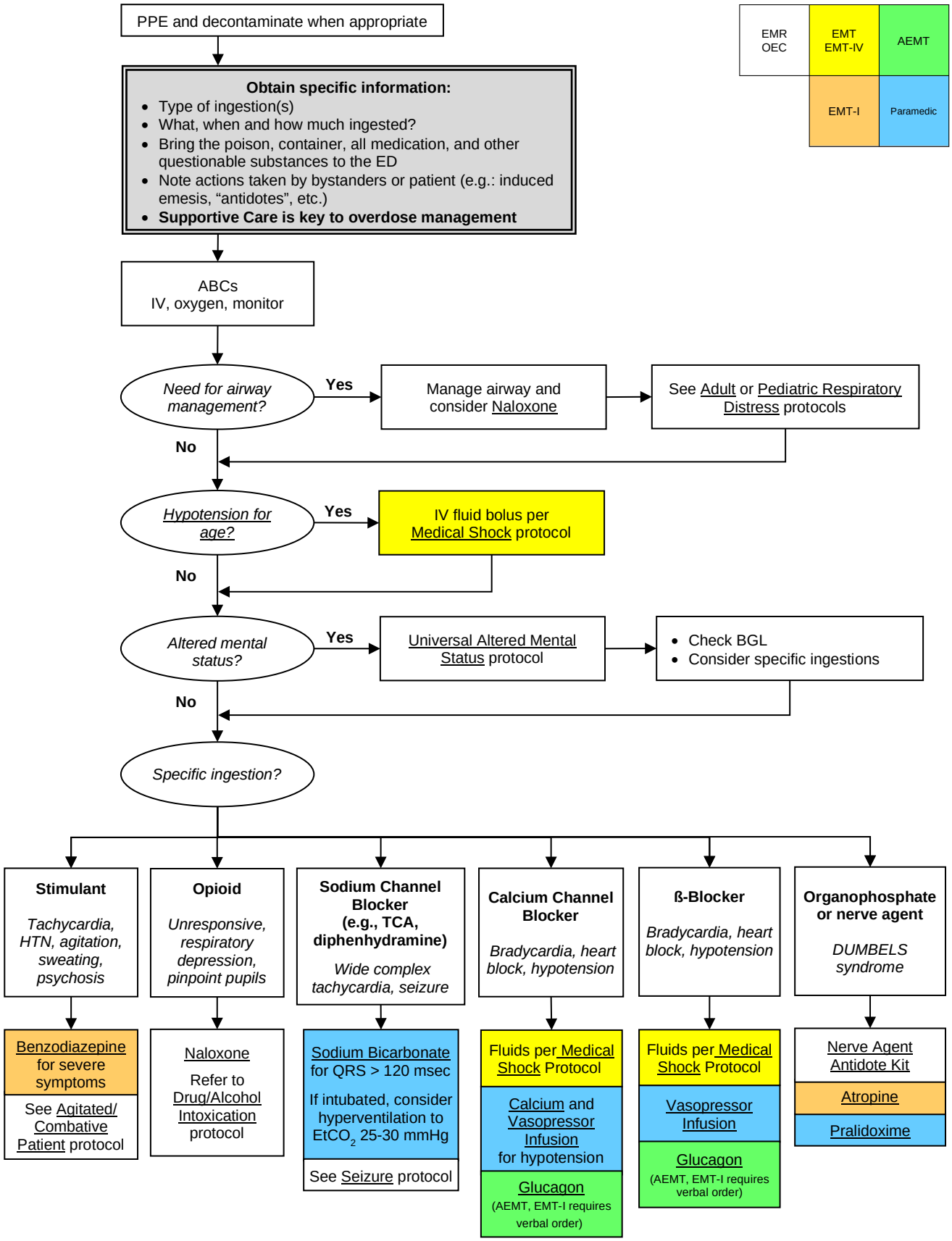
**Examination/Assessment**

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

# 4070 DRUG/ALCOHOL INTOXICATION



# 4080 OVERDOSE AND ACUTE POISONING



# 4090 ALLERGY AND ANAPHYLAXIS

**Pediatric Considerations:**

Anaphylaxis in children less than 6 months is rare, consider alternative causes.

Allergic reaction, anaphylaxis, or angioedema

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

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

1. **Signs of shock:** Poor perfusion, altered mental status, hypotension
2. **Airway or mucous membrane involvement:** Tongue or uvula swelling, stridor, lip swelling
3. **Anaphylaxis:** Potential allergen AND any two of the following:
   - **Angioedema:** facial/lip/tongue swelling, throat tightening voice changes
   - **Breathing:** shortness of breath, wheeze, stridor, cyanosis
   - **Poor perfusion:** hypotension, altered mental status, syncope, delayed capillary refill
   - **Skin:** Hives, itching, extremity swelling, erythema
   - **Gastrointestinal:** vomiting, abdominal pain, diarrhea

**Localized Reaction / Isolated Generalized Rash**

If significant discomfort:

- Give diphenhydramine
- Give methylprednisolone

Reassess and if patient deteriorates or does not improve go to epinephrine IM

- Give epinephrine IM
- Avoid standing/ambulating patient. Keep supine if possible
- Give IV NS bolus per medical shock protocol

**Document:**

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

- If no response in 5 minutes repeat epinephrine IM
- Consider epinephrine IV infusion or push dose if peri-arrest

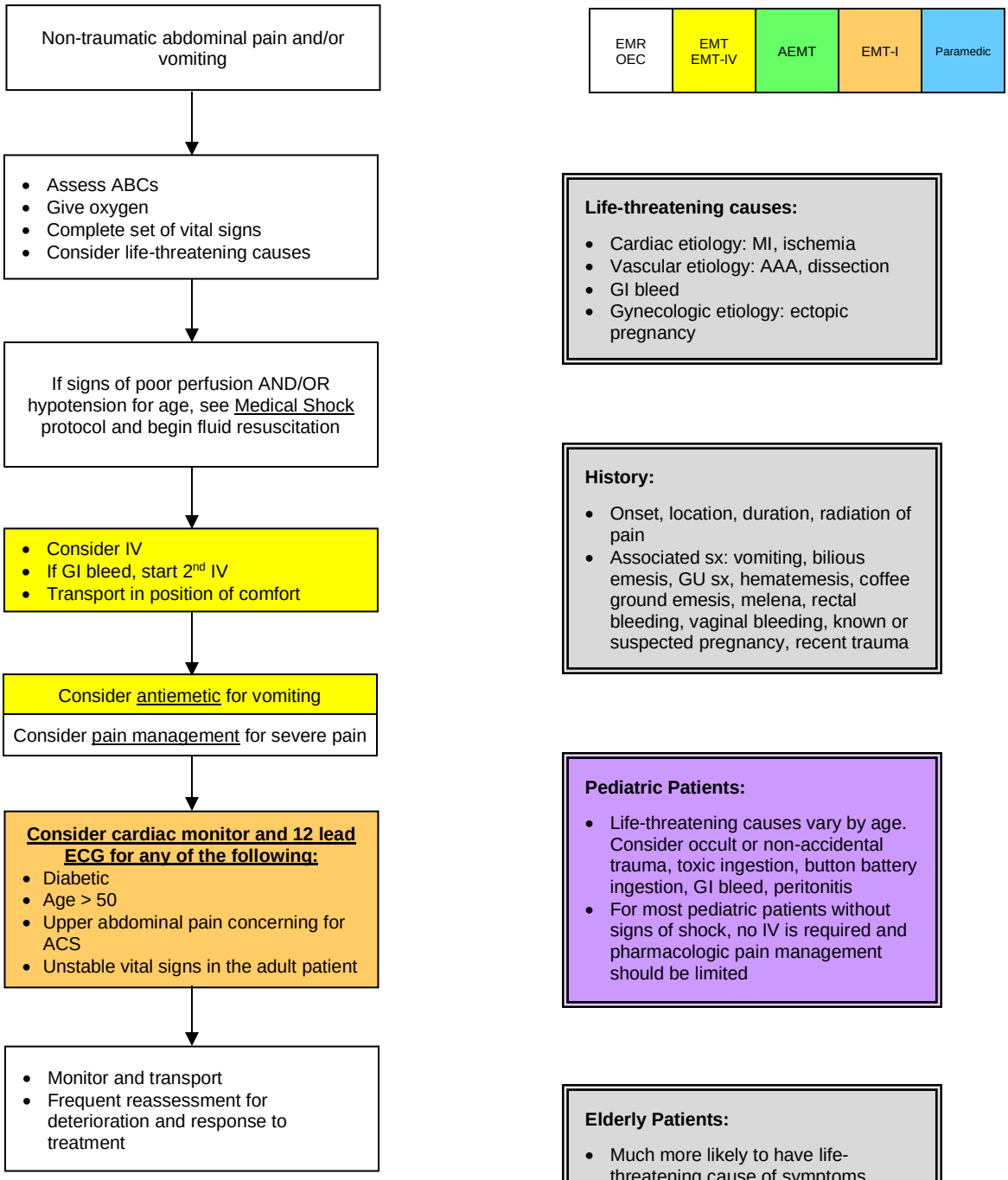
- If no response in 5 minutes start epinephrine IV infusion or push dose

If time and patient stability permit:

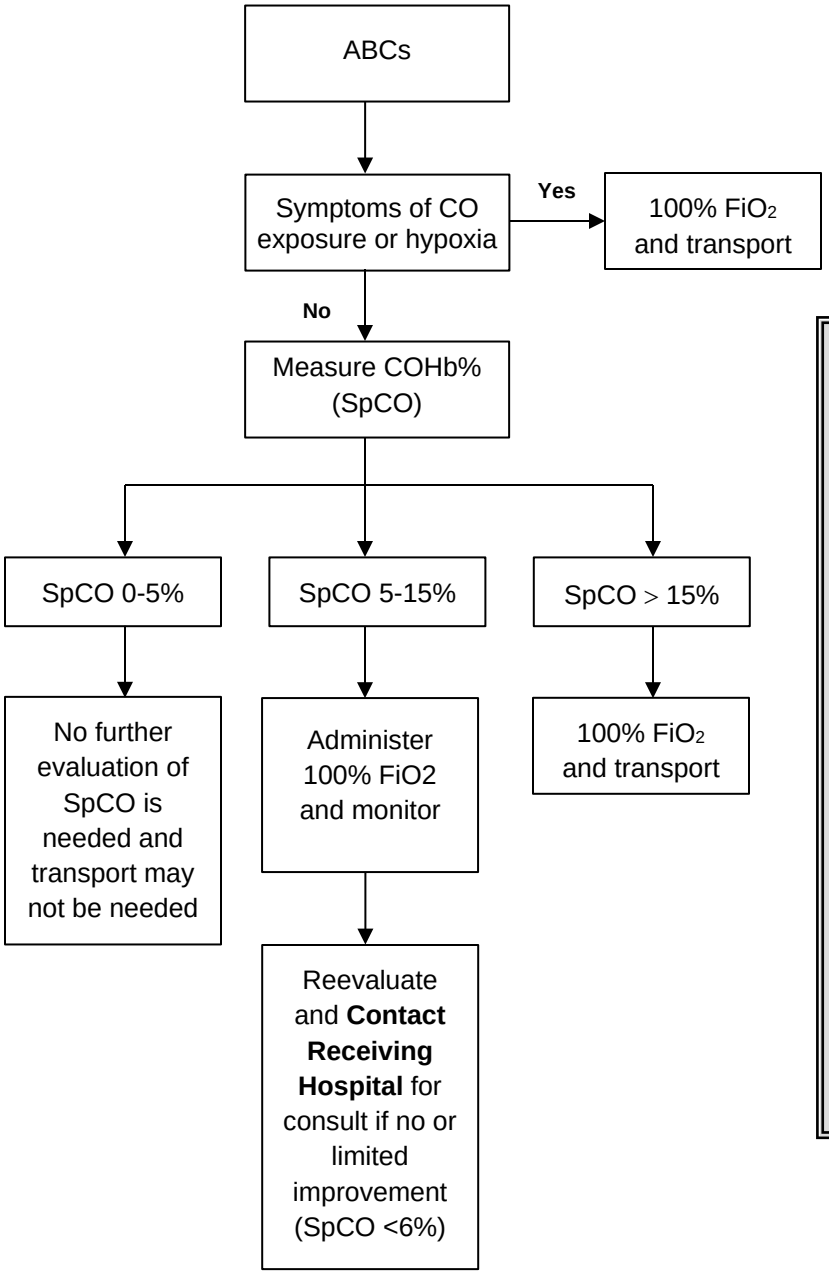
- Give diphenhydramine
- Give methylprednisolone
- Consider addition of albuterol if wheezing

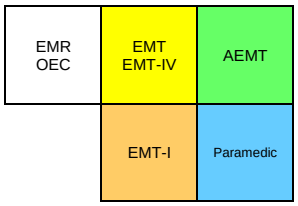
- Monitor ABCs, SpO2, cardiac rhythm
- Reassess for signs of deterioration

# 4100 NON-TRAUMATIC ABDOMINAL PAIN/VOMITING



# 4110 SUSPECTED CARBON MONOXIDE EXPOSURE



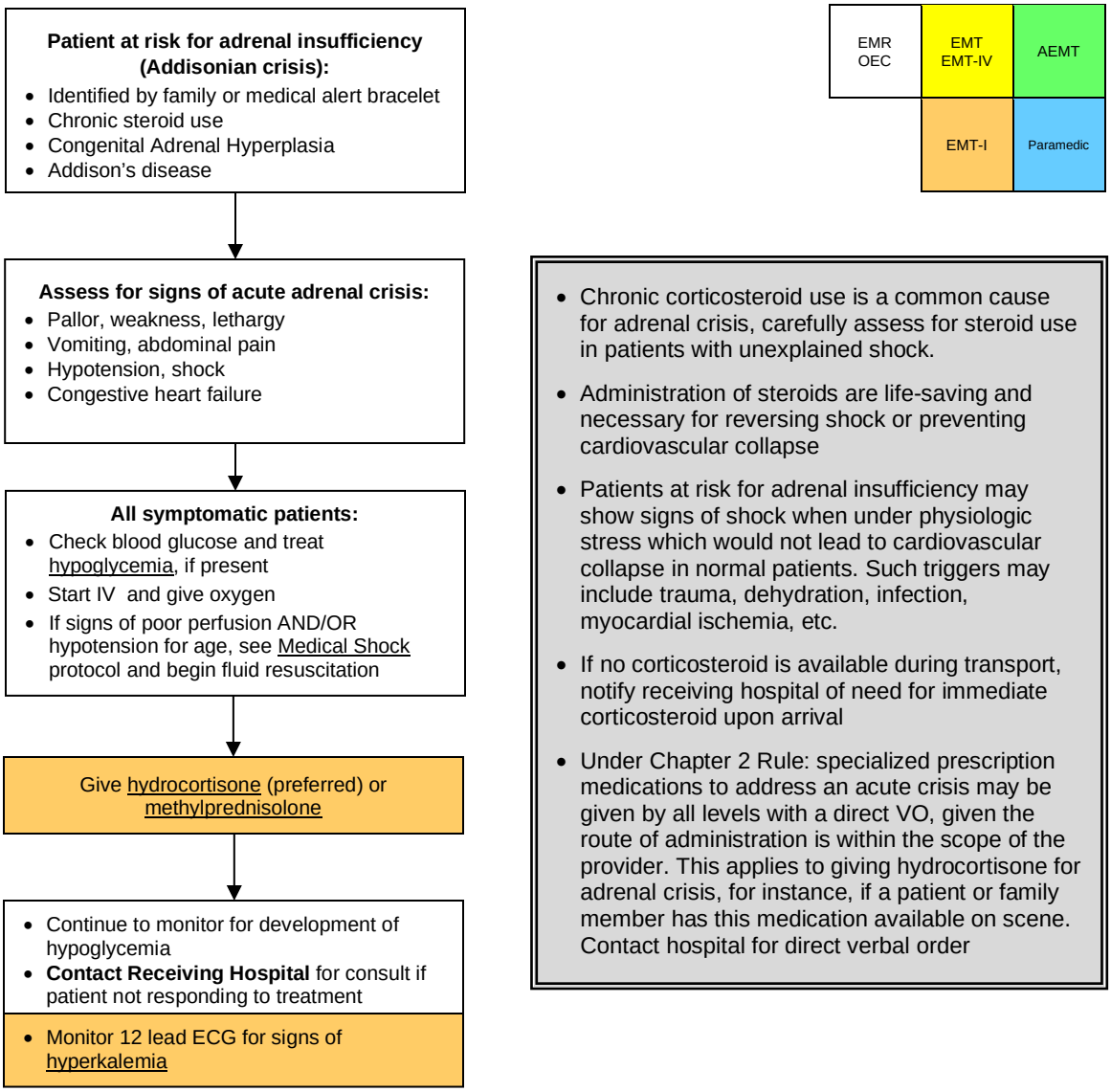




**General Guidelines:**

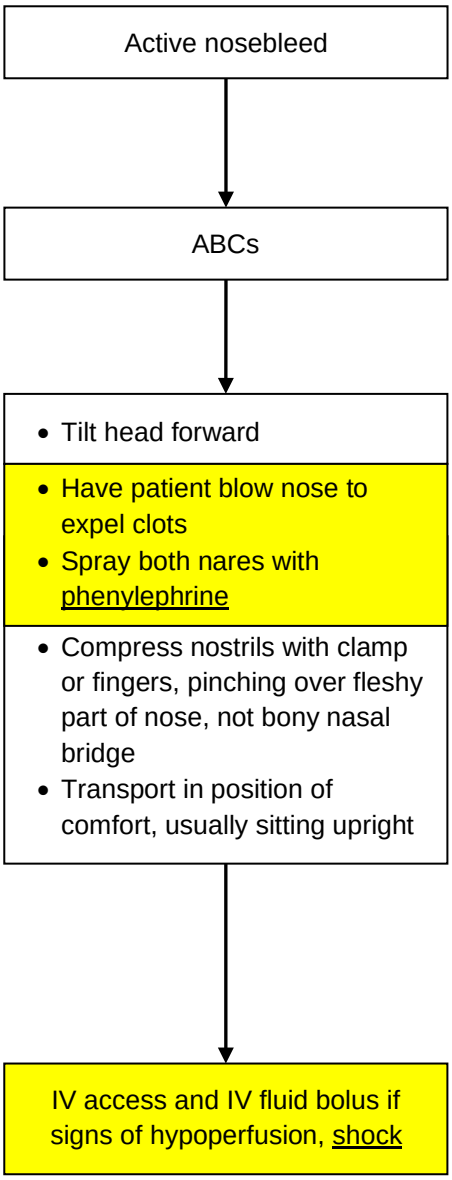
- *Signs and Symptoms of CO exposure include*:
  Headache, dizziness, coma, altered mentation, seizures, visual changes, chest pain, tachycardia, arrhythmias, dyspnea, N/V, "flu-like illness"
- The absence or low readings of COHb is not a reliable predictor of toxicity of other fire byproducts
- Consider 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




| EMR<br>OEC | EMT<br>EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

**General Guidelines:**

- Most nose bleeding is from an anterior source and may be easily controlled.
- Avoid phenylephrine in pts with known CAD.
- Antiplatelet medications such as aspirin, clopidogrel (plavix) and anticoagulant medications such as apixaban (Eliquis), rivaroxaban (Xarelto), dabigatran (Pradaxa), enoxaparin (Lovenox), heparin, or warfarin (Coumadin) will make epistaxis much harder to control. Note if your patient is taking any antiplatelet or 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

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

**Is there suspected or confirmed infection?**

- ABCs
- Complete set of vital signs
- Monitoring including $SpO_2$
- Oxygen as appropriate

**Does the patient meet two SIRS criteria**

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

No

- Routine Care
- Oxygen
- Establish IV access
- Consider fluid bolus if sepsis suspected
- Cardiac monitoring
- Transport to closest appropriate hospital
- Continue to re-assess vital signs and perfusion

**Common Infection Sites/ Sources with Severe Sepsis**

- Respiratory
- Bacteremia (unspecified site)
- Genitourinary
- Abdominal
- Device-related
- Soft tissue/wound
- Central nervous system
- Myocardial and endocardial

**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

**Initiate fluid resuscitation**

- 2 large bore IV's
- 30ml/kg IV fluid bolus up to 2 L unless contraindications such as CHF or end stage renal disease
- Assess approximately every 10mL/kg for improved vitals and/or signs of pulmonary edema

- Transport to closest appropriate hospital
- NOTIFY HOSPITAL of potential Sepsis with signs of Shock (hospital activation criteria may vary)

After completion of 30 cc/kg IV fluid bolus or max of 2 L, or if patient cannot tolerate fluids consider vasopressor infusion

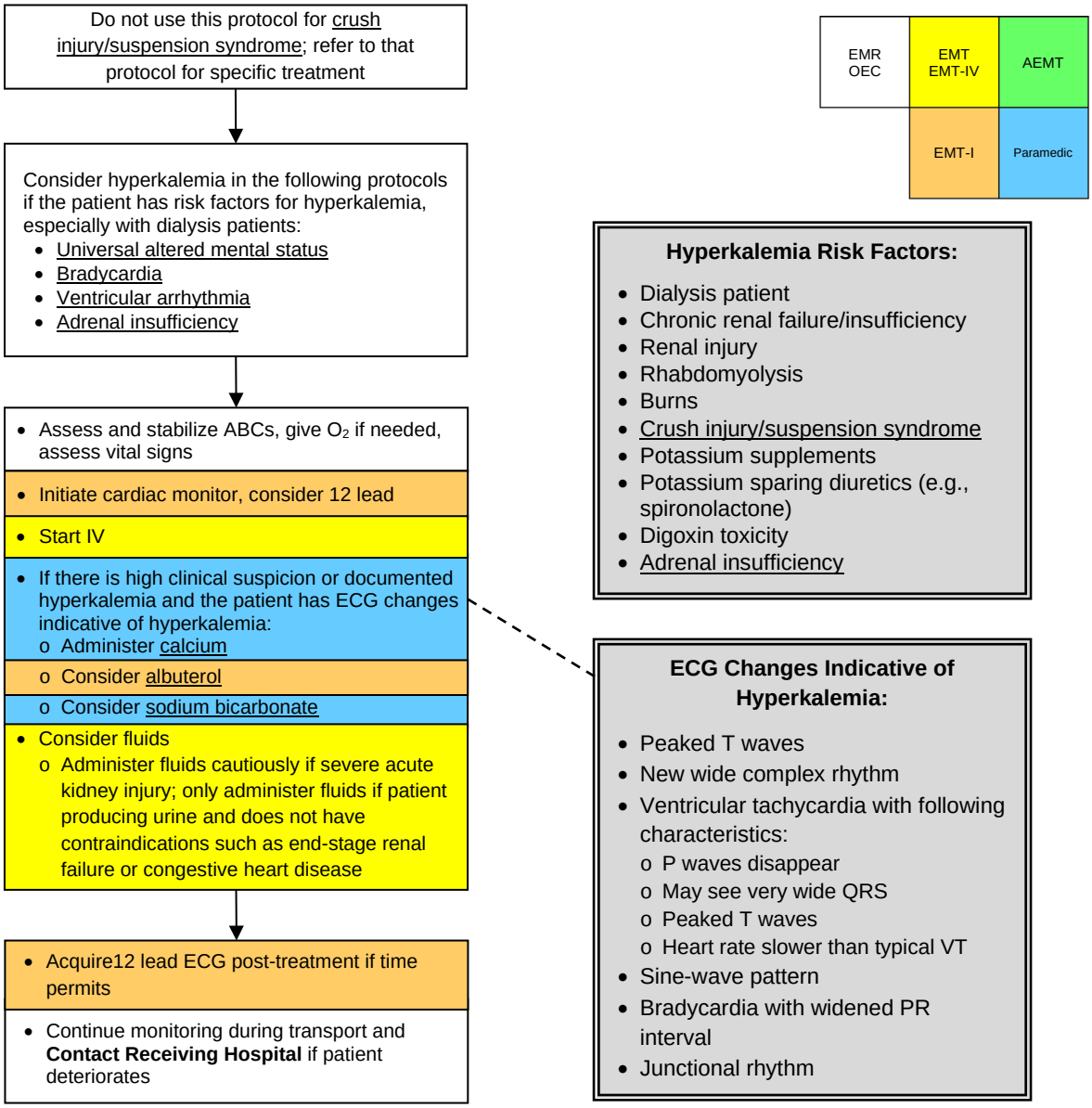
**Principles of Sepsis**

- 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 prior to onset of hypotension.
- Some agencies may carry lactate monitors. In that case, a lactate level of ≥4 mmol/L is indicative of hypoperfusion.
- Sepsis in the elderly and immunocompromised may lack traditional symptoms of infection such as fever or history of infectious symptoms and may present with only vague or nonspecific symptoms such as weakness or fatigue.

**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.

# 4150 HYPERKALEMIA




**General Information:**

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

# 5000 DROWNING

Rapid extrication if patient is still in the water

## If unresponsive:

- Provide ventilations with oxygen
- Start CPR if patient is pulseless
- Treat per Medical Arrest Algorithm with following changes if hypothermic:
  - o Single defibrillation attempt
  - o Handle very gently
  - o Insulate patient
  - o Start IV w. warm IV fluids
  - o Single dose epinephrine IV/IO
- Remove wet garments, dry and insulate patient
- Consider spinal motion restriction if trauma suspected or patient has signs of spinal cord injury, although rescue breathing and CPR should be prioritized.
- Consider advanced airway, especially if suspected pulmonary edema
- Monitor cardiac rhythm, waveform capnography
- BLS airway preferred in pediatrics

## If responsive:

- Administer oxygen
- Provide ventilations and suction as indicated,
- Consider spinal motion restriction if trauma suspected or patient has signs of spinal cord injury
- Consider all causes of Altered Mental Status
- Remove wet garments, dry and insulate patient
- Start IV, w. warm fluids if hypothermic
- Monitor ABC, VS, mental status, waveform capnography
- Delayed pulmonary edema can occur after drowning; consider PEEP/CPAP if suspected pulmonary edema
- Monitor cardiac rhythm
- BLS airway preferred in pediatrics

| EMR<br>OEC | EMT<br>EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

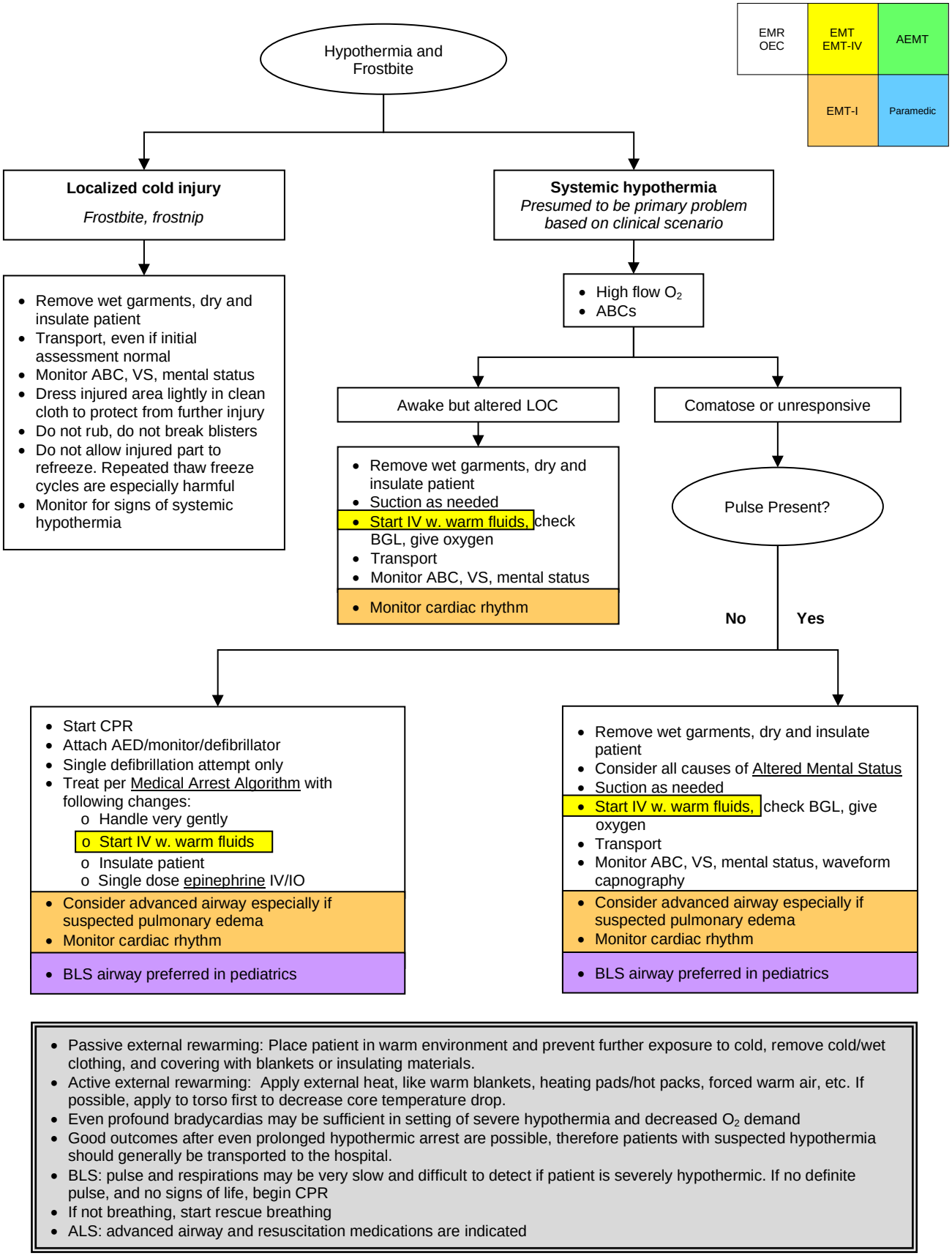
**Specific Information Needed**

- Length of submersion
- Degree of contamination of water
- Water temperature
- Diving accident and/or suspected trauma

**General Information**

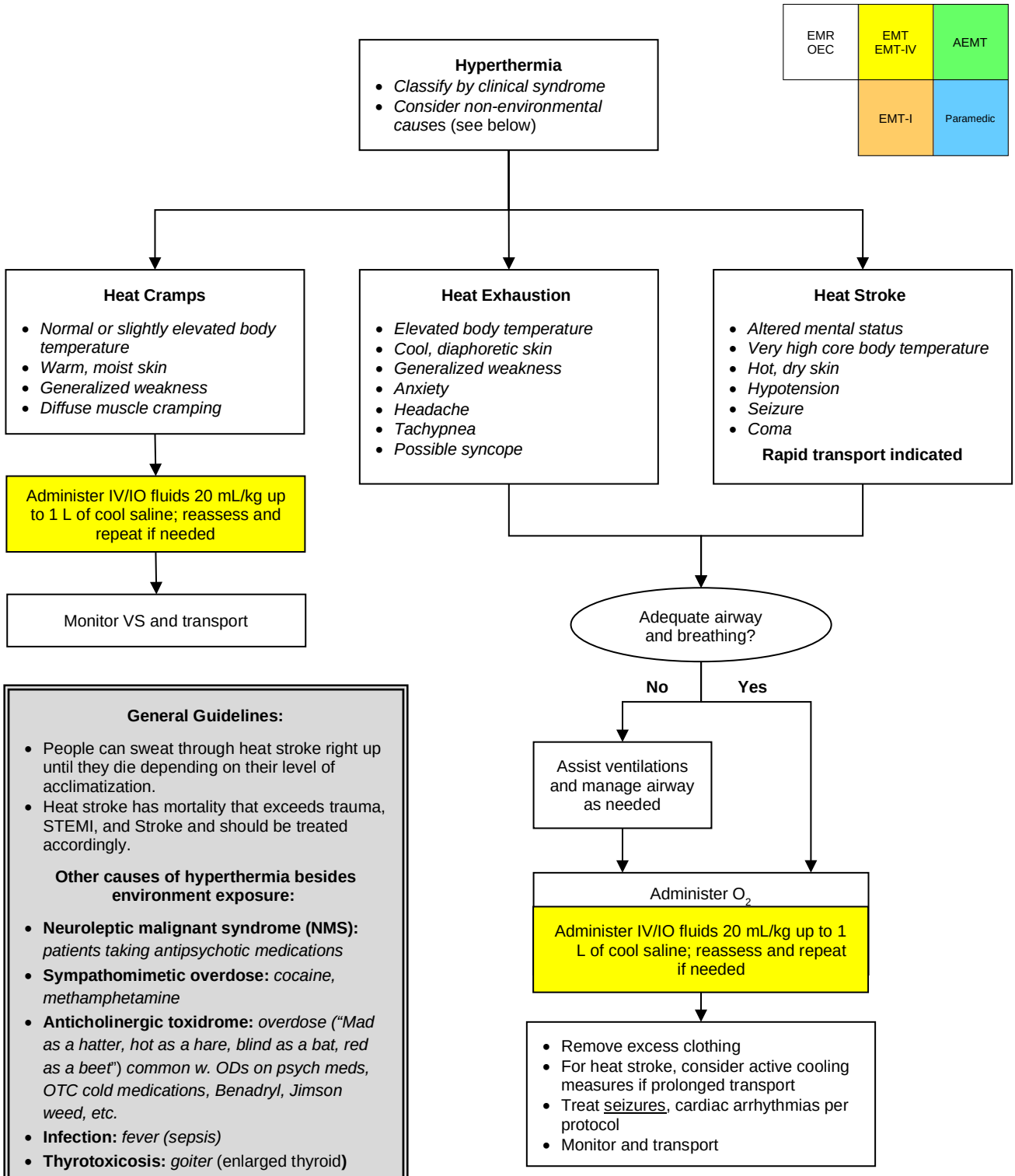
- Encourage transport, even if patient is asymptomatic, as pulmonary edema may present in a delayed manner after drowning.
- Drowning/submersion commonly associated with hypothermia.
  - o Even profound bradycardias may be sufficient in setting of severe hypothermia and decreased O2 demand.
  - o Good outcomes after even prolonged hypothermic arrest are possible, therefore patients with suspected hypothermia should generally be transported to the hospital.
  - o 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.
  - o ALS: advanced airway and resuscitation medications are indicated.

# 5010 HYPOTHERMIA




- Passive external rewarming: Place patient in warm environment and prevent further exposure to cold, remove cold/wet clothing, and covering with blankets or insulating materials.
- Active external rewarming: Apply external heat, like warm blankets, heating pads/hot packs, forced warm air, etc. If possible, apply to torso first to decrease core temperature drop.
- 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

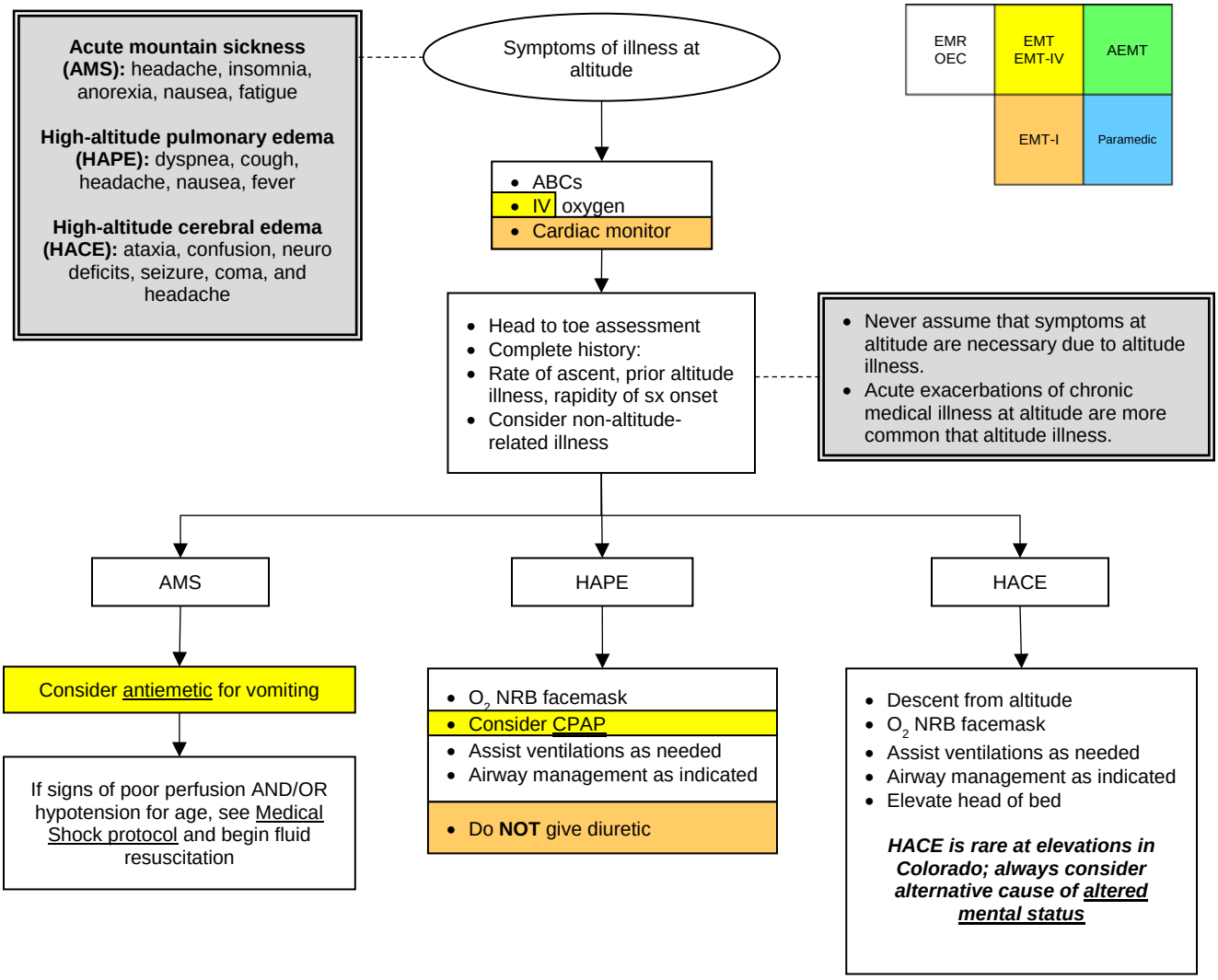
# 5020 HYPERTHERMIA




**Active Cooling Techniques**

- If core temperature is greater than 104°F (40°C) or if altered mental status is present, initiate active cooling.
- Evaporative cooling is most effective: Remove clothing, wet skin (misting preferred) and move cool air over skin.
- Truncal ice packs may be used but are less effective than evaporative cooling.
- Do not apply wet clothing, this may trap heat and prevent evaporative cooling.

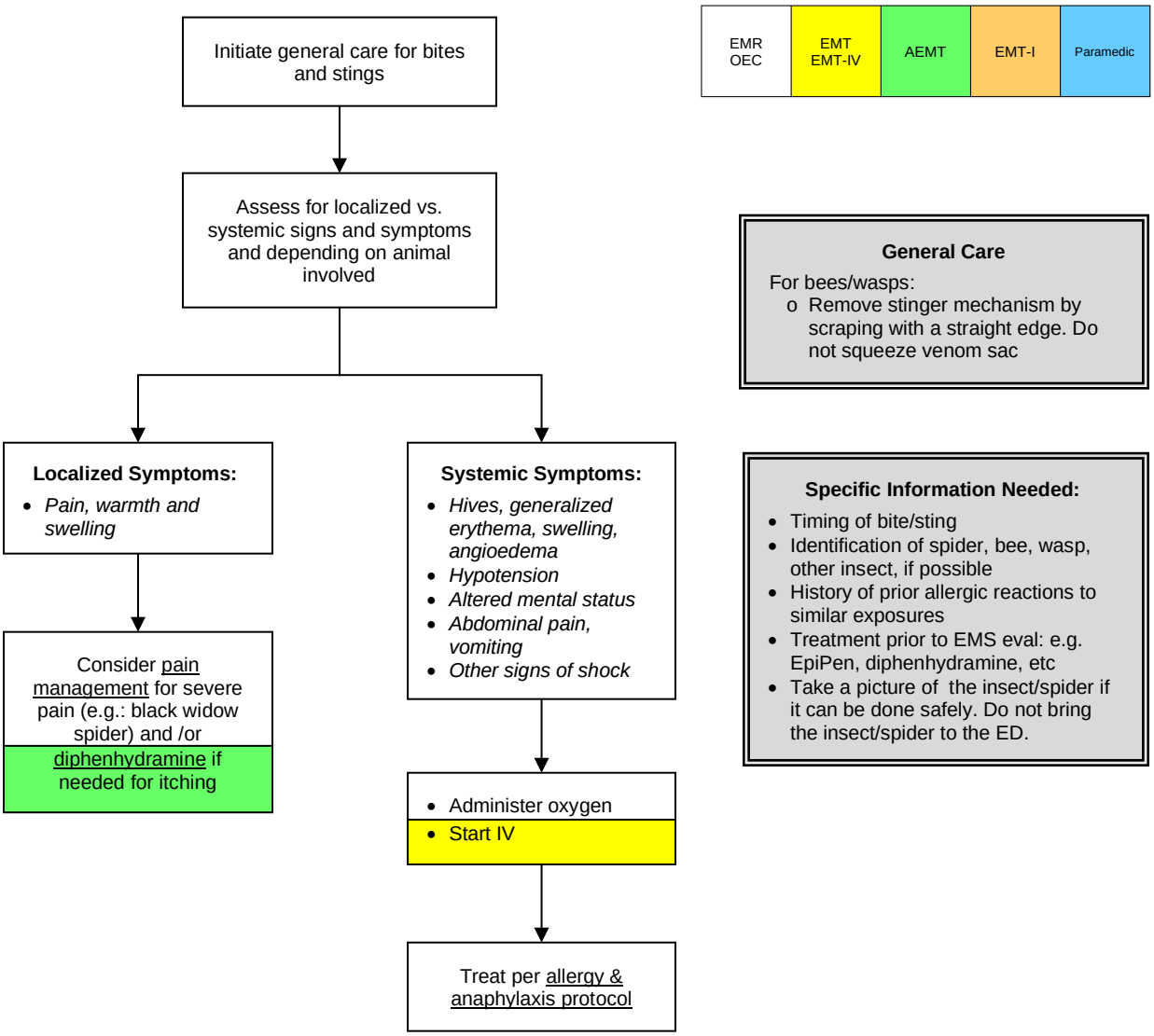
# 5030 HIGH ALTITUDE ILLNESS




**Special Notes:**

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

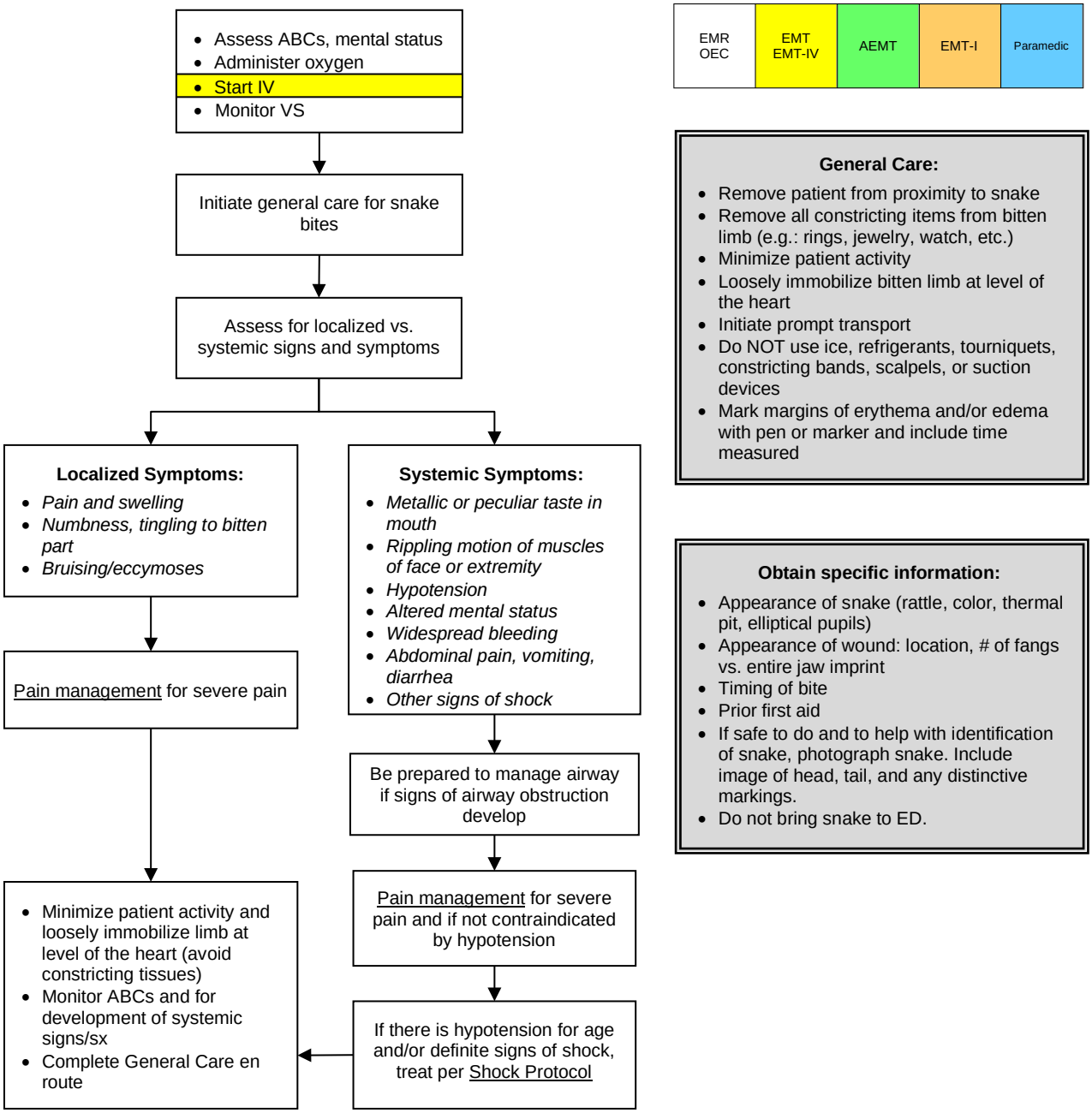
# 5040 INSECT/ARACHNID STINGS AND BITES PROTOCOL




**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

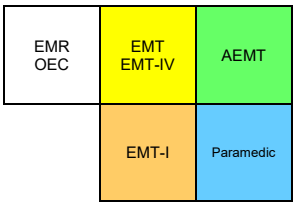
# 5050 SNAKE BITE PROTOCOL




**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.
- **If safe to do, take a picture of the snake including images of head, tail, and any distinctive markings. Do not bring snake to ED.**
- Never pick up a presumed-to-be-dead snake by hand. If it must be moved, 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




## Scene Safety

A. Scene safety should be assured prior to initiating care. Consider police contact if scene safety is a concern.
B. Refer to restraint protocol as needed, especially as it relates to A.

## Specific Information Needed

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

## Specific Objective Findings

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

## Treatment

A. If patient agitated or combative, see agitated/combative patient protocol
B. Attempt to establish rapport
C. If agitated, attempt verbal calming and de-escalation techniques
D. Assess ABCs. If unstable vital signs, refer to appropriate treatment protocol.
E. Transport to closest appropriate emergency eepartment or refer to mental health clearance form for determining appropriate patient destination
F. Be alert for possible elopement, all patient transports should occur with seatbelt in place and visible to provider at all times
G. Consider organic causes of abnormal behavior (trauma, overdose, intoxication, hypoglycemia)
H. If patient restraint considered necessary for patient or EMS safety, refer to restraint protocol.
I. Check blood sugar, vital signs, and assess for signs of toxidrome
J. If altered mental status, refer to universal altered mental status protocol

## Transporting Patients Who Have a Behavioral Health Complaint

A. Maintaining patient respect and dignity is important. Attempt to conduct assessment, treatment, and transport in the safest and least restrictive manner possible.
B. Coordination with law enforcement in managing these delicate situations is vital for safety of the patient, scene, and first responders. Authority to make all medical and treatment decisions lies solely with EMS and not law enforcement. Sedation is entirely the responsibility and decision of EMS on scene. There may be certain situations in which a collaborative effort may need to occur between law enforcement and EMS for the safe management of a patient, however, all medical decisions will be made by EMS in these circumstances.
C. If a patient has an isolated mental health complaint (e.g., suicidality), and does not have a medical complaint or need specific medical intervention, then that patient may be appropriately transported by law enforcement according to their protocols or alternative means per agency specific guidelines.
D. If a patient has a psychiatric complaint with associated illness or injury (e.g., overdose, altered mental status, chest pain, etc.), then the patient should be transported by EMS.

E. It is sufficient to assume the patient lacks decision-making capacity if there is a reasonable concern when any person appears to have a mental illness and, as a result of such mental illness, appears to be an imminent danger to others or to himself or herself or appears to be gravely disabled. Effort should be made to obtain consent for transport from the patient, and to preserve the patient's dignity throughout the process. However, the patient may be transported over his or her objections and treated under involuntary consent if the patient does not comply. A patient being transported for psychiatric evaluation may be transported to any appropriate receiving emergency department.
F. The Boulder County EMS Medical Directors feel strongly that the risk of abandonment of a potentially suicidal or otherwise gravely impaired patient far outweighs the likelihood of accusations of patient abduction. Be sure to document your reason for taking the patient over their objections; that you believe that you are acting in the patient's best interests; and be sure to **Contact Receiving Hospital** if there are concerns.
G. Documentation supports your decision making, therefore document thoroughly.

## Specific Precautions

A. Patients presenting with acute delirium often have an organic etiology. Rapid and through assessment of the patient is essential to potentially identify reversible causes of delirium. Be suspicious for hypoglycemia, hypoxia, head injury, intoxication, or toxic ingestion.
B. Providers transporting a patient over his or her objections should reassure the patient. The provider should strongly consider whether the patient may need restraint and/or sedation for safety. Beware of weapons. These patients can become combative.

## Transporting Patients on a Mental Health Hold

A. By law, patients detained on a mental health hold may not refuse transport. Similarly, by law, patients on a mental health hold are required to be evaluated by a physician or psychologist and should be transported.
B. Although it is commonly believed that the original copy of the mental health hold form is required to accompany the patient, a legible copy of the mental health hold form is also sufficient.
C. The form documenting the mental health hold should be as complete as possible. Confirm with appropriate individual that the documentation will be completed.
D. The mental health hold does not need to be started on patients who are intoxicated on drugs and/or alcohol. Nor is it required for patients who are physically incapable of eloping from care, such as those who are intubated, or physically unable.
E. The patient rights form does not need to accompany the patient. The receiving facility may complete this form if there are concerns.
F. If possible, seek direction from the sending facility regarding whether the patient may require sedation and restraint. Consider ALS transport if this is the case.
G. Recall that patients who are a danger to self/others or gravely disabled due to mental illness may be transported by EMS without a mental health hold, under involuntary consent.
H. EMS may leave a patient on a mental health hold for the following reasons:
    1. Scene is unsafe or patient poses potential safety risks to EMS
    2. Law enforcement is unable to provide scene safety
    3. Law enforcement cannot or will not gain access to the patient

# 6010 AGITATED/COMBATIVE PATIENT PROTOCOL

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

## Principles:

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

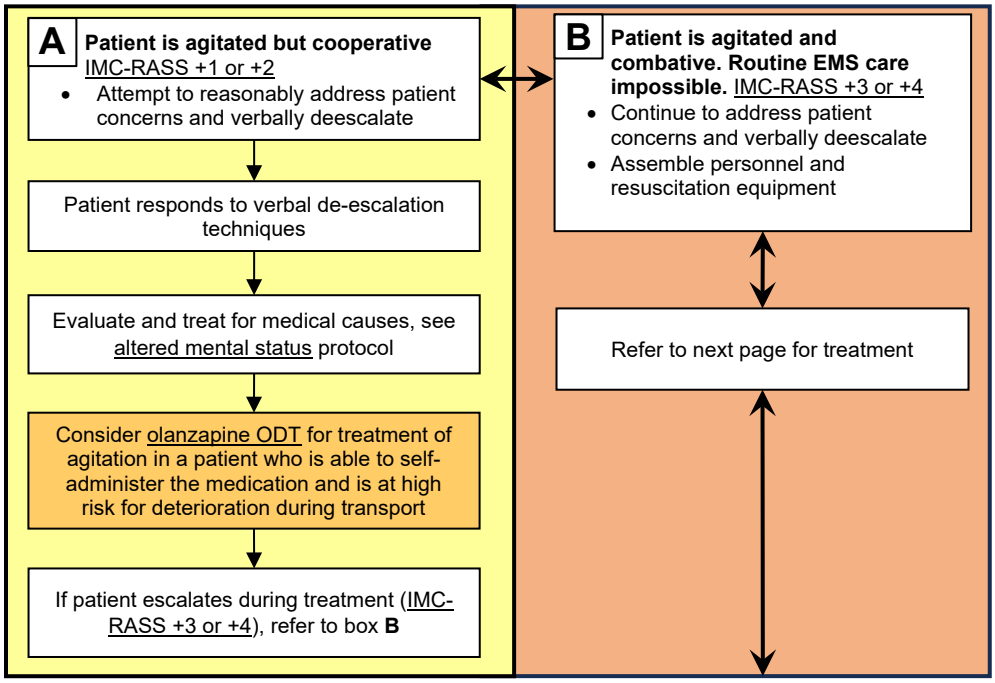
- EMS Safety. The safety of field personnel is paramount. Although EMS personnel have a duty to treat patients experiencing emergency medical conditions, they must not take risks that are threats to safety. Risks to personnel or scene safety should be commensurate to the benefit a patient may receive.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

## Initial Assessment:

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

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

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




**Pediatric Considerations**

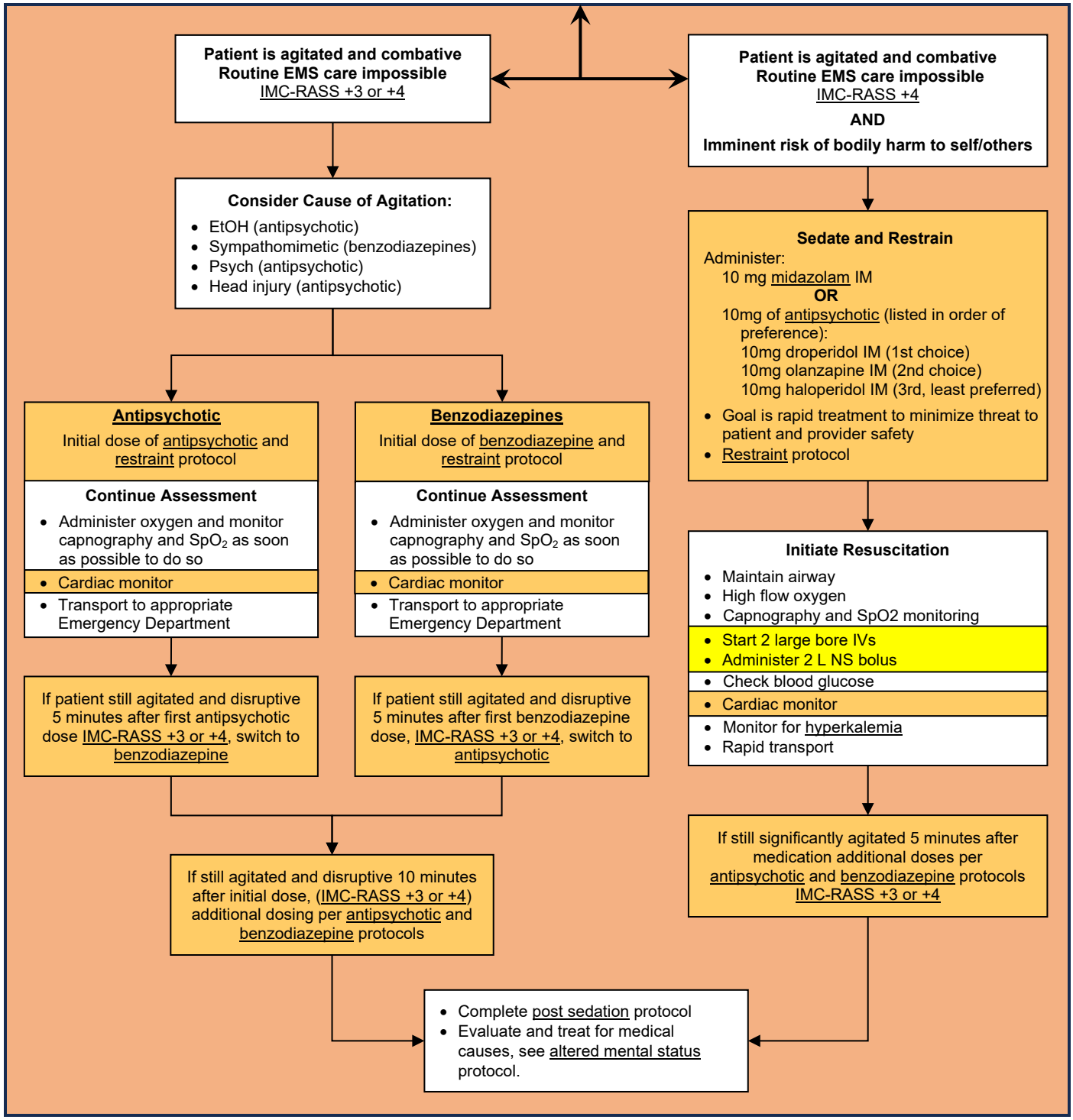
It is important to consider etiology for agitation when determining treatment:

- Developmental delay or known Autism
  - Involve caregiver
  - Sensory tools and calming interventions
- Suspected psychiatric diagnosis
  - Use de-escalation techniques
- Check blood glucose, assess for trauma
- Pain

Given risk of complications, medication for sedation of children is rarely needed and is highly uncommon. Sedation of children <8 years old requires **Base Contact** for a physician order.

- Benzodiazepines are preferred in children for most conditions except as below.
- Antipsychotics
  - Head injury
  - Developmental delay or known Autism
  - Alcohol intoxication

# 6010 AGITATED/COMBATIVE PATIENT PROTOCOL




**General Guideline**

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

**Documentation**

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

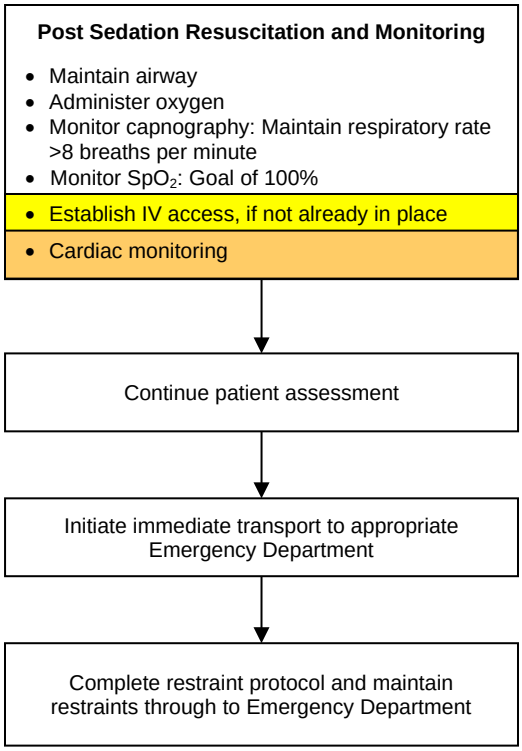
**Adequate Sedation**

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

# 6010 AGITATED/COMBATIVE PATIENT PROTOCOL

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

# 6015 POST SEDATION RESUSCITATION AND MONITORING

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**Adequate Sedation**

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

**General Guidelines**

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

# 6020 TRANSPORT OF THE HANDCUFFED PATIENT

**Purpose**:

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

**Guideline**:

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

# 7000 CHILDBIRTH PROTOCOL

**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

Obtain obstetrical history (see adjacent)

**If suspected imminent childbirth:**

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

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

**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

**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
- Dry baby and place skin-to-skin on the mother. Assess breathing, tone, and activity.

**Critical Thinking:**

- If there is an infant in distress call for additional EMS resources to provide care to 2 patients.
- Normal pregnancy is accompanied by higher heart rates and lower blood pressures
- Shock will be manifested by signs of poor perfusion
- Labor can take 8-12 hours, but as little as 5 minutes if high PARA
- The higher the PARA, the shorter the labor is likely to be
- High risk factors include: no prenatal care, drug use, teenage pregnancy, DM, htn, cardiac disease, prior breech or C section, 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
- Healthy term babies should be managed skin-to-skin with their mothers. After birth, the baby should be dried and directly placed skin-to-skin with attention to warm coverings and maintenance of normal temperature.
- Clamp the cord after the infant is quickly dried, placed on the mother, and assessed for breathing and activity. Double clamp 6" from infant abdominal wall and cut between clamps with sterile scalpel. If no sterile cutting instrument available, lay infant on mother and do not cut clamped cord. Document 1- and 5-minute APGAR scores
- Keep the baby covered, including cap over the head

**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 gauze and direct pressure
- Postpartum hemorrhage – see obstetrical complications protocol
- Initiate transport once delivery of child is complete and mother can tolerate movement

When opioids are administered to a pregnant patient in active labor or breastfeeding mother it can lead to central nervous system depression, including respiratory depression, in the newborn or the breastfed infant. In these circumstances opioids should only be administered after informed consent is received from the mother and limited to a single dose.

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

### Breech Delivery

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

### Postpartum Hemorrhage

- Perform fundal massage until hemorrhage resolved.
- Initiate rapid transport
- Treat signs of shock with IV fluid boluses

### Complications of Late Pregnancy

#### 3rd Trimester Bleeding

- High flow oxygen 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 oxygen via NRB, IV access
- Treat with magnesium sulfate in patients ≥ 20 weeks gestation or up to 6 weeks post-partum if:
  - BP >140/90 plus other symptoms (headache, vision changes, peripheral edema)
  - BP >160/100
  - Seizure
- Transport position of comfort
- See seizure protocol

### Shoulder Dystocia

- Support baby's head
- Suction oral and nasal passages
- DO NOT pull on head
- McRoberts maneuver: Using a provider on each side, hyperflex mother's hips to the extent possible and apply pressure with an open hand just above the pubic bone to baby's shoulder from the side of the baby's back
- If infant delivered see childbirth protocol – Postpartum care of infant and mother

# 8000 GENERAL TRAUMA CARE

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

**Look for massive hemorrhage and stop:**
- Tourniquet extremities
- Wound pack junctional wounds
- Seal truncal injuries

**Address airway and support breathing:**
- Emergent BLS airway management
- Assist ventilations as indicated
- Needle decompression for tension pneumothorax
- Semi-occlusive dressing for open chest wound
- Provide high flow oxygen

**Assess circulation:**
- If pelvis unstable, place binder.
- During transport, establish vascular access and treat hypotension per traumatic shock protocol

**Hypothermia / Head Injury:**
- Prevent and treat hypothermia
- Brief neuro assessment
- Minimize secondary injury, refer to head injury protocol.

- Consider spinal motion restriction
- Assess vital signs
- Consider advanced airway management

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

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|---|---|---|---|---|

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

**Airway Management Goals:**
- Manage with the simplest method that provides adequate ventilation and oxygenation
- Intubation should be done en route unless there is no other option
- Nasal intubation is relative contraindication with suspicion of head injury
- BLS airway preferred in pediatrics

# 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 patient (Unmanageable airway)
   - Use of airway adjuncts, e.g., ETT, supraglottic 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

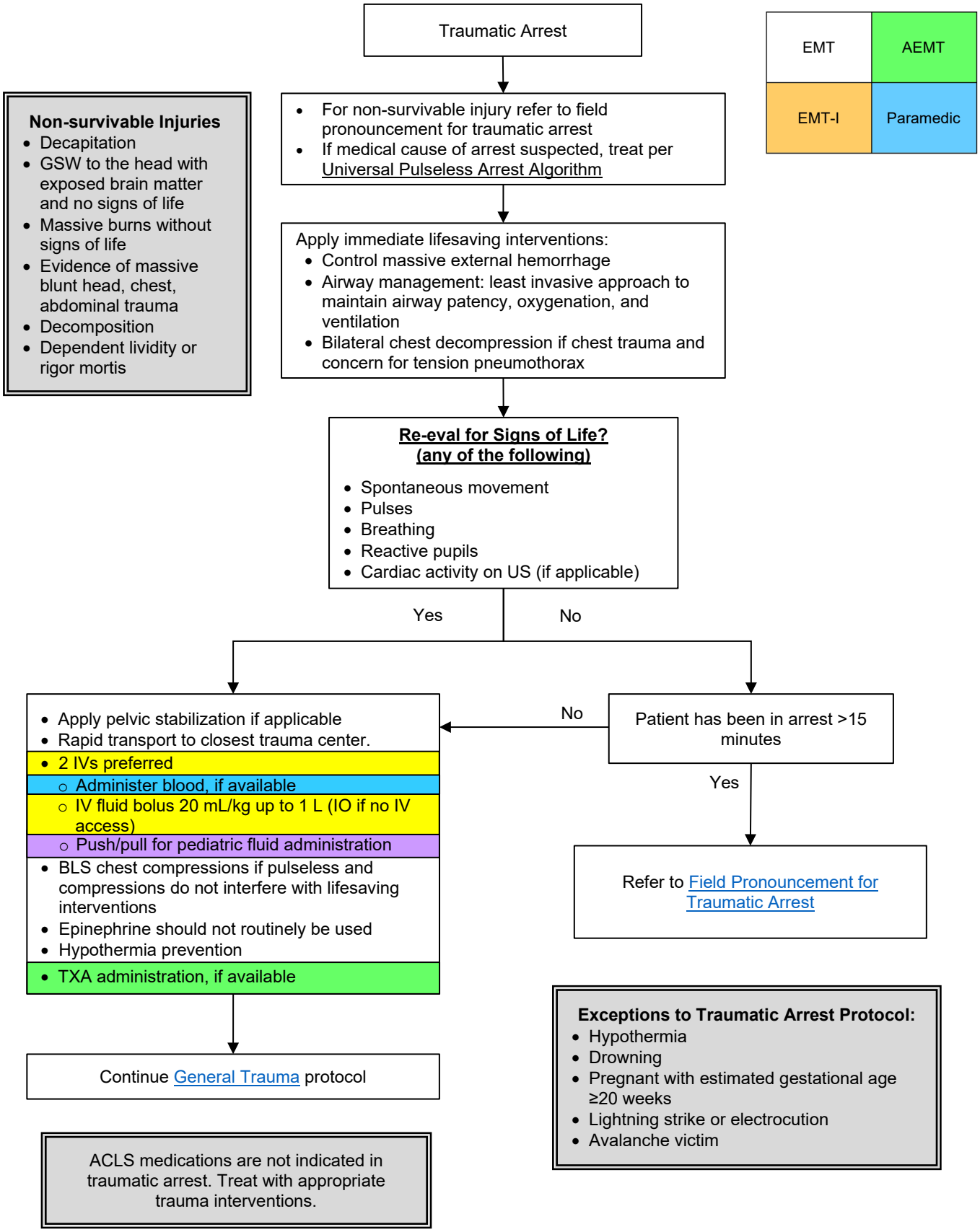
## Limited Trauma Team Activation: Mechanism of Injury

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 ($2^{nd}$ and/or $3^{rd}$ 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. Weakness, paresthesia, or history of paralysis related to the current traumatic event.
12. EMS provider judgment. Provide clinical rationale for activation.

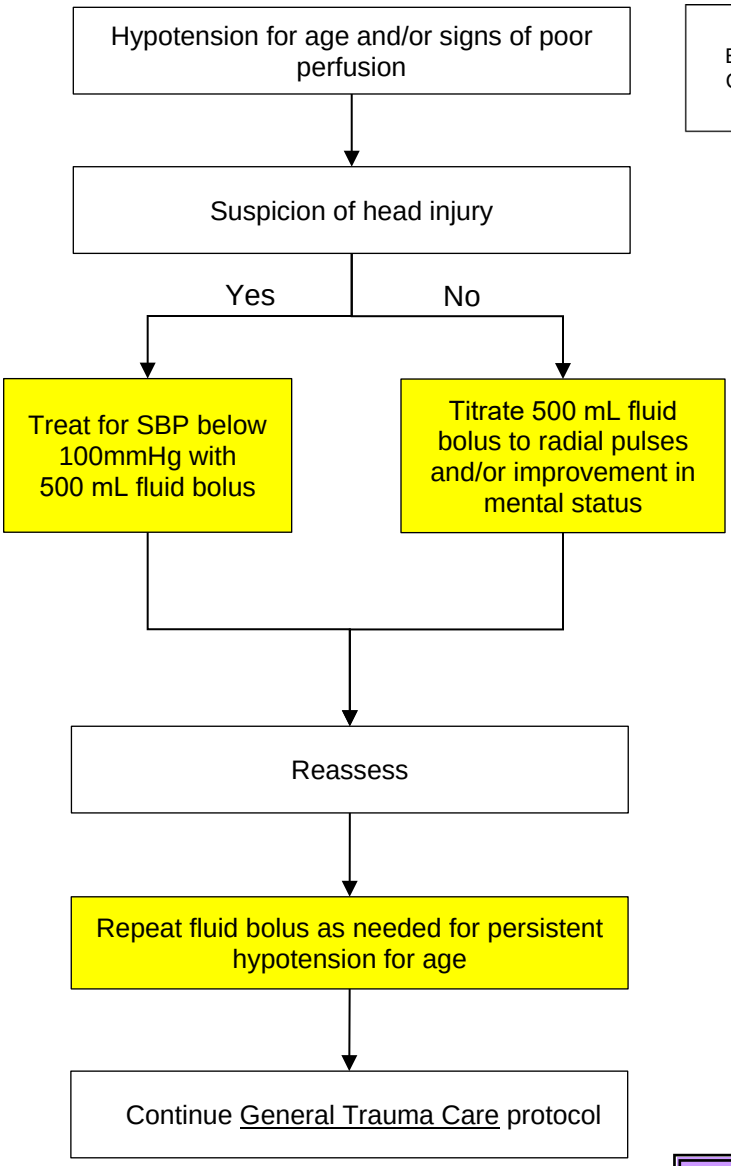
**Special considerations:**

- Different destinations may have different criteria. Check with the receiving hospital.
- ≥ 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 TRAUMATIC ARREST



# 8020 TRAUMATIC SHOCK




| EMR<br>OEC | EMT<br>EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

**Consider Non-Hypovolemic Causes of Shock**

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

**Hypotension for Age**

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

**Tachycardia for Age**

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

**Pediatric Minimum Blood Pressure with TBI**

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

**Pediatric Fluid Administration**

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

**Pediatric Shock**

**Signs of Compensated Shock**

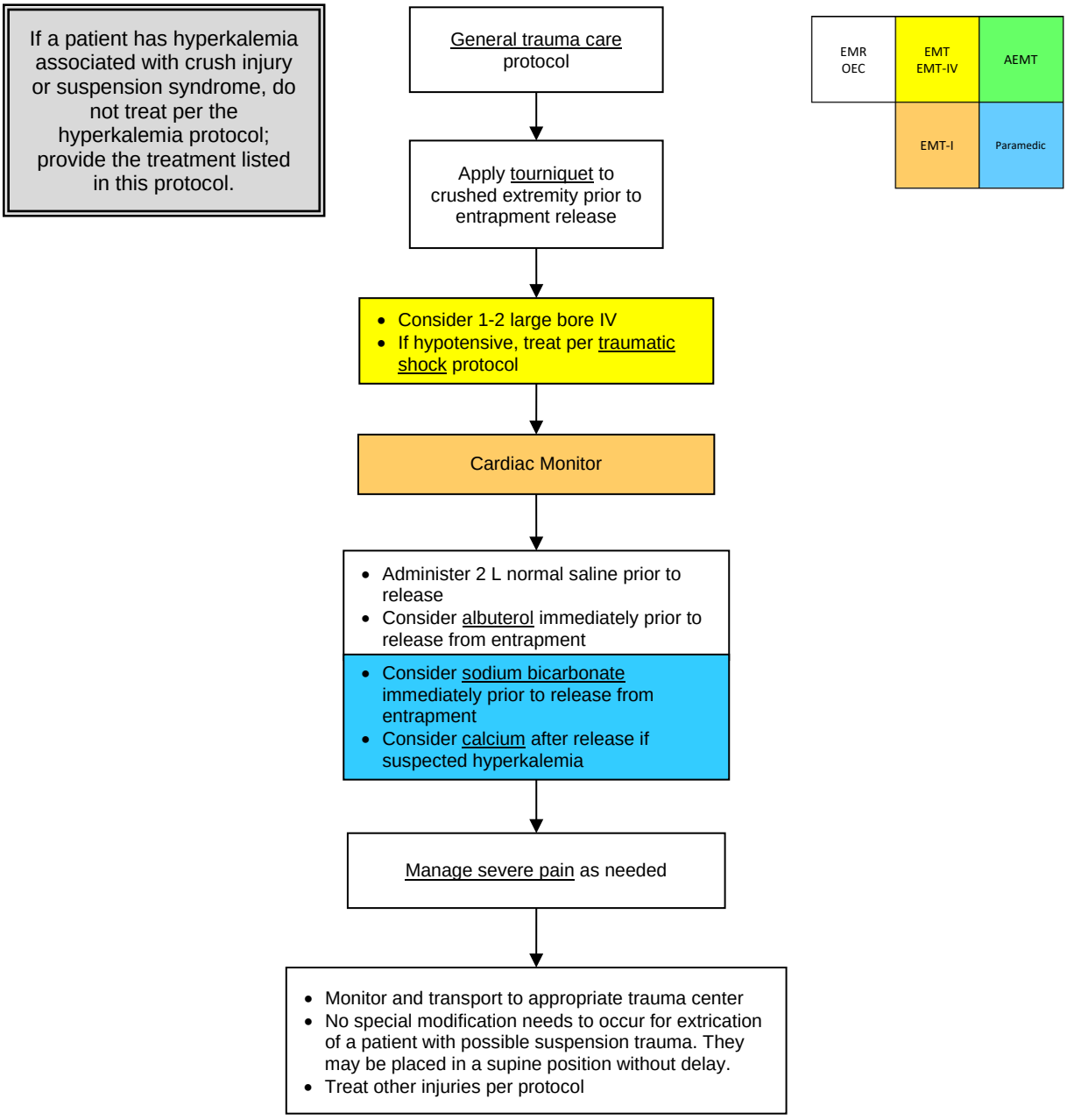
- Normal mental status
- Normal systolic blood pressure
- Tachycardia
- Prolonged (>2 seconds) capillary refill
- Tachypnea
- Cool and pale distal extremities
- Weak peripheral pulse

**Signs of Decompensated Shock**

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

# 8025 CRUSH INJURIES/SUSPENSION SYNDROME

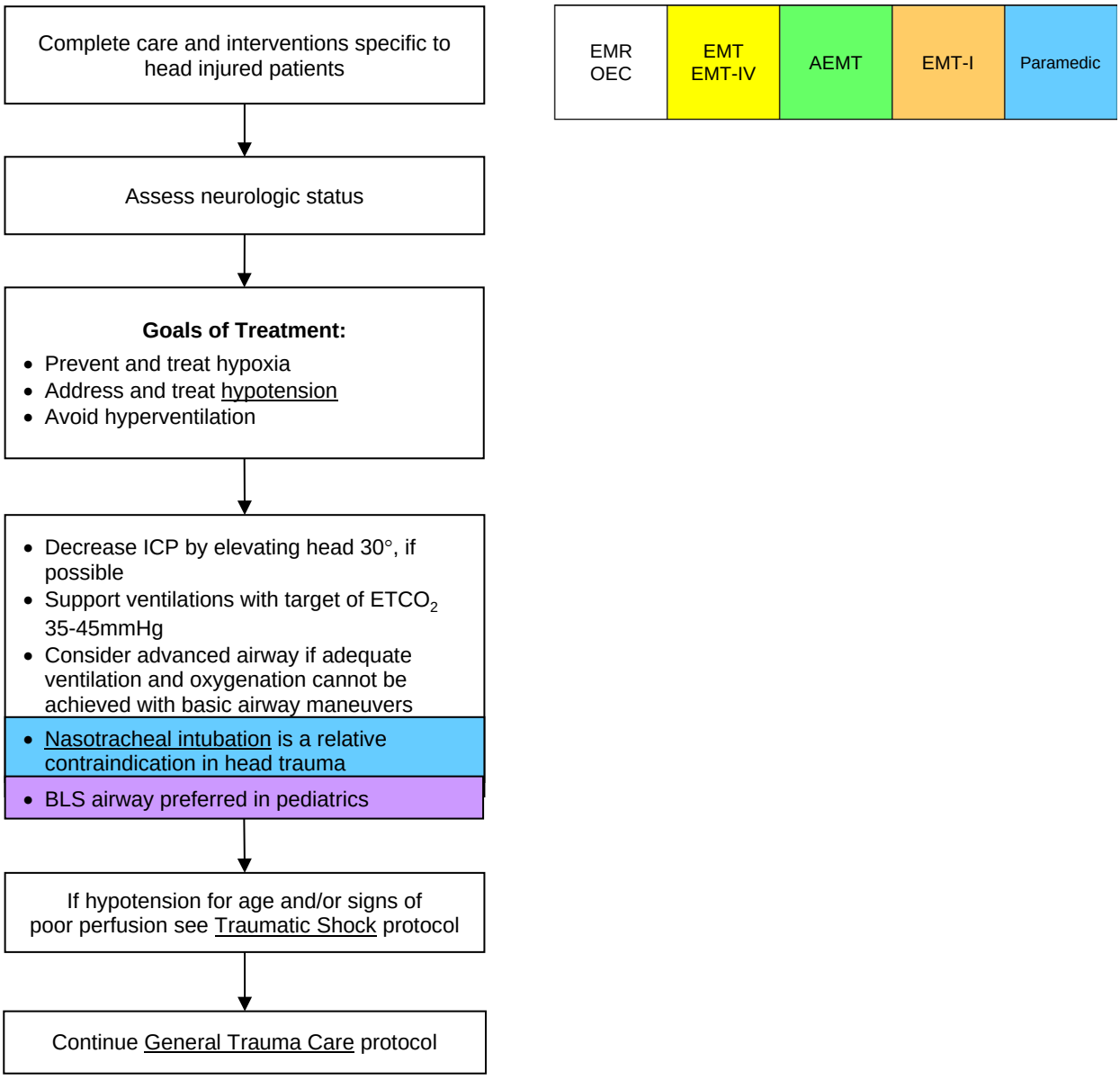
If a patient has hyperkalemia associated with crush injury or suspension syndrome, do not treat per the hyperkalemia protocol; provide the treatment listed in this protocol.




**Special Considerations**

- If a patient has hyperkalemia associated with crush injury or suspension syndrome, do not treat per the hyperkalemia protocol; provide treatment per this protocol.
- 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.

# 8030 HEAD TRAUMA



# 8040 FACE AND NECK TRAUMA

Complete care and interventions specific to face and neck trauma

- Clear airway
- Rapid trauma assessment
- Consider spinal motion restriction
- Assess for need for airway management

If laryngeal trauma, avoid intubation if patient can be oxygenated by less invasive means

**For severe airway bleeding:**

- Use direct pressure if able without obstructing airway
- Consider advanced airway if adequate ventilation and oxygenation cannot be achieved with basic airway maneuvers
- BLS airway preferred in pediatrics

- Complete neuro exam
- Assess for subcutaneous air
- Cover/protect eyes as indicated
- Do not try to block drainage from ears, nose

- Rapid transport to appropriate Trauma Center
- Suction airway as needed

If hypotension for age and/or signs of poor perfusion see Traumatic Shock protocol

Consider pain management

Continue General Trauma Care protocol

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

**Facial Injury Considerations:**

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

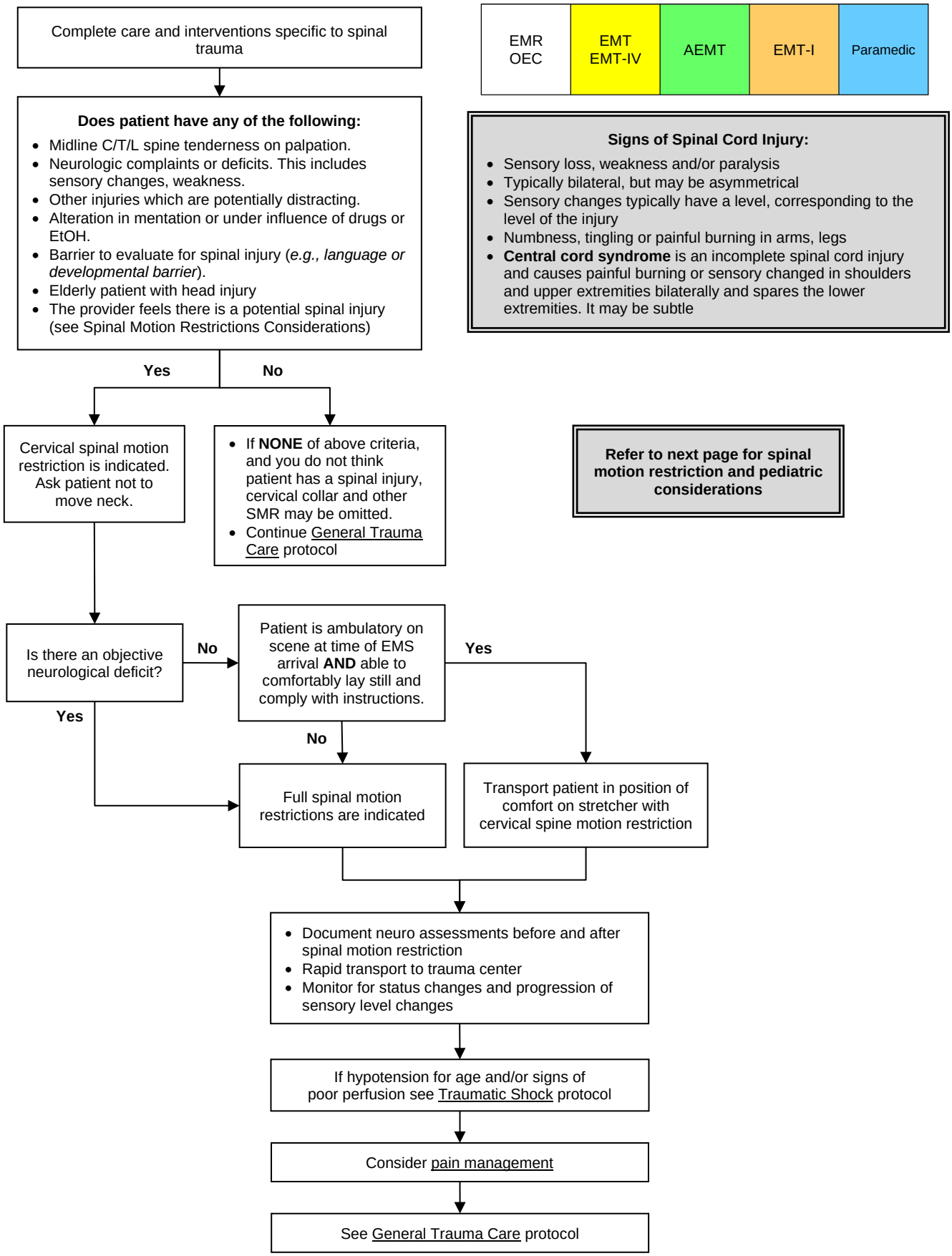
**Eye Injury Considerations:**

- Cover and protect eyes as indicated by injury type; do not apply pressure to eyes
- Orbital area fractures should be of high concern as they can result in ocular muscle entrapment and ocular compartment syndrome
- Consider evaluation for any visual loss or changes.

**Neck Injury Considerations:**

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

# 8050 SPINAL TRAUMA



# 8050 SPINAL TRAUMA

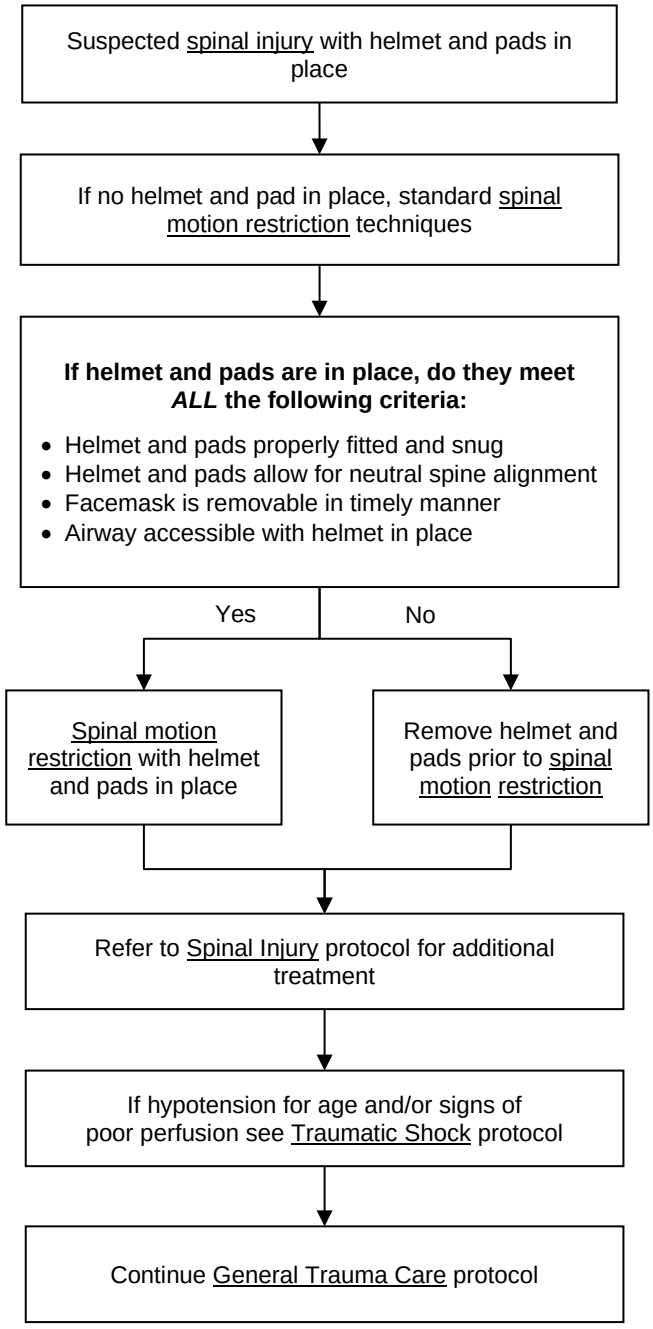
**Spinal Motion Restriction Considerations**

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

**Pediatric Considerations:**

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

# 8055 SPINAL TRAUMA WITH ATHLETIC EQUIPMENT

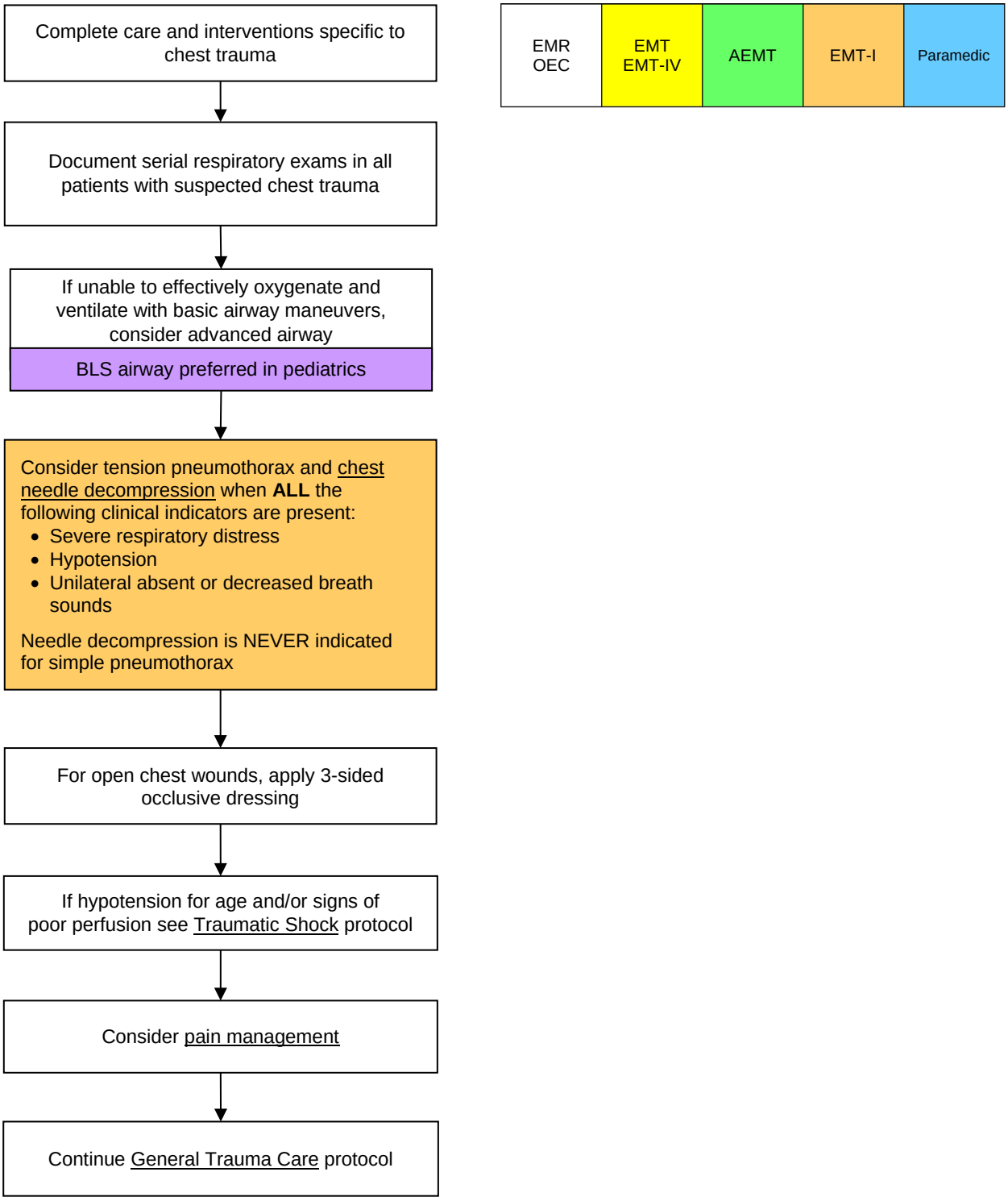



| EMR OEC | EMT EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

**Overview**

- Do not remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life-threatening injuries.
- The helmet and pads should be considered one unit. Therefore, if one is removed, then the other should be removed as well to assure neutral spine alignment.
- All athletic equipment is not the same. Athletic Trainers on scene should be familiar with equipment in use and be able to remove facemask prior to, or immediately upon, EMS arrival.

# 8060 CHEST TRAUMA



# 8070 ABDOMINAL AND PELVIC TRAUMA

Complete care and interventions specific to abdominal / pelvic trauma

↓

If concern for blunt pelvic trauma with hypotension apply pelvic binder or wrap

↓

For penetrating or eviscerating trauma:

- Cover wounds, viscera with saline moistened gauze dressing
- Do not attempt to repack exposed viscera

↓

If hypotension for age and/or signs of poor perfusion see Traumatic Shock protocol

↓

Consider pain management

↓

Continue General Trauma Care protocol

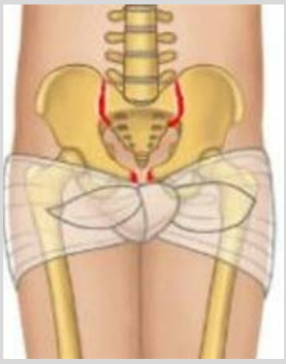
| EMR<br>OEC | EMT<br>EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

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

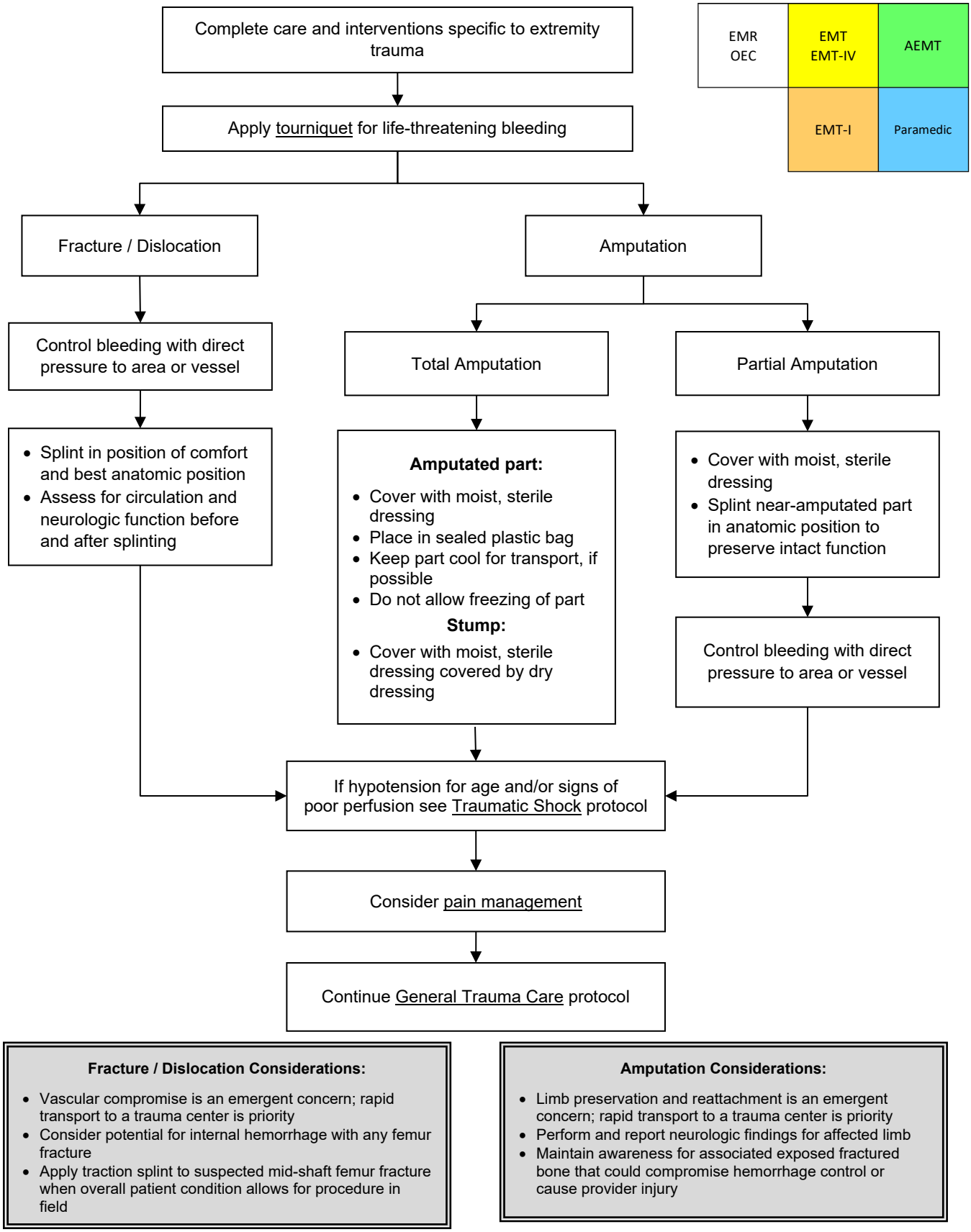
- Relatively compact torsos
- Larger viscera, especially liver and spleen, which extend below the costal margin
- Less overlying fat and weaker abdominal musculature

**Pelvic Trauma Considerations:**

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



# 8080 EXTREMITY TRAUMA



# 8090 BURNS

Complete care and interventions specific to burns once active burning is stopped

**If airway involvement:**

- Administer high flow oxygen
- Manage airway and assist ventilations as indicated

- Consider carbon monoxide (CO) / cyanide (CN) with closed space involvement
- If patient is unconscious or in pulseless arrest initiate resuscitation and administer hydroxocobalamin

- Evaluate degree and body surface area (BSA) involved
- If determined to be a critical burn administer fluids per ABA recommendations

- Remove all clothing and jewelry as soon as possible
- Protect patient from hypothermia
- Dress burns with dry sterile dressings

If hypotension for age and/or signs of poor perfusion see Traumatic Shock protocol

Consider pain management

Continue General Trauma Care protocol

| EMR<br>OEC | EMT<br>EMT-IV | AEMT | EMT-I | Paramedic |
|---|---|---|---|---|

**Burn Considerations:**

**Critical Burn:**

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

**Types of Burns:**

- Thermal: remove from environment
- Chemical: brush off or dilute chemical. Consider HAZMAT
- Electrical: make sure patient is de-energized and suspect internal injuries

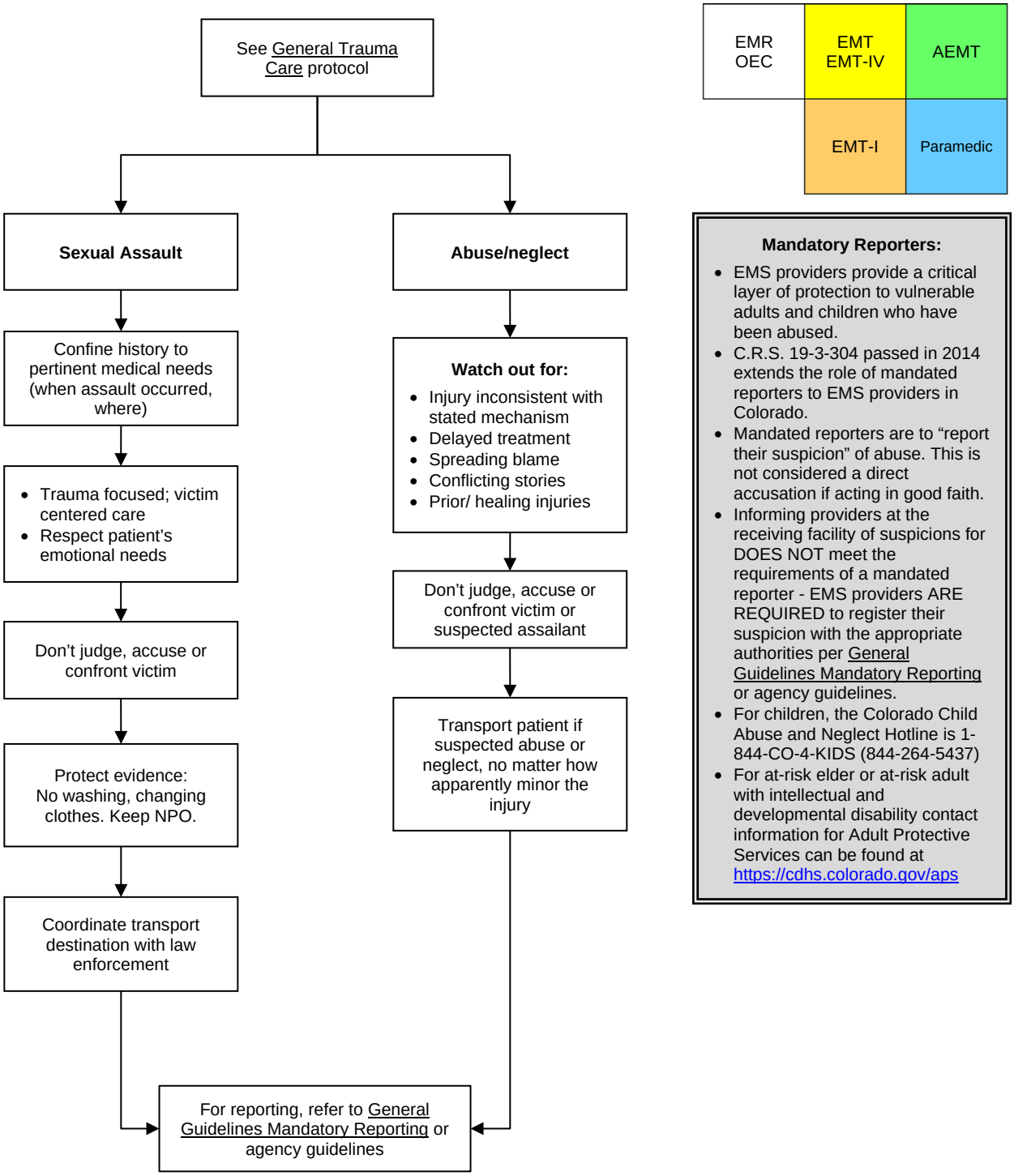
**ABA Recommended Prehospital Fluid Therapy**

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

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

# 8100 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 "report their suspicion" of abuse. This is not considered a direct accusation if acting in good faith.
- Informing providers at the receiving facility of suspicions for DOES NOT meet the requirements of a mandated reporter - EMS providers ARE REQUIRED to register their suspicion with the appropriate authorities per General Guidelines Mandatory Reporting or agency guidelines.
- For children, the Colorado Child Abuse and Neglect Hotline is 1-844-CO-4-KIDS (844-264-5437)
- For at-risk elder or at-risk adult with intellectual and developmental disability contact information for Adult Protective Services can be found at https://cdhs.colorado.gov/aps

# 8110 TRAUMA IN PREGNANCY

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

- Complete care and interventions specific to trauma in pregnancy
- Treatment priority is the mother
- Transport all patients with any thoracic, abdominal, or pelvic injury / complaint

**Estimated Gestational Age (EGA) < 20 weeks**

- Transport in position of comfort or spinal motion restriction as indicated

**Estimated Gestational Age (EGA) ≥ 20 weeks**

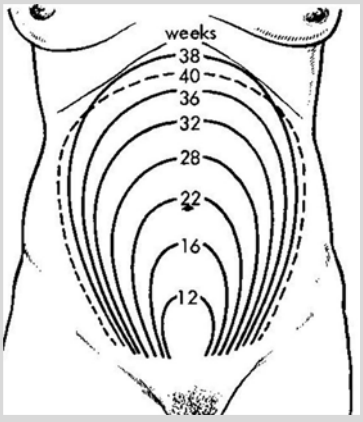
- Avoid supine position:
  - Place in left lateral recumbent position if possible
  - If immobilized tilt backboard 15 to 30 degrees to the left side
- Assure receiving trauma center is aware of pregnancy and EGA
- Non-transport is a high-risk refusal, **Base Contact** is strongly recommended even for seemingly minor mechanisms

If hypotension for age and/or signs of poor perfusion see Traumatic Shock protocol

Continue General Trauma Care protocol

**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.

**Traumatic Arrest and Pregnancy**

EGA ≥ 20 weeks is an exception to the trauma arrest protocol and patient should be transported to closest appropriate facility.

# 9000 GENERAL GUIDELINES: MEDICATION ADMINISTRATION

## Purpose

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

## General Principles

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

B. The risk of dosing error is high in children, and we recommend the use of a standardized system to decrease the rate of error. This can include age-based, weight-based, or length-based systems that has standardize precalculated volume-based medication dosing and equipment. These should be utilized on every pediatric patient to guide medication dosing and equipment size. Agencies are encouraged to use a medication assisted cross check prior to administration.

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

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

# 9005 MEDICATIONS

## *ACETAMINOPHEN (TYLENOL)*

**Description**

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

**Onset & Duration**

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

**Indications**

- Mild pain, moderate, or severe pain. Consider IV administration for moderate or severe pain.
- Fever ***(PO administration only)***

**Contraindications**

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

**Adverse Reactions**

- Acetaminophen has a wide therapeutic window. Recommended maximum therapeutic doses are less than half the toxic dose.
  - Single toxic dose in a 70 kg adult is greater than 7 gm.
  - Single toxic dose in a child is greater than 150 mg/kg.
  - Chronic supratherapeutic acetaminophen poisoning is possible as many medications contain acetaminophen.
- Liver injury (hepatotoxicity) can occur from either a single large overdose or repeated supratherapeutic ingestion of acetaminophen. Therefore, it is important to determine if your patient has already taken a therapeutic dose of acetaminophen within past 6 hours before you administer.
- IV acetaminophen may cause headache, nausea, and vomiting.
- Hypersensitivity and allergic reactions have been reported but are rare

**Drug Interactions**

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

**Dosage and Administration**

**Adult:**

1000 mg PO

**OR**

1000 mg IV infused over 15 minutes

**Pediatric:**

15 mg/kg PO – ***SEE CHART***

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

**Protocol**

- Pain management

# 9010 MEDICATIONS

## *ADENOSINE (ADENOCARD)*

### Description

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

### Onset & Duration

- Onset: almost immediate
- Duration: 10 sec

### Indications

- Narrow-complex supraventricular tachyarrhythmia after obtaining 12 lead ECG (This may be the only documented copy of the 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 12 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

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**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

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**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
- Tachyarrhythmia 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.

.

- **Amiodarone Dosage and Administration**

| Pulseless Arrest (Refractory VT/VF) |
|---|
| **Adult** |
| • 300 mg IV bolus.<br>• 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.<br>• **Contact Receiving Hospital** for additional doses. |
| **Symptomatic VT and undifferentiated wide complex tachycardia with a pulse:** |
| **Adult** |
| • 150 mg slow IV push |
| **Pediatric** |
| • **Contact Receiving Hospital** 5 mg/kg (not to exceed 150 mg) slow IV push |

## 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** |
| • 1-1.5 mg/kg IV bolus.<br>• 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.

# ANTIPSYCHOTICS

***BUTYROPHENONES including DROPERIDOL and HALOPERIDOL***
***OLANZAPINE (ZYPREXA)***

**Description**

- Butyrophenones are first-generation antipsychotic medications. They produce a dopaminergic blockade, a mild alpha-adrenergic blockade, and causes peripheral vasodilation. Its major actions are sedation and tranquilization. Droperidol also has a potent anti-emetic effect.
- Olanzapine is a second-generation antipsychotic. It acts through combination of dopamine and serotonin type 2 receptor site antagonism.

**Onset & Duration**

- Droperidol
  - Onset: IM within 10 minutes. IV within 5 to 10 minutes. Peak effect within 30 minutes
  - Duration: 2 to 4 hours (may be longer in some individuals)
- Haloperidol
  - Onset: IM within 15 to 30 minutes. IV within 10 to 20 minutes.
  - Duration: 2 to 6 hours
- Olanzapine
  - Onset: IM within 10 minutes. IV within 5 to 10 minutes. PO/ODT around 10 minutes.
  - Duration: 2 hours

**Indications**

- Treatment of patient who is agitated and combative (IMC-RASS +3 or +4)
- Droperidol specific indications:
  - Nausea and/or vomiting
- Olanzapine specific indications:
  - For ODT administration, consider for treatment of agitation in a cooperative patient who is able to self-administer the medication and is at high risk for deterioration during transport.

**Contraindications**

- Systolic blood pressure under 100 mmHg, or the absence of a palpable radial pulse
- Signs of respiratory depression
- Known QTc prolongation
- Pregnancy

**Side Effects**

- Due to the vasodilation effect, antipsychotics can cause a transient hypotension that is usually self-limiting and can be treated effectively with IV fluids. Droperidol may cause tachycardia which usually does not require pharmacologic intervention.
- Antipsychotics may cause prolonged QT interval.
- Some patients may experience unpleasant sensations manifested as restlessness, hyperactivity, or anxiety following antipsychotic administration. Extra-pyramidal reactions have been noted hours to days after treatment. This is called akathisia and can be treated with or prevented by diphenhydramine.
- Rare instances of neuroleptic malignant syndrome have been known to occur following treatment using antipsychotics.
- Olanzapine and benzodiazepines coadministration has a potential synergistic effect leading to significant sedation.

**Special Considerations**

- If known Parkinsonian disease, benzodiazepines are the preferred first line medication
- Due to antipsychotic's potential effect on QT interval prolongation, all patients receiving them should have IV access established and cardiac monitoring, end tidal capnography, pulse oximetry, and a 12-lead ECG as soon as feasible.
- Antipsychotics in frail or elderly patients can increase risk of over-sedation, hypotension and prolonged QT. If it must be given, administer half typical dose.
- For pediatric patient with autism or severe developmental delay, olanzapine ODT is preferred.

## Dosage and Administration

### Droperidol

**Patient is agitated and combative (IMC-RASS +3 or +4)**

**Adult**

**IV/IO/IM route:** 5 mg.
- If patient still agitated and combative 5 minutes after first droperidol dose (IMC-RASS +3 or +4) switch to benzodiazepine.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial droperidol dose, may repeat droperidol dose.
- Maximum cumulative dose for droperidol is 15 mg.

**Pediatric 8 to 11 years old**

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

| Age (years) | LBT color | Estimated Weight (kg) | Droperidol Dose (mg) |
|---|---|---|---|
| 8-9 | Orange | 27-34 | 0.625 |
| 10-11 | Green | 35-40 | 1.25 |

- If patient still agitated and combative 5 minutes after first droperidol dose (IMC-RASS +3 or +4) switch to benzodiazepine.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial droperidol dose, may repeat droperidol dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

**Pediatric <8 years old**

**Not indicated.** Refer to benzodiazepine protocol.

**Patient is agitated and combative (IMC-RASS +4) and posing imminent bodily harm to self/others**

**Adult**

**IV/IO/IM route:** 10 mg
- If patient still agitated and combative 5 minutes after first droperidol dose (IMC-RASS +3 or +4), may administer midazolam 5 mg.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial droperidol dose, may administer droperidol 5 mg.
- Maximum cumulative dose of droperidol 15 mg.

**Pediatric 8 to 11 years old**

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

| Age (years) | LBT color | Estimated Weight (kg) | Droperidol Dose (mg) |
|---|---|---|---|
| 8-9 | Orange | 27-34 | 0.625 |
| 10-11 | Green | 35-40 | 1.25 |

- If patient still agitated and combative 5 minutes after first droperidol dose, (IMC-RASS +3 or +4), switch to midazolam.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial droperidol dose, may repeat droperidol dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

| | |
|---|---|
| **Pediatric <8 years old** | |
| | **Not indicated.** Refer to benzodiazepine protocol. |
| **Antiemetic** | |
| **Adult** | |
| **IV/IO/IM route:** | 1.25 mg slow push. |
| **Pediatric** | |
| | **Not indicated** |

## Haloperidol

| | |
|---|---|
| **Patient is agitated and combative (IMC-RASS +3 or +4)** | |
| **Adult** | |
| **IV/IO/IM route:** | 5 mg.<br>• If patient still agitated and combative 5 minutes after first haloperidol dose (IMC-RASS +3 or +4) switch to benzodiazepine.<br>• If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial haloperidol dose, may repeat haloperidol dose.<br>• Maximum cumulative dose for haloperidol is 15 mg. |
| **Pediatric 8 to 11 years old** | |
| **IM route:** | 0.05 mg/kg. Maximum single dose of 2.5 mg. |

| Age (years) | LBT color | Estimated Weight (kg) | Haloperidol Dose (mg) |
|---|---|---|---|
| 8-9 | Orange | 27-34 | 1.5 |
| 10-11 | Green | 35-40 | 2.5 |

| | |
|---|---|
| | • If patient still agitated and combative 5 minutes after first haloperidol dose, (IMC-RASS +3 or +4), switch to benzodiazepine.<br>• If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial haloperidol dose, may repeat haloperidol dose.<br>• If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**. |
| **Pediatric <8 years old** | |
| | **Not indicated.** Refer to benzodiazepine protocol. |
| **Patient who is agitated and combative, routine EMS care impossible, IMC-RASS +4, AND imminent risk of bodily harm to self/others (if droperidol not available)** | |
| **Adult** | |
| **IV/IO/IM route:** | 10 mg<br>• If patient still agitated and combative 5 minutes after first haloperidol dose (IMC-RASS +3 or +4), may administer midazolam 5 mg.<br>• If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial haloperidol dose, may administer haloperidol 5 mg.<br>• Maximum cumulative dose of haloperidol 15 mg. |

**Pediatric 8 to 11 years old**

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

| Age (years) | LBT color | Estimated Weight (kg) | Haloperidol Dose (mg) |
|---|---|---|---|
| 8-9 | Orange | 27-34 | 1.5 |
| 10-11 | Green | 35-40 | 2.5 |

- If patient still agitated and combative 5 minutes after first haloperidol dose, (IMC-RASS +3 or +4), switch to benzodiazepine.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial haloperidol dose, may repeat haloperidol dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

## Olanzapine

**Patient is agitated and combative (IMC-RASS +3 or +4)**

**Adult**

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

- If patient still agitated and disruptive 5 minutes after first olanzapine dose (IMC-RASS +3 or +4), switch to benzodiazepine
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial droperidol dose, may repeat olanzapine dose.
- Maximum cumulative dose for olanzapine is 15 mg.

**Pediatric 8 to 11 years old**

**IV/IO/IM route:** See dosing table.

| Age (years) | LBT color | Estimated Weight (kg) | Olanzapine | |
|---|---|---|---|---|
| | | | Dose (mg) | 5 mg/mL Vol (mL) |
| 8-9 | Orange | 27-34 | 2.5 mg | 0.5 mL |
| 10-11 | Green | 35-40 | 5 mg | 1 mL |

- If patient still agitated and combative 5 minutes after first olanzapine dose, (IMC-RASS +3 or +4), switch to benzodiazepine.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial olanzapine dose, may repeat olanzapine dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

**Pediatric <8 years old**

**Not indicated.** Refer to benzodiazepine protocol.

**Patient is agitated and combative (IMC-RASS +4) and posing imminent bodily harm to self/others**

**Adult**

**IV/IO/IM route:** 10 mg

- If patient still agitated and combative 5 minutes after first olanzapine dose (IMC-RASS +3 or +4), may administer midazolam 5 mg.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial olanzapine dose, may administer olanzapine 5 mg.
- Maximum cumulative dose of olanzapine 15 mg.

**Pediatric 8 to 11 years old**

**IV/IO/IM route:**

See dosing table.

| Age (years) | LBT color | Estimated Weight (kg) | Olanzapine | |
|---|---|---|---|---|
| | | | Dose (mg) | 5 mg/mL Vol (mL) |
| 8-9 | Orange | 27-34 | 2.5 mg | 0.5 mL |
| 10-11 | Green | 35-40 | 5 mg | 1 mL |

- If patient still agitated and combative 5 minutes after first olanzapine dose, (IMC-RASS +3 or +4), switch to midazolam.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial olanzapine dose, may repeat olanzapine dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or olanzapine (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

**Pediatric <8 years old**

**Not indicated.** Refer to benzodiazepine protocol.

**Treatment of agitation (IMC-RASS +1 or +2) in a cooperative patient who is able to self-administer the medication and is at high risk for deterioration during transport**

**Adult**

**ODT route:**

10 mg ODT administration

- If additional sedation medication needed (IMC-RASS +3 or +4) refer to agitated/combative protocol.
- Consider ½ dose in the elderly

**Pediatric 8 to 11 years old**

**IV/IO/IM route:**

See dosing table.

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

- If additional sedation medication needed (IMC-RASS +3 or +4) refer to agitated/combative protocol.

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**Protocol**

- Agitated/Combative Patient
- Antiemetics

# 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*

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**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)

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**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

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**Adverse Reactions**

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

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**Dosage and Administration**

**Hemodynamically Unstable Bradycardia**

**Adult:**

1 mg IV/IO bolus.

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

**Pediatric:**

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

**Poisoning/Overdose**

**Adult:**

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

**Pediatric:**

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

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

### 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.
- Patient who is agitated or combative (IMC-RASS +3 or +4)
- Sedation for cardioversion or transcutaneous pacing (TCP)
- Anxiolysis

### Contraindications

- Hypotension
- Respiratory depression

### Adverse Reactions

- Respiratory depression, including apnea
- Hypotension

### Special Considerations

- When administering a benzodiazepine, a patient should have appropriate respiratory monitoring as soon as feasible, which should include cardiac monitoring, pulse oximetry, and waveform capnography.
- 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.

### Dosage and Administration

**Midazolam (Versed)**

- Midazolam has more rapid onset of action when administered intramuscularly than diazepam or lorazepam and is preferred if intramuscular route is used.

| **Seizure** | |
|---|---|
| **Adult** | |
| **IV/IO route:** | 5 mg. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses |
| **IN/IM route: (IN preferred)** | 10 mg. Dose may be repeated x 1. **Contact Receiving Hospital** for more than 2 doses |

<table>
<tr><td colspan="2"><u>Pediatric</u></td></tr>
<tr><td>IV/IO route:</td><td>0.1 mg/kg. Maximum single dose is 5 mg IV/IO. Dose may be repeated x 1. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:<br>(IN preferred)</td><td>0.2 mg/kg. Maximum single dose is 10 mg IN or IM. Dose may be repeated x 1. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td colspan="2">Sedation for cardioversion or transcutaneous pacing</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO route:</td><td>2 mg or 2.5 mg. Dose may be repeated x 1. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:<br>(IN preferred)</td><td>5 mg. Dose may be repeated x 1. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td colspan="2"><u>Pediatric</u></td></tr>
<tr><td>IV/IO route:</td><td>0.1 mg/kg. Maximum single dose is 2 mg IV/IO. Dose may be repeated x 1. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:<br>(IN preferred)</td><td>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.</td></tr>
<tr><td colspan="2">Patient is agitated and combative (IMC-RASS +3 or +4)</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO/IM route:</td><td>5 mg.<ul><li>If patient still agitated and combative 5 minutes after first midazolam dose (IMC-RASS +3 or +4), switch to <u>antipsychotic</u>.</li><li>If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial midazolam dose, may repeat midazolam dose.</li><li>Maximum cumulative dose for midazolam is 15 mg.</li></ul></td></tr>
<tr><td colspan="2"><u>Pediatric 8 to 11 years old</u></td></tr>
<tr><td>IV/IO/IM route:</td><td>0.1 mg/kg. Maximum single dose of 5 mg.
<table>
<tr><th>Age (years)</th><th>LBT color</th><th>Estimated Weight (kg)</th><th>Midazolam Dose (mg)</th></tr>
<tr><td>8-9</td><td>Orange</td><td>27-34</td><td>2.5 mg</td></tr>
<tr><td>10</td><td>Green</td><td>35</td><td>2.5 mg</td></tr>
<tr><td>11</td><td>Green</td><td>40</td><td>5 mg</td></tr>
</table>
<ul><li>If patient still agitated and combative 5 minutes after first midazolam dose (IMC-RASS +3 or +4), switch to <u>antipsychotic</u>.</li><li>If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial midazolam dose, may repeat midazolam dose.</li><li>If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) Contact Receiving Hospital.</li></ul></td></tr>
<tr><td colspan="2"><u>Pediatric <8 years old</u></td></tr>
<tr><td></td><td>Contact Receiving Hospital before any consideration of sedation of severely agitated/combative child <8 years old.</td></tr>
<tr><td colspan="2">Patient is agitated and combative (IMC-RASS +4) and posing imminent bodily harm to self/others</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO/IM route:</td><td>10 mg.<ul><li>If patient is still agitated and combative 5 minutes after first midazolam dose, (IMC-RASS +3 or +4), switch to <u>antipsychotic</u> 5 mg.</li><li>If patient still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial midazolam dose, may administer additional dose of midazolam 5 mg.</li><li>Maximum cumulative dose for midazolam is 15 mg.</li></ul></td></tr>
</table>

<table>
<tr><td colspan="2"><u>Pediatric 8 to 11 years old</u></td></tr>
<tr><td>IV/IO/IM route:</td><td>0.1 mg/kg. Maximum single dose of 5 mg.
<table>
<tr><th>Age (years)</th><th>LBT color</th><th>Estimated Weight (kg)</th><th>Midazolam Dose (mg)</th></tr>
<tr><td>8-9</td><td>Orange</td><td>27-34</td><td>2.5 mg</td></tr>
<tr><td>10</td><td>Green</td><td>35</td><td>2.5 mg</td></tr>
<tr><td>11</td><td>Green</td><td>40</td><td>5 mg</td></tr>
</table>
<ul>
<li>If patient still agitated and combative 5 minutes after first midazolam dose (IMC-RASS +3 or +4), switch to <u>antipsychotic</u>.</li>
<li>If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial midazolam dose, may repeat midazolam dose.</li>
<li>If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) Contact Receiving Hospital.</li>
</ul></td></tr>
<tr><td colspan="2"><u>Pediatric <8 years old</u></td></tr>
<tr><td></td><td>Contact Receiving Hospital before any consideration of sedation of severely agitated/combative child <8 years old.</td></tr>
<tr><td colspan="2">Anxiolysis</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO route:</td><td>0.5-1 mg. Dose may be repeated x 1 after 5 minutes if needed. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:</td><td>1 mg. Dose may be repeated x 1 after 5 minutes if additional sedation needed. Contact Receiving Hospital for more than 2 doses.</td></tr>
</table>

**<u>Lorazepam (Ativan)</u>**

- The onset of action for IM administration for lorazepam can be 15-30 minutes. Midazolam has more rapid onset of action when administered intramuscularly than diazepam or lorazepam and is preferred if intramuscular route is used.

<table>
<tr><td colspan="2">Seizure</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO/IN/IM route:</td><td>2 mg. Dose may be repeated x 1 in 5 minutes. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td colspan="2"><u>Pediatric</u></td></tr>
<tr><td>IV/IO route:</td><td>0.1 mg/kg. Maximum single dose of 2 mg IV/IO. Dose may be repeated x 1 after 5 minutes if still seizing. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:</td><td>0.1 mg/kg. Maximum single dose is 2 mg IM. Dose may be repeated x 1 after 5 minutes if still seizing. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td colspan="2">Sedation for cardioversion or transcutaneous pacing</td></tr>
<tr><td colspan="2"><u>Adult</u></td></tr>
<tr><td>IV/IO route:</td><td>1 mg. Dose may be repeated x 1 after 5 minutes. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:</td><td>2 mg. Dose may be repeated x 1 after 5 minutes. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td colspan="2"><u>Pediatric</u></td></tr>
<tr><td>IV/IO route:</td><td>0.1 mg/kg. Maximum single dose is 1 mg IV/IO. Dose may be repeated x 1 after 5 minutes. Contact Receiving Hospital for more than 2 doses.</td></tr>
<tr><td>IN/IM route:</td><td>0.1 mg/kg. Maximum single dose is 2 mg IM. Dose may be repeated x 1 after 5 minutes. Contact Receiving Hospital for more than 2 doses.</td></tr>
</table>

**Patient who is agitated and combative (IMC-RASS +3 or +4)**

**Adult**

**IV/IO/IM route:**

2 mg.

- If patient still agitated and combative 5 minutes after first lorazepam dose (IMC-RASS +3 or +4), switch to antipsychotic.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial lorazepam dose, may repeat lorazepam dose.
- Maximum cumulative dose for lorazepam is 6 mg.

**Pediatric 8 to 11 years old**

**IV/IO/IM route:**

0.05 mg/kg. Maximum single dose of 2 mg.

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

- If patient still agitated and combative 5 minutes after first lorazepam dose (IMC-RASS +3 or +4), switch to antipsychotic.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial lorazepam dose, may repeat lorazepam dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

**Pediatric <8 years old**

**Contact Receiving Hospital** before any consideration of sedation of severely agitated/combative child <8 years old.

**Patient is agitated and combative (IMC-RASS +4) and posing imminent bodily harm to self/others**

**Adult**

**IV/IO/IM route:**

4 mg.

- If patient is still agitated and combative 5 minutes after first lorazepam dose, (IMC-RASS +3 or +4), switch to antipsychotic.
- If patient still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial lorazepam dose, may administer additional dose of lorazepam 2 mg.
- Maximum cumulative dose for lorazepam is 6 mg.

**Pediatric 8 to 11 years old**

**IV/IO/IM route:**

0.05 mg/kg. Maximum single dose of 2 mg.

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

- If patient still agitated and combative 5 minutes after first lorazepam dose (IMC-RASS +3 or +4), switch to antipsychotic.
- If patient is still agitated and combative (IMC-RASS +3 or +4) 10 minutes after initial lorazepam dose, may repeat lorazepam dose.
- If patient is still agitated and combative after 3 cumulative doses of benzodiazepine and/or antipsychotic (IMC-RASS +3 or +4) **Contact Receiving Hospital**.

| Pediatric <8 years old | |
|---|---|
| | **Contact Receiving Hospital** before any consideration of sedation of severely agitated/combative child <8 years old. |
| **Anxiolysis** | |
| **Adult** | |
| **IV/IO/IN/IM route:** | 0.5 - 2 mg. Dose may be repeated after 5 minutes at 0.5 mg slow push over 2 minutes. **Contact Receiving Hospital** for more than 2 doses. |

**Diazepam (Valium)**

- The onset of action for IM administration of diazepam can be 15-30 minutes. Midazolam is recommended over lorazepam and diazepam if intramuscular route is used.

| 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/IO route:** | • Neonate: Not indicated<br>• Neonate to < 5 years: 0.5 mg. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Receiving Hospital** for more than 2 doses.<br>• 5 to 12 years: 1mg. Dose may be repeated x 1 after 5 minutes if still seizing. **Contact Receiving Hospital** for more than 2 doses. |

**Protocol**

- Synchronized Cardioversion
- Transcutaneous Pacing
- Seizure
- Tachyarrhythmia with poor perfusion
- Agitated/Combative Patient
- Poisoning/Overdose

# 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 gm (10 mL) vial of calcium chloride 10% solution contain 273 mg of elemental calcium, whereas 1 gm (10 mL) of 10% calcium gluconate contains 90 mg of elemental calcium. For this reason, larger doses of calcium gluconate are required.
- Doses below refer to dose of calcium solution, not elemental calcium.

### Indications

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

### Contraindications

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

### Side Effects/Notes

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

### Dosage and Administration

#### Calcium Gluconate 10% Solution

**Adult:**

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

## 9080 MEDICATIONS

**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 gm** 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
- Hyperkalemia
- Crush Injury/Suspension Syndrome

# 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:**

250 mL of a 10% solution (25 gm in 250 mL) IV/IO infusion
Alternative: 25 gm in solution IV/IO

**Pediatric:**

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

### Protocol

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

### Special Considerations

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

# 9100 MEDICATIONS

## *DIPHENHYDRAMINE (BENADRYL)*

**Description**

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

**Indications**

- Allergic reaction
- Treatment or prevention of dystonic medication reactions or akathisia

**Precautions**

- Asthma or COPD, thickens bronchial secretions
- Narrow-angle glaucoma
- Patients over 65 years old are at greater risks of serious side effects including confusion, urinary retention, and dizziness that could lead to fall risk. For these reasons, half dosing is recommended.
- Avoid diphenhydramine in suspected overdose

**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**

**Mild or moderate allergic reaction**
**Treatment or prevention of dystonic medication reactions or akathisia**
**Adults**:
25 mg IV/IO/IM. May repeat x1 after 5 minutes to a total of 50 mg.
For patients over 65 years old, administer maximum dose of 25 mg IV/IO/IM.
**Pediatrics:**
< 8 years: 1 mg/kg slow IV/IO/IM (not to exceed 25 mg). May repeat x1 after 5 minutes.
**Anaphylaxis**
**Adults**:
50 mg IV/IO/IM.
For patients over 65 years old, administer half-dose of 25 mg IV/IO/IM.
**Pediatrics:**
< 8 years: 1-2 mg/kg slow IV/IO/IM (not to exceed 50 mg)

**Protocol**

- Allergy/Anaphylaxis
- Butyrophenones

**9115 MEDICATIONS**

***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

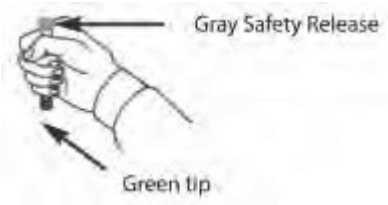
- Suspected nerve agent exposure accompanied with signs and symptoms of nerve agent poisoning

## Injection sites

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

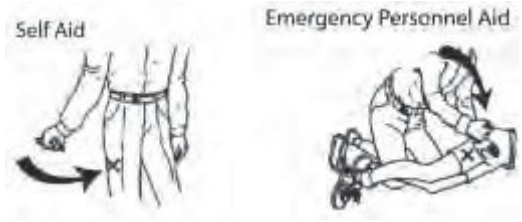
## Instructions

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

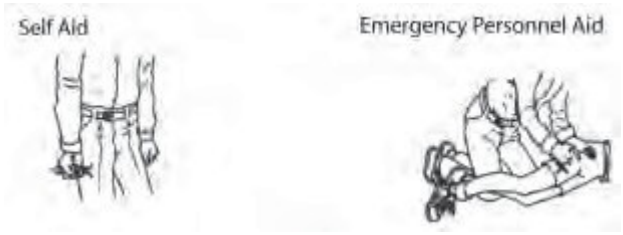



- With the other hand, pull off the gray safety release. The DuoDote™ auto-injector is now ready to be administered.

- 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.

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**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.

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**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
- Hypotension and poor perfusion refractory to fluids or other interventions

### 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:**
- Administer epinephrine by infusion or push dose**.**

**Asthma / Systemic Allergic Reaction:**
- 0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 1.
- If refractory, consider epinephrine infusion or push dose.

**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.

**Hypotension and poor perfusion refractory to 60 mL/kg of fluids and other interventions:**
- Administer epinephrine by infusion or push dose**.**

**Bradycardia:**
- 0.01 mg/kg (0.1 ml/kg of 1:10,000 solution) IV/IO
- If refractory, consider epinephrine infusion or push dose

# 9120 MEDICATIONS

**Asthma / Systemic Allergic Reaction**

- 0.01 mg/kg (0.01 ml/kg of 1:1,000 solution) IM. May repeat dose x 1.
- Alternative: 0.15 mg (0.15 mL of 1:1,000) for <25 kg and 0.3 mg (0.3 mL of 1:1,000) for ≥25 kg. May repeat dose x 1.
- If refractory, consider epinephrine infusion or push dose

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

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

**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**:
  - 0.01-1 mcg/kg/min
  - 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**: 0.01-1 mcg/kg/min

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

**Push dose**

- **Mixing Instructions:**
  1. Draw up 9 mL of normal saline into a 10 mL syringe. Then draw up 1 mL of 1:10,000 into the syringe. Gently agitate to mix.
  2. Makes a 1:100,000 concentration of epinephrine for 10 mcg/mL
- **Adult Dose**: 1-2 mL per minute (10-20 mcg/min), repeat as needed
- **Pediatric Dose**: Administer at rate below to desired effect, repeat as needed

| Push Dose Epinephrine Volume by Weight (Age) | | | |
|---|---|---|---|
| Weight (Age) | Volume | Dose | Max Total Volume |
| 2 kg (premature) | 0.2 mL/min | 2 mcg/min | 2 mL |
| 4 kg (newborn) | 0.4 mL/min | 4 mcg/min | 4 mL |
| 6 kg (4 months) | 0.6 mL/min | 6 mcg/min | 6 mL |
| 8 kg (6 months) | 0.8 mL/min | 8 mcg/min | 8 mL |
| 10 kg (1 year and older) | 1 mL/min | 10 mcg/min | 10 mL |

# 9120 MEDICATIONS

**Protocol**

- Universal Pulseless Arrest Algorithm
- Bradycardia with poor perfusion
- Neonatal Resuscitation
- Adult Wheezing
- Pediatric Wheezing
- Allergy and Anaphylaxis
- Overdose and Acute Poisoning

**Special Considerations**

- May increase myocardial oxygen demand and angina pectoris. Use with caution in patients with known or suspected CAD
- Intramuscular injection into the thigh is preferred route and site of administration. Intramuscular injection of epinephrine in the thigh results in higher concentrations of medication versus intramuscular or subcutaneous injection in the upper arm.

# 9130 MEDICATIONS

## *GLUCAGON*

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**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.

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**Onset & Duration**

- Onset: variable

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**Indications**

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

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**Side Effects**

- Tachycardia
- Headache
- Nausea and vomiting

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**Dosage and Administration**

**Adult:**

Hypoglycemia:

- 1 mg IM

Beta Blocker or calcium channel 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 or calcium channel blocker overdose with hypotension for age, signs of poor perfusion and bradycardia:

- 0.1 mg/kg IV

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**Protocol**

- Hypoglycemia
- Poisoning/Overdose

# 9150 MEDICATIONS

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

### Description

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

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

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

### Onset and Duration

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

### Indications

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

### Contraindications

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

**Adverse Reactions**

- Hypertension
- Allergic reaction/anaphylaxis

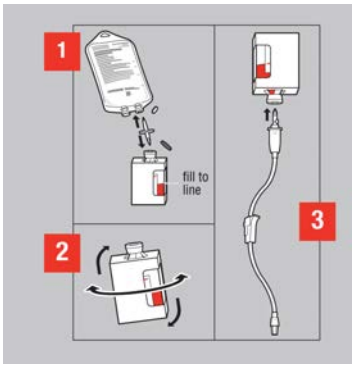
**Dosage and Administration**

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

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

## 9160 MEDICATIONS

- Adult infusion instructions:
    1. Draw one tiger top tube, if practical.
    2. Reconstitute: Place the 5 gm vial of hydroxocobalamin in an upright position. Add 200 mL of 0.9% sodium chloride injection* to the vial using the transfer spike. Fill to the line.
        * 0.9% sodium chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's solution and 5% dextrose injection have also been found to be compatible with hydroxocobalamin.
    3. Mix: The vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds prior to infusion.
    4. Infuse Vial: Use vented intravenous tubing, hang, and infuse desired dose over 15 minutes.




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

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**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.

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**Protocols**

- Carbon Monoxide Exposure
- Burns

# 9170 MEDICATIONS

## *IPRATROPIUM BROMIDE (ATROVENT)*

**Description**

Ipratropium is an anticholinergic bronchodilator chemically related to atropine.

**Onset & Duration**

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

**Indications**

- Bronchospasm

**Contraindications**

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

**Adverse Reactions**

- Palpitations
- Tremors
- Dry mouth

**How Supplied**

Premixed Container: 0.5 mg in 2.5ml NS

**Dosage and Administration**

**Adult:**

**Bronchospasm:**

- 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 noncompetitive N-methyl D-aspartate (NMDA) receptor antagonist that blocks glutamate. Subanesthetic doses produce analgesia that make it useful in acute and chronic pain management, and pain management in opioid-dependent patients. Onset of action is rapid and dependent upon the route of administration (IV: 30 seconds; IM/IN 10 minutes). Duration of action is 1-4 hours. Rapid administration is associated with respiratory depression. Doses higher than analgesic dosing are associated with amnesia and anesthesia.

**Onset & Duration**

- Onset: 1-5 minutes after administration.
- Duration: up to 60 minutes, however, effects may subside in as little as 10 to 15 minutes.

**Indications**

- Analgesia

**Precautions/Possible Side Effects**

- Use with caution in the following patients:
    a. Hemodynamically unstable patients
    b. Patients with history of schizophrenia
    c. Patients in the third trimester of pregnancy
- 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.
- Apnea/hypoventilation: Recent studies identify 1% incidence/occurrence of transient apnea/respiratory arrest. Respiratory compromise can occur rapidly.
- Emergence reaction: Presents as anxiety, agitation, apparent hallucinations, or nightmares as ketamine is wearing off. For minor emergence reactions, attempt to calm patient. For severe emergence reactions, consider benzodiazepine.
    a. Medication follow bimodal mechanism of action. Lower dosing allows for effective pain management. High dosing provides sedation and dissociation. Intermediate dosing often will result in significant emergence reactions requiring immediate interventions.
- 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.
- Cardiac effects: May cause release of endogenous epinephrine resulting in tachycardia.

**Dosage and Administration**

Adults and Pediatric patients 3 months and older:

**Analgesia indications only: Cumulative Maximum Dose for all administration routes = 1mg/kg/hour**

- Intravenous (IV) / Intraosseous (IO) Route:
  0.1 – 0.3 mg/kg IV/IO slow push over 2 minutes. Repeat PRN to cumulative maximum dose.
- Infusion Administration:
  Mix appropriate dose for patient in 50ml Normal Saline and administer over 10 to 15 minutes
- Intranasal (IN) Route:
  0.5 – 1 mg/kg IN. Repeat PRN to cumulative maximum dose.
- Intramuscular (IM) Route:
  0.5 mg/kg IM. Repeat PRN to cumulative maximum dose.

# 9175 MEDICATIONS

**In cases where ketamine is used for pain management in an austere environment:**

Constant patient engagement and pulse oximetry are minimal monitoring requirements if full patient care monitoring is not possible.

**Mandatory Monitoring/Equipment except as noted above:**

4 lead cardiac monitoring, unless 12 lead is indicated in the presence of arrhythmia or pre-existing cardiac condition, pulse oximetry and capnography. Suction, airway adjuncts and ventilatory support must be available and documented.

**Required CDPHE Documentation for reporting:**

- PCR documentation will include listing Ketamine in both intervention and the narrative sections.
- Patient weight is a required notation to determine correct dosing – see state requirement and additional training.
- Pain scale (1-10) before and after Ketamine administration.
- Vital signs must be obtained and documented prior to administration for pain management to include Pulse, Respiratory Rate and Quality, Blood Pressure, Pulse Oximetry and ETCO2.
- Specify airway set-up as stated above.

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**Special Note**

- All cases of ketamine administration will undergo mandatory review by agency medical director(s) and will be submitted to CDPHE in accordance with state rules and regulations.

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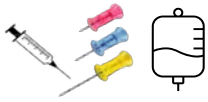
**Protocols**

- Pain management
- Benzodiazepine

# 9175 MEDICATIONS

| Ketamine<br>Pain Management Dosing | | | | | | |
|---|---|---|---|---|---|---|
| Administration Route → | |  | |  | |  |
| | | IV/IO Dose (mg) | | IN Dose (mg) | | IM Dose (mg) |
| | | 0.1 mg/kg | 0.3 mg/kg | 0.5 mg/kg | 1.0 mg/kg | 0.5 mg/kg |
| Patient Weight ↓ | | Cumulative Max Dose = 1mg/kg/hr | | Cumulative Max Dose = 1.5 mg/kg/hr | | Cumulative Max Dose = 1mg/kg/hr |
| Pounds | Kilograms | Infusion Dosing: With 50ml bag administer appropriate dose over 10 to 15 minutes or Slow IVP over 2 minutes | | | | |
| 10 | 4.5 | 0.45 | 1.3 | 2.25 | 4.5 | 2.25 |
| 20 | 9 | 0.9 | 2.7 | 4.5 | 9 | 4.5 |
| 30 | 13.6 | 1.36 | 4 | 6.8 | 13.6 | 6.8 |
| 40 | 18 | 1.8 | 5.4 | 9 | 18 | 9 |
| 50 | 22.6 | 2.26 | 6.78 | 11.3 | 22.6 | 11.3 |
| 60 | 27 | 2.7 | 8.1 | 13.5 | 27 | 13.5 |
| 70 | 31.75 | 3.175 | 9.52 | 15.8 | 31.75 | 15.8 |
| 80 | 36 | 3.6 | 10.8 | 18 | 36 | 18 |
| 90 | 40.8 | 4.08 | 12.24 | 20 | 40.8 | 20 |
| 100 | 45 | 4.5 | 14 | 23 | 45 | 23 |
| 110 | 50 | 5 | 15 | 25 | 50 | 25 |
| 120 | 55 | 5.5 | 16 | 28 | 55 | 28 |
| 130 | 59 | 5.9 | 18 | 29 | 55 | 29 |
| 140 | 64 | 6.4 | 19 | 32 | 64 | 32 |
| 150 | 68 | 6.8 | 20 | 34 | 68 | 34 |
| 160 | 73 | 7.3 | 22 | 36 | 73 | 36 |
| 170 | 77 | 7.7 | 23 | 38 | 77 | 38 |
| 180 | 82 | 8.2 | 25 | 41 | 82 | 41 |
| 190 | 86 | 8.6 | 26 | 43 | 86 | 43 |
| 200 | 91 | 9.1 | 27 | 45 | 91 | 45 |
| 210 | 95 | 9.5 | 29 | 47 | 95 | 47 |
| 220 | 100 | 10 | 30 | 50 | 100 | 50 |
| 230 | 105 | 10.5 | 31 | 53 | 105 | 53 |
| 240 | 109 | 10.9 | 33 | 55 | 109 | 55 |
| 250 | 114 | 11.4 | 34 | 57 | 114 | 57 |
| 260 | 118 | 11.8 | 35 | 59 | 118 | 59 |
| 270 | 123 | 12.3 | 37 | 61 | 123 | 61 |
| 280 | 127 | 12.7 | 38 | 63 | 127 | 63 |
| 290 | 132 | 13.2 | 40 | 66 | 132 | 66 |
| 300 | 136 | 13.6 | 41 | 68 | 136 | 68 |
| 310 | 141 | 14.1 | 42 | 70 | 141 | 70 |
| 320 | 145 | 14.5 | 44 | 72 | 145 | 72 |
| 330 | 150 | 15 | 45 | 75 | 150 | 75 |
| 340 | 155 | 15.5 | 46 | 78 | 155 | 78 |
| 350 | 159 | 15.9 | 48 | 79 | 159 | 79 |
| 360 | 164 | 16.4 | 49 | 82 | 164 | 82 |
| 370 | 168 | 16.8 | 50 | 84 | 168 | 84 |
| 380 | 173 | 17.3 | 52 | 86 | 173 | 86 |
| 390 | 177 | 17.7 | 53 | 88 | 177 | 88 |
| 400 | 182 | 18.2 | 55 | 91 | 182 | 91 |

# 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**

- Ongoing or resolved torsade de pointes associated with prolonged QT interval

**Respiratory**

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

**Obstetrics**

- Pre-eclampsia: Pregnancy ≥20 weeks gestational age or up to 6 weeks post-partum with one of the following criteria
  - Blood pressure >140/90 plus other symptoms (headache, dizziness, blurred vision, peripheral edema)
  - Blood pressure >160/100
- Eclampsia: Pregnancy ≥20 weeks gestational age or up to 6 weeks post-partum with active or recent seizure

**Precautions**

- Bradycardia
- Hypotension
- Respiratory depression

**Adverse Reactions**

- Bradycardia
- Hypotension
- Respiratory depression

**Dosage and Administration**

- **Ongoing or resolved Torsades de Pointes suspected caused by prolonged QT interval:**
  - Adult
    - 2 gm, IV bolus.
  - Pediatric
    - 50 mg/kg IV, maximum dose of 2 gm, over 15 minutes
- **Refractory Severe Bronchospasm:**
  - Adult
    - 2 gm, IV bolus, over 2 minutes.
  - Pediatric (2 yrs. And older)
    - 50 mg/kg IV, maximum dose of 2 gm, over 15 minutes
- **Pre-eclampsia:**
  - IV/IO – 5 gm IV over 20 minutes, then 2 gm/hour IV.
- **Eclampsia:**
  - IV/IO (preferred) – 2 gm IV slow push (1-2 minutes), then 3 grams over remaining 20 minutes, may repeat 2 gm slow push bolus for repeat seizures.
  - IM (if no IV/IO access) – 10 gm total split across multiple sites (5 mL per site).

**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 is a relative contraindication

### Adverse Reactions

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

- Gastrointestinal bleeding
- Hypertension
- Hyperglycemia

### Dosage and Administration

**Adult:**

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

**Pediatric:**

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

### Protocol

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

### Special Considerations

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

# 9210 MEDICATIONS

## *NALOXONE (NARCAN)*

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**Description**

Naloxone is a competitive opioid receptor antagonist

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**Onset & Duration**

Onset: Within 5 minutes
Duration: 1-4 hours

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**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.

# 9220 MEDICATIONS

## *NITROGLYCERIN (NITROSTAT, NITROQUICK)*

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**Description**

Short-acting peripheral venodilator decreasing cardiac preload and afterload

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**Onset & Duration**

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

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**Indications**

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

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**Contraindications**

- Suspected right ventricular ST-segment elevation MI (Inferior STEMI pattern plus ST elevation in right sided-precordial leads)
- Hypotension SBP < 100
- Recent use of erectile dysfunction (ED) medication, e.g., sildenafil (Viagra, Revatio), tadalafil (Cialis, Adcirca), vardenafil (Levitra, Staxyn), avanafil, (Stendra)

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**Adverse Reactions**

- Hypotension
- Headache
- Syncope

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**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:**
    - Optional protocol, may not be adopted by all medical directors
    - First administer single dose of 0.4 mg (1/150 gr) nitroglycerin sublingual
    - Then apply 1” nitroglycerin paste to application paper. Place the paper nitroglycerin paste toward the patient on the anterior chest wall.

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**Protocol**

- Chest Pain
- CHF/Pulmonary Edema

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

### Description

NSAIDs decrease pain and inflammation by several mechanisms. Their primary action is to inhibit the family of cyclooxygenase (COX) enzymes resulting in blockade of prostaglandin synthesis. COX inhibition also impacts renal blood flow and stomach acid secretion. NSAIDs may also inhibit chemotaxis, alter lymphocyte activity, decrease proinflammatory cytokine activity, and inhibit neutrophil aggregation; further contributing to anti-inflammatory activity.

### Onset & Duration

- Onset of analgesia: oral 30-60 minutes, IV within 5 minutes
- Peak effect: 1 hour
- Duration: 4 hours

### Indications

- Acute treatment of mild, moderate, or severe pain. Consider IV ketorolac for moderate to severe pain.
- Pain due to suspected kidney stones, acute exacerbations of chronic pain, musculoskeletal pain
- Fever ***(PO administration only)***

### Contraindications

- Allergy to NSAIDs including aspirin and naproxen (Naprosyn, Aleve)
- Pregnancy or breast feeding
- History of GI bleeding or active stomach ulcer
- History of chronic kidney disease or kidney transplant
- Anticoagulation/antiplatelet (patient taking blood thinners) or history of a blood clotting disorder
- In setting of multisystem trauma
- Acute head trauma or suspected intracranial bleed
- Ketorolac is contraindicated for ages less than 12-years-old and over 65-years-old
- Severe dehydration

### Adverse Reactions

- Allergic reactions: anaphylaxis, urticaria, angioedema, bronchospasm, rash, hypotension, etc.
- Nausea and vomiting
- GI bleeding with chronic use
- Acute kidney injury

### Drug Interactions

- Avoid concomitant administration with other NSAIDS or anticoagulant/antiplatelet medications such as apixaban (Eliquis), aspirin, dabigatran (Pradaxa), enoxaparin (Lovenox), heparin, rivaroxaban (Xarelto), warfarin (Coumadin).

### Dosage and Administration

**Ibuprofen**

**Adult:**
600 mg PO

**Pediatric:**
10 mg/kg PO – ***SEE CHART***

**Ketorolac**

**Adult (<65 years-old):**
15mg IV or IM

**Pediatric**
Not indicated

**Ibuprofen PO Dosing Chart**

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

### Protocol

- Pain management

# 9230 MEDICATIONS

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

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**General Description**

Opioid agonists that bind to opioid receptors in the nervous system for desired effect of analgesia and sedation.

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**General Indications**

- Treatment of hemodynamically stable patients with moderate to severe pain due to traumatic or medical conditions, including cardiac conditions, acute abdominal pain, back pain, etc.

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**General Contraindications**

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

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**General Side Effects**

- Respiratory depression and apnea
- Hypotension (with exception of fentanyl)
- Sedation
- Nausea and vomiting

---

**General Caution/Comments:**

- Except for 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.**
- When opioids are administered to a pregnant patient in active labor or breastfeeding mother it can lead to central nervous system depression, including respiratory depression, in the newborn or the breastfed infant. In these circumstances opioids should only be administered after informed consent is received from the mother and limited to a single dose.
- Place patients on oxygen for saturations less than 90%.
- Use of sedation as a pain management adjunct is described in the procedures protocol.
- IV route is preferred for all opioid administration because of more accurate titration and maximal clinical effect.
    - 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.
    - Both fentanyl and morphine can be nebulized. Dilute dose with 5 ml saline or sterile water.
- 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.

---

**Dosage and Administration**

### FENTANYL

- **Specific Description**
    - A synthetic opioid, fentanyl is 100 times more potent than morphine, and is less likely to cause histamine release or hypotension.

- **Specific Onset & Duration**
  - Intravenous onset of action is almost immediate with maximal analgesic effect noted after several minutes. Duration of action of the analgesic effect is 30 to 60 minutes after a single intravenous dose of up to 100 mcg
  - Intramuscular administration onset of action is from 7 to 8 minutes and duration of action is 1 to 2 hours.
- **Specific Indications**
  - May be administered with caution in patients who are hemodynamically unstable/shock with moderate to severe pain.
- **Specific Side Effects/Caution**
  - Chest wall rigidity has been reported with rapid administration of fentanyl.
- **Specific Administration Considerations**
  - 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***
- **Dosage and Administration**

| **Moderate to Severe Pain** | |
|---|---|
| **Adult** | |
| **IV/IO/IN/IM/ Nebulized route:** | 0.5-4 mcg/kg<br>• Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 4 mcg/kg for transporting agency.<br>• Additional dosing requires contact with receiving hospital<br>• If using nebulizer as route, dilute with 5 ml sterile saline/water<br>• For IN administration limit fluid amount to 1 mL per nare, per dose |
| **Pediatric (1-12 years)** | |
| **IV/IO/IN/IM/ Nebulized route:** | 1-2 mcg/kg<br>• Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose of 3 mcg/kg for transporting agency.<br>• If using nebulizer as route, dilute with 5 ml sterile saline/water<br>• Additional dosing requires contact with receiving hospital<br>• For IN administration limit fluid amount to 1 mL per nare, per dose |
| **Pediatric (<1 years): Contact Receiving Hospital** | |

## MORPHINE

- **Specific Description**
  - Morphine is the principal narcotic alkaloid of opium.
- **Specific Onset & Duration**
  - Intravenous administration – Peak analgesia usually within 20 minutes with duration of analgesia for approximately 3 to 6 hours.
  - Intramuscular administration – Peak analgesia usually within 30 to 60 minutes with the duration of analgesia for approximately 3 to 6 hours.
- **Specific Contraindications**
  - Hypotension, hemodynamic instability, or shock.
- **Specific Side Effects/Caution**
  - Bradycardia
  - Induction of histamine release causing peripheral vasodilation/hypotension
  - Nausea/vomiting

# 9230 MEDICATIONS

## Dosage and Administration

| Moderate to Severe Pain | |
|---|---|
| **Adult** | |
| **IV/IO/IM/ Nebulized route:** | 2-5 mg.<br>• Peripheral pain - Initial dose should be 5 mg IV/IM/IO. Repeat until pain is manageable or until systolic BP 90 mmHg.<br>• If using nebulizer as route, dilute with 5 ml sterile saline/water |
| **Pediatric (1-12 years)** | |
| **IV/IO/IM/ Nebulized route:** | 0.1 mg/kg. Maximum single dose is 5 mg<br>• 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.<br>• If using nebulizer as route, dilute with 5 ml sterile saline/water<br>• Additional cumulative dosing requires contact with receiving hospital. |
| **Pediatric (<1 years): Contact Receiving Hospital** | |
| **ACS Chest Pain** | |
| **Adult** | |
| **IV route:** | 2 to 5 mg IV, may repeat if needed or systolic BP 90 mmHg. |

## HYDROMORPHONE (DILAUDID)

- **Specific Description**
  - Hydromorphone is a semi-synthetic opioid agonist. It has higher lipid solubility than morphine giving it the ability to cross the blood-brain barrier faster for more rapid affects. It is 5 times more potent than morphine.
- **Specific Onset & Duration**
  - Intravenous administration – Analgesia usually within 15 minutes.
- **Specific Contraindications**
  - Hypotension, hemodynamic instability, or shock.
- **Specific Side Effects/Caution**
  - Bradycardia
  - Induction of histamine release causing peripheral vasodilation/hypotension
  - Nausea/vomiting
- **Dosage and Administration**

| Moderate to Severe Pain | |
|---|---|
| **Adult** | |
| **IV/IO/IM route:** | 0.5 mg<br>• Dose may be repeated after 10 minutes and titrated to clinical effect up to maximum cumulative dose of 1.5 mg for transporting agency.<br>• Additional cumulative dosing requires contact with receiving hospital. |
| **Pediatric: Not indicated for pediatric patients** | |

**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**

Newly born: 2 mL
Pediatric: 0.3 g/kg (max 15 g or one tube)
Adult: 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

- Suspected hyperkalemic pulseless arrest: consider in patients with known renal failure/dialysis.
- Sodium channel blocker overdose (e.g., TCA, diphenhydramine) with arrhythmias, widened QRS complex or hypotension.
- Known or suspected hyperkalemia with ECG changes
- Severe agitation that develops wide QRS >120 ms
- Crush injury/suspension syndrome

### Contraindications

- Metabolic and respiratory alkalosis
- Hypocalcemia
- Hypokalemia

### Adverse Reactions

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

### Drug Interactions

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

### Dosage and Administration: 8.4% Sodium Bicarbonate Solution

**Adults and children (> 10 kg):**

- **Pulseless arrest suspected due to hyperkalemia (typically in patient with dialysis, end-stage renal disease)**
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes.
- **Sodium channel blocker overdose with wide QRS >120 ms or ventricular arrhythmia**
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes or until QRS is narrowed.
- **Known or suspected hyperkalemia with ECG changes**
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes or until QRS is narrowed.
- **Severe agitation that develops wide QRS >120 ms**
  - 1 mEq/kg slow IV/IO push. Repeat if needed x 2 every 5 minutes or until QRS is narrowed.
- **Crush injury/suspension syndrome**
  - 1 mEq/kg slow IV/IO push (immediately prior to release). Repeat if needed x 2 every 5 minutes

### Protocol

- Universal Pulseless Arrest
- Poisoning/Overdose
- Hyperkalemia
- Crush Injury/Suspension Syndrome

### Special Considerations

- Sodium bicarbonate administration increases $CO_2$ which rapidly enters cells, causing a paradoxical intracellular acidosis.
- Sodium bicarbonate is not 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 sodium channel blocker/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

## 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

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# 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

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# 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

# 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)*

Page: of

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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 E: 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 Interfacility Transport

An EMS provider may decline an interfacility transport any patient that they deem to require a level of care beyond their capabilities. “The transporting EMS provider may decline to transport any patient he or she believes requires a level of care beyond his or her capabilities.” (Code of Colorado Regulations, 6 CCR 1015-3, Chapter 2, Section 16.2)

### 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.

## Appendix E: Interfacility Transport

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). The following list is addition to what is within scope listed in Quick Reference for Procedures and Medications Allowed by Protocol.

| 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 |
| 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 |
| Use of mechanical infusion pumps | | | | S | S | S |
| Chest tube maintenance | | | | | S | S |
| Automated transport ventilator (manipulate only tidal volume, respiratory rate, fraction of inspired oxygen, and positive end expiratory pressure) | | | | | S | S |
| Manual transport ventilator (manipulate all settings) | | | | | | S |
| Blood chemistry interpretation | | | | | | S |
| Transvenous pacing – Monitoring and maintenance | | | | | | S |

| Interfacility Transport – Facility Initiated Medications | EMT | EIV | AEMT | I | PM | P-CC |
|---|---|---|---|---|---|---|
| Acetylcysteine (Mucomyst) | | | | | | S |
| Amiodarone – Infusion | | | | P | P | S |
| Antibiotic and antivirals | | | | P | P | S |
| Bivalirudin (Angiomax) | | | | | | S |
| Blood component infusions | | | | | P | S |
| • Monitoring and maintenance of facility initiated | | | | | P | S |
| • Initiate facility supplied | | | | | P | S |
| • Initiate blood products | | | | | | S |
| Colloids (non-blood component) infusions | | | | P | P | S |
| Crystalloid infusions | | P | P | P | P | S |
| Diltiazem (Cardizem) | | | | | P | S |
| Dobutamine | | | | | | S |
| Dopamine | | | | | S | S |
| Epinephrine – Continuous infusion | | | | | S | S |
| Esmolol (Brevibloc) | | | | | | S |
| Etomidate (Amidate) | | | | | | S |
| Fosphenytoin (Cerebyx) | | | | | | S |
| Glycoprotein Inhibitors | | | | | P | S |
| Heparin – Infusion | | | | | P | S |
| Insulin – Infusion | | | | | P | S |
| Labetalol (Normodyne) | | | | | | S |

## Appendix E: Interfacility Transport

| Interfacility Transport – Facility Initiated Medications | EMT | EIV | AEMT | I | PM | P-CC |
|---|---|---|---|---|---|---|
| Levetiracetam (Keppra) | | | | | | S |
| Lidocaine – Infusion | | | | | P | S |
| Magnesium Sulfate | | | | | | |
| • Electrolyte infusion | | | | | P | S |
| • Pre-eclampsia/eclampsia/tocolysis | | | | | P | S |
| Mannitol | | | | | P | S |
| Methylprednisolone (Solu-Medrol) | | | | | P | S |
| Metoprolol (Lopressor) | | | | | | S |
| Nicardipine (Cardene) | | | | | P | S |
| Nitroglycerin, intravenous | | | | | P | S |
| Norepinephrine (Levophed) | | | | | S | S |
| Octreotide (Sandostatin) | | | | | P | S |
| Oxytocin (Pitocin) - Infusion | | | | | P | S |
| Pantoprazole (Protonix) | | | | | P | S |
| Phenytoin (Dilantin) | | | | | | S |
| Potassium chloride – Infusion | | | | | P | S |
| Propofol (Diprivan) | | | | | | S |
| Rocuronium (Zemuron) | | | | | | S |
| Sodium bicarbonate – Antidote infusion | | | | | P | S |
| Succinylcholine (Anectine) | | | | | | S |
| Total parenteral nutrition (TPN) and/or vitamins | | | | P | P | S |
| Thrombolytics/tPA Infusion | | | | | | S |
| • Monitoring and maintenance | | | | | P | S |
| • Initiate infusion | | | | | | S |
| Tranexamic acid (TXA) | | | | | W | S |
| Vecuronium (Norcuron) | | | | | | S |

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Scope

A. The following protocols apply only to Boulder County Hazardous Materials Team personnel trained as HAZMAT Tox-Medics.

### Actions on Routes of Exposure

A. Obtain specific information
    1. Identify exact substance if possible. Do not compromise responder safety
    2. Identify route(s) of exposure
    3. Effects of exposure can be seen at both a localized and/or systemic level
B. Specific Route of Exposure
    1. Inhalation:
        a. Remove patient from exposure
        b. Decontaminate skin if needed
        c. ABCs
        d. 100% $O_2$ for CO exposure, hypoxemia SpO2<90%, cyanosis, signs and symptoms of CNS or cardiopulmonary compromise
        e. If respiratory compromise or airway swelling, secure an airway (orotracheal intubation or supraglottic airways)
        f. IV/monitor
        g. Pain management as needed
    2. Ingestion:
        a. ABCs, IV, monitor, $O_2$ as needed
        b. Pain management if needed
    3. Injection:
        a. Decontaminate skin in the field
        b. ABCs
        c. IV/$O_2$/Monitor as indicated
        d. Pain management if needed
    4. Absorption through skin or eyes:
        a. Decontaminate the patient:
            i. Skin: remove clothing, blot any adherent liquid, remove solids, wash effected areas with water and mild soap and water
        b. Eyes: rinse eye(s) for at least 20 minutes
        c. ABCs
        d. IV/$O_2$/Monitor as indicated
        e. Skin: treat chemical burns as indicated
            i. If local and/or systemic exposure to hydrofluoric acid treat with calcium gluconate
        f. Eyes: treat pain with tetracaine as indicated
        g. Pain management if needed
C. Chemical exposure with specific antidotes:
    1. Organophosphates, carbamates, nerve agents:
        a. Atropine
        b. Pralidoxime chloride (2-Pam)
        c. DuoDote®: Auto-injector contains atropine and pralidoxime chloride injection 2.1 mg / 600 mg Injection (0.7 ml / 2 ml)

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

2. Cyanide
    a. Hydroxocobalamin (Cyanokit®)
3. Hydrofluoric acid/fluoride poisoning (local and systemic)
    a. Calcium gluconate or calcium chloride IV/IO for systemic exposure
    b. Calcium gluconate gel for local exposure

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Carbon Monoxide Poisoning

A. Purpose: Guidance to Boulder County Hazardous Materials Team HAZMAT Tox-Medic personnel on how to manage incidents where carbon monoxide poisoning is suspected.

B. Procedure:

1. Primary survey and resuscitation:
    a. Airway - Ensure open airway
    b. Breathing - Ventilate with 100% $FiO_2$
        i. BEWARE that $SPO_2$ may have false readings in CO poisoning patients.
        ii. If able to monitor carboxyhemoglobin (COHb)
            (a) 0-5% is reassuring
            (b) 5-15% is potentially dangerous especially in patients with other comorbidities or injuries
            (c) >15% has high risk of complications.
    c. Circulation - Place on monitor and watch for dysrhythmias
    d. Disability - Prepare for possible seizure activity, treat with a benzodiazepine if necessary
    e. Exposure- Remove the patient from the contaminated environment
2. Treatment Paradigm
    a. Administer antidote - 100% $FiO_2$ oxygen
        i. Consider transport to hyperbaric oxygen capable facility if COHb level exceeds 25% or 20% in pregnant patients.
    b. Basics - Continue to reassess ABCs.
    c. Change Catabolism - Not applicable.
    d. Distribute Differently - 100% oxygen displaces carbon monoxide from its binding sites on hemoglobin and cytochrome c-oxidase.
    e. Enhance Elimination **-** Elimination is enhanced through the use of 100% oxygen, consider CPAP.

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Hydrofluoric Acid

A. Purpose: Guidance to Boulder County Hazardous Materials Team HAZMAT Tox-Medic personnel on how to manage incidents where hydrofluoric acid (HF) exposure is suspected.
B. Guideline:
    1. Primary survey and resuscitation:
        a. Airway- Ensure open airway as the irritant action of hydrofluoric acid can restrict the upper airway
        b. Breathing- Ventilate with 100% $FiO_2$, may administer albuterol for wheezing per protocol
        c. Circulation- Place on monitor and watch for dysrhythmias from hypocalcemia
        d. Disability- Prepare for seizure activity, treat with a benzodiazepine if necessary
        e. Exposure- Removed clothes and decontaminate with copious water. Chemical burn blisters should be broken as opposed to thermal burn blisters. Topical calcium gluconate liquid or gel can be applied to skin after decontamination with water
C. Procedure:
    1. Administer antidote:
        a. Calcium gluconate:
            i. Topical for localized symptoms:
                (a) 2.5% commercial gel or 10% liquid can be placed in a glove for finger/hand exposures. Topical gel can be placed over exposed areas elsewhere.
            ii. IV/IO for systemic symptoms:
                (a) Adult: 30ml of 10% calcium gluconate slow push
                (b) Pediatric: 0.6ml/kg of 10% calcium gluconate up to 30 ml slow push
        b. Calcium chloride:
            i. IV for systemic symptom:
                (a) Do not give IO. Infiltration/extravasation of IV calcium chloride can cause severe tissue necrosis
                (b) Adult: 10ml of 10% calcium chloride slow push
                (c) Pediatric: 0.2ml/kg of 10% calcium chloride up to 10 ml slow push
    2. Basics- Continue to reassess ABCs
    3. Change Catabolism- N/A
    4. Distribute Differently- Calcium as discussed above
    5. Enhance Elimination- N/A

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Hydrogen Cyanide and Cyanogen Poisoning

A. Purpose: Guidance to Boulder County Hazardous Materials Team HAZMAT Tox-Medic personnel on how to manage incidents where hydrogen cyanite or cyanogen poisoning is suspected.

B. Guideline:
   1. Primary survey and resuscitation:
      a. Airway- Ensure open airway as the irritant action of hydrogen cyanide can restrict the upper airway
      b. Breathing- Ventilate with 100% $FiO_2$
      c. Circulation- Place on monitor and watch for dysrhythmias
      d. Disability- Prepare for seizure activity, treat with a benzodiazepine if necessary
      e. Exposure- Cyanogen compounds are not water soluble, decon with soap and water.

C. Procedure:
   1. Administer antidote- Hydroxocobalamin
   2. Basics- Continue to reassess ABCs
   3. Change Catabolism- Not applicable
   4. Distribute Differently- The distribution of cyanide is changed by the administration of hydroxocobalamin
   5. Enhance Elimination- Not applicable

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Organophosphate and Nerve Agent Poisoning

A. Purpose: This Standard Operating Procedure provides guidance to Boulder County Hazardous Materials Team HAZMAT Tox-Medic personnel on how to manage incidents where organophosphate or nerve agent poisoning is suspected.

B. Guideline:

1. Primary survey and resuscitation:
    a. Airway- Continual suctioning of the airway may be needed because of sialorrhea and/or bronchorrhea.
    b. Breathing- Ventilate with 100% FiO2
    c. Circulation- Place on monitor and watch for hemodynamically unstable bradycardias
    d. Disability- Prepare for seizure activity, treat first with a benzodiazepine, if seizures are refractory they may respond to atropine and pralidoxime (2-PAM).
    e. Exposure- Remove clothing and decon the patient with mild soap and water. If soap is not immediately available, do not delay decontamination with water.
2. Treatment Paradigm
    a. Atropine**:**
        i. Adult: 2 mg IV/IO given every 5 minutes until bronchorrhea, bronchospasm, and bradycardia symptoms resolve.
        ii. Pediatric: 0.01-0.04 mg/kg given every 5 minutes until bronchorrhea, bronchospasm, and bradycardia symptoms resolve
    b. Pralidoxime (2-PAM):
        i. Adult: 1-2 gm given IV/IO over 15-30 minutes, rapid IV push can cause laryngospasm or muscle rigidity. Alternate dose IM is 600 mg and may be repeated every 15 minutes for mild/moderate symptoms to maximum dose of 1800 mg. Patients with severe symptoms can receive the full 1800 mg in rapid succession.
        ii. Pediatric: 50 mg/kg up to 2g IV/IO given over 15-30 minutes. Alternate dose IM is 50 mg/kg up to 1800 mg and may be repeated every 15 minutes for mild/moderate symptoms to max dose of 1800 mg. Patients with severe symptoms can receive the full pediatric dose in rapid succession.
    c. DuoDote®: Autoinjector contains atropine 2.1 mg (0.7 mL) and pralidoxime chloride 600 mg (2 mL)
3. Basics- Continue to reassess ABCs
4. Change Catabolism- Not applicable
5. Distribute Differently- Not applicable
6. Enhance Elimination- Not applicable

## Appendix F: Boulder County Hazardous Materials Team Treatment Protocols

### Simple Asphyxiant and Irritant Gas Poisoning

A. Purpose: Guidance to Boulder County Hazardous Materials Team HAZMAT Tox-Medic personnel on how to manage incidents where hydro simple asphyxiant poisoning or irritant gas poisoning is suspected.

B. General
   1. Simple asphyxiant gasses cause illness and injury by displacing oxygen from the atmosphere and present with symptoms ranging from mild dyspnea and hypoxia to severe hypoxia/unresponsiveness.
   2. Irritant gasses cause irritation, inflammation, and/or increased secretions in the upper, middle, and/or lower airways depending on the characteristics of the substance. Intoxication presents as respiratory distress, coughing, increased secretions, burning of airway, hypoxia, wheezing, airway compromise, or respiratory failure.

C. Primary survey and resuscitation:
   1. Airway- Ensure open airway
   2. Breathing- Ventilate with 100% FiO2, consider CPAP, consider nebulized albuterol for wheezing/bronchospasm
   3. Circulation- Place on monitor and watch for dysrhythmias
   4. Disability- Continually reassess patient's neurological status
   5. Exposure- Ensure the patient's clothing has been removed due to irritant nature of some of these compounds

D. Treatment Paradigm
   1. Administer antidote- 100% oxygen, consider nebulilzed albuterol for wheezing/ bronchospasm with irritant gasses
   2. Basics- Continue to reassess ABCs
   3. Change Catabolism- Not applicable
   4. Distribute Differently- Not applicable
   5. Enhance Elimination- Enhance elimination through 100% oxygen