

# **NWRETAC COMBINED MEDICAL GUIDELINES**

**Version 18.1**

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The above medical directors would like to express their thanks to the Denver Metro EMS Medical Directors who pioneered in Colorado the algorithm format used in these guidelines and from whom much of this material was obtained.

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## **MEDICAL SKILLS AND ACTS ALLOWED**

**TABLE A.1 - AIRWAY/VENTILATION/OXYGEN**

<b>Skill</b>	<b>EMR</b>	<b>EM T</b>	<b>EMT-IV</b>	<b>AEMT</b>	<b>EMT-I</b>	<b>P</b>
Airway - Supraglottic	N	Y	Y	Y	Y	Y
Airway - Nasal	N	Y	Y	Y	Y	Y
Airway - Oral	Y	Y	Y	Y	Y	Y
Bag - Valve - Mask (BVM)	Y	Y	Y	Y	Y	Y
Carbon Monoxide Monitoring	Y	Y	Y	Y	Y	Y
Chest Decompression - Needle	N	N	N	N	Y	Y
Chest Tube Insertion	N	N	N	N	N	N
CPAP	N	Y	Y	Y	Y	Y
PEEP	N	Y	Y	Y	Y	Y
Cricoid Pressure - Sellick's Maneuver	N	Y	Y	Y	Y	Y
Cricothyroidotomy - Needle	N	N	N	N	N	Y
Cricothyroidotomy - Surgical	N	N	N	N	N	Y
End Tidal CO <sub>2</sub> Monitoring/Capnometry/ Capnography	N	Y	Y	Y	Y	Y
Flow Restrictive Oxygen Powered Ventilatory Device	N	Y	Y	Y	Y	Y
Gastric Decompression - NG/OG Tube Insertion	N	N	N	N	N	Y
Inspiratory Impedence Threshold Device	N	Y	Y	Y	Y	Y
Intubation - Digital	N	N	N	N	N	Y
Intubation - Bougie Style Introducer	N	N	N	N	Y	Y
Intubation - Lighted Stylet	N	N	N	N	Y	Y
Intubation - Medication Assisted (non-paralytic)	N	N	N	N	N	N
Intubation - Medication Assisted (paralytics) (RSI)	N	N	N	N	N	N
Intubation - Maintenance with paralytics	N	N	N	N	N	N
Intubation - Nasotracheal	N	N	N	N	N	Y
Intubation - Orotracheal	N	N	N	N	Y	Y
Intubation - Retrograde	N	N	N	N	N	N
Extubation	N	N	N	N	Y	Y
Obstruction - Direct Laryngoscopy	N	N	N	N	Y	Y
Oxygen Therapy – Humidifiers	Y	Y	Y	Y	Y	Y
Oxygen Therapy - Nasal Cannula	Y	Y	Y	Y	Y	Y
Oxygen Therapy - Non-rebreather Mask	Y	Y	Y	Y	Y	Y
Oxygen Therapy - Simple Face Mask	Y	Y	Y	Y	Y	Y
Oxygen Therapy - Venturi Mask	N	Y	Y	Y	Y	Y
Peak Expiratory Flow Testing	N	N	N	N	Y	Y
Pulse Oximetry	Y	Y	Y	Y	Y	Y
Suctioning – Tracheobronchial	Y	N	N	Y	Y	Y
Suctioning - Upper Airway	N	Y	Y	Y	Y	Y
Tracheostomy Maintenance - Airway management only	N	Y	Y	Y	Y	Y
Tracheostomy Maintenance - Includes replacement	N	N	N	N	N	Y
Ventilators - Automated Transport (ATV) <sup>1</sup>	N	N	N	N	N	Y

**TABLE A.2 - CARDIOVASCULAR/CIRCULATORY SUPPORT**

<b>Skill</b>	<b>EMR</b>	<b>EM T</b>	<b>EMT-IV</b>	<b>AEMT</b>	<b>EMT-I</b>	<b>P</b>
Cardiac Monitoring - Application of electrodes and data transmission	N	Y	Y	Y	Y	Y
Cardiac Monitoring - Rhythm and diagnostic EKG interpretation	N	N	N	N	Y	Y
Cardiopulmonary Resuscitation (CPR)	Y	Y	Y	Y	Y	Y
Cardioversion - Electrical	N	N	N	N	N	Y
Carotid Massage	N	N	N	N	N	Y
Defibrillation - Automated/Semi-Automated (AED)	Y	Y	Y	Y	Y	Y

Defibrillation - Manual	N	N	N	N	Y	Y
External Pelvic Compression	Y	Y	Y	Y	Y	Y
Hemorrhage Control - Direct Pressure	Y	Y	Y	Y	Y	Y
Hemorrhage Control - Pressure Point	Y	Y	Y	Y	Y	Y
Hemorrhage Control - Tourniquet	Y	Y	Y	Y	Y	Y
Implantable cardioverter/defibrillator magnet use	N	N	N	N	N	N
Mechanical CPR Device	N	Y	Y	Y	Y	Y
Transcutaneous Pacing	N	N	N	N	Y	Y
Transvenous Pacing - Maintenance	N	N	N	N	N	N
Therapeutic Induced Hypothermia (TIH) <sup>2</sup>	N	N	N	N	VO	Y
Central Venous Catheter Insertion	N	N	N	N	N	N
Central Venous Catheter Maintenance/Patency/Use	N	N	N	N	Y	Y
Percutaneous Pericardiocentesis	N	N	N	N	N	N

**TABLE A.3 - IMMOBILIZATION**

Skill	EMR	EM T	EMT-IV	AEMT	EMT-I	P
Spinal Immobilization - Cervical Collar	Y	Y	Y	Y	Y	Y
Spinal Immobilization - Long Board	Y	Y	Y	Y	Y	Y
Spinal Immobilization - Manual Stabilization	Y	Y	Y	Y	Y	Y
Spinal Immobilization - Seated Patient	Y	Y	Y	Y	Y	Y
Splinting - Manual	Y	Y	Y	Y	Y	Y
Splinting - Rigid	Y	Y	Y	Y	Y	Y
Splinting - Soft	Y	Y	Y	Y	Y	Y
Splinting - Traction	Y	Y	Y	Y	Y	Y
Splinting - Vacuum	Y	Y	Y	Y	Y	Y

**TABLE A.4 - INTRAVENOUS CANNULATION / FLUID ADMINISTRATION / FLUID MAINTENANCE**

Skill	EMR	EM T	EMT-IV	AEMT	EMT-I	P
Blood/Blood By-Products Initiation (out of facility initiation)	N	N	N	N	N	N
Colloids - (Albumin, Dextran) - Initiation	N	N	N	N	N	N
Crystalloids (D5W, LR, NS) - Initiation/Maintenance	N	N	Y	Y	Y	Y
Intraosseous - Initiation	N	N	N	Y	Y	Y
Intraosseous Initiation – In Extremis	N	N	Y	Y	Y	Y
Medicated IV Fluids Maintenance - As Authorized in Appendix B	N	N	N	N	Y	Y
Peripheral - Excluding External Jugular - Initiation	N	N	Y	Y	Y	Y
Peripheral - Including External Jugular - Initiation	N	N	N	Y	Y	Y
Use of Peripheral indwelling Catheter for IV medications (Does not include PICC)	N	N	Y	Y	Y	Y

**TABLE A.5 - MEDICATION ADMINISTRATION ROUTES**

Skill	EMR	EM T	EMT-IV	AEMT	EMT-I	P
Aerosolized	Y	Y	Y	Y	Y	Y
Atomized	Y	Y	Y	Y	Y	Y
Auto-Injector	Y	Y	Y	Y	Y	Y
Buccal	Y	Y	Y	Y	Y	Y
Endotracheal Tube (ET)	N	N	N	N	Y	Y
Extra-abdominal umbilical vein	N	N	N	N	Y	Y
Intradermal	N	N	N	N	Y	Y
Intramuscular (IM)	N	Y	Y	Y	Y	Y
Intranasal (IN)	Y	Y	Y	Y	Y	Y
Intraosseous	N	N	Y	Y	Y	Y
Intravenous (IV) Piggyback	N	N	N	N	Y	Y

Intravenous (IV) Push	N	N	Y	Y	Y	Y
Nasogastric	N	N	N	N	N	Y
Nebulized	N	Y	Y	Y	Y	Y
Ophthalmic	N	N	N	N	Y	Y
Oral	Y	Y	Y	Y	Y	Y
Rectal	N	N	N	N	Y	Y
Subcutaneous	N	N	N	Y	Y	Y
Sublingual	N	Y	Y	Y	Y	Y
Sublingual (nitroglycerin)	Y	Y	Y	Y	Y	Y
Topical	N	Y	Y	Y	Y	Y
Use of Mechanical Infusion Pumps	N	N	N	N	Y	Y

**TABLE A.6 - MISCELLANEOUS**

Skill	EMR	EM T	EMT- IV	AEMT	EMT-I	P
Assisted Delivery	Y	Y	Y	Y	Y	Y
Capillary Blood Sampling	Y	Y	Y	Y	Y	Y
Diagnostic Interpretation - Blood Glucose <sup>3</sup>	Y	Y	Y	Y	Y	Y
Diagnostic Interpretation - Blood Lactate <sup>3</sup>	N	N	N	Y	Y	Y
Dressing/Bandaging	Y	Y	Y	Y	Y	Y
Esophageal Temperature Probe for TIH	N	N	N	N	VO	Y
Eye Irrigation Noninvasive	Y	Y	Y	Y	Y	Y
Eye Irrigation Morgan Lens	N	N	N	N	Y	Y
Maintenance of Intracranial Monitoring Lines	N	N	N	N	N	N
Physical examination	Y	Y	Y	Y	Y	Y
Restraints - Verbal	Y	Y	Y	Y	Y	Y
Restraints - Physical	Y	Y	Y	Y	Y	Y
Restraints - Chemical	N	N	N	N	Y	Y
Urinary Catheterization - Initiation	N	N	N	N	N	Y
Urinary Catheterization - Maintenance	N	Y	Y	Y	Y	Y
Venous Blood Sampling - Obtaining	N	N	Y	Y	Y	Y

## **FORMULARY OF MEDICATIONS ALLOWED**

**TABLE B.1 - GENERAL**

Medications	EMR	EMT	EMT- IV	AEMT	EMT- I	P
Over-the-counter-medications	Y	Y	Y	Y	Y	Y
Oxygen	Y	Y	Y	Y	Y	Y
Specialized prescription medications to address acute crisis <sup>1</sup>	N	VO	VO	VO	VO	VO

**TABLE B.2 – ANTIDOTES**

Medications	EMR	EMT	EMT- IV	AEMT	EMT-I	P
Atropine	N	N	N	N	VO	Y
Cyanide antidote	N	N	N	N	Y	Y
Naloxone	Y	Y	Y	Y	Y	Y
Nerve agent antidote	N	Y	Y	Y	Y	Y
Sodium bicarbonate	N	N	N	N	N	Y

**TABLE B.3 - BEHAVIORAL MANAGEMENT**

Medications	EMR	EMT	EMT- IV	AEMT	EMT-I	P
Anti-Psychotic - Haloperidol	N	N	N	N	VO	Y
Benzodiazepine - Midazolam	N	N	N	N	VO	Y

Diphenhydramine	N	N	N	N	VO	Y
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**TABLE B.4 - CARDIOVASCULAR**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
Adenosine	N	N	N	N	VO	Y
Amiodarone –bolus infusion only	N	N	N	N	VO	Y
Aspirin	Y	Y	Y	Y	Y	Y
Atropine	N	N	N	N	VO	Y
Dopamine	N	N	N	N	N	Y
Epinephrine	N	N	N	N	VO	Y
Lidocaine –bolus and continuous infusion	N	N	N	N	VO	Y
Magnesium sulfate - bolus infusion only	N	N	N	N	N	Y
Morphine sulfate	N	N	N	N	VO	Y
Nitroglycerin - sublingual (patient assisted)	VO	VO	VO	Y	Y	Y
Nitroglycerin - sublingual (tablet or spray)	N	N	N	Y	Y	Y
Sodium bicarbonate	N	N	N	N	VO	Y

**TABLE B.5 - ENDOCRINE AND METABOLISM**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
IV Dextrose	N	N	Y	Y	Y	Y
Glucagon	N	N	N	Y	Y	Y
Oral glucose	Y	Y	Y	Y	Y	Y

**TABLE B.6 – GASTROINTESTINAL MEDICATIONS**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
Anti-nausea – Ondansetron ODT	N	Y	Y	Y	Y	Y
Anti-nausea – Ondansetron IM/IVP	N	N	Y	Y	Y	Y

**TABLE B.7 - PAIN MANAGEMENT**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
Anesthetic - Lidocaine (for intraosseous needle insertion)	N	N	N	Y	Y	Y
Benzodiazepine - Diazepam	N	N	N	N	VO	Y
Benzodiazepine - Lorazepam	N	N	N	N	VO	Y
Benzodiazepine - Midazolam	N	N	N	N	VO	Y
General - Nitrous oxide	N	N	N	VO	VO	Y
Narcotic Analgesic - Fentanyl	N	N	N	N	VO	Y
Narcotic Analgesic - Hydromorphone	N	N	N	N	N	Y
Narcotic Analgesic - Morphine sulfate	N	N	N	N	VO	Y
Ophthalmic anesthetic-Ophthaine	N	N	N	N	Y	Y
Ophthalmic anesthetic-Tetracaine	N	N	N	N	Y	Y
Topical Anesthetic - Benzocaine spray	N	N	N	N	N	Y
Topical Anesthetic - Lidocaine jelly	N	N	N	N	N	Y

**TABLE B.8 - RESPIRATORY AND ALLERGIC REACTION MEDICATIONS**

Medications	EMR	EM T	EMT-IV	AEMT	EMT-I	P
Antihistamine - Diphenhydramine	N	N	N	VO	VO	Y
Bronchodilator - Anticholinergic - Atropine (aerosol/nebulized)	N	N	N	N	VO	Y
Bronchodilator - Anticholinergic - Ipratropium	N	N	N	VO	VO	Y
Bronchodilator - Beta agonist - Albuterol	N	Y	Y	Y	Y	Y
Epinephrine 1:1,000 IM or SQ Only	N	Y	Y	Y	Y	Y
Epinephrine IV Only	N	N	N	N	VO	Y
Epinephrine Auto-Injector	Y	Y	Y	Y	Y	Y



Magnesium Sulfate - bolus infusion only	N	N	N	N	N	Y
Racemic Epinephrine	N	N	N	N	VO	Y
Short Acting Bronchodilator meter dose inhalers (MDI) (Patient assisted)	VO	VO	VO	VO	Y	Y
Short Acting Bronchodilator meter dose inhalers (MDI)	N	VO	VO	VO	VO	Y

**TABLE B.9 - SEIZURE MANAGEMENT**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
Benzodiazepine – Diazepam	N	N	N	N	VO	Y
Benzodiazepine – Lorazepam	N	N	N	N	VO	Y
Benzodiazepine – Midazolam	N	N	N	N	VO	Y
OB -associated - Magnesium sulfate - bolus infusion only	N	N	N	N	VO	Y

**TABLE B.10 - MISCELLANEOUS**

Medications	EMR	EMT	EMT-IV	AEMT	EMT-I	P
Benzodiazepine - Midazolam for TIH	N	N	N	N	VO	Y
Lidocaine - bolus for intubation of head-injured patients	N	N	N	N	VO	Y
Narcotic Analgesic - Fentanyl for TIH	N	N	N	N	VO	Y
Topical Hemostatic agents	N	Y	Y	Y	Y	Y

## 0010 GENERAL GUIDELINES: INTRODUCTION

### INTRODUCTION

The following guidelines have been developed and approved by the NWRETAC Medical Directors group. These guidelines define the standard of care for EMS providers in the NWRETAC area, and delineate the expected practice, actions, and procedures to be followed.

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

The guidelines 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.

To keep guidelines as uncluttered as possible, and limit inconsistencies, individual drug dosing has not been included in the algorithms. It is expected the providers will be familiar with standard drug doses. Drug dosages are included with the medications section of the guidelines 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 levels of EMT, including EMR/OEC. Boxes with orange fill are for actions for EMT and/or EMT-IV level or higher, yellow boxes for Advanced EMT and higher, green boxes for EMT-Intermediate and higher, and blue-filled boxes are for Paramedics only. When applicable, actions requiring base contact are identified in the protocol.

<b>EMR</b>	<b>EMT/EMT-IV</b>	<b>AEMT</b>	<b>Intermediate</b>	<b>Paramedic</b>
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Teaching points deemed sufficiently important to be included in the protocol are separated into grey-filled boxes with a double line border:

### PEDIATRIC GUIDELINES

For the purposes of these clinical care guidelines, pediatric patients are those < 12 years of age and are still within the length based tape sizing, except where identified in a specific protocol. Infant is defined as less than one year of age and Neonate less than one month of age.

## 0020 GENERAL GUIDELINES: BENCHMARKS

“Benchmarking” is the process of comparing an organization’s performance to national or industry “benchmarks”, or “best practices”. This process allows an organization to develop plans on how to make improvements, or adapt certain best practices, with the aim of increasing system-wide performance.

“Benchmarking” is an integral part of the Continuous Quality Improvement (CQI) plan in place in the NWRETAC. We will be continuously comparing our performance to EMS “best practices”, and targeting education, protocol development and discipline to help us improve our performance where needed. The spirit of Benchmarking and CQI are this: most problems are found in processes, not people. CQI does not seek to blame, but rather to improve. The intent is to look at our system as a whole, and gather objective data to analyze and thus improve processes.

A simple example: for EMS patients with AMS, a “best practice benchmark” might be that 100% have their blood glucose measured in the field. If our system data shows that it is only occurring 80% of the time in an agency or region, then we have a system-wide problem. Is it a charting issue (not using checkbox)?; a training issue (EMT-B’s are not being taught how to use glucometer)?; an education issue (providers do not know they need to check BG in AMS)?; or is it a protocol issue (guidelines are not clear)? If individual providers are persistently deficient, then they will also be counseled/disciplined as needed. However, the issue uncovered is undoubtedly a system problem, not an individual provider problem.

The NWRETAC medical directors will be tracking these items for use in comparison between systems in our region as well as other regions within the State of Colorado and the State as a whole.

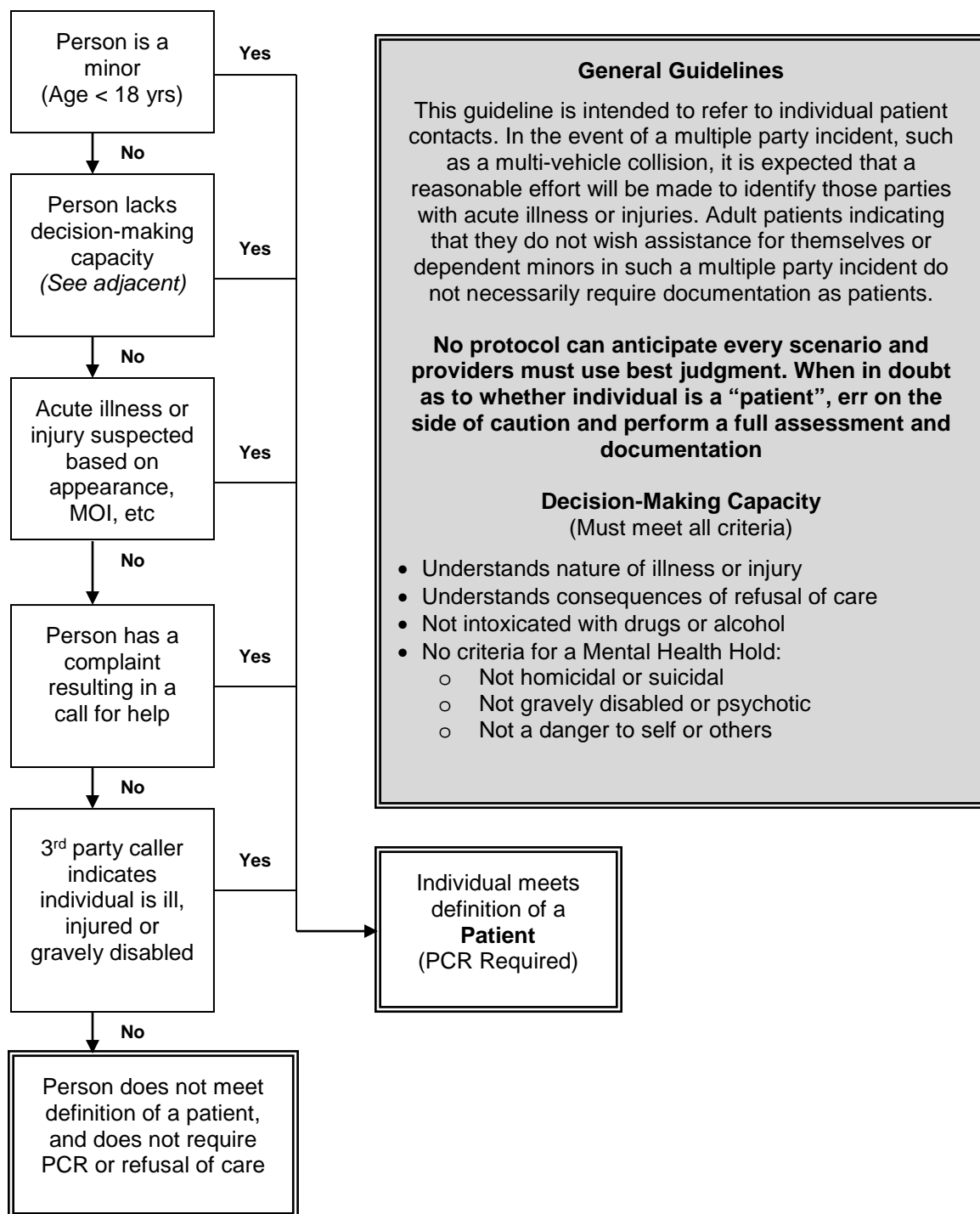
A “Benchmark Notation”, designated “**BMK**”, has been added within each individual protocol for which benchmarks will be tracked, in order to remind providers of the “best practices” we are shooting for as a System for that protocol.

The following guidelines have the “**BMK**” designation and this is what will be tracked:

1. Airway
  - a. Intubation success rate
    - i. Per patient
    - ii. Per attempt
  - b. Complications
    - i. Misplaced tube
    - ii. Unintended extubation
2. Cardiac arrest
  - a. ROSC/Transport rate
  - b. Survival to discharge rate (VF/VT, other)
3. Chest Pain
  - a. ECG done in pts > 34 years old with non-traumatic CP
  - b. ASA administration rates
4. Universal Altered Mental Status – BG check (precursor to hypoglycemia, seizure, stroke, alcohol intoxication). Also BG Check in:
  - a. Agitated / Combative Patient
  - b. Heat/Cold
  - c. Head Trauma
  - d. Near Drowning with AMS
  - e. SZ in Pregnancy
  - f. Pediatric seizures
5. Pediatrics – use of length based tape

Your agency medical director may have other items which will be tracked in your agency or system. These will be identified in the “Local Guidelines” sections of the guidelines.

## 0030 GENERAL GUIDELINES: PATIENT DETERMINATION: “PATIENT OR NO PATIENT”



## 0040 GENERAL GUIDELINES: CONSENT

### CONSENT

#### General Principles: Adults

- A. An adult in the State of Colorado is 18 years of age or older.
- B. Every adult is presumed capable of making medical treatment decisions. This includes the right to make "bad" decisions that the prehospital provider believes are not in the best interests of the patient.
- C. A person is deemed to have decision-making capacity if he/she has the ability to provide informed consent, i.e., the patient:
  - 1. Understands the nature of the illness/injury or risk of injury/illness
  - 2. Understands the possible consequences of delaying treatment and/or refusing transport
  - 3. Given the risks and options, the patient voluntarily refuses or accepts treatment and/or transport.
- D. A call to 9-1-1 itself does not prevent a patient from refusing treatment. A patient may refuse medical treatment (IVs, oxygen, medications), but you should try to inform the patient of the need for therapies, offer again, and treat to the extent possible.
- E. The odor of alcohol on a patient's breath does not, by itself, prevent a patient from refusing treatment.
- F. **Implied Consent:** An unconscious adult is presumed to consent to treatment for life-threatening injuries/illnesses.
- G. **Involuntary Consent:** a person other than the patient in rare circumstances may authorize Consent. This may include a court order (guardianship), authorization by a law enforcement officer for prisoners in custody or detention, or for persons under a mental health hold or commitment who are a danger to themselves or others or are gravely disabled.

#### Procedure: Adults

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

#### General Principles: Minors

- A. A parent, including a parent who is a minor, may consent to medical or emergency treatment of his/her child. There are exceptions:
  - 1. Neither the child nor the parent may refuse medical treatment on religious grounds if the child is in imminent danger as a result of not receiving medical treatment, or when the child is in a life-threatening situation, or when the condition will result in serious handicap or disability.
  - 2. The consent of a parent is not necessary to authorize hospital or emergency health care when an EMT in good faith relies on a minor's consent, if the minor is at least 15 years of age and emancipated or married.
  - 3. Minors may seek treatment for abortion, drug addiction, and venereal disease

## 0040 GENERAL GUIDELINES: CONSENT

without consent of parents. Minors > 15 years may seek treatment for mental health.

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

### **Procedure: Minors**

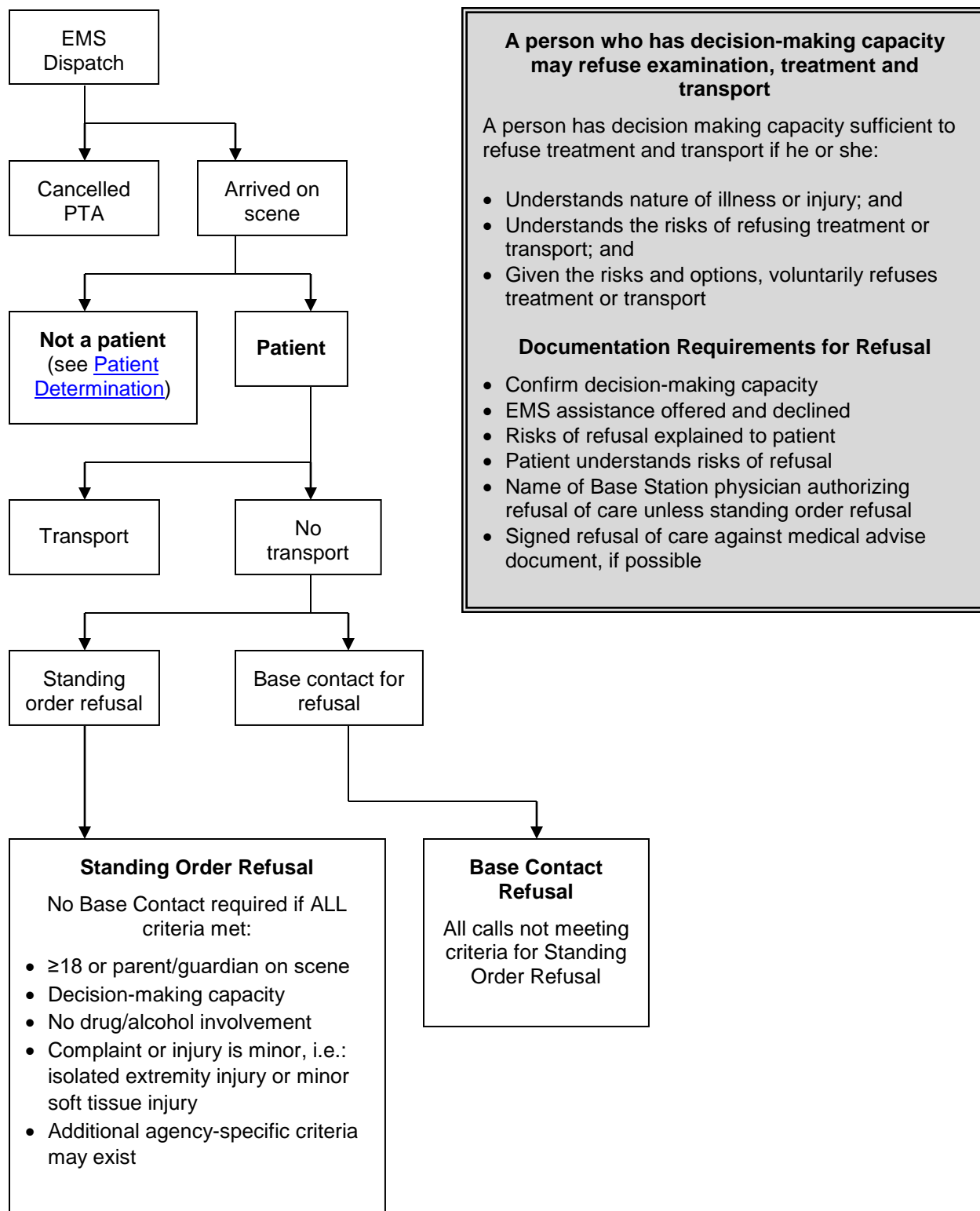
- A. A parent or legal guardian may provide consent to or refuse treatment in a non- life-threatening situation.
- B. When the parent is not present to consent or refuse:
  - 1. If a minor has an injury or illness, but not a life-threatening medical emergency, you should attempt to contact the parent(s)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

## 0050 GENERAL GUIDELINES: CONFIDENTIALITY

### CONFIDENTIALITY

- A. The patient-physician relationship, the patient-registered nurse relationship, and the patient-prehospital provider relationship are recognized as privileged. This means that the physician, nurse, or prehospital provider 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. Exceptions include:
  - a. 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.
  - b. The patient is not entitled to confidentiality for disclosures made publicly.
  - c. 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 are done strictly for educational or performance improvement purposes. 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.

## 0060 GENERAL GUIDELINES: PATIENT NON-TRANSPORT OR REFUSAL





## **0070 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION**

### **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**

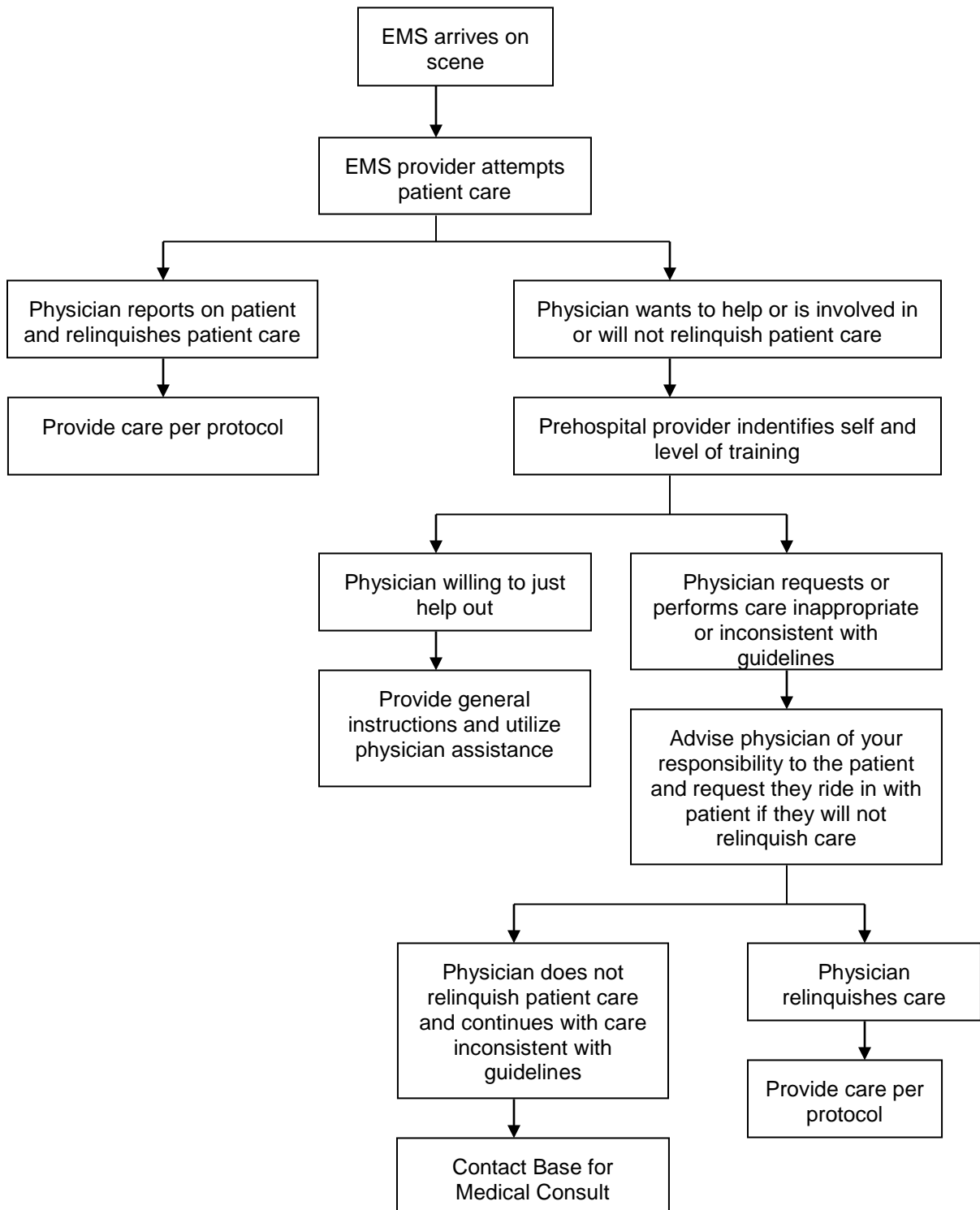
- A. See algorithm below.

#### **Special notes**

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

# 0070 GENERAL GUIDELINES: PHYSICIAN AT THE SCENE/MEDICAL DIRECTION

## PHYSICIAN AT THE SCENE/MEDICAL DIRECTION ALGORITHM



## **0080 GENERAL GUIDELINES: FIRE GROUND REHABILITATION**

### **Fire Ground Rehabilitation Evaluations**

#### **Purpose**

- A. To provide guidelines for pre-hospital personnel who are doing fire ground rehabilitation evaluations

#### **General Principles**

- A. Fighting fires in full turnout gear is very strenuous and personnel may easily exceed safe levels of physical and/or mental endurance
- B. Each Fire Agency should have guidelines in place for evaluation of personnel involved in such operations. Guidelines should be modeled after NFPA guidelines, 1582, 1583, and 1584.
- C. Medical monitoring should be included in these guidelines and performed accordingly, preferably by ALS level personnel.
- D. Personnel safety should take precedence over property salvage and no personnel should be allowed to continue in fire ground operations until deemed fit by medical personnel

#### **Procedure**

- A. EMS personnel working at fire ground operations shall be aware of and have copies of agency fire ground rehabilitation guidelines.
- B. The fire ground IC shall select a proper location for the rehabilitation.
- C. Proper documentation of vital signs at pre-determined intervals shall be performed
- D. No personnel shall be cleared to return to the fire ground operations unless they have returned to pre-determined levels of operational suitability.
- E. The EMS provider doing the evaluations should be free from operational considerations when doing evaluations and should base clearance of personnel solely on pre-determined parameters.

#### **Special notes**

**CONTACT BASE** when any question(s) arise

## **0090 GENERAL GUIDELINES: EMS DUTY HOURS**

### **EMS Duty Hours**

#### **Purpose**

- A. Many studies have demonstrated that excessive fatigue can be as detrimental to cognitive function as alcohol intoxication.
- B. EMS providers are entrusted with making quick decisions regarding care which may affect life and death.
- C. The public should be ensured that the providers called upon to care for themselves or their loved ones have the mental faculties to make these decisions appropriately.
- D. Many EMS providers work for multiple agencies and little monitoring is done regarding providers working multiple 24 hours shifts in a row without proper rest.
- E. Little evidence based information exists as to the timing at which point cognitive danger exists.

#### **General Principles**

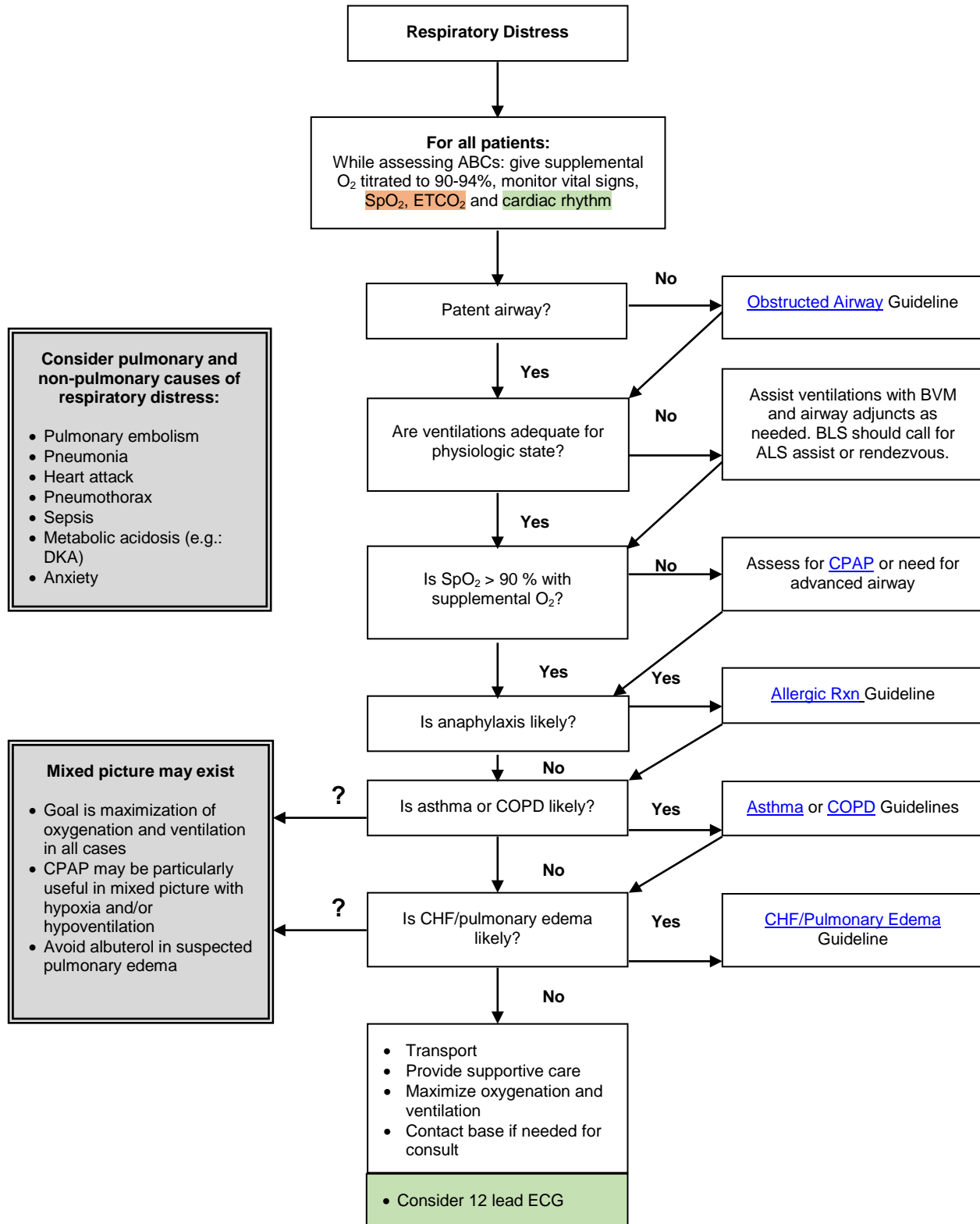
- A. EMS providers should not be providing care without sufficient periods of rest.
- B. Each EMS Agency shall have guidelines which relate to appropriate rest periods.
  - a. Providers should not be the primary care providers NOR drivers of EMS vehicles after 24 hours of duty without a rest period.
  - b. Safe rest periods shall be specified in guidelines
  - c. Back up plans should be in place for providers who are unable to perform their duties until appropriate rest has been obtained.
- C. There shall be appropriate exceptions for lengthening duty hours in cases of extreme need, but these practices shall be the exception and not the rule.

#### **Procedure**

- A. EMS provider or driver duty hours guidelines shall be developed by each agency and submitted with annual licensing paperwork.
- B. Each EMS agency shall have a system for determining duty hours and rest periods
- C. Each EMS provider is responsible for notifying their shift supervisors of their duty hours prior to or coming after the shift they are on, and knowing when they have exceeded their own levels of safe functioning without rest.
  - a. EMS providers knowingly withholding such information shall be deemed to falsify records and may be subject to termination of supervision
  - b. EMS supervisors should notify the next EMS agency supervisor of the provider's duty hours at current agency.
- D. EMS agencies shall document any provider's who exceed the duty hour restrictions and the grounds for such cases. Records of total numbers of providers exceeding duty hour guidelines and reasons therefore shall be kept and reported annually.

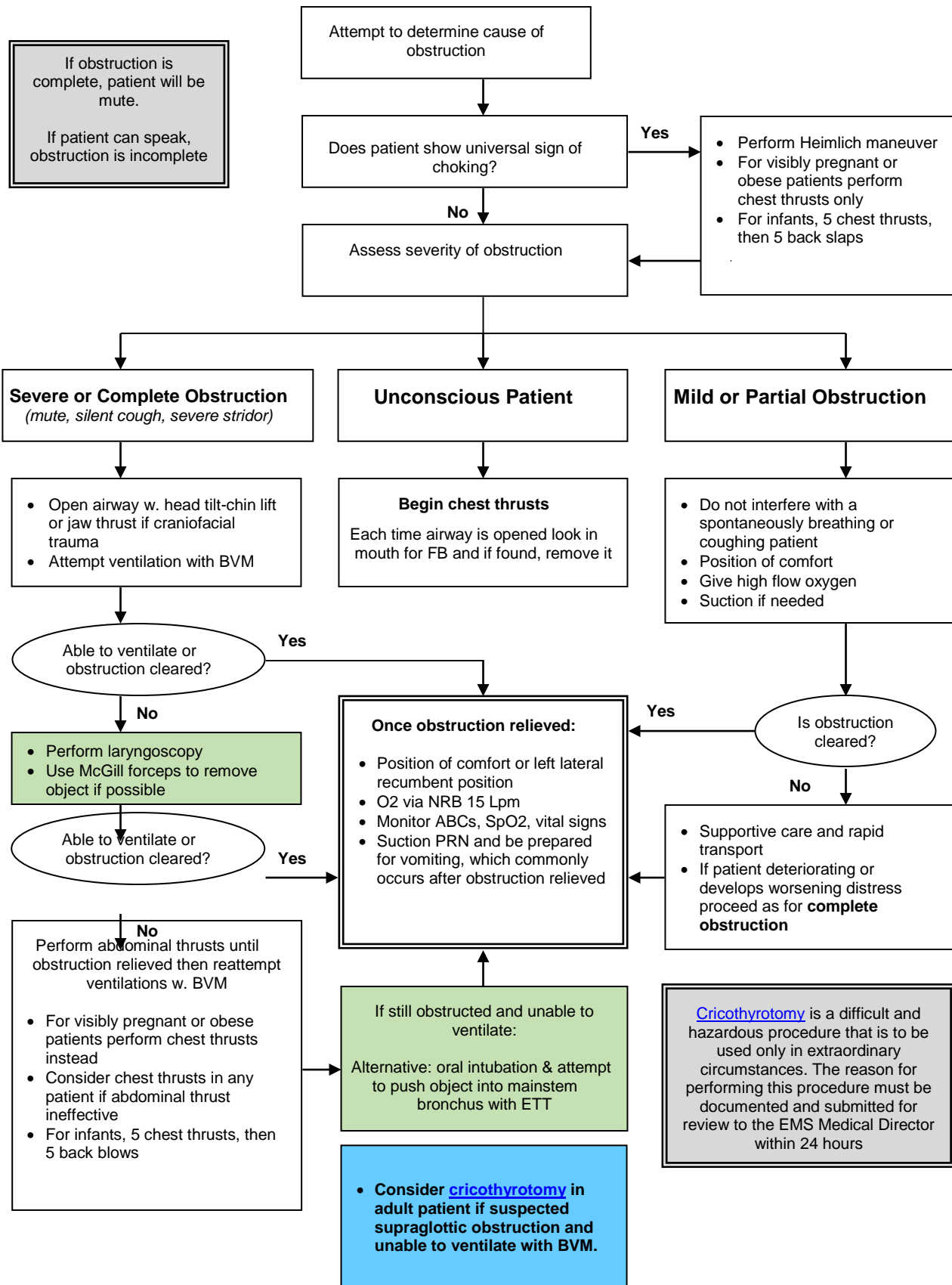
# 1000 ADULT (AGE ≥ 12 YEARS) UNIVERSAL RESPIRATORY DISTRESS ALGORITHM

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 1010 OBSTRUCTED AIRWAY

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 1020 PROCEDURE GUIDELINE: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

EMT/EMT-IV

AEMT

Intermediate

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 ( $\text{SpO}_2 < 90\%$  despite  $\text{O}_2$ )
  - Dyspnea with verbal impairment – i.e. cannot speak in full sentences
  - Accessory muscle use
  - Respiratory rate  $> 24/\text{minute}$  despite  $\text{O}_2$
  - Diminished tidal volume

### Contraindications:

- Respiratory or cardiac arrest
- Systolic BP  $< 100$  mmHg
- Lack of airway protective reflexes (gag)
- 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:

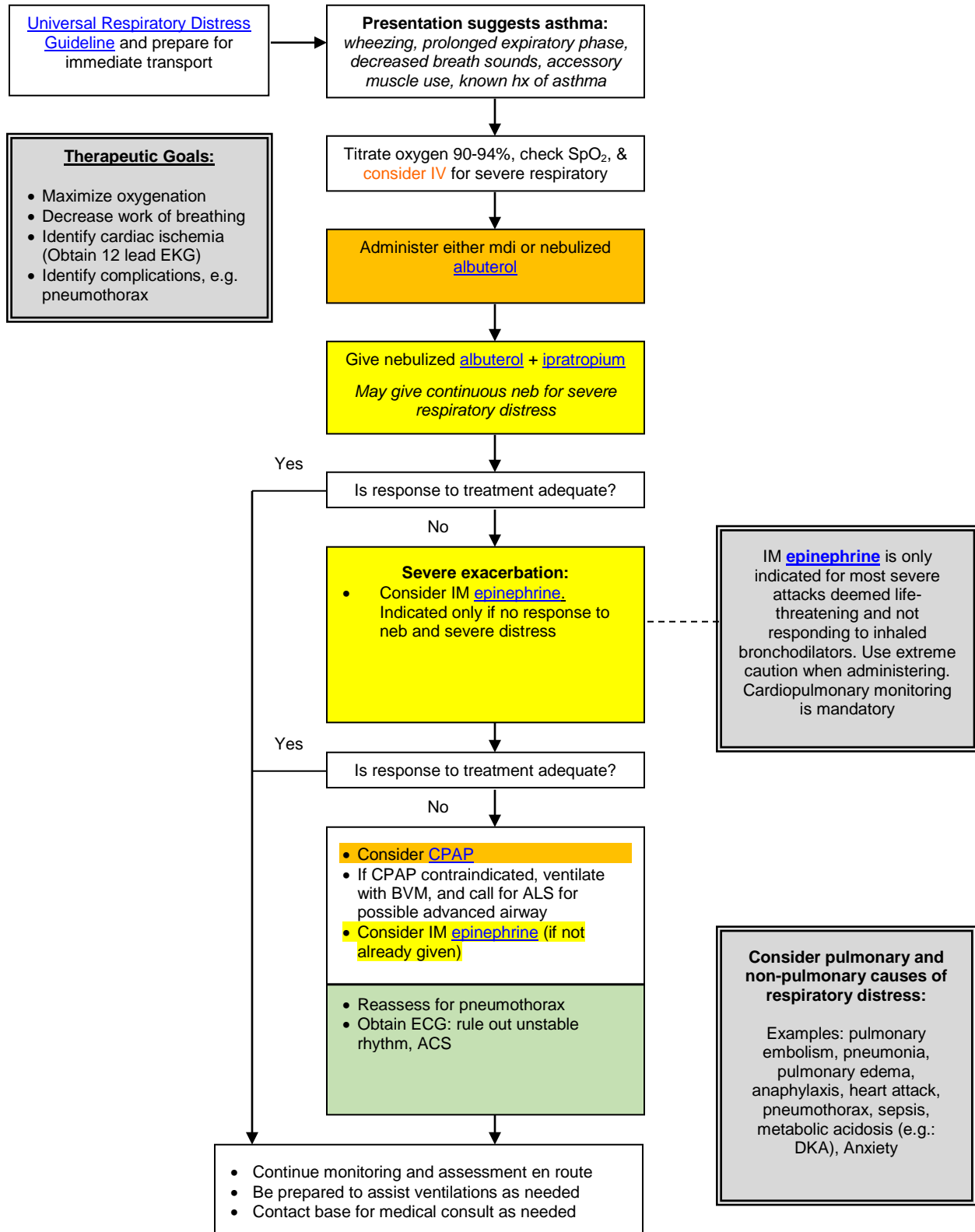
1. Place patient in a seated position and explain the procedure to him or her
2. Assess vital signs (BP, HR, RR,  $\text{SpO}_2$ , and  $\text{ETCO}_2$ )
3. Operate CPAP device according to manufacturer specifications
4. PEEP should be set at 5 cm of water initially, may be increased to maximum 10 cm of water as needed.
5. Apply the CPAP mask and secure with provided straps, progressively tightening as tolerated to minimize air leak
6. Patients should be considered “critical” with vital signs recorded every 5 minutes
7. Assess patient for improvement as evidenced by the following:
  - a. Increased  $\text{SpO}_2$
  - b. Appropriate  $\text{ETCO}_2$  values and waveforms
  - c. 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  $\text{SpO}_2$  readings
  - d. Rising  $\text{ETCO}_2$  levels or other  $\text{ETCO}_2$  evidence of ventilatory failure
  - e. Diminished or no improvement in tidal volume
9. EMT-I/Paramedic - may consider [midazolam](#) (single dose) if patient too anxious to tolerate mask

### Precautions:

- Should patient deteriorate on CPAP:
  - Troubleshoot equipment
  - 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

# 1030 ADULT (AGE ≥ 12 YEARS) ASTHMA

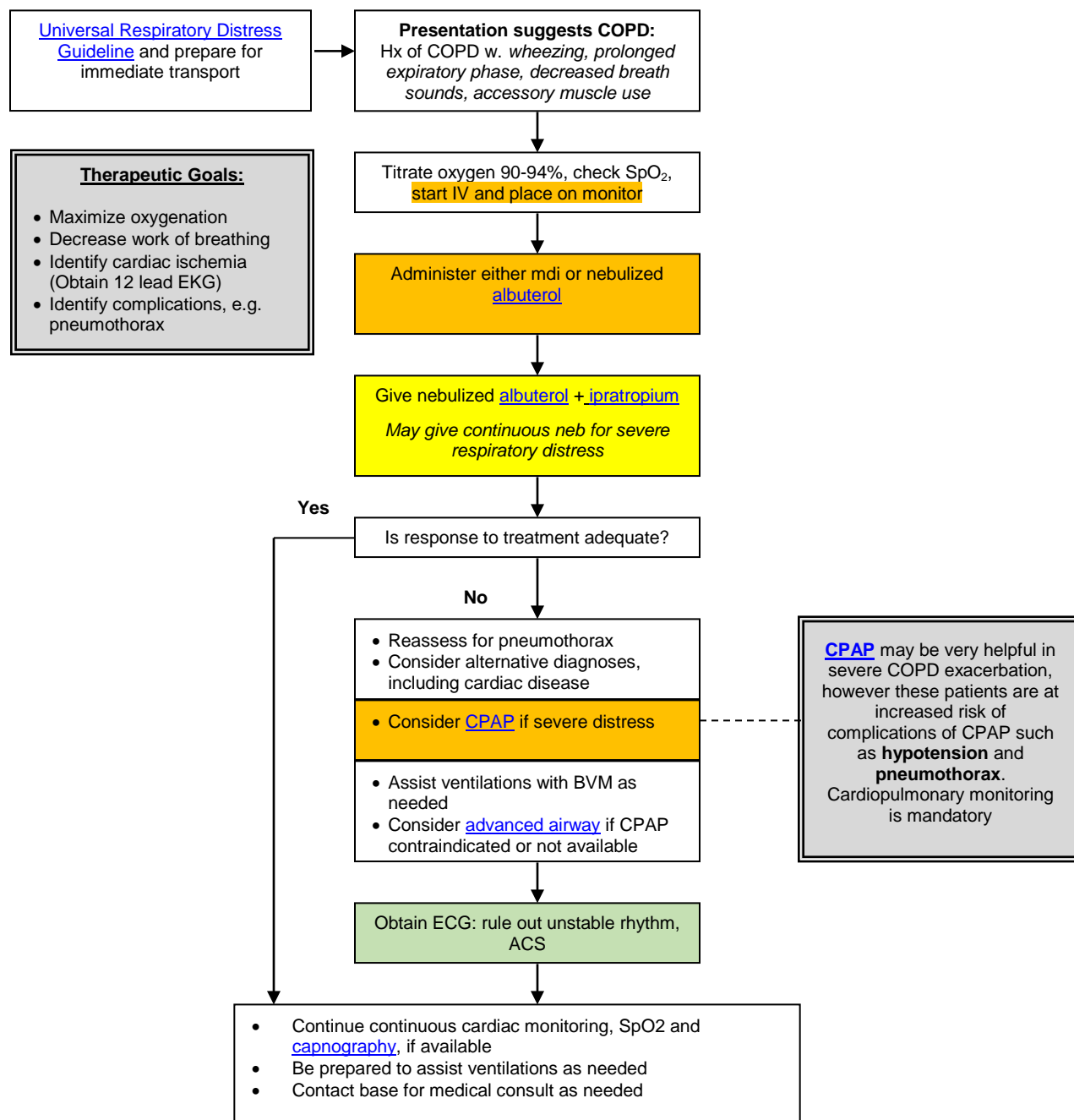
EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 1040 COPD

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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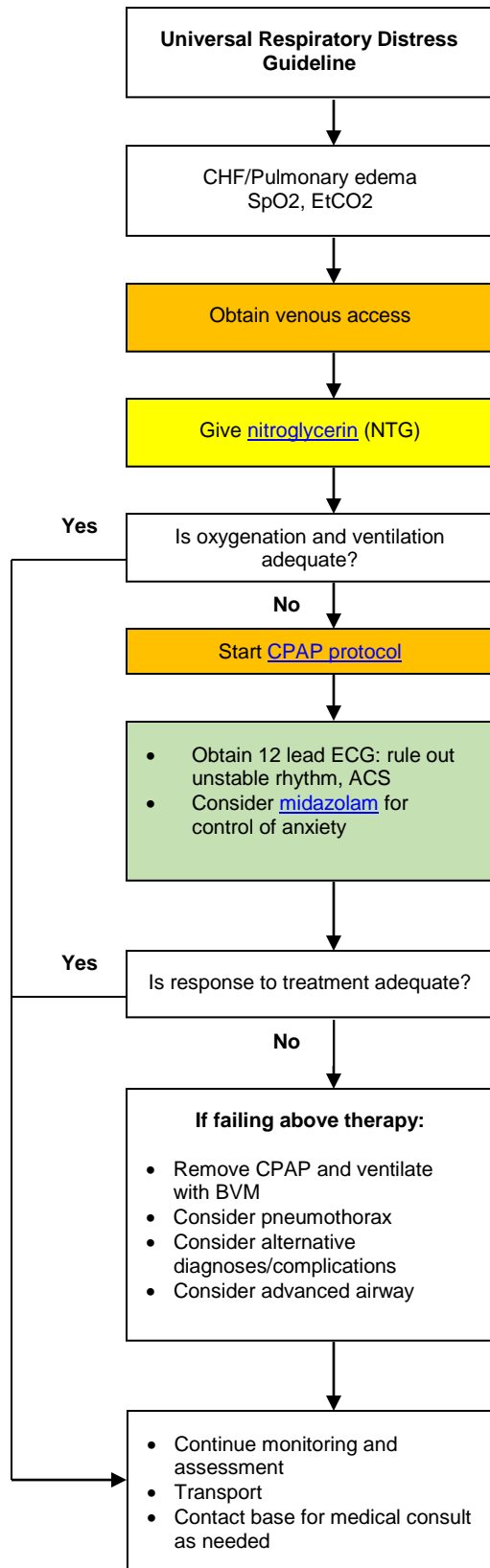


## Special Notes:

- Correct hypoxia:** do not withhold maximum oxygen for fear of CO<sub>2</sub> retention
- Consider pulmonary and non-pulmonary causes of respiratory distress:** Examples: pulmonary embolism, pneumonia, pulmonary edema, anaphylaxis, heart attack, pneumothorax, sepsis, metabolic acidosis (e.g.: DKA), Anxiety
- Patients with COPD are older and have comorbidities, including heart disease.
- Wheezing may be a presentation of pulmonary edema, "cardiac asthma"
- Common triggers for COPD exacerbations include: Infection, dysrhythmia (e.g.: atrial fibrillation), myocardial ischemia

# 1050 CHF / PULMONARY EDEMA

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## Therapeutic Goals:

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

## Special Notes:

- In general diuretics have no role in initial treatment of acute pulmonary edema.

# 1060 PROCEDURE GUIDELINE: OROTRACHEAL INTUBATION

Intermediate

Paramedic

## Indications:

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

## Contraindications:

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

## Technique:

1. Initiate BLS airway sequence
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment and position patient:
  - a. If trauma: have assistant hold in-line spinal immobilization in neutral position
  - b. If no trauma, sniffing position or slight cervical hyperextension is preferred
4. Perform laryngoscopy
5. Place ETT. Confirm tracheal location and appropriate depth and secure tube
6. Confirm and document tracheal location by:
  - a. Direct visualization of ETT passing cords
  - b. EtCO<sub>2</sub>
  - c. Presence and symmetry of breath sounds
  - d. Rising SpO<sub>2</sub>
  - e. Other means as needed
7. Ventilate with BVM. Assess adequacy of ventilations
8. During transport, continually reassess ventilation, oxygenation and tube position with continuous EtCO<sub>2</sub> and SpO<sub>2</sub>

## Precautions:

- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
  - Dislodgement, Obstruction, Pneumothorax, Equipment failure (no oxygen)
- Reconfirm and document correct tube position after moving patient and before disconnecting from monitor in ED
- Unsuccessful intubation does not equal failed airway management. Many patients cannot be intubated without paralytics. Use King airway or BVM ventilations if 3 attempts at intubation unsuccessful.
- Self extubation and/or fighting the tube is a problem after placement. Consider sedation with versed, pain control with opiates, and/or restraining patients hands after intubation.

## 1060 PROCEDURE GUIDELINE: OROTRACHEAL INTUBATION

Intermediate

Paramedic

### Documentation: (BMK)

- Number of attempts at intubation (attempt = insertion of laryngoscope into mouth with intent to intubate)
- Reasons why intubation attempt was unsuccessful
- Post intubation medications or restraint
- Any complications during procedure including misplaced tubes, or unintended extubation.

# 1070 PROCEDURE GUIDELINE: NASOTRACHEAL INTUBATION

## Paramedic

### Indications:

- Age  $\geq$  9 years spontaneously breathing patient with indication for intubation who cannot tolerate either supine position or laryngoscopy
- Present or impending airway obstruction
- Anticipated prolonged need for positive pressure ventilation

### Contraindications:

- Apnea
- Severe mid-face trauma
- Patient can be safely ventilated with non-invasive means such as CPAP or BVM

### Technique:

1. Initiate BLS airway sequence
2. Suction airway and pre-oxygenate with BVM ventilations, if possible
3. Check equipment and position patient appropriately
4. Administer phenylephrine nasal drops in each nostril
5. Lubricate ETT with Lidocaine jelly or other water-soluble lubricant
6. Insert tube in largest nare and advance during inspiration until tube in trachea. Continue advancing tube until air is definitely exchanging through tube, then advance 2 cm more and inflate cuff
7. Note tube depth and tape securely
8. Confirm and document endotracheal location by:
  - a.  $\text{ETCO}_2$
  - b. Presence and symmetry of breath sounds
  - c. Rising  $\text{SpO}_2$
  - d. Other means as needed
9. Ventilate with BVM. Assess adequacy of ventilations
10. During transport, continually reassess ventilation, oxygenation and tube position with continuous  $\text{ETCO}_2$  and  $\text{SpO}_2$
11. Reconfirm and document correct tube position after moving patient and before disconnecting from monitor in ED

### Precautions:

- Ventilate at age-appropriate rates. Do not hyperventilate
- If the intubated patient deteriorates, think “DOPE”
  - Dislodgement
  - Obstruction
  - Pneumothorax
  - Equipment failure (no oxygen)
- Blind nasotracheal intubation is a very gentle technique. The secret to success is perfect positioning and patience.
- Self extubation and/or fighting the tube is a problem after placement. Consider sedation with versed, pain control with opiates, and/or restraining patients hands after intubation.

### Documentation: (BMK)

- Number of attempts at intubation (attempt = insertion of endotracheal tube with intent to pass into trachea)
- Reasons why intubation attempt was unsuccessful
- Post intubation medications and/or restraint
- Any complications during procedure including misplaced tubes, or unintended extubation.

## 1080 PROCEDURE GUIDELINE: SUPRAGLOTTIC AIRWAY

EMT/EMT-IV

AEMT

Intermediate

Paramedic

### Indications:

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

### Contraindications:

- Intact gag reflex
- Caustic ingestion
- Relative to device specific height guidelines

### Technique

1. Initiate BLS airway sequence
2. Select proper size supraglottic airway (based on selected brand) assemble and test equipment, lubricate posterior aspect distal tip with water-soluble lubricant (included)
3. Suction airway and pre-oxygenate with BVM ventilations, if possible
4. If trauma: have assistant hold in-line spinal immobilization in neutral position
5. If no trauma, sniffing position or slight cervical hyperextension is preferred
6. Insert and place airway as previously instructed.
7. Using supplied syringe, inflate cuff balloon with correct volume of air (marked on King tube if using).
8. Attach bag to airway and begin ventilating patient. (King airway: While bagging, slowly and slightly withdraw King until ventilations are easy and chest rise is adequate)
9. Confirm tube placement by auscultation, chest movement, and ET $\text{CO}_2$
10. Monitor patient for vomiting and aspiration
11. Continuously monitor and record ET $\text{CO}_2$ , SpO $_2$ , vital signs

### Precautions:

1. Use with caution in patients with broken teeth, which may lacerate balloon
2. Use with caution in patients with known esophageal disease
3. Do not remove a properly functioning supraglottic airway in order to attempt intubation

## 1090 PROCEDURE GUIDELINE: CAPNOGRAPHY

EMT/EMT-IV

AEMT

Intermediate

Paramedic

### Indications:

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

### Contraindications:

- None

### Technique:

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

### Precautions:

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

# 1100 PROCEDURE GUIDELINE: PERCUTANEOUS CRICOTHYROTOMY

## Paramedic

### Introduction:

- Percutaneous cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The reason for performing this procedure must be documented and submitted for review to the EMS Medical Director as soon as possible but no later than 24 hours after the call.

### Indications:

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

### Contraindications:

- Anterior neck hematoma is a relative contraindication
- Age < 12 is a relative contraindication

### Technique:

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

### 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



# 1110 PROCEDURE GUIDELINE: SURGICAL CRICOTHYROTOMY

## Paramedic

### **Introduction:**

- Surgical cricothyrotomy is a difficult and hazardous procedure that is to be used only in extraordinary circumstances as defined below. The reason for performing this procedure must be documented and submitted for review to the EMS Medical Director as soon as possible but no later than 24 hours after the call.

### **Indications:**

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

### **Contraindications:**

- Age < 8 is an absolute contraindication
- Anterior neck hematoma is a relative contraindication

### **Technique:**

1. Assemble and check equipment as soon as this procedure becomes a possibility.
2. Prepare skin using aseptic solution
3. Position the patient in a supine position, with in-line spinal immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view
4. Perform surgical cricothyrotomy
  - a. Once hole in membrane is created, something should remain in orifice until ETT placed.
  - b. 6.0 ETT in most adults
5. Confirm and document tube placement by:
  - a. ETCO<sub>2</sub>
  - b. Breath sounds
  - c. Rising pulse oximetry
  - d. Other means as needed
  - e. Goal is to create an airway so any patent airway is a success
6. Ventilate with BVM assessing adequacy of ventilation
7. Observe for subcutaneous air, which may indicate tracheal injury or extra- tracheal tube position
8. Secure tube with tube ties
9. Continually reassess ventilation, oxygenation, tube placement and waveform EtCO<sub>2</sub>.

### **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

## 2000 ADULT CHEST PAIN

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### General:

- A. Consider life-threatening causes of chest pain first in all patients:
  - 1. Acute coronary syndromes (ACS)
  - 2. Pulmonary embolism (PE)
  - 3. Thoracic aortic dissection (TAD)
  - 4. Tension pneumothorax (PTX)
- B. Do not delay obtaining 12 lead ECG, if available, and notify receiving facility *immediately* if [Cardiac Alert](#) criteria met.

### Document specific findings:

- A. Complete set of vital signs
- B. General appearance: skin color, diaphoresis
- C. Cardiovascular exam: presence of irregular heart sounds, JVD, murmur, pulse asymmetry, dependent edema
- D. Pulmonary exam: crackles/rales and/or wheezes/rhonchi
- E. Chest wall and abdominal tenderness

### Treatment:

- A. ABCs
- B. Reassure patient and place in position of comfort
- C. Place patient on cardiac monitor
- D. Administer oxygen – titrate to SaO<sub>2</sub> 90-94%. DO NOT GIVE OXYGEN IF NORMOXIC.
- E. Start IV
- F. If patient > 34 years old **(BMK)**, or strong concern for cardiac cause if < 35 years old:
  - 1. Administer 4 chewable 81mg aspirin
  - 2. EMT-Basics - Contact base for verbal order for patient-assisted and supplied nitroglycerine, if applicable. Obtain 12 lead ECG for transmission or subsequent ALS evaluation if available.
  - 3. AEMTs - Administer [nitroglycerine](#) 0.4mg SL or spray if SBP > 100. Repeat dose every 5 minutes, up to a maximum of 3 doses, holding if SBP < 100. Consider nitroglycerine paste if patient responds to sublingual NTG.
- G. EMT-Intermediates and paramedics - Obtain 12-lead ECG. **(BMK)**
  - 1. If patient has at least 1 mm ST segment elevation (STE) in at least 2 anatomically contiguous leads, notify receiving hospital and request CARDIAC ALERT (see [Cardiac Alert Protocol](#)).
  - 2. Administer [opioids](#) IV for persistent pain that is not relieved by 3 doses SL nitroglycerine, unless contraindicated. It is acceptable to administer morphine before 3 doses of nitro if nitro deemed ineffective for pain control.
  - 3. Consider base station contact for additional medication orders if pain persists.

### Precautions:

- A. If inferior MI diagnosed (ST elevation in II, III, aVF), consider possibility of right ventricular infarct. Do not delay transport or receiving hospital contact, however, obtain right-sided ECG leads en route if time and conditions allow in order to identify right ventricular infarct.
- B. If RV infarct pattern present (ST elevation in right-sided precordial leads, typically RV<sub>4</sub>), give nitroglycerine with extreme caution as hypotension common.
- C. If hypotension develops following nitroglycerine administration in any patient, treat with 250cc NS boluses.
- D. Nitroglycerine is contraindicated in patients taking medication for erectile dysfunction (phosphodiesterase inhibitors, e.g.: Viagra, Cialis) if taken in the previous 36 hours.

## 2000 ADULT CHEST PAIN

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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- E. Suspicion of an acute MI is based on history. Do **not** be reassured by a “normal” monitor strip. Conversely, “abnormal” strips (particularly ST and T wave changes) can be due to technical factors or nonacute cardiac diseases. ST elevation that changes after nitroglycerin administration can be significant and should be documented.
- F. Constant monitoring is essential. As many as 50% of patients with acute MI who develop ventricular fibrillation may have no warning arrhythmias.
- G. Beware of IV fluid overload in the potential cardiac patient.

## 2010 CARDIAC ALERT GUIDELINE

Intermediate

Paramedic

### **Goal:**

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

### **Inclusion Criteria:**

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

### **Exclusion Criteria:**

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

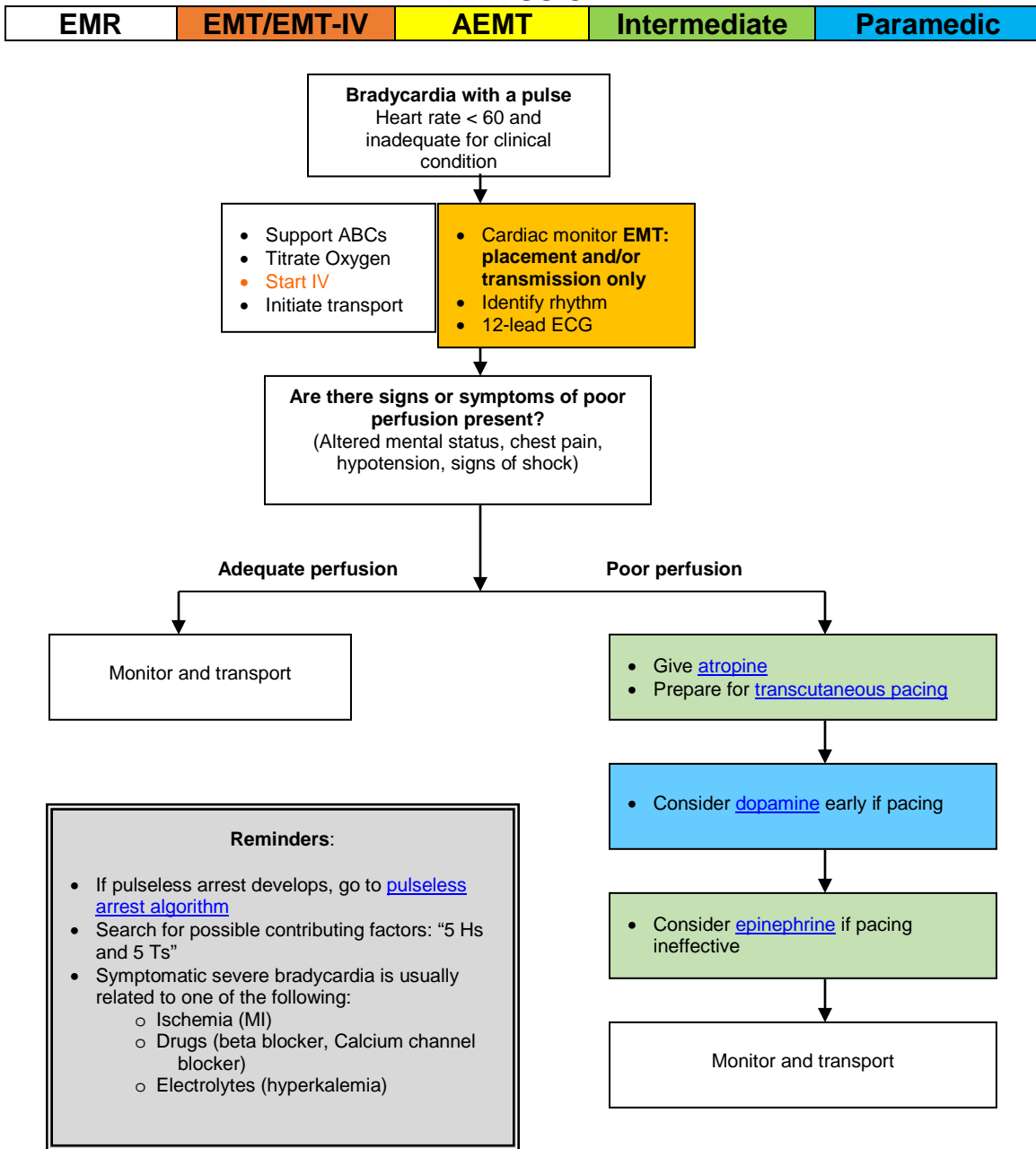
### **Actions:**

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

### **Additional Documentation Requirements:**

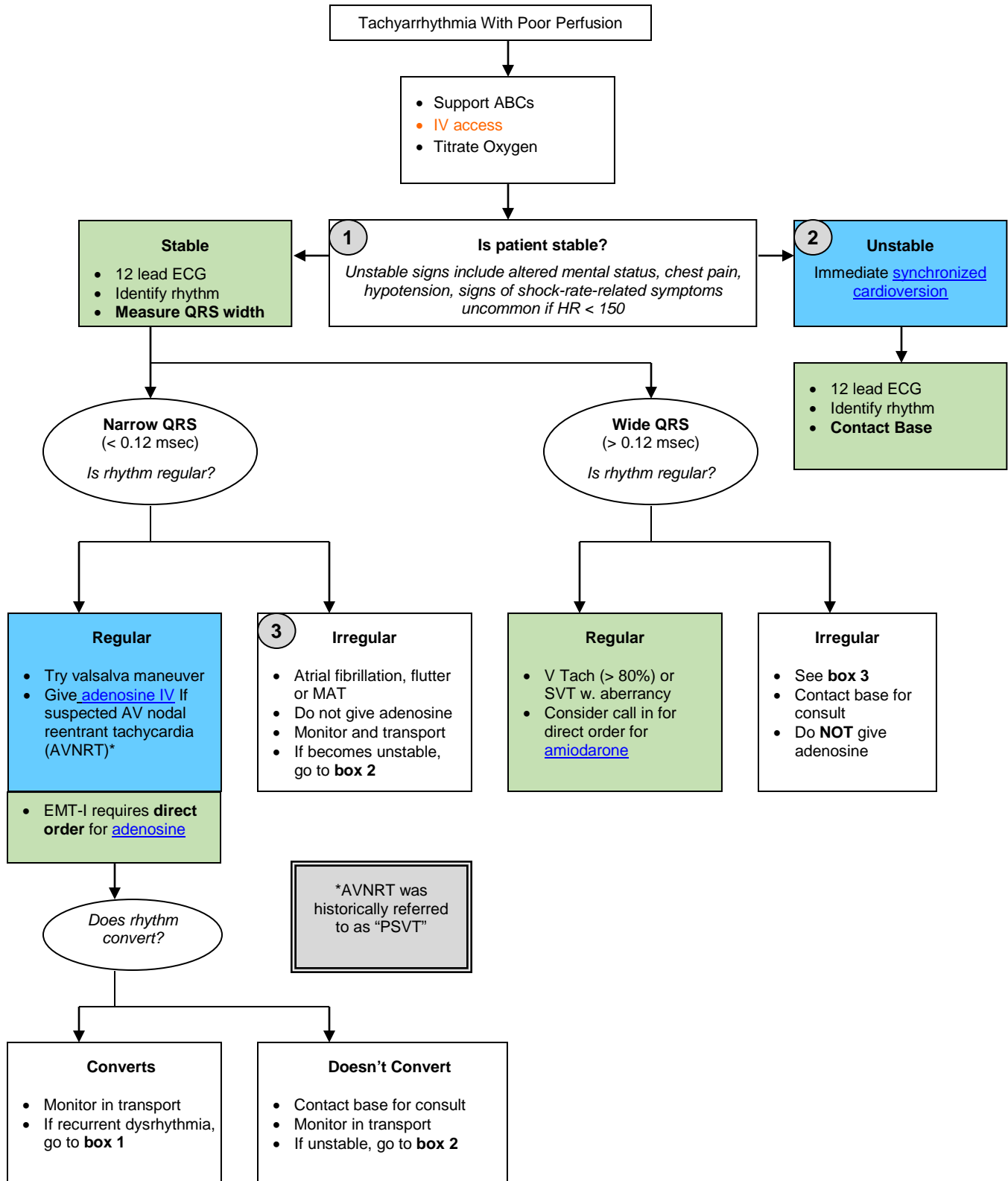
- Time of first patient contact
- Time of first ECG

## 2020 ADULT (AGE ≥ 12 YEARS) BRADYARRHYTHMIA WITH POOR PERFUSION



# 2030 ADULT (≥ 12 YEARS) TACHYARRHYTHMIA WITH POOR PERFUSION

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 2040 ADULT (AGE ≥ 12 years) CARDIAC ARREST

## GENERAL PRINCIPLES

### Specific Information Needed For Patient Care Report

- Onset (witnessed or unwitnessed), preceding symptoms, bystander CPR, downtime before CPR and duration of CPR
- Past History: medications, medical history, suspicion of ingestion, trauma, environmental factors (hypothermia, inhalation, asphyxiation)
- Lack of DNR orders if elderly or infirm.
- Initial rhythm on placement of cardiac monitor **(BMK)**

### Document Specific Objective Findings

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

### General Guidelines: Chest Compressions

- Push hard (2" compressions in adults) and push fast (100-120/minute)
- Ensure full chest recoil
- Rotate compressors every 2 minutes with rhythm checks (CPR Cycle)
- During CPR, any interruption in chest compressions deprives heart and brain of necessary blood flow and lessens chance of successful defibrillation
  - Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks. Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check
  - Try to coordinate to make analyze/rhythm checks and defibrillation pauses < 10 sec.

### General Guidelines: Defibrillation

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

### General Guidelines: Ventilation during CPR

- If suspected cardiac etiology of arrest, during first approximately 5-6 minutes of VT/VF arrest, passive oxygenation with OPA and NRB facemask is preferred to positive pressure ventilation with BVM or advanced airway
- EMS personnel must use good judgment in assessing likely cause of pulseless arrest. In patients suspected of having a primary respiratory cause of cardiopulmonary arrest, (e.g.: COPD or status asthmaticus), adequate ventilation and oxygenation are a priority
- In general, patients with cardiac arrest initially have adequately oxygenated blood, but are in circulatory arrest. Therefore, chest compressions are initially more important than ventilation to provide perfusion to coronary arteries
- Do not interrupt chest compressions and do not hyperventilate. Hyperventilation decreases effectiveness of CPR and worsens outcome.

## 2040 ADULT (AGE ≥ 12 years) CARDIAC ARREST GENERAL PRINCIPLES

### **General Guidelines: Timing Of Placement Of Advanced Airway**

- Advanced airway (e.g. supraglottic, ETT) may be placed at any time after initial 3 rounds of chest compressions and rhythm analysis, provided placement does not interrupt chest compressions
- Once an advanced airway is in place, compressions are given continuously and breaths given asynchronously at 8-10 per minute
- Always confirm advanced airway placement with ETCO<sub>2</sub>
  - Use continuous waveform capnography if available. In low flow states such as cardiac arrest, colorimetric CO<sub>2</sub> detector may be inaccurate and not sense very low CO<sub>2</sub> level

### **General Guidelines: Pacing**

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

### **General Guidelines: ICD/Pacemaker patients**

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

### **Transport of Cardiac Arrest Patients**

- The best chance of survival for out of hospital cardiac arrest is by providing high quality, uninterrupted CPR and early defibrillation
- It is virtually impossible to perform adequate CPR in a moving ambulance
- Patients should generally have resuscitation attempts performed on scene and patients not transported without return of spontaneous circulation (ROSC) unless scene safety or other extreme circumstances dictate otherwise.
- Patients who do not have ROSC should be considered for termination of resuscitation (TOR) efforts according to [TOR Policy](#).



## 2050 GENERAL GUIDELINES: ADVANCED MEDICAL DIRECTIVES

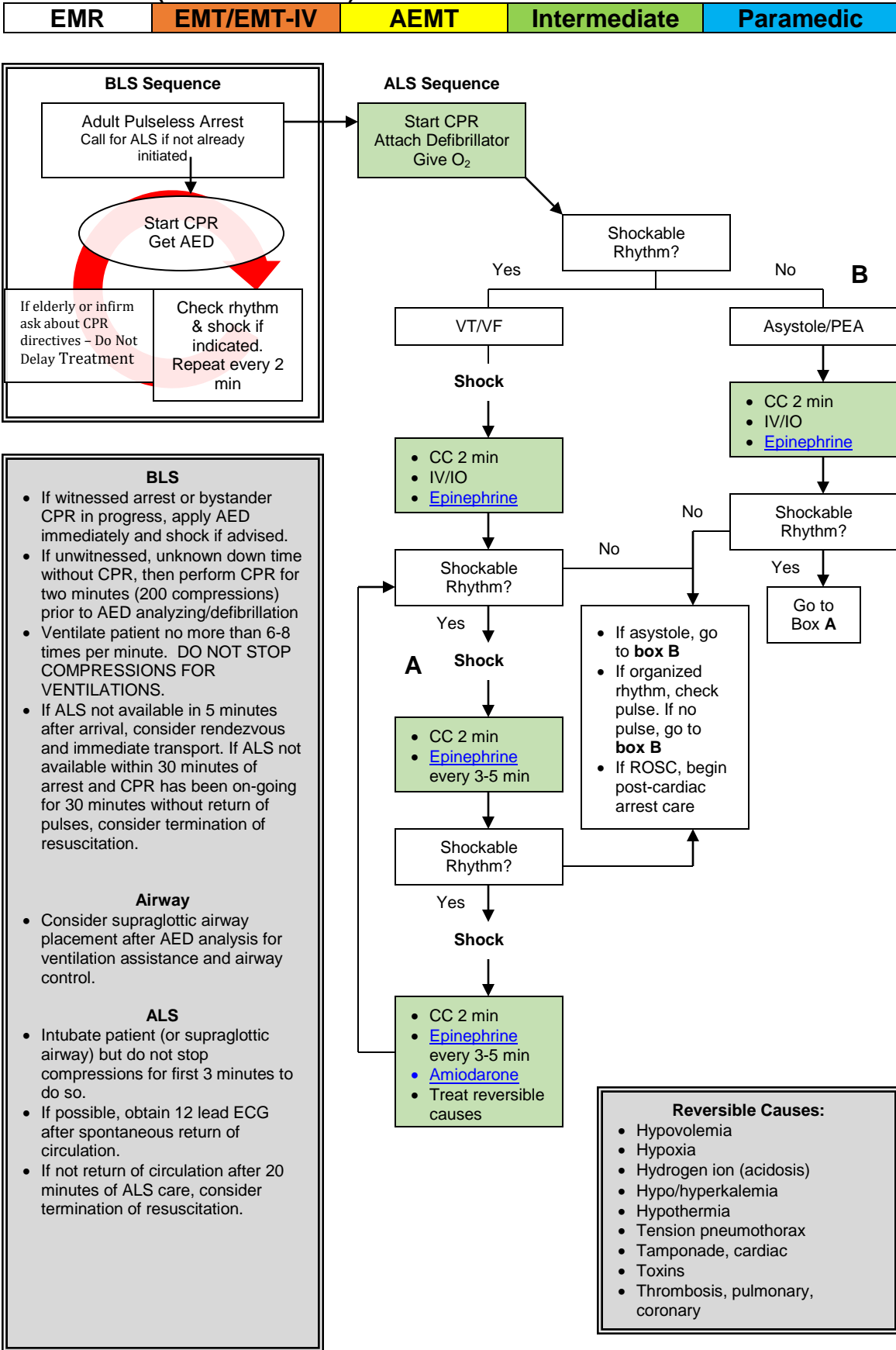
### Advance Medical Directives

- A. These guidelines apply to both adult and pediatric patients.
- B. There are several types of advance medical directives (documents in which a patient identifies the treatment to be withheld in the event the patient is unable to communicate or participate in medical treatment decisions).
- C. Some patients may have specific physician orders on a Colorado Medical Orders for Scope of Treatment (MOST) form. A MOST form order to withhold CPR or resuscitation should be honored by EMS.
- D. Suspected suicide does not necessarily negate an otherwise valid CPR Directive, DNR order or other advanced medical directive. **CONTACT BASE**
- E. **DO NOT RESUSCITATE (DNR) ORDERS AND MEDICAL ORDERS FOR SCOPE OF TREATMENT (MOST)**
  - 1. EMS providers frequently encounter patients who have valid DNR paperwork and wish no resuscitative efforts to be initiated. The decision to honor, or not honor, a DNR must be made quickly and accurately. This order does mean the patient refuses medical care. Other treatment may be provided prior to cardiac or respiratory arrest. More extensive limitations of treatment are accomplished through advanced directives where specific treatments or procedures can be refused. Patients with a terminal illness are unique and require thoughtful consideration at critical times. Healthcare providers should always remember: *"To cure sometimes, relieve occasionally, comfort always."*
  - 2. The person who executes the DNR or MOST order may request to have any of the following procedures withheld, with documentation of each procedure present at the top of the DNR or MOST order:
    - a. Cardiopulmonary resuscitation;
    - b. Advanced airway management;
    - c. Artificial ventilation;
    - d. Transcutaneous cardiac pacing
  - 3. The DNR form ***is not to be honored*** and full resuscitative efforts, including BLS and ACLS, are to be initiated if the patient or the executioner of the order (guardian) does any of the following:
    - a. Destroys the form and removes the identification device; or
    - b. Directs someone in their presence to destroy the form and remove the identification device; or
    - c. Verbally communicates to the responding health care professional(s) or attending physician that it is his/her intent to revoke the order.
- F. **Overview of State Rule 6 CCR 1015-2**
  - 1. Colorado regulations regarding CPR directives and the withholding of CPR by EMS personnel were revised in the State effective as of April 30, 2010.
    - a. Please see [www.coems.info](http://www.coems.info) for complete information
    - b. See the "Information sheet for EMS providers" at this site
  - 2. DNR orders are one type of "advanced directive" regarding medical care. Others include MOST, CPR directives, medical durable power of attorneys and living wills. All are allowed by Colorado law to document end of life wishes.
  - 3. **THE OFFICIAL COLORADO DNR ORDER IS NO LONGER THE ONLY EMS PERSONNEL ENFORCEABLE DNR ORDER IN COLORADO.**
    - a. By State Rule Section 3.1.3 – "Any CPR directive which is apparent and immediately available and which directs that resuscitation not be attempted constitutes lawful authority to withhold or discontinue CPR".
    - b. By State Rule Section 4.2.4 – "EMS personnel shall comply with an individuals CPR Directive when it is apparent and immediately available".
    - c. By State Rule Section 3.1.2 – "A CPR Directive may be made by any other manner". This means that no particular form or format must be used for a DNR/CPR directive to be valid.

## 2050 GENERAL GUIDELINES: ADVANCED MEDICAL DIRECTIVES

- d. By State Rule Section 5.1 – “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..”.
- 4. Per State Rule Section 3.1.1 – An advanced directive ideally contains: Patient name, date of birth, directive concerning CPR or other treatments, signature, date signed, PCP/hospice contact, and any other pertinent information.
  - a. But, as per Rule 3.1.2 – no particular form or format is required.
  - b. **If it is apparent, immediately available, and appears valid you must honor it.** That is the spirit of the rule.
- 5. State Rule Section 3.1.2.a states – “A CPR directive bracelet or necklace may be considered as valid”. The rule does not state that the patient must be wearing the device to be valid.
- 6. State Rule Section 4.2.5 states – “In the absence of a CPR Directive, consent to CPR is presumed”.
- 7. State Rule Section 4.2.1.a states – “This may include directives (sic) from other States”
- 8. State Rule Section 4.2.4.b states – “ a valid CPR Directive which has been scanned, photocopied, faxed or otherwise reproduced shall be honored”.
- G. A Living Will ("Declaration as to Medical or Surgical Treatment") requires a patient to have a terminal condition, as certified in the patient's hospital chart by two physicians.
- H. Other types of advance directives may be a "Durable Medical Power of Attorney," or "Health Care Proxy". Each of these documents can be very complex and require careful review and verification of validity and application to the patient's existing circumstances. Therefore, the consensus is that resuscitation should be initiated until a physician can review the document or field personnel can discuss the patient's situation with the base physician. **If there is disagreement at the scene about what should be done, CONTACT BASE for guidance.**
- I. Verbal DNR "orders" are not to be accepted by the prehospital provider. In the event family or an attending physician directs resuscitation be ceased, the prehospital provider should immediately **CONTACT BASE**. The prehospital provider should accept verbal orders to cease resuscitation only from the **Base physician**.
- J. There may be times in which the prehospital provider feels compelled to perform or continue resuscitation, such as a hostile scene environment, family members adamant that "everything be done," or other highly emotional or volatile situations. In such circumstances, the prehospital provider should attempt to confer with the base for direction and if this is not possible, the prehospital provider must use his or her best judgment in deciding what is reasonable and appropriate, including transport, based on the clinical and environmental conditions, and establish base contact as soon as possible.
- K. **Additional Considerations:**
  - a. Patients with valid DNR orders or advanced medical directives should receive supportive or comfort care, e.g. medication by any route, positioning and other measures to relieve pain and suffering. Also the use of oxygen, suction and manual treatment of an airway obstruction as needed for comfort.
  - b. Mass casualty incidents are not covered in detail by these guidelines. (See Colorado State Unified Disaster Tag and Triage System: A Guide to MCI).
  - c. 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.
  - d. Mechanisms for disposition of bodies by means other than EMS providers and vehicles should be prospectively established in each county or locale.
  - e. In all cases of unattended deaths occurring outside of a medical facility, the coroner should be contacted immediately.

# 2060 ADULT (AGE ≥ 12 YEARS) UNIVERSAL PULSELESS ARREST ALGORITHM



**Reversible Causes:**

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

# 2070 GENERAL GUIDELINES: TERMINATION OF RESUSCITATION AND FIELD PRONOUNCEMENT GUIDELINES

## Purpose

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

## General Principles

- A. Agency policy determines base contact requirements for patients for whom resuscitative efforts are being withheld.
- B. Attempt resuscitation for all patients found pulseless and apneic, unless any of the following are present:
  - 1. Physician orders as specified on the Colorado Medical Orders for Scope of Treatment (MOST) form: "No CPR. Do Not Resuscitate/DNR/Allow Natural Death", present with the patient
  - 2. A valid CPR directive present with the patient
  - 3. Dependent lividity or rigor mortis
  - 4. Decomposition
  - 5. Decapitation
  - 6. Evidence of massive blunt head, chest, or abdominal trauma with obvious mortal wounds (with obvious signs of vital organ destruction such as brain, thoracic contents, etc.).
  - 7. Third degree burns over more than 90% of the total body surface area
- C. The following guidelines for termination of resuscitation do not apply for any of the following cases as prolonged resuscitation may be warranted. Contact base for further directions after 30 minutes of resuscitation:
  - 1. Hypothermia
  - 2. Drowning with hypothermia and submersion < 60 minutes.
  - 3. Pregnant patient with estimated gestational age  $\geq$  20 weeks
- D. In general, a patient's best chances at survival are from good CPR and rapid defibrillation. Patients without return of spontaneous circulation should not be transported from scene without extenuating circumstances.
- E. If ANY patient meets the criteria described above as a non-resuscitation candidate, access to the scene should be limited as much as possible with due care to disturb the scene as little as possible. As in all cases of out-of-hospital deaths, every effort should be made to console family, friends, survivors, and witnesses without interfering with ongoing investigations. Victim Assistance Program (VAP) services should be notified when appropriate.
- F. After pronouncement, do not alter condition in any way or remove equipment (lines, tubes, etc.), as the patient is now a potential coroner's case.

## Termination of Resuscitation (TOR)

- A. All cases described below require contact with a base physician to approve termination of resuscitation (TOR).
  - 1. **Blunt Trauma Arrest:**
    - a. Contact Base for TOR if patient found apneic and pulseless and no response to BLS airway care.
    - b. Consider needle thoracostomy if ALS available
  - 2. **Penetrating Trauma Arrest:**
    - a. Resuscitate and transport to a trauma facility if less than 10 minutes to trauma center.
    - b. Consider needle thoracostomy if ALS available.
    - c. If time of arrest suspected to be > 10 minutes, and no signs of life or response to BLS care (as above), consider base contact for TOR.

## 2070 GENERAL GUIDELINES: TERMINATION OF RESUSCITATION AND FIELD PRONOUNCEMENT GUIDELINES

### 3. Medical Pulseless Arrest:

- a. Resuscitate according to Universal Pulseless Arrest Algorithm on scene (unless unsafe) until one of the following end-points met:
  - i. Return of spontaneous circulation (ROSC).
  - ii. Patent airway with EtCO<sub>2</sub> <10 during high quality CPR
  - iii. No ROSC despite 20 minutes of provision of ALS care or BLS care with an AED. If shockable rhythm still present, continue resuscitation and contact base for consideration of transport.
  - iv. Contact base for TOR at any point if continuous asystole for at least 20 minutes in any patient despite adequate CPR with ventilation and no reversible causes have been identified.
- b. For BLS-only providers, contact Base for TOR when all of the following criteria met:
  - i. No AED shock advised
  - ii. No ROSC
  - iii. 20 minutes of quality CPR with patent airway or:
    1. Arrest unwitnessed by either EMS or bystanders
    2. No bystander CPR before EMS arrival

### B. Field Pronouncement Orders

1. EMT shall contact base on recorded line (or per agency specific guidelines) and speak directly to physician.
2. Report shall include the following:
  - a. A request for field pronouncement.
  - b. Patient age and sex.
  - c. Apparent cause of death and approximate downtime.
  - d. Reasons CPR should not be initiated (see #1 above).
  - e. Any other pertinent information.
3. Documentation shall include:
  - a. Physician name.
  - b. Time of death (pronouncement).
  - c. Documentations shall also include consideration of the following, if available, in addition to normal written report information:
    - i. Body position and location when discovered, including differences from when last seen alive.
    - ii. Patient condition when last seen alive.
    - iii. Clothing and condition of clothing.
    - iv. Conditions of residence/business.
    - v. Statements made on the scene by significant individuals.
    - vi. Any unusual circumstances.

## 2080 PROCEDURE GUIDELINE: INTRAOSSEOUS CATHETER PLACEMENT

EMT-IV

AEMT

Intermediate

Paramedic

### Indications (must meet all criteria):

1. There is confirmed existence of shock, cardiac arrest, or unresponsive with unstable/unacceptable vital signs.
2. Three peripheral IV attempts have been unsuccessful or 90 seconds have passed.
3. Intraosseous shall not be used for prophylactic access, pain control medications or for simple dehydration.

### Technique:

1. Determine the correct catheter to use
  - a. Pediatric – Pink color, for patients 3-39 Kg
  - b. Adult – Blue color, for patients  $\geq 40$  kg
2. Locate insertion site (only one attempt at each insertion site, 3 attempts total)
  - a. Avoid using in patients with osteogenesis imperfect, or bones with obvious fractures, prior IO insertions, osteomyelitis, or skin infection at insertion site.
  - b. Adult
    - i. Proximal tibia - one finger width medial to the tibial tuberosity.
    - ii. Humeral Head – palpate intertubercular groove. Move 1 finger laterally to insert in greater tubercle.
    - iii. Distal tibia – just above medial malleolus
  - c. Pediatric
    - i. Proximal tibia if tibial tuberosity is not palpable - Two finger widths below the bottom of the patella, then medial along the flat aspect of the tibia
    - ii. Proximal tibia with palpable tibial tuberosity – One finger width distal to the tibial tuberosity along the flat aspect of the medial tibia
3. Clean skin with iodine, if available
4. Prior to powering the driver, insert the needle set (perpendicular to insertion site) through the skin to the bone; verify the 5 mm mark can be seen
  - a. If the 5 mm mark is visible continue with the insertion
  - b. If the 5 mm mark is not visible switch to another site or try a longer needle
5. Power the driver and complete insertion
  - a. Do Not Push Down with excessive force on the Driver and Needle Set during insertion
  - b. Use moderate pressure and allow the Driver and the Needle Set to do the work
6. Stop when the IO space is reached. You know the IO space has been reached when:
  - a. There is a sudden lack of resistance (“stop when you feel the pop”)
  - b. In select adult cases, when the flange gently touches the skin
7. Attach the primed EZ-Connect® extension to the catheter Luer-lock
8. If patient is awake and responsive, administer 2% Lidocaine as a local anesthetic. Prime the EZ-Connect® extension with it before connection to the hub.
  - a. Adults: 0.2 ml increments for 1 cc (20 mg); allow 15-30 seconds. Then start second 1 cc (20mg) dose and titrate to effect; max 3 mg/kg per 24 hours (70 kg = 210 mg/24 hours).
  - b. Pediatrics: 0.5 mg/kg IO slowly over 90-120 seconds. Maximum dose in pediatric patients is 20 mg.
9. Rapidly syringe flush it with 10 ml of fluid
  - a. Amount of syringe flush is the same for pediatric and adult
  - b. Some patients may require multiple syringe flushes
10. Confirm catheter placement by:
  - a. Noting blood on the tip of the stylet
  - b. The catheter is firmly seated in the bone
  - c. Noting blood filling the catheter hub
  - d. After flushing the IO noting fluids and medications flow without difficulty and there are no signs of extravasation

## 2080 PROCEDURE GUIDELINE: INTRAOSSEUS CATHETER PLACEMENT

EMT-IV

AEMT

Intermediate

Paramedic

11. Secure the EZ-IO® and protect the sterile connection point on the catheter hub
12. An infusion pressure bag or syringe may be needed to improve fluid flow
13. Place the supplied wrist band on the patient's arm
14. Once EZ-IO® is placed remember:
  - a. Routinely reconfirm the catheter is secure and in position
  - b. Maintain appropriate protection at the insertion site to prevent accidental bumping or dislodgement
  - c. Frequently monitor the EZ-IO®, fluids, and extremity
  - d. Remove the EZ-IO® within 24 hours

### **Immediate Complications:**

1. Compartment syndrome with improper placement.
2. Subperiosteal infusion with improper placement.
3. Slow infusion secondary to clotting of marrow in the needle.
4. Bone Fracture.

### **Delayed Complications:**

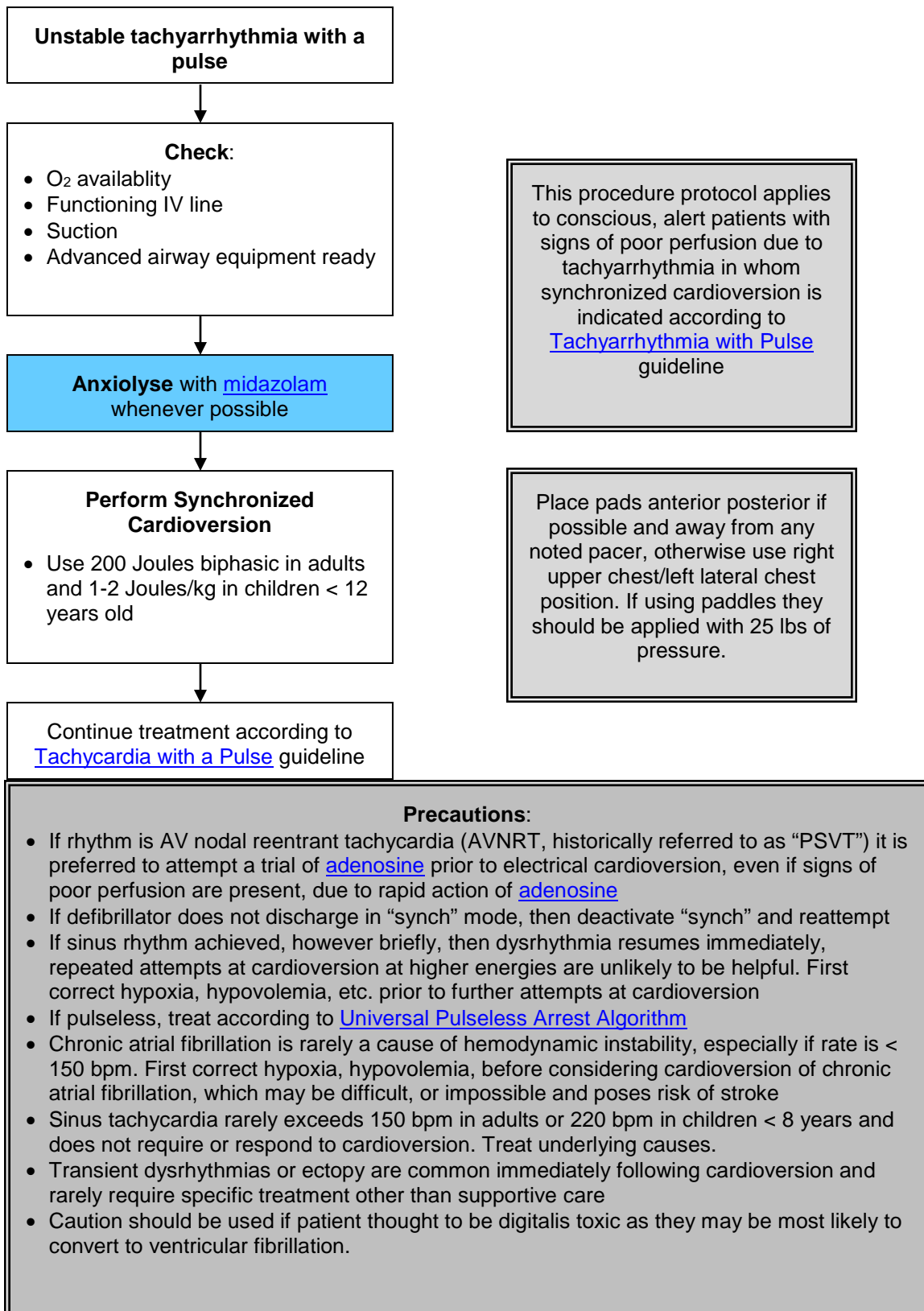
1. Sepsis.
2. Fat embolism.
3. Osteomyelitis occurs in septic patients, use of I/O lines beyond 24 hours, and infusion of hypertonic solutions
4. Growth plate and marrow damage from I/O infusions are possible, but largely unstudied.

### **Contraindications:**

1. Fracture of target bone
2. Cellulitis (skin infection overlying insertion site)
3. Osteogenesis imperfecta (rare condition predisposing to fractures with minimal trauma)
4. Total knee replacement (hardware will prevent placement)

## 2090 PROCEDURE GUIDELINE: SYNCHRONIZED CARDIOVERSION

### Paramedic





## 2100 PROCEDURE GUIDELINE: TRANSCUTANEOUS CARDIAC PACING

Intermediate

Paramedic

### Indications

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

### Precautions

1. Conscious patient will experience discomfort; consider relief with opioids 50 mcg IV or midazolam 3 mg IV if blood pressure allows.

### Technique

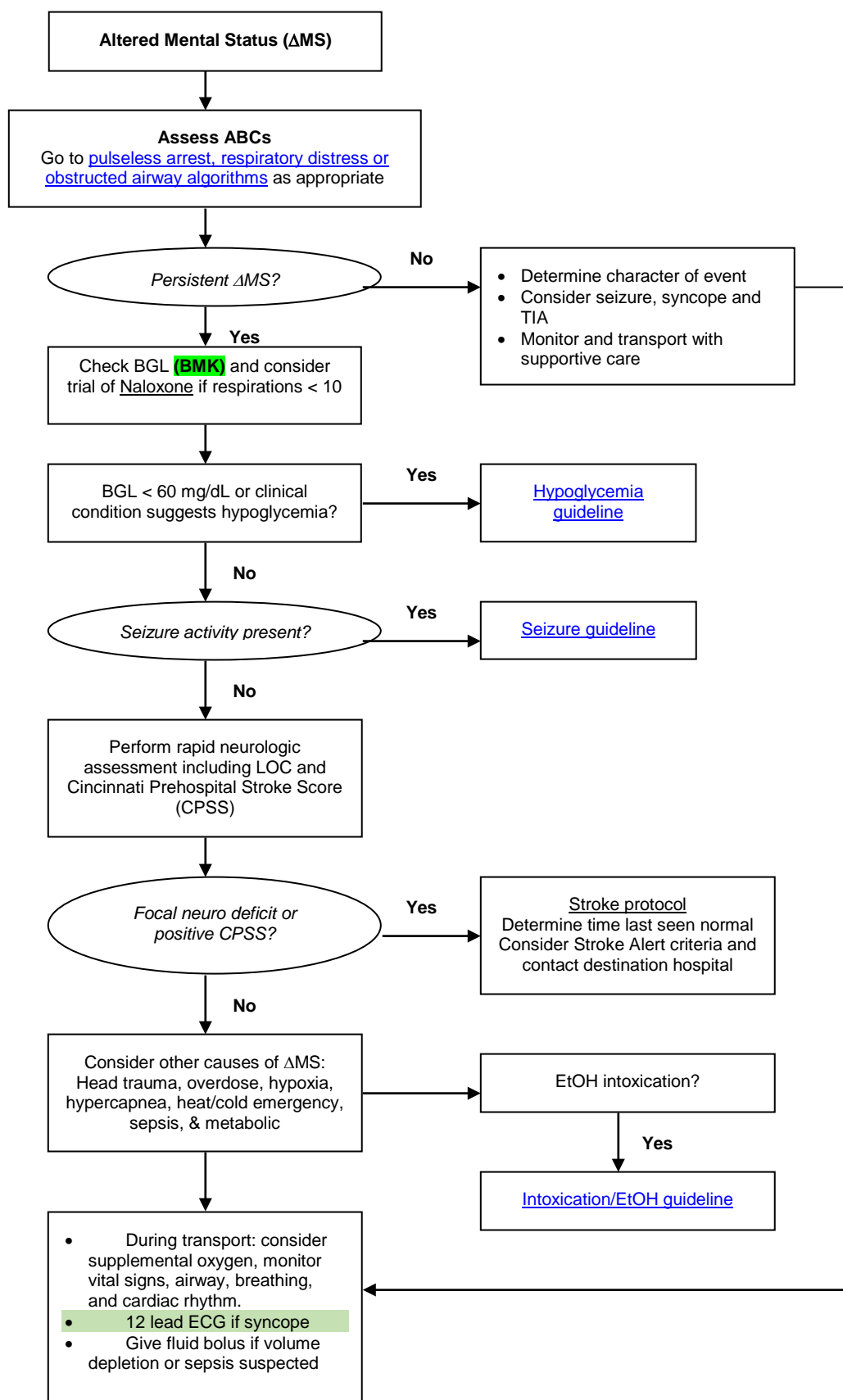
1. Apply electrodes as per manufacturer specifications: (-) left anterior, (+) left posterior.
2. Turn pacer unit on.
3. Set initial current to 40 mAmps .
4. Select pacing rate at 60 beats per minute (BPM)
5. Start pacing unit.
6. Confirm that pacer senses intrinsic cardiac activity by adjusting ECG size.
7. Increase current 10 mAmps every 10-15 seconds until capture or 200 mAmps (usually captures around 100 mAmps).
8. If there is electrical capture, check for pulses and increase amps by 2 mAmps..
9. If no capture occurs with maximum output, discontinue pacing and resume Bradycardia Protocol.
10. If there are no pulses with capture, consider a fluid challenge or dopamine at 10 mcg/kg/min, titrate to SBP>100.

### Precautions:

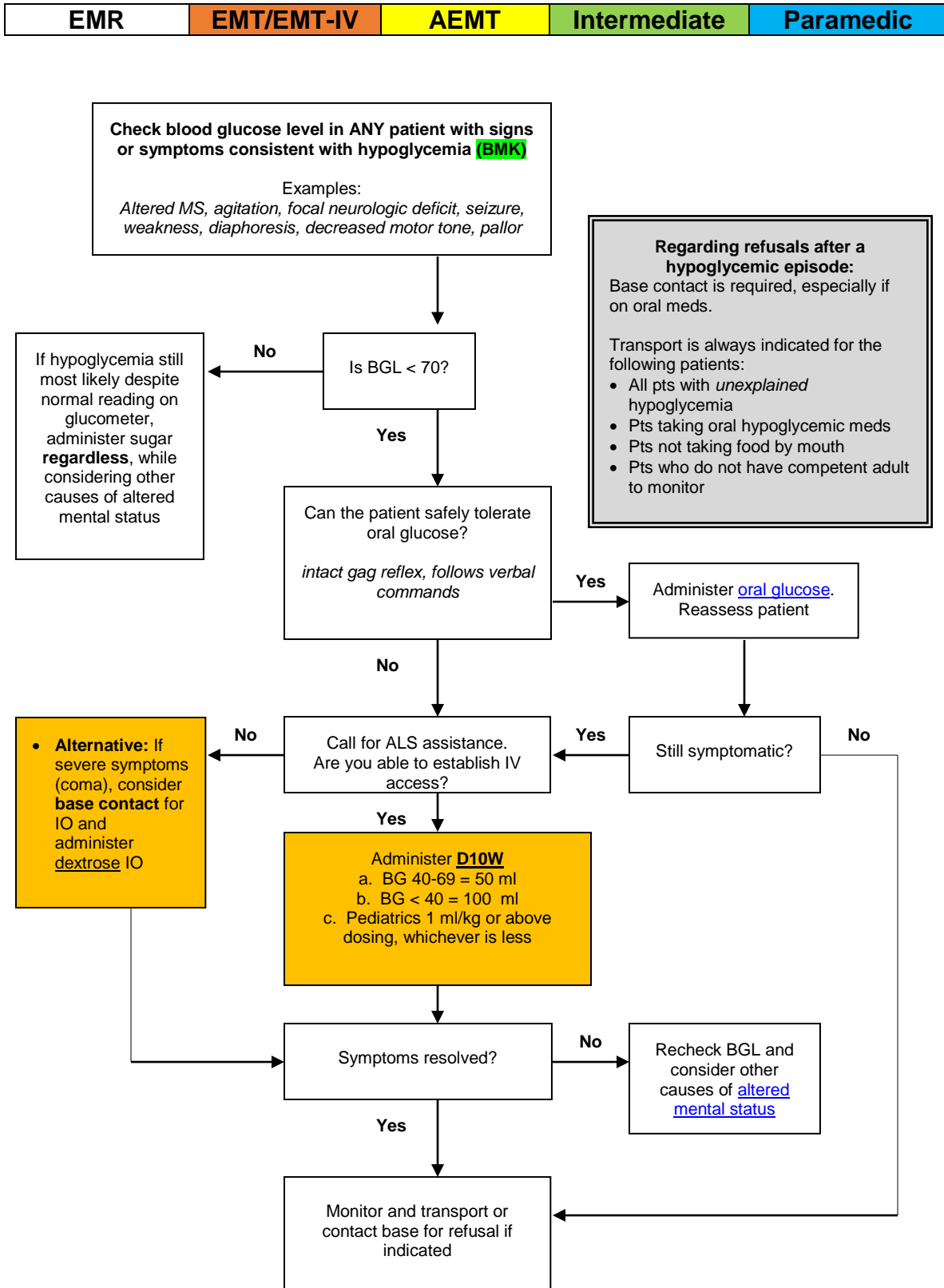
1. Ventricular fibrillation and ventricular tachycardia are rare complications, most often seen in digitalis toxicity. Follow appropriate guidelines if either occur.
2. Pacing is rarely indicated in patients under the age of 12 years.

# 3000 UNIVERSAL ALTERED MENTAL STATUS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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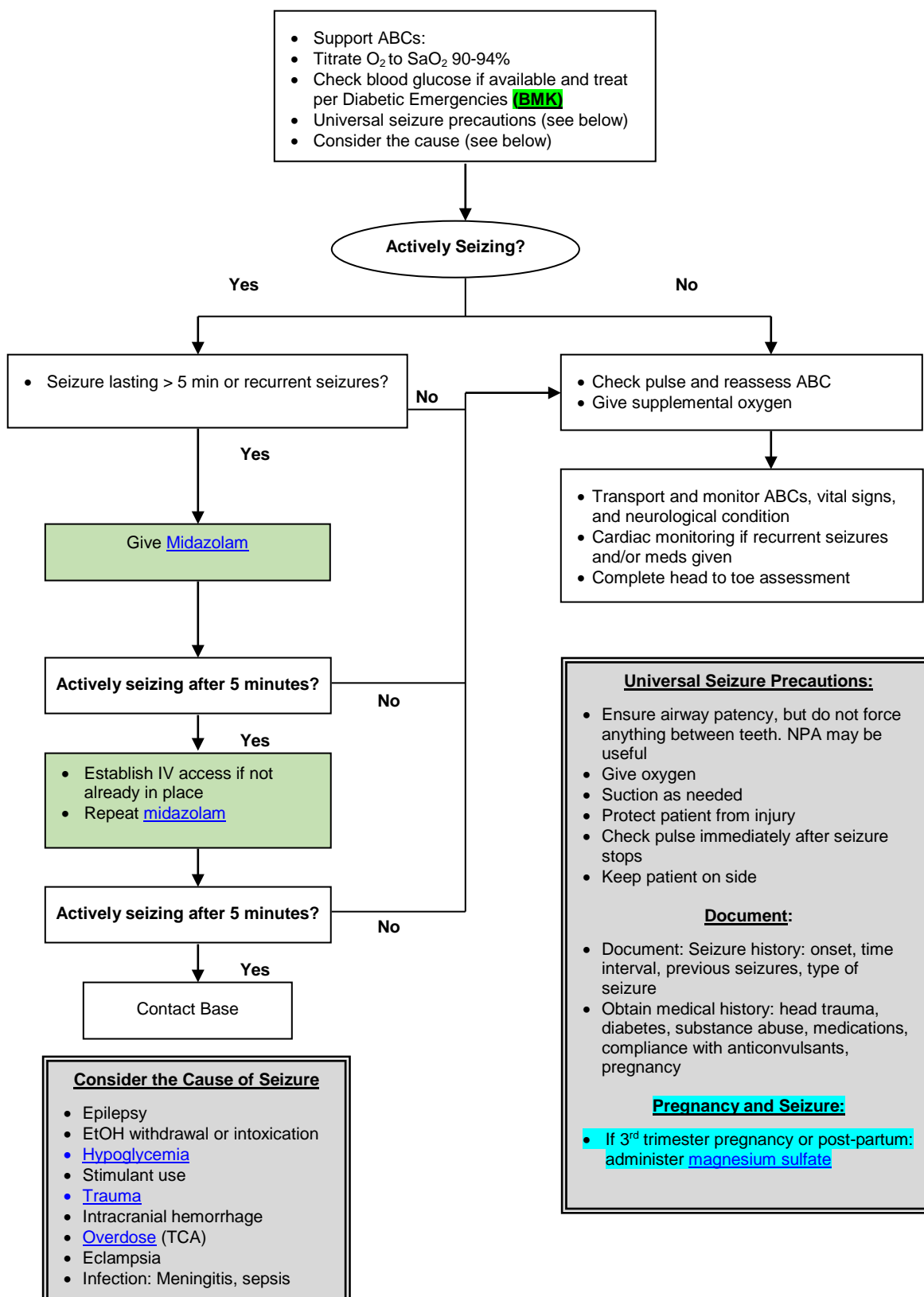


# 3010 HYPOGLYCEMIA

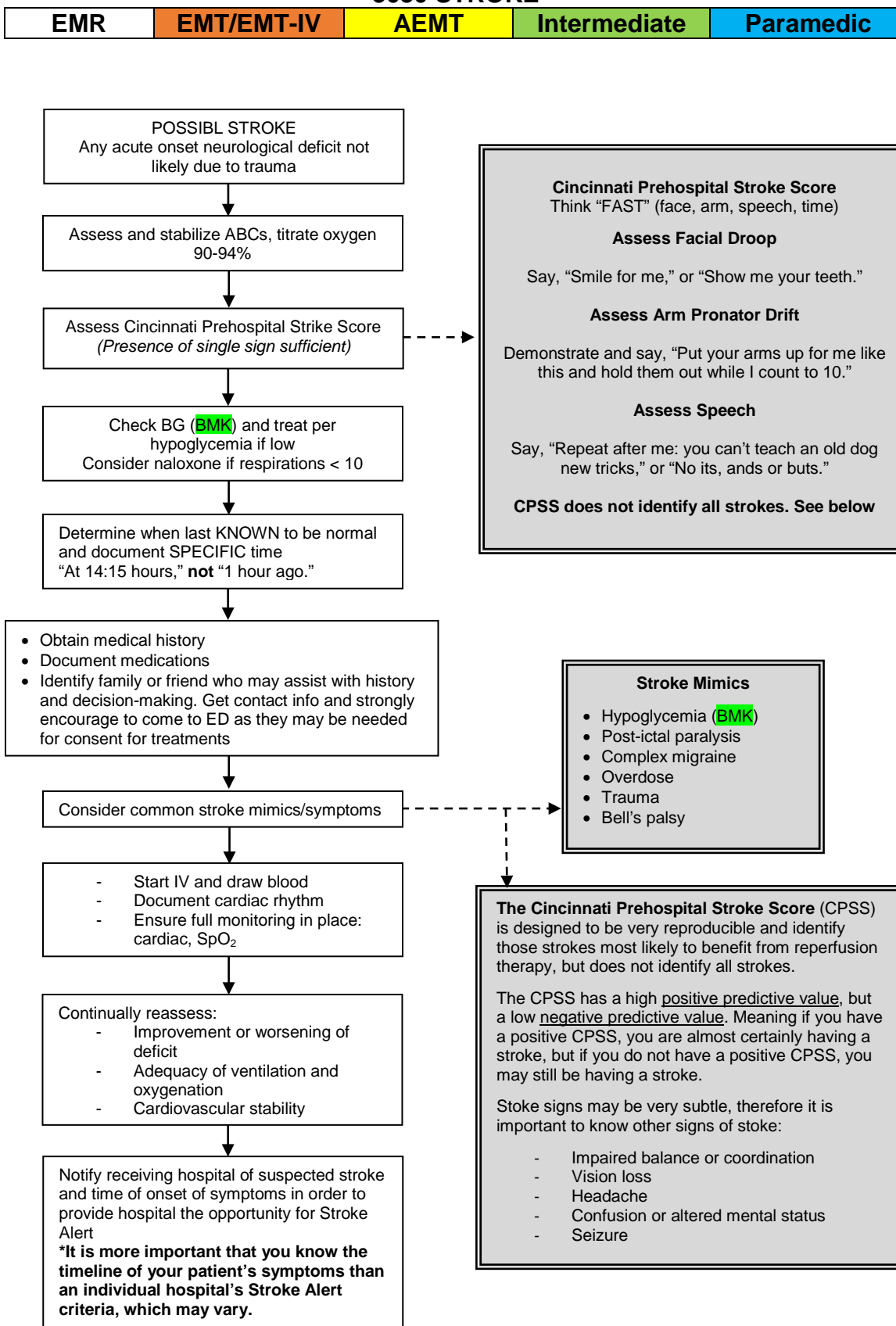


## 3020 SEIZURE - ADULT (≥ 12 YEARS)

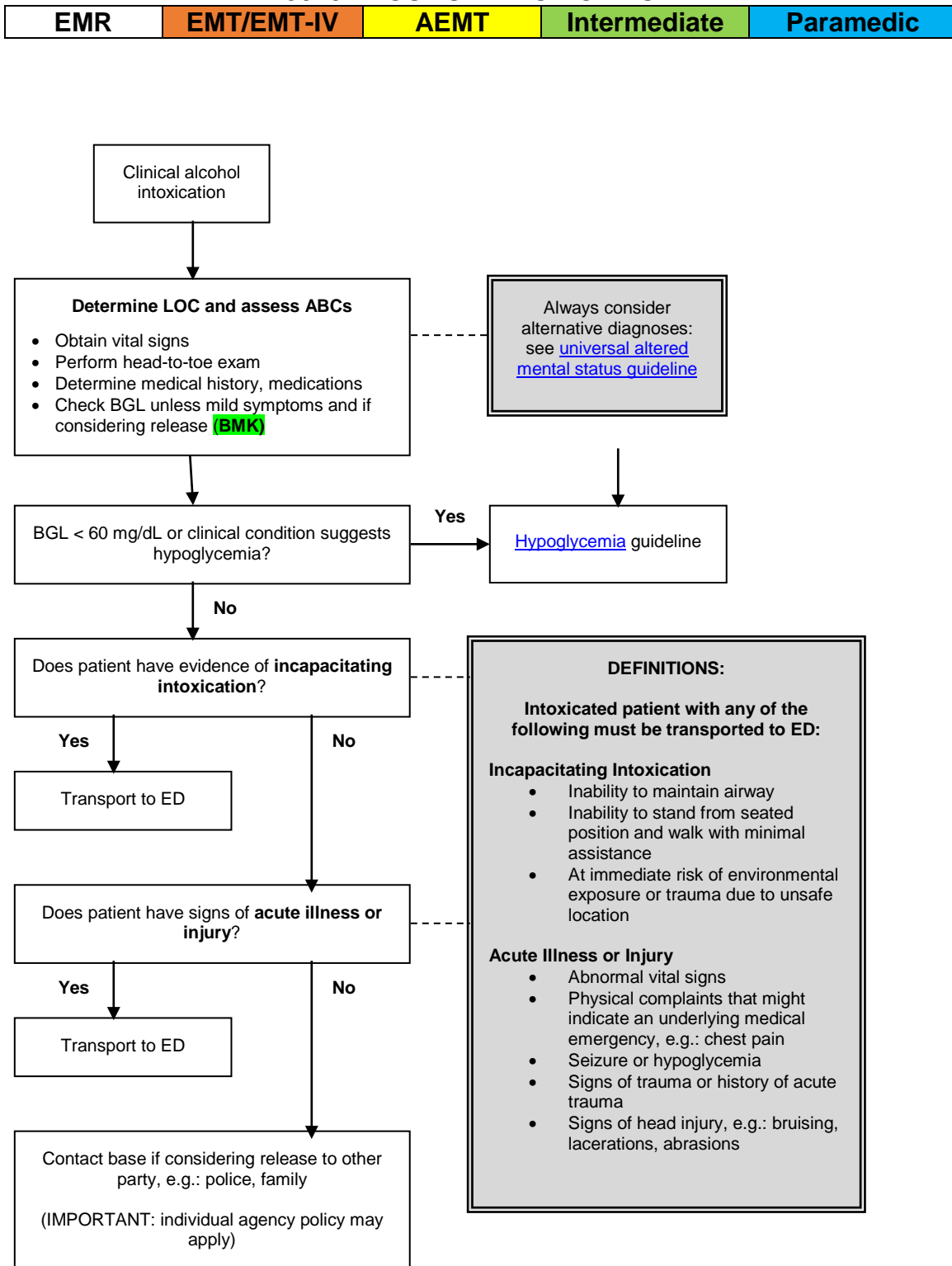
EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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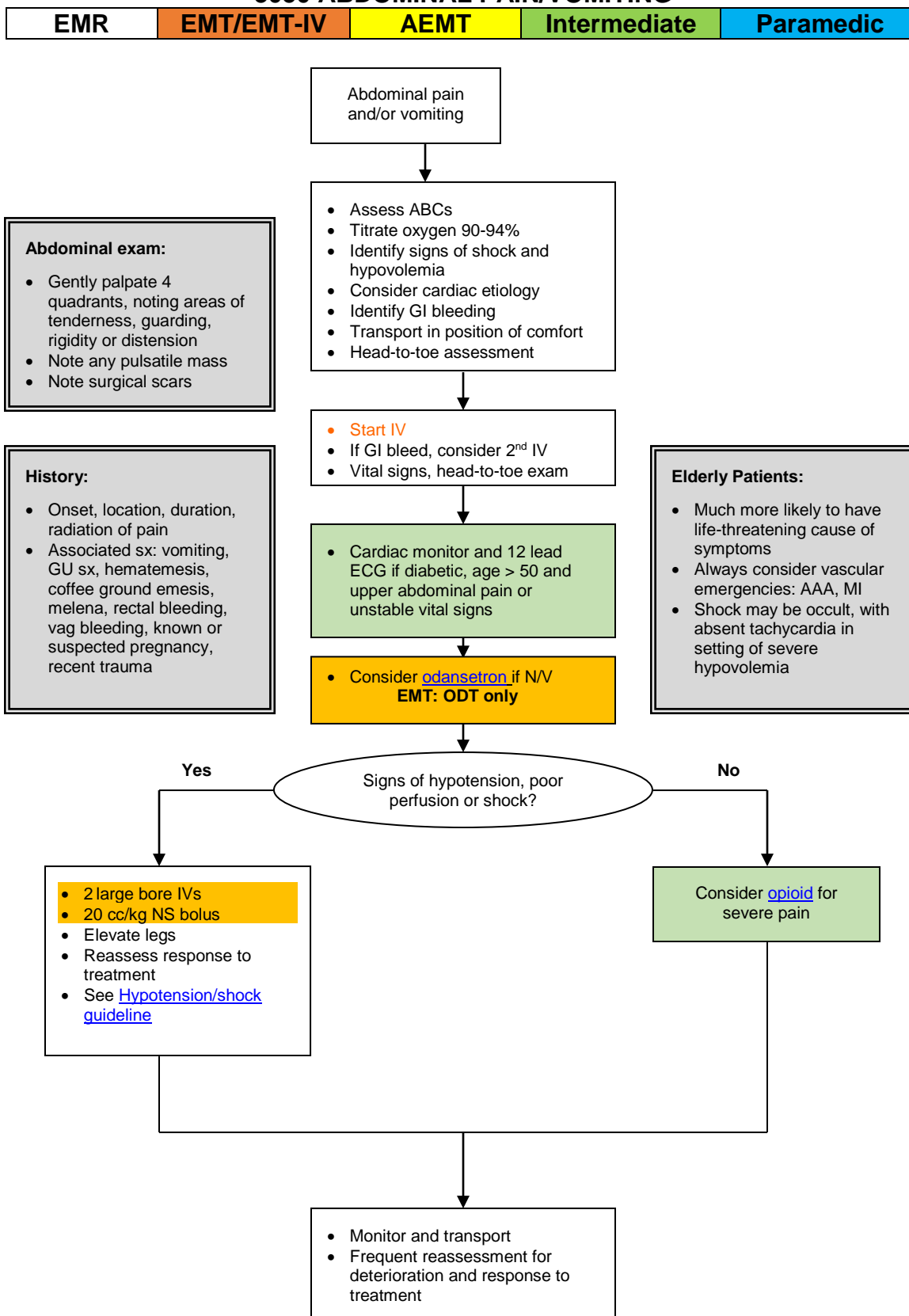
## 3030 STROKE



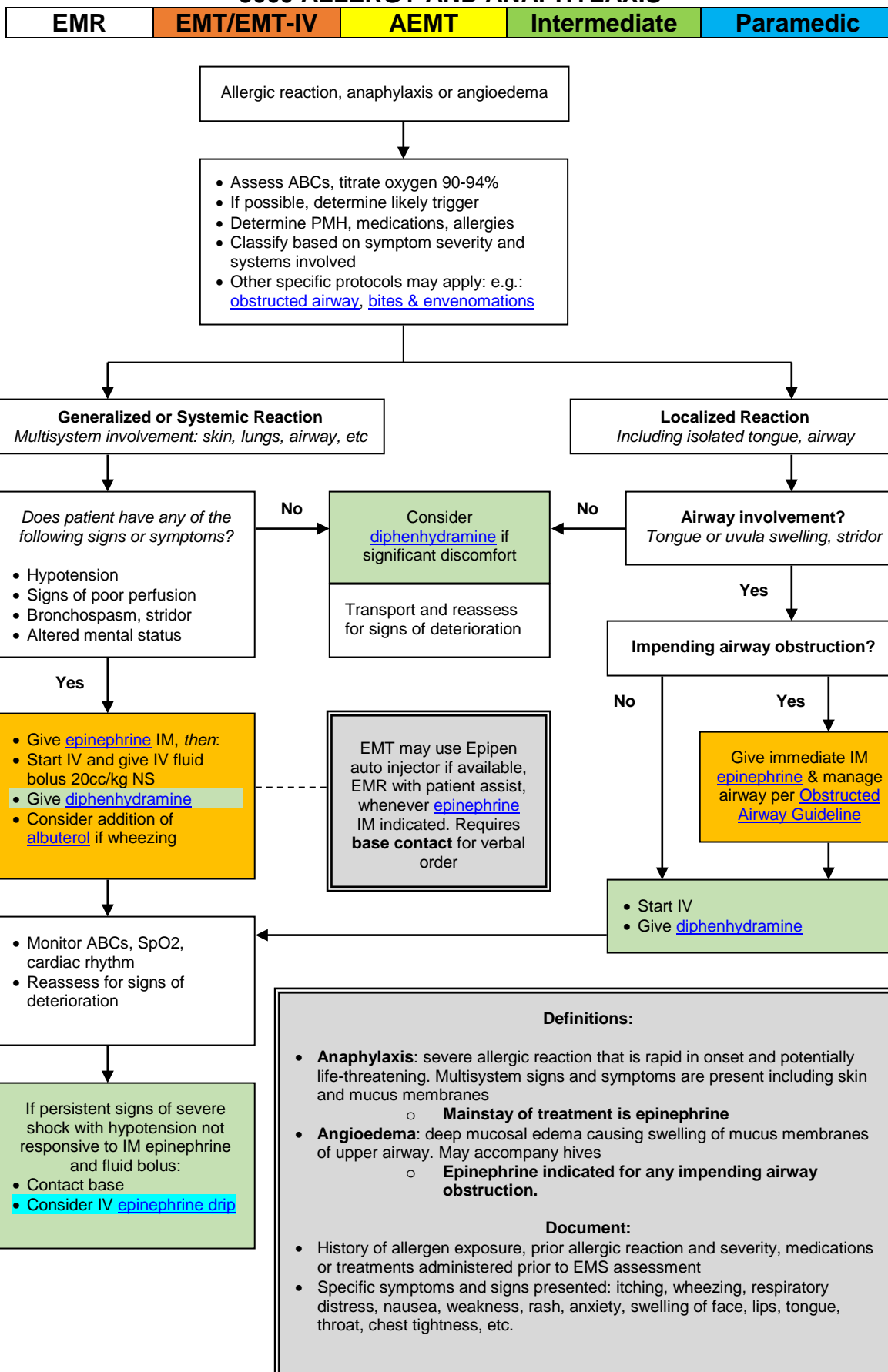
## 3040 ALCOHOL INTOXICATION



# 3050 ABDOMINAL PAIN/VOMITING

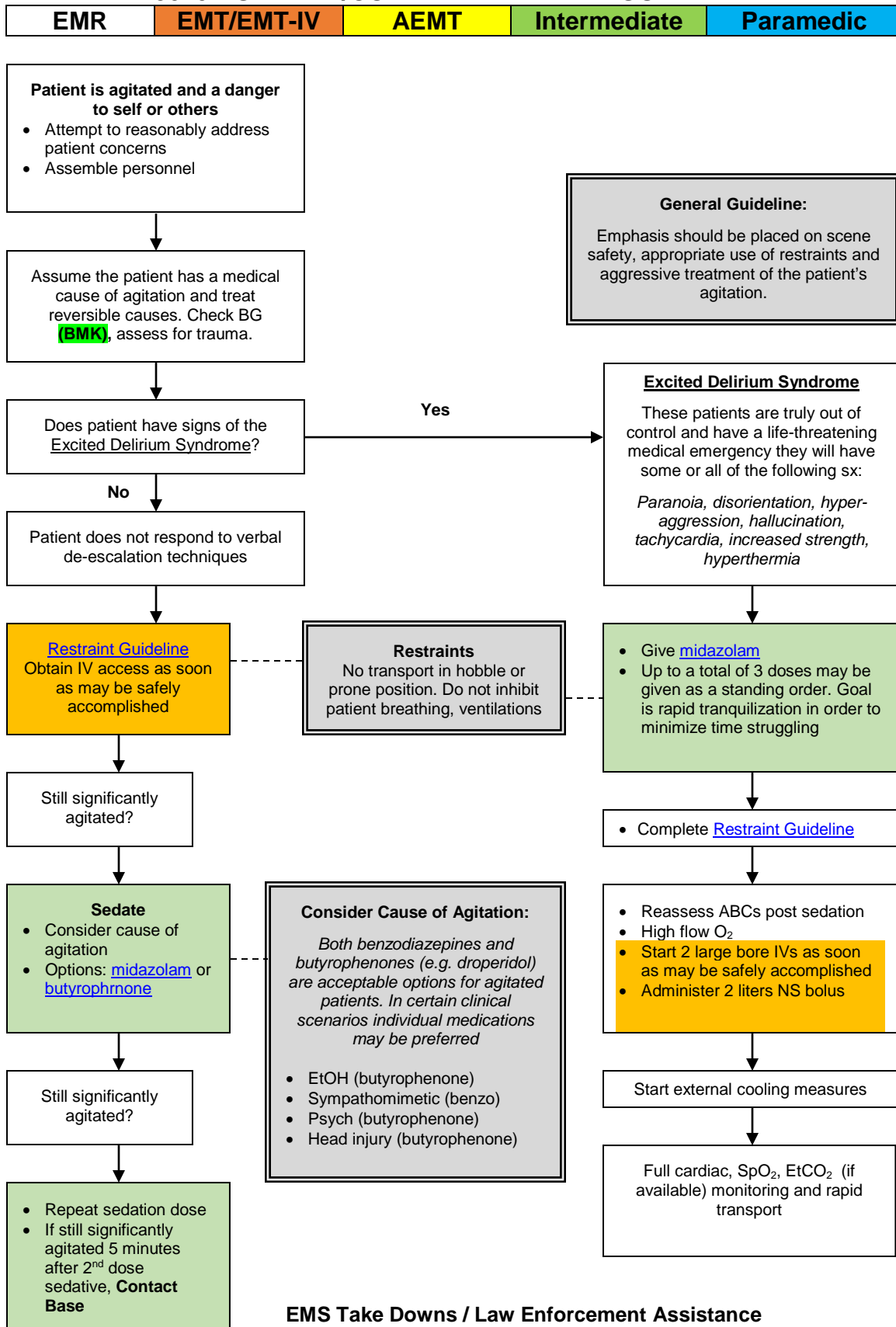


## 3060 ALLERGY AND ANAPHYLAXIS





# 3070 AGITATED/COMBATIVE PATIENT GUIDELINE



### 3070 AGITATED/COMBATIVE PATIENT GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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- A. Agitated and combative patients are a great concern for EMS provider safety.
- B. Most EMS providers are ill prepared and trained to engage in physical take downs of combative patients.
- C. EMS has a main goal of patient care and protection, and they also have medications which can assist in the tranquilization of the patient AFTER they have been physically subdued.
- D. Law enforcement has much more training and tools to be available to be able to handle the combative patient.

#### **Procedure**

- A. Law enforcement shall be contacted immediately if they are not already on scene whenever a patient is exhibiting potentially violent behavior.
- B. Law enforcement shall be lead on any calls where the patient needs to be controlled by physical force on scene. Obviously this does not apply if this occurs during transport.
- C. Once physical control of patient has been accomplished by law enforcement, EMS shall THEN follow the medication and restraint portions of the above guideline.
- D. If the patient is VERY agitated, make sure Excited Delirium is considered.
- E. CONTACT ON-LINE MEDICAL CONTROL FOR:
  - a. If law enforcement is unavailable, EMS shall not put themselves in a position to perform acts they are not qualified to perform.
  - b. If law enforcement is on scene but is unwilling to assist in gaining physical control of the patient
  - c. If law enforcement needs orders from a physician to place an M-1 and take patient into custody.

## 3080 PROCEDURE GUIDELINE: RESTRAINT GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### Indications:

- A. Physical restraint of patients is permissible and encouraged if the patient poses a danger to him or herself or to others. Only reasonable force is allowable, i.e., the minimum amount of force necessary to control the patient and prevent harm to the patient or others. Try alternative methods first (e.g., verbal de-escalation should be used first if the situation allows).
- B. **Paramedic/EMT-I:** Consider pharmacological treatment (tranquilization) of agitation in patients that require transport and are behaving in a manner that poses a threat to themselves or others, and **any patient who requires physical restraints**. See [Agitated/Combative Patient Guideline](#). The term “chemical restraint” is no longer preferred.
- C. Restraints may be indicated for patients who meet the following criteria:
  - 1. A patient who is significantly impaired (e.g. intoxication, medical illness, injury, psychiatric condition, etc) and lacks decision-making capacity regarding his or her own care and insight into their current behavior.
  - 2. A patient who exhibits violent, combative or uncooperative behavior who does not respond to verbal de-escalation and such behavior poses a danger to themselves or others either directly or by interfering with emergency treatment.
  - 3. A patient who is suicidal, homicidal, or on a mental health hold and considered to be a risk for behavior dangerous to his or herself or to healthcare providers.

### Precautions:

- A. When appropriate, involve law enforcement, especially if there is potential for a “takedown”. This should be performed preferentially by law enforcement officers trained in such procedures.
- B. Restraints shall be used only when necessary to prevent a patient from seriously injuring him or herself or others (including the ambulance crew), and only if safe transportation and treatment of the patient cannot be accomplished without restraints. They may not be used as punishment, or for the convenience of the crew.
- C. Any attempt to restrain a patient involves risk to the patient and the prehospital provider. Efforts to restrain a patient should only be done with adequate assistance present.
- D. Be sure to evaluate the patient adequately to determine his or her medical condition, mental status and decision-making capacity.
- E. Do not use hobble restraints and do not restrain the patient in the prone position or any position that is impairing the airway or breathing.
- F. Search the patient for weapons.
- G. Handcuffs are not appropriate medical restraints and should only be placed by law enforcement personnel. See [Handcuff Guideline](#).

### Technique:

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

## 3080 PROCEDURE GUIDELINE: RESTRAINT GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### Documentation :

Document the following in all cases of restraint:

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

### Complications:

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

## 3085 TRANSPORT OF THE HANDCUFFED PATIENT

**General:** EMS personnel have no legal authority to enforce restraint and custody on behalf of law enforcement. The use of handcuffs in the back of an ambulance may hinder the provider's ability to give appropriate medical care if there is not the availability to remove them immediately. EMS providers may legally restrain someone if the patient's sensorium is altered to the point where the patient presents an acute danger to themselves or the EMS providers. However, EMS personnel should never use handcuffs for this purpose. While we want to be helpful and assist law enforcement in their duties, it should not come by putting ourselves at medical and legal risk.

### **Purpose:**

1. Guideline for transport of patients in handcuffs placed by law enforcement who do not otherwise have a medical reason for use of restraints.

### **Guideline:**

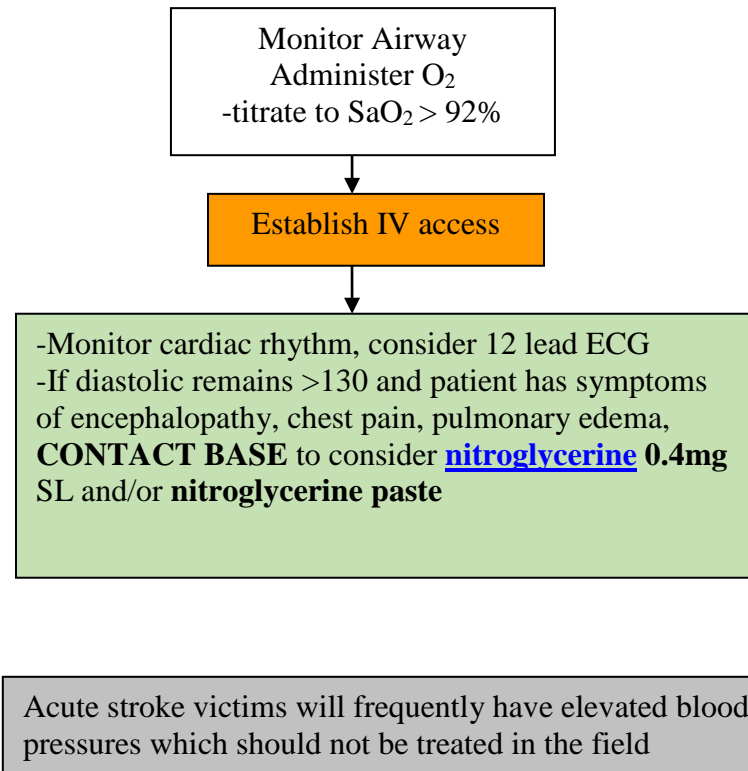
1. Handcuffs are only to be placed by law enforcement. EMS personnel are not permitted to use handcuffs for restraint purposes.
2. Every effort should be made to arrange for a member of law enforcement to accompany the in-custody patient in the back of the ambulance at all times when transporting a patient in handcuffs.
3. If the officer is not available to ride in the ambulance, alternate arrangements should be considered such as law enforcement transport of patient or keys held by EMS personnel.
4. EMS personnel are not responsible for the law enforcement hold on these patients. If patient becomes threatening EMS should stop and let patient go. This assumes that the patient has capacity to refuse care if not for being in custody (i.e. no ExDS, AMS or severe intoxication). Concurrent law enforcement notification should be done.
5. Accompanied handcuffed patients shall never be placed in the prone position.
6. Handcuffs may be used with spinal immobilization but are not recommended. Medical priorities should take priority in the positioning of the handcuffs.
7. It is encouraged that each agency should discuss these issues with their local law enforcement agencies and come to agreements PRIOR to having this discussion on a scene.

## 3090 HYPERTENSION

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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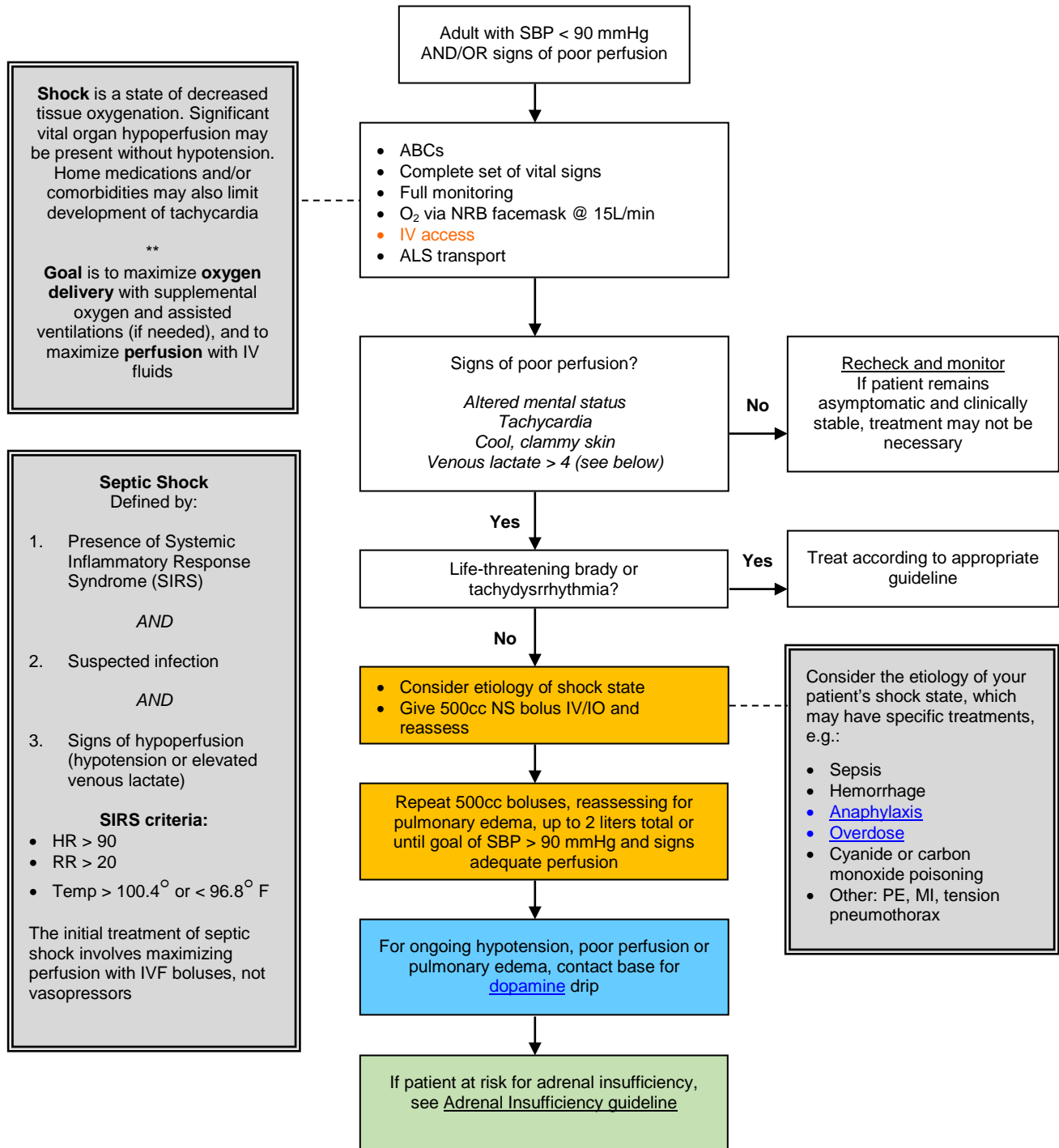
**General Considerations:** There are many causes for hypertension, most of which do not require immediate treatment. Acute problems are rarely due to hypertension itself. Make sure you are treating the underlying condition and not just the hypertension. This guideline is intended for **isolated hypertension**.

### IF PREGNANT TREAT PER OB/GYN GUIDELINE



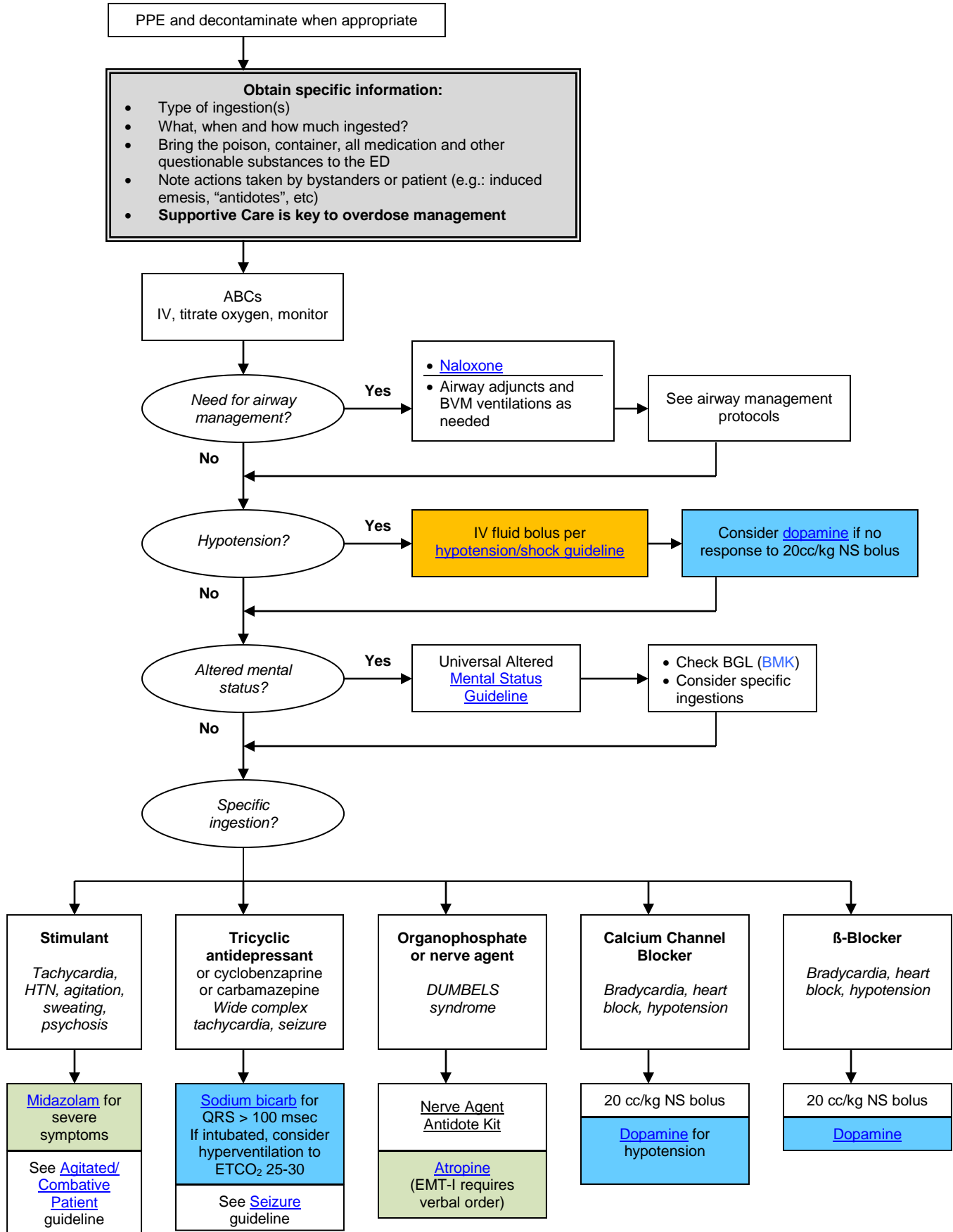
# 3100 MEDICAL HYPOTENSION / SHOCK GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 3110 OVERDOSE AND ACUTE POISONING

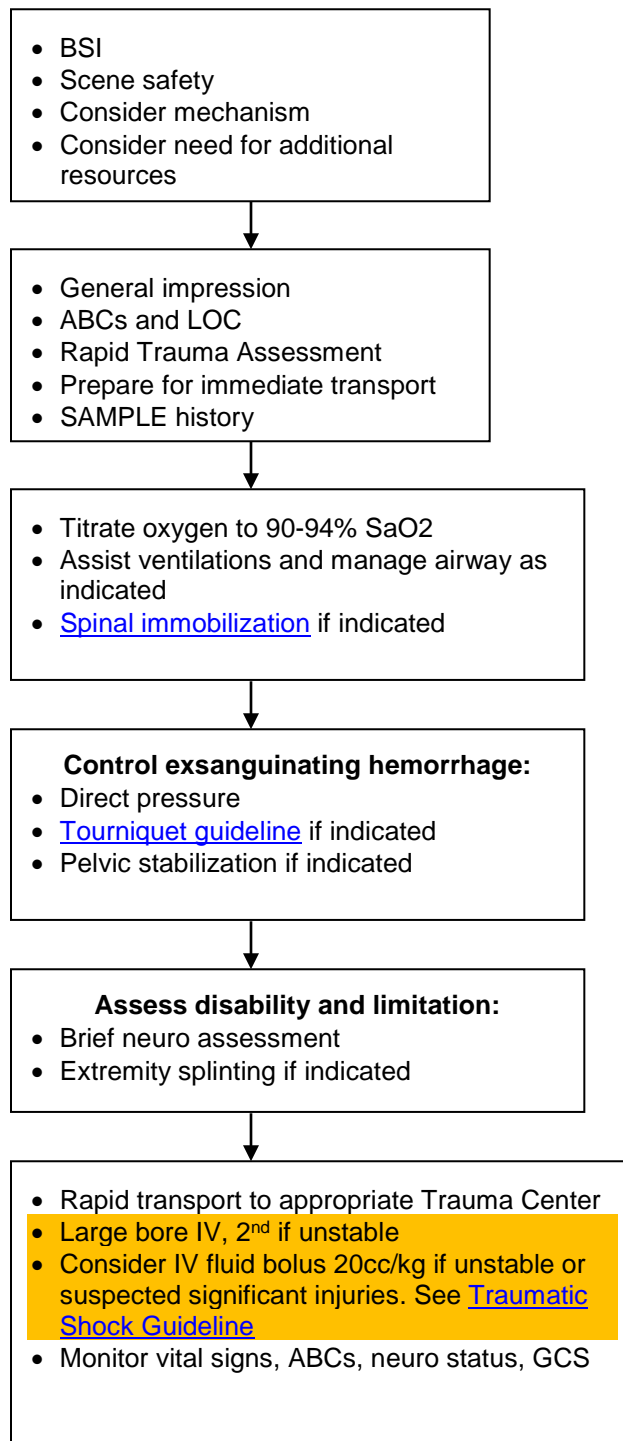
EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 4000 GENERAL TRAUMA CARE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 4010 PROCEDURE GUIDELINE: TOURNIQUET GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### Indications

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

### Precautions

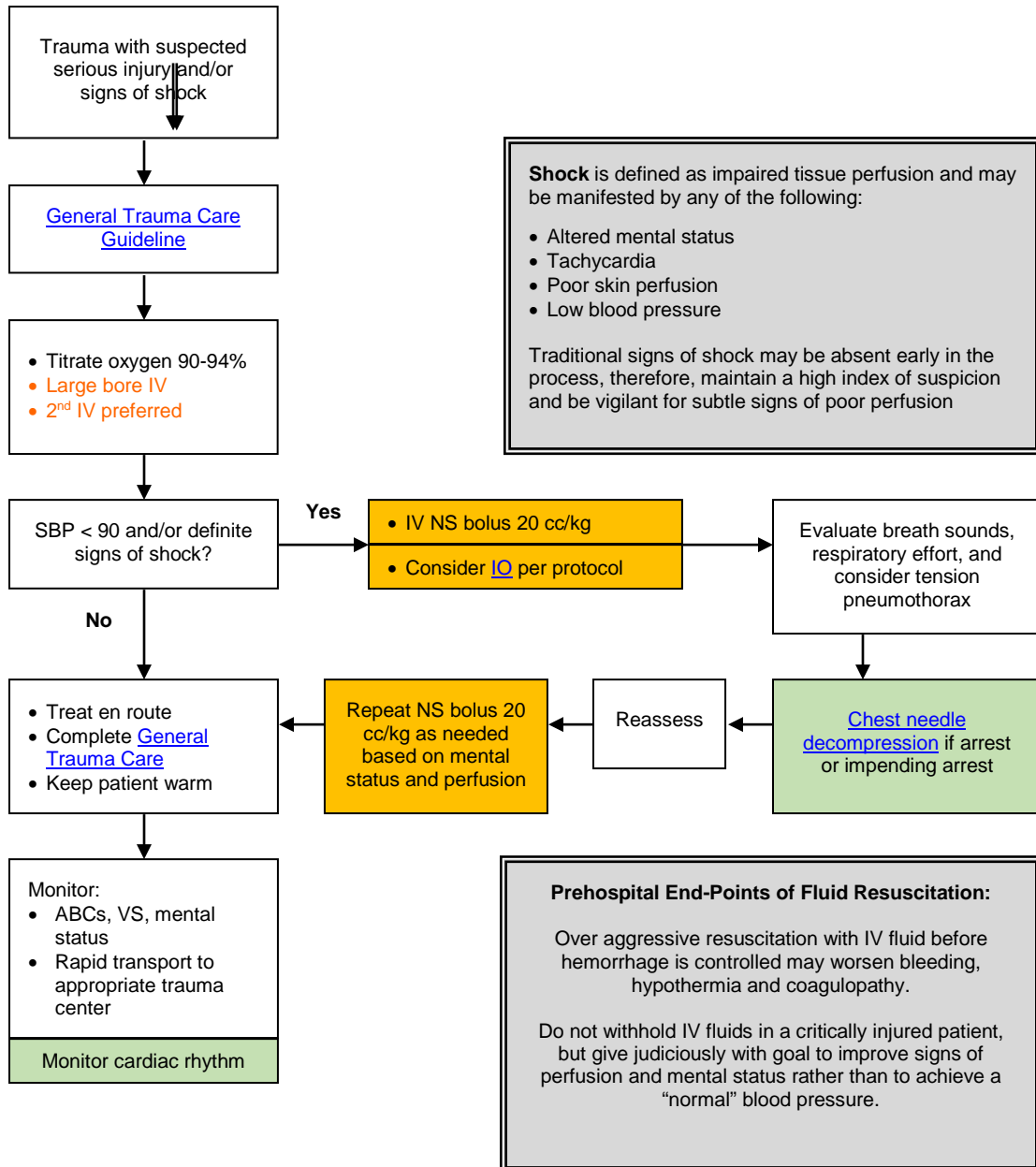
- A. A tourniquet applied incorrectly can increase blood loss.
- B. Applying a tourniquet can cause nerve and tissue damage whether applied correctly or not. Proper patient selection is of utmost importance.
- C. Injury due to tourniquet is unlikely if the tourniquet is removed within 1 hour. In cases of life-threatening bleeding benefit outweighs theoretical risk.
- D. A commercially made tourniquet is the preferred tourniquet. If none is available, a blood pressure cuff inflated to a pressure sufficient to stop bleeding is an acceptable alternative. Other improvised tourniquets are not allowed.

### Technique

- A. First attempt to control hemorrhage by using direct pressure over bleeding area.
- B. If a discrete bleeding vessel can be identified, point pressure over bleeding vessel is more effective than a large bandage and diffuse pressure.
- C. If unable to control hemorrhage using direct pressure, apply tourniquet according to manufacturer specifications and using the steps below:
  - 1. Cut away any clothing so that the tourniquet will be clearly visible. NEVER obscure a tourniquet with clothing or bandages.
  - 2. Apply tourniquet proximal to the wound and not across any joints.
  - 3. Tighten tourniquet until bleeding stops. Applying tourniquet too loosely will only increase blood loss by inhibiting venous return.
  - 4. Mark the time and date of application on the patient's skin next to the tourniquet.
  - 5. Keep tourniquet on throughout hospital transport – a correctly applied tourniquet should only be removed by the receiving hospital.

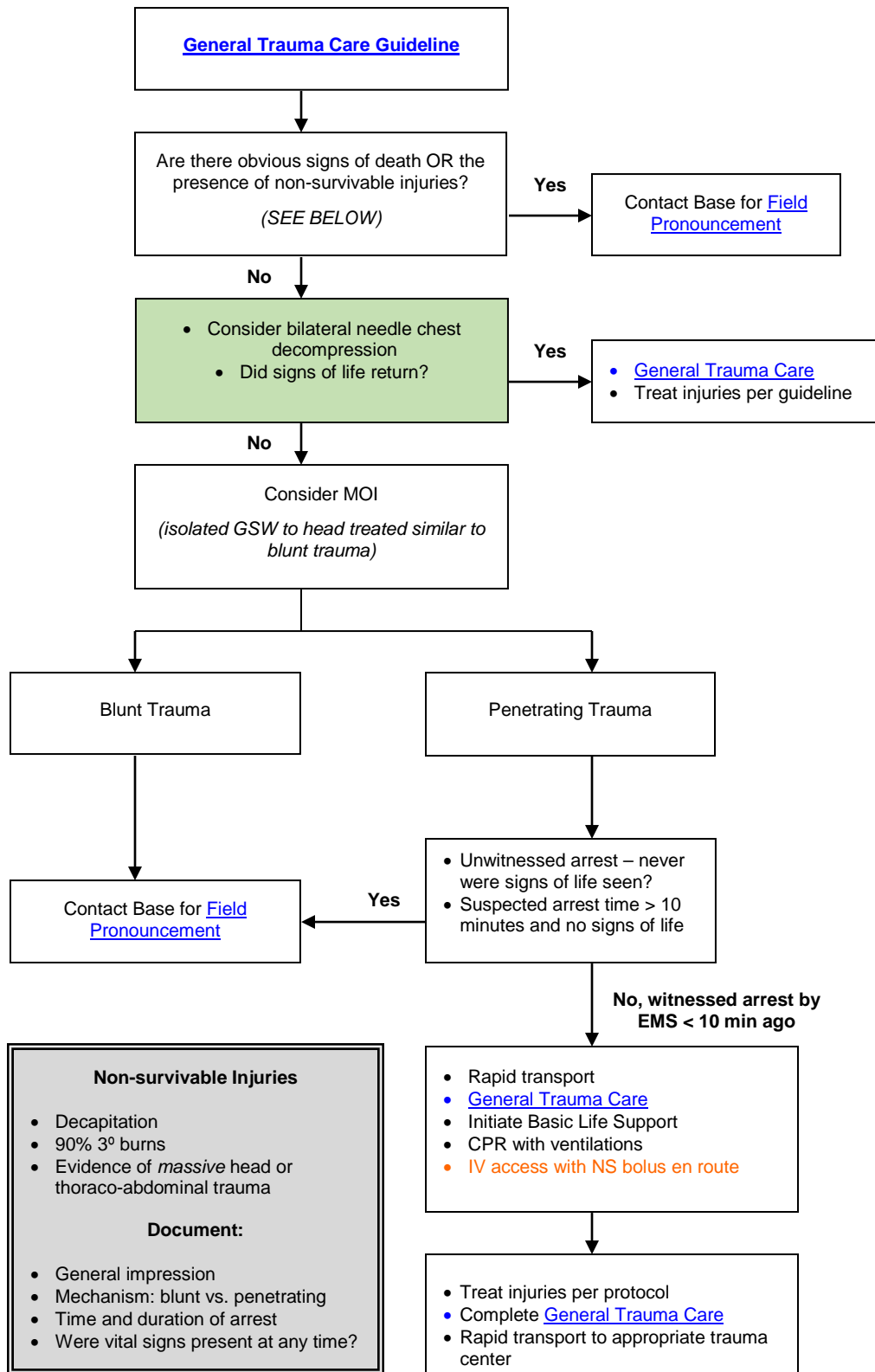
## 4020 TRAUMATIC SHOCK GUIDELINE - ADULT (AGE ≥ 12 YEARS)

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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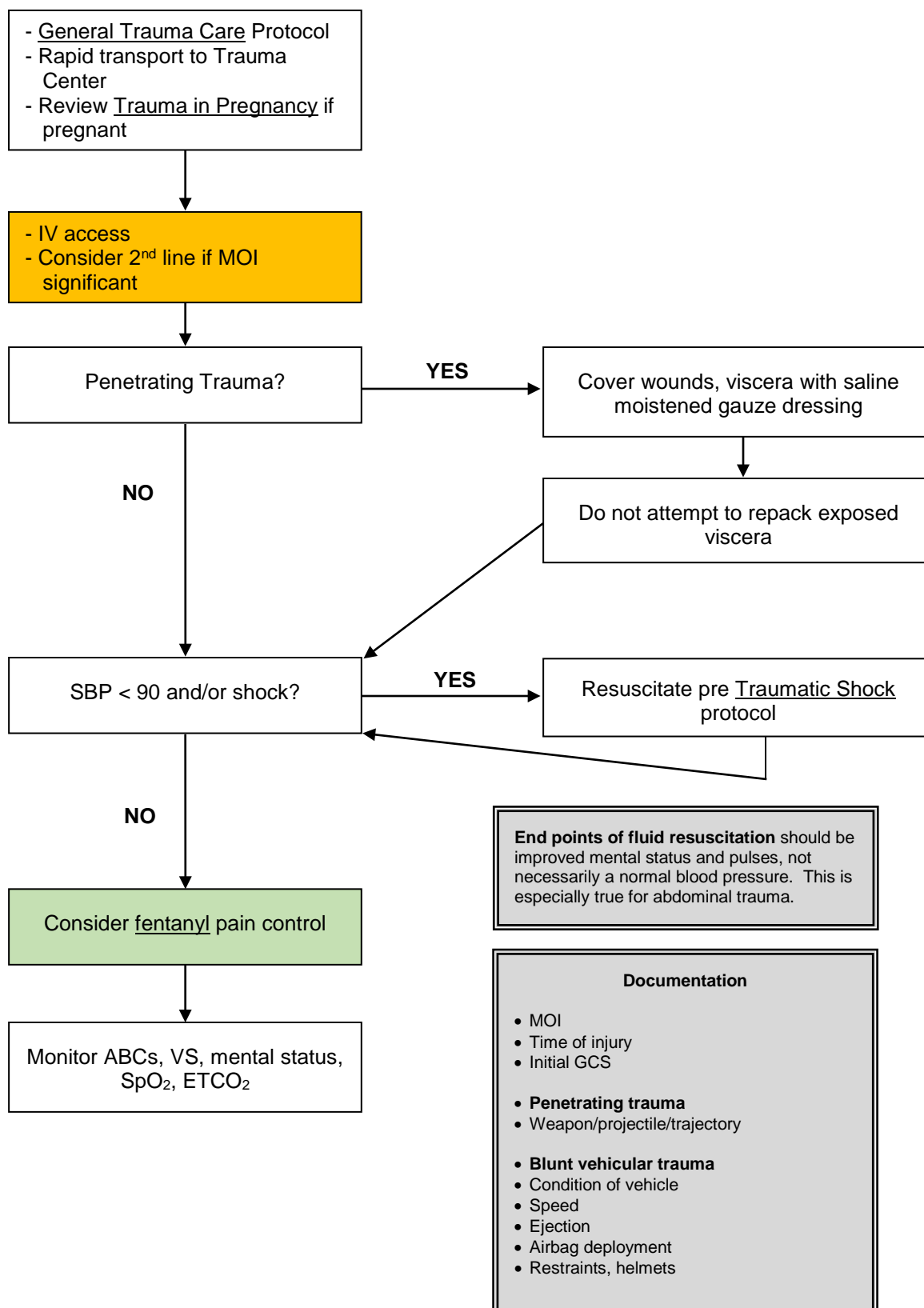
# 4030 TRAUMATIC PULSELESS ARREST - ADULT (AGE ≥ 12 YEARS)

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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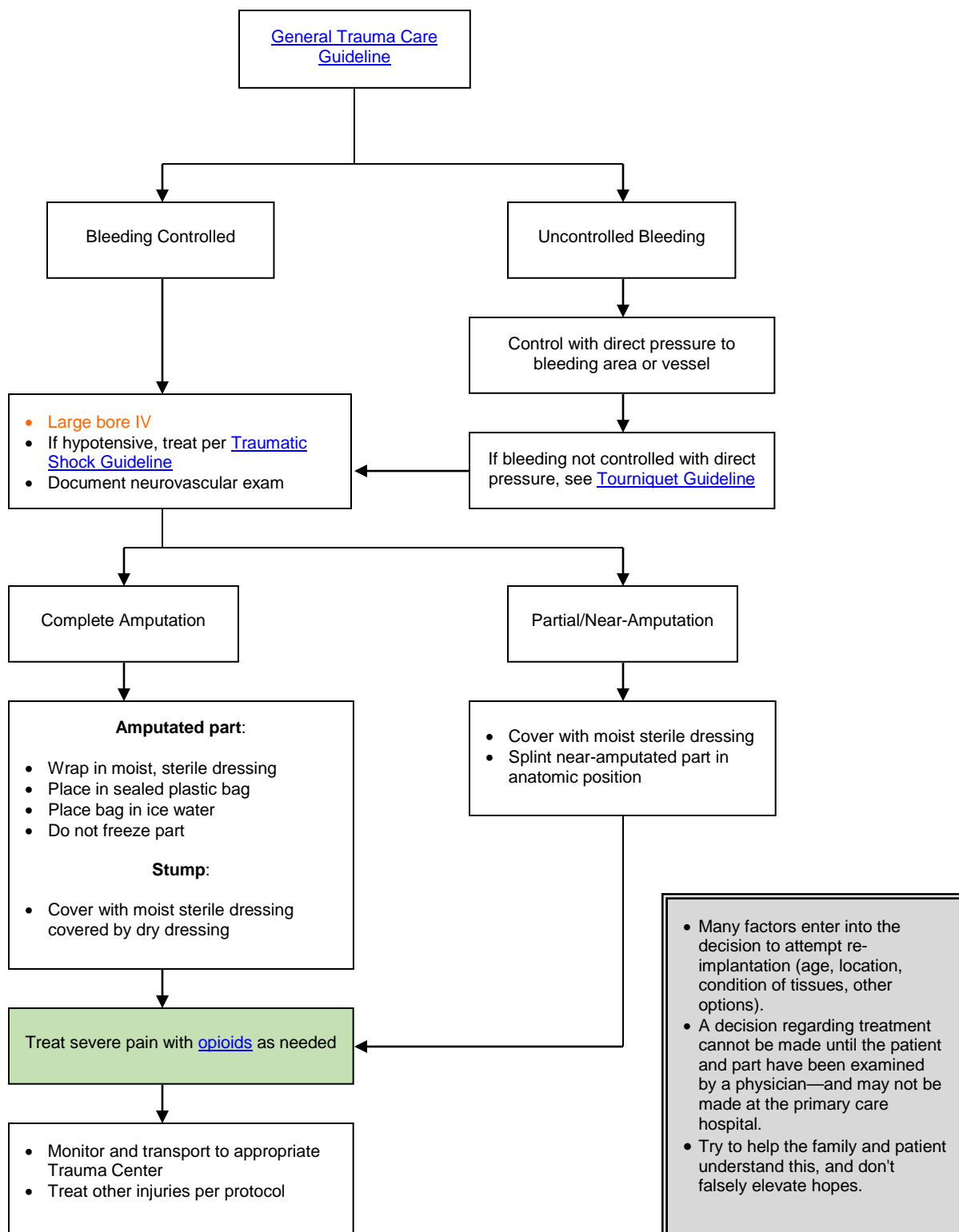
## 4040 ABDOMINAL TRAUMA

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 4050 AMPUTATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 4060 BURNS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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- [General Trauma Care Protocol](#)
- Rapid transport to Trauma Center



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



Respiratory Distress?

Yes

- High flow oxygen
- Manage airway and assist ventilations as indicated
- Consider CO, CN

No

Evaluate degree and body surface area involved



Critical Burn?\*

Yes

- Start 2 large-bore IVs
- Adults: NS at 500 ml/hour
- Peds:
- 6-13 - 250 ml/hr
- <6 - 125 ml/hr

No

IV NS TKO



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



Consider [opioid](#) for pain control



Monitor ABCs, VS, mental status, SpO<sub>2</sub>, ETCO<sub>2</sub>

## Document:

- Type and degree of burn(s)
- % BSA
- Respiratory status
- Singed nares, soot in mouth
- SpO<sub>2</sub>
- PMH
- Confined space

## \*Critical Burn:

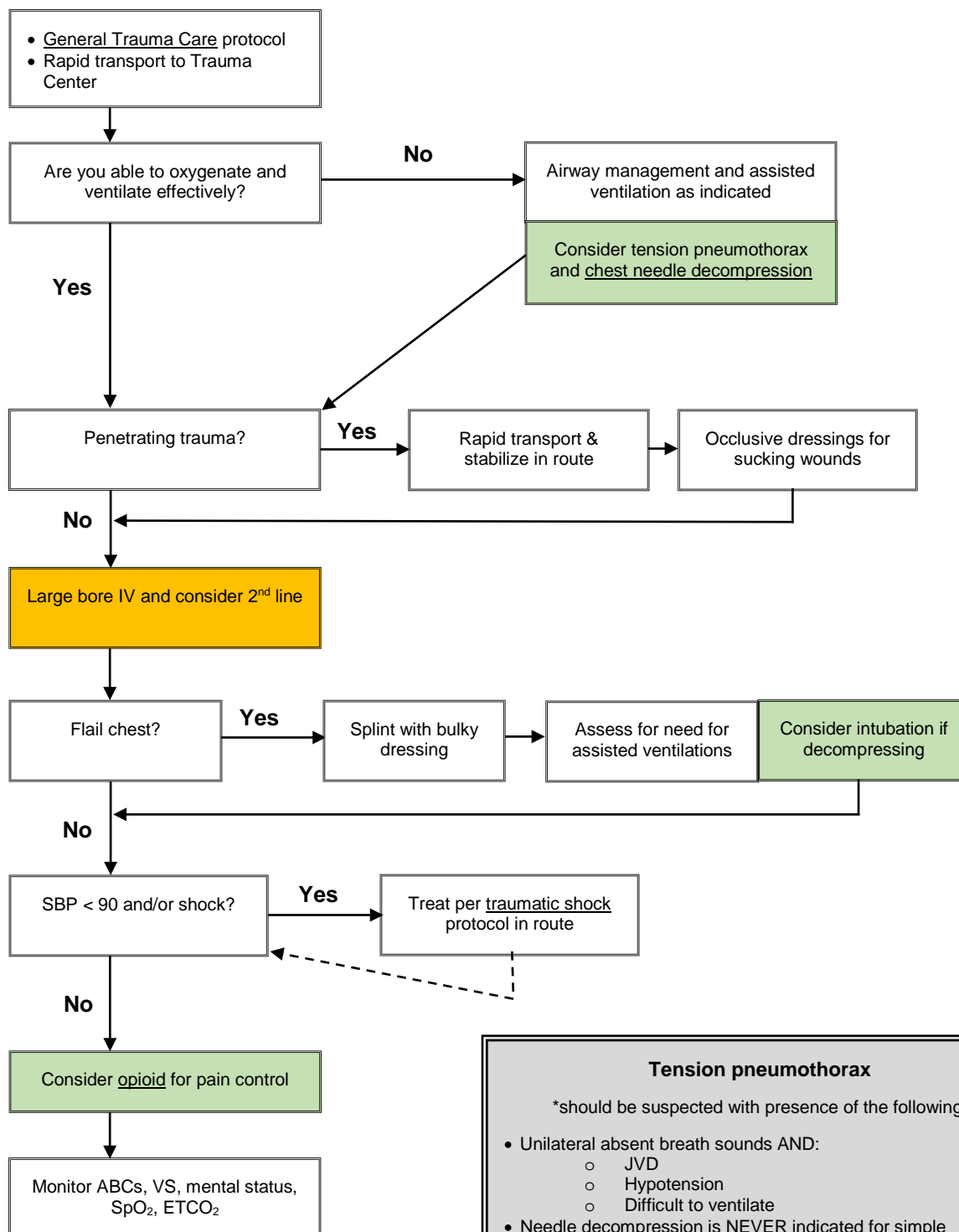
- 2° > 30% BSA
- 3° > 10% BSA
- Respiratory injury, facial burn
- Associated injuries, electrical or deep chemical burns, underlying PMH (cardiac, DM), age < 10 or > 50 yrs

## Types of Burns:

- **Thermal:** remove from environment, put out fire
- **Chemical:** brush off or dilute chemical. Consider HAZMAT
- **Electrical:** make sure victim is de-energized and suspect internal injuries
- **Consider CO** if enclosed space
- **Consider CN** if plastics, shock, pulseless arrest

# 4070 CHEST TRAUMA

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## Tension pneumothorax

\*should be suspected with presence of the following:

- Unilateral absent breath sounds AND:
  - JVD
  - Hypotension
  - Difficult to ventilate
- Needle decompression is NEVER indicated for simple pneumothorax

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



## 4075 NEEDLE THORACOSTOMY FOR TENSION PNEUMOTHORAX DECOMPRESSION

Intermediate

Paramedic

### Indication:

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

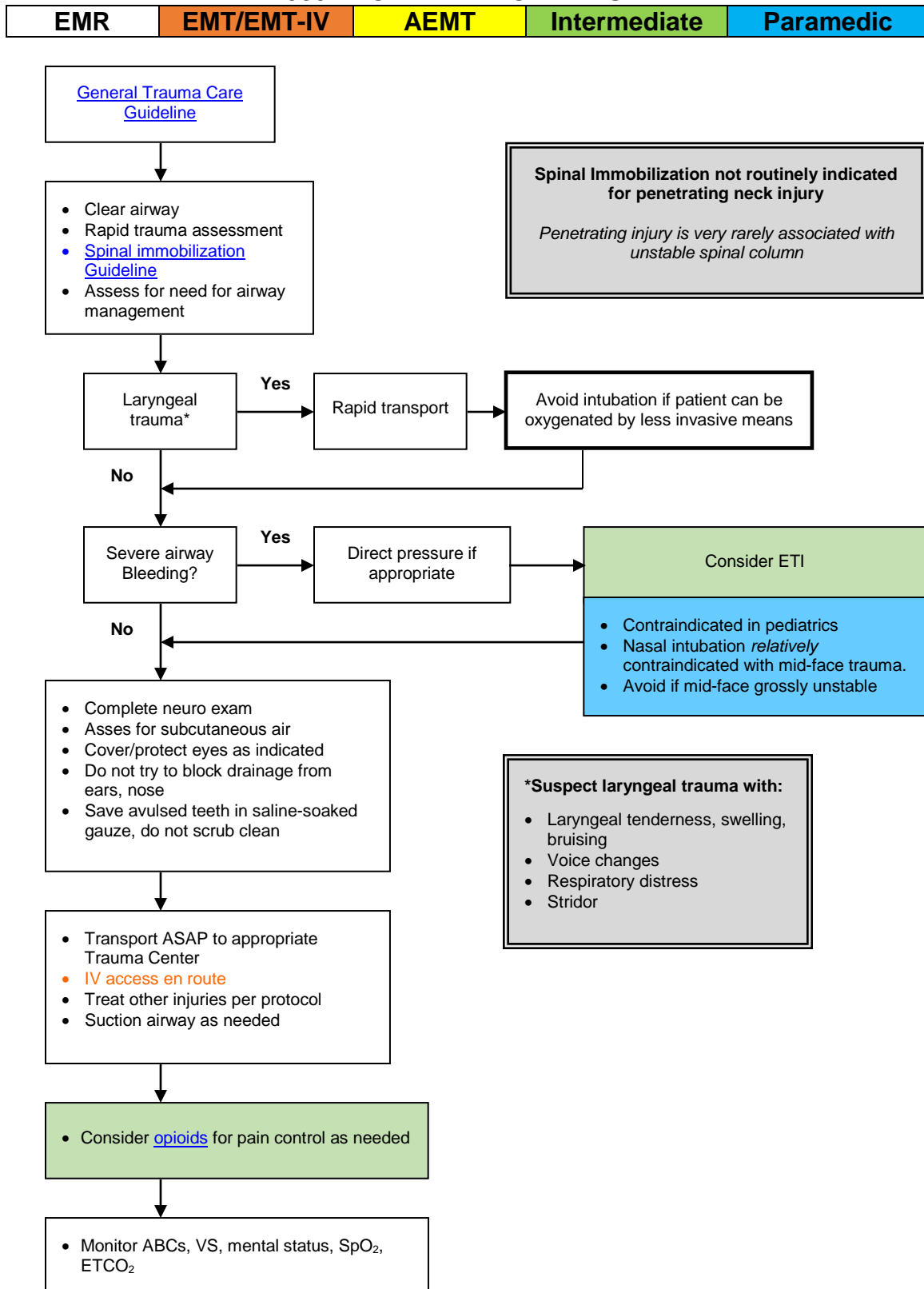
### Technique:

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

### Precautions:

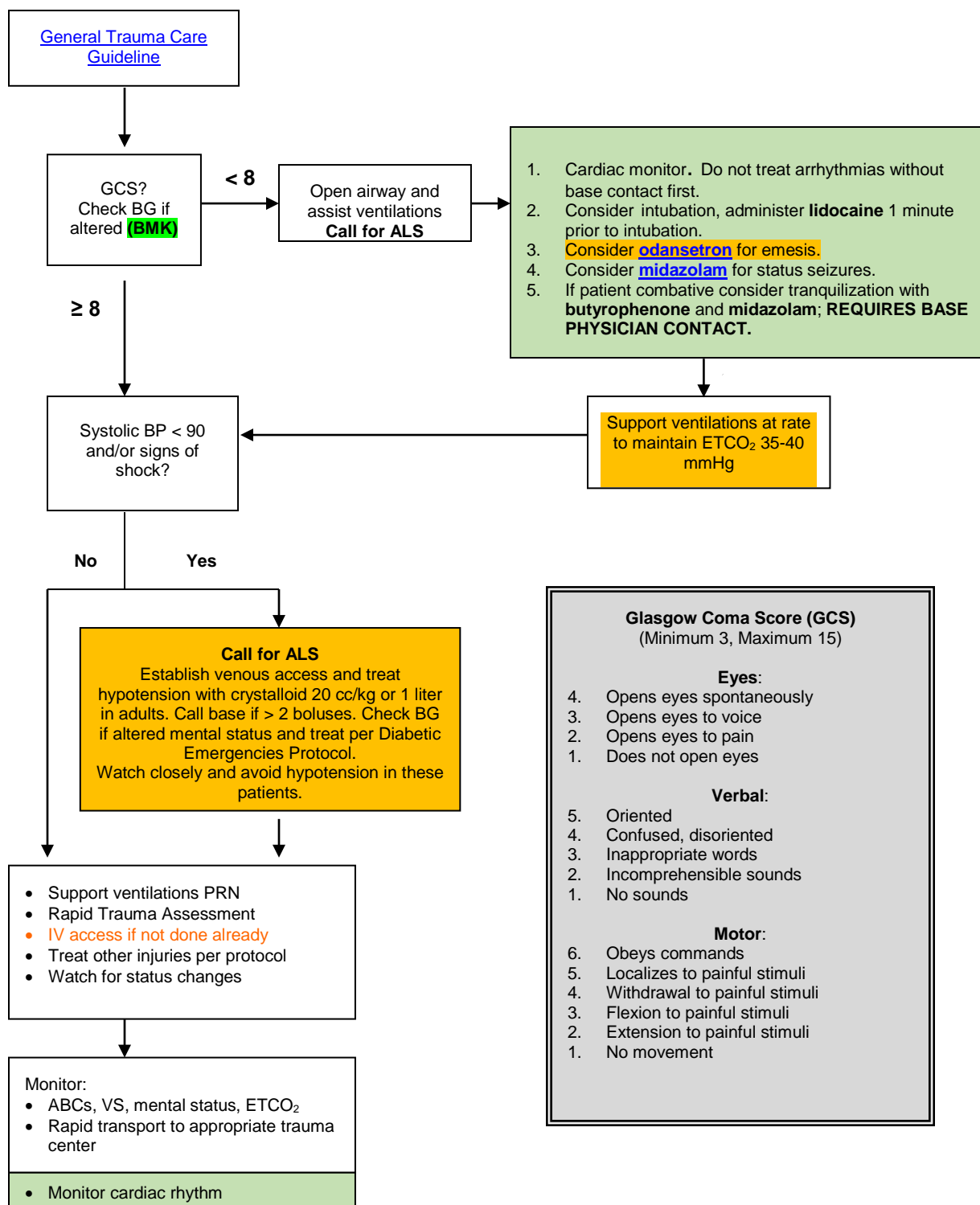
- A. Angiocath may become occluded with blood or by soft tissue
- B. A simple pneumothorax is **NOT** an indication for needle decompression

## 4080 FACE AND NECK TRAUMA



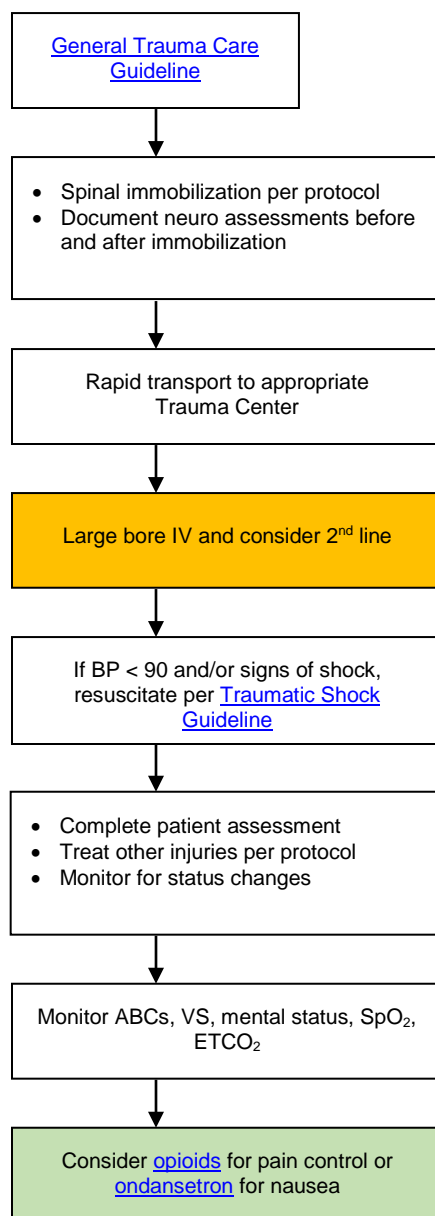
# 4090 HEAD TRAUMA GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 4100 SPINAL TRAUMA – ADULT

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### Signs of Spinal Cord Injury:

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

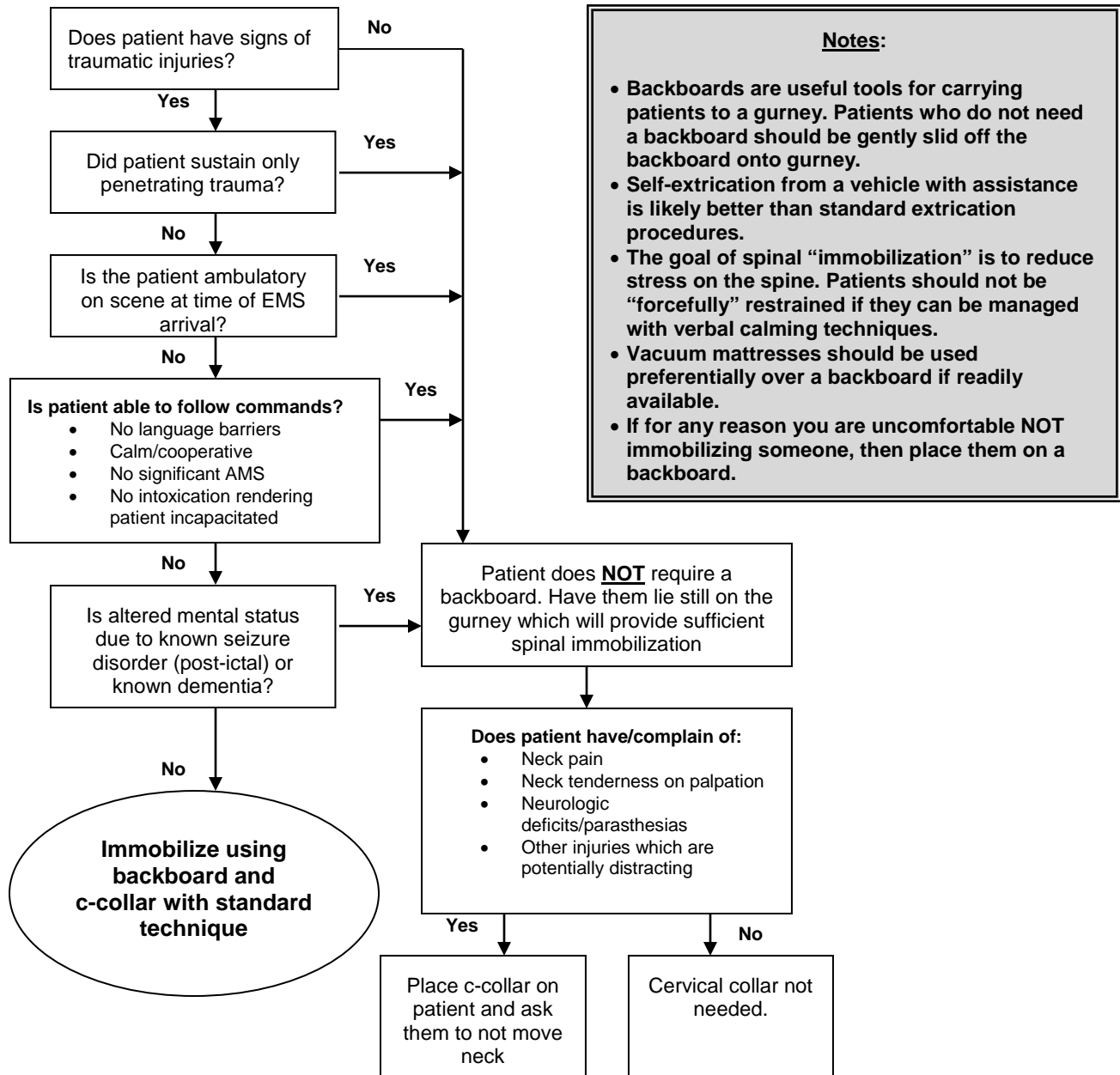
### Spinal Immobilization not routinely indicated for penetrating neck injury

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

## 4105 SPINAL IMMOBILIZATION GUIDELINE

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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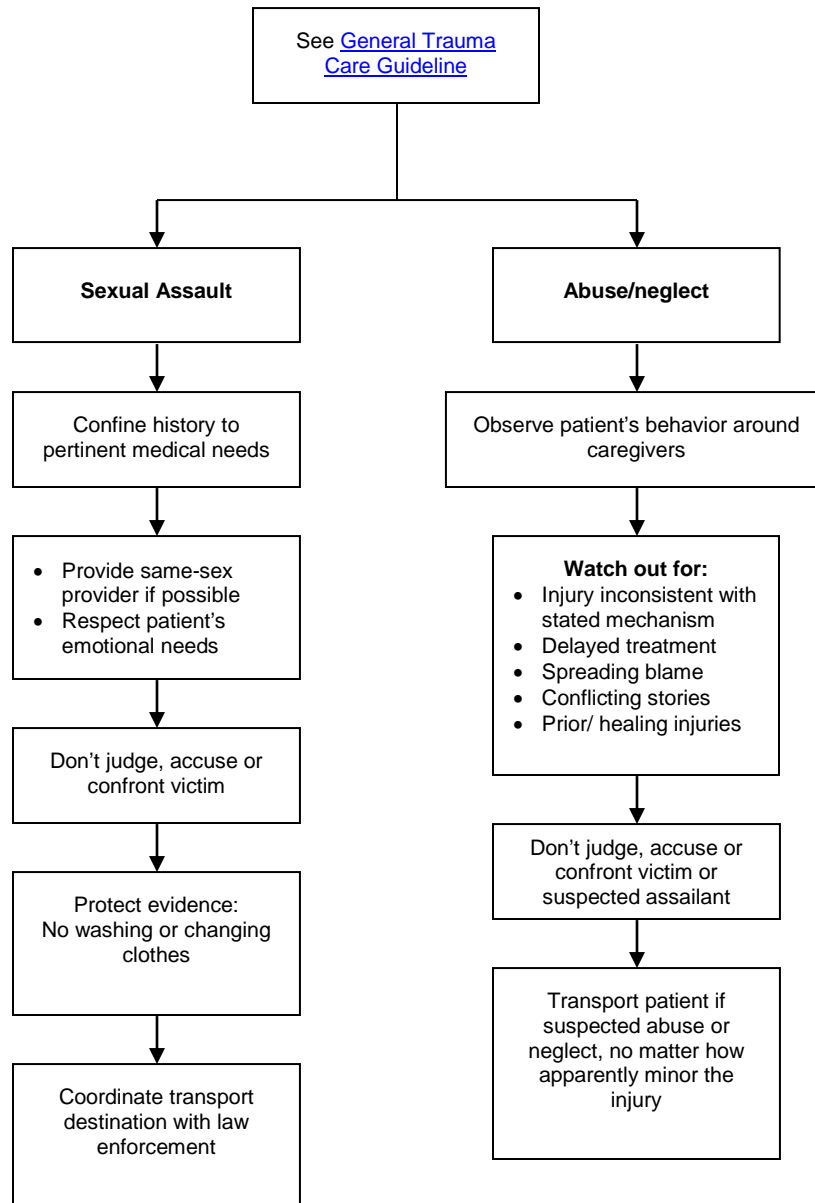
- Backboards have not been shown to be of any benefit for spinal injuries, but they may cause patient harm
- We wish to reduce the use of back boards in patients with traumatic injuries where appropriate



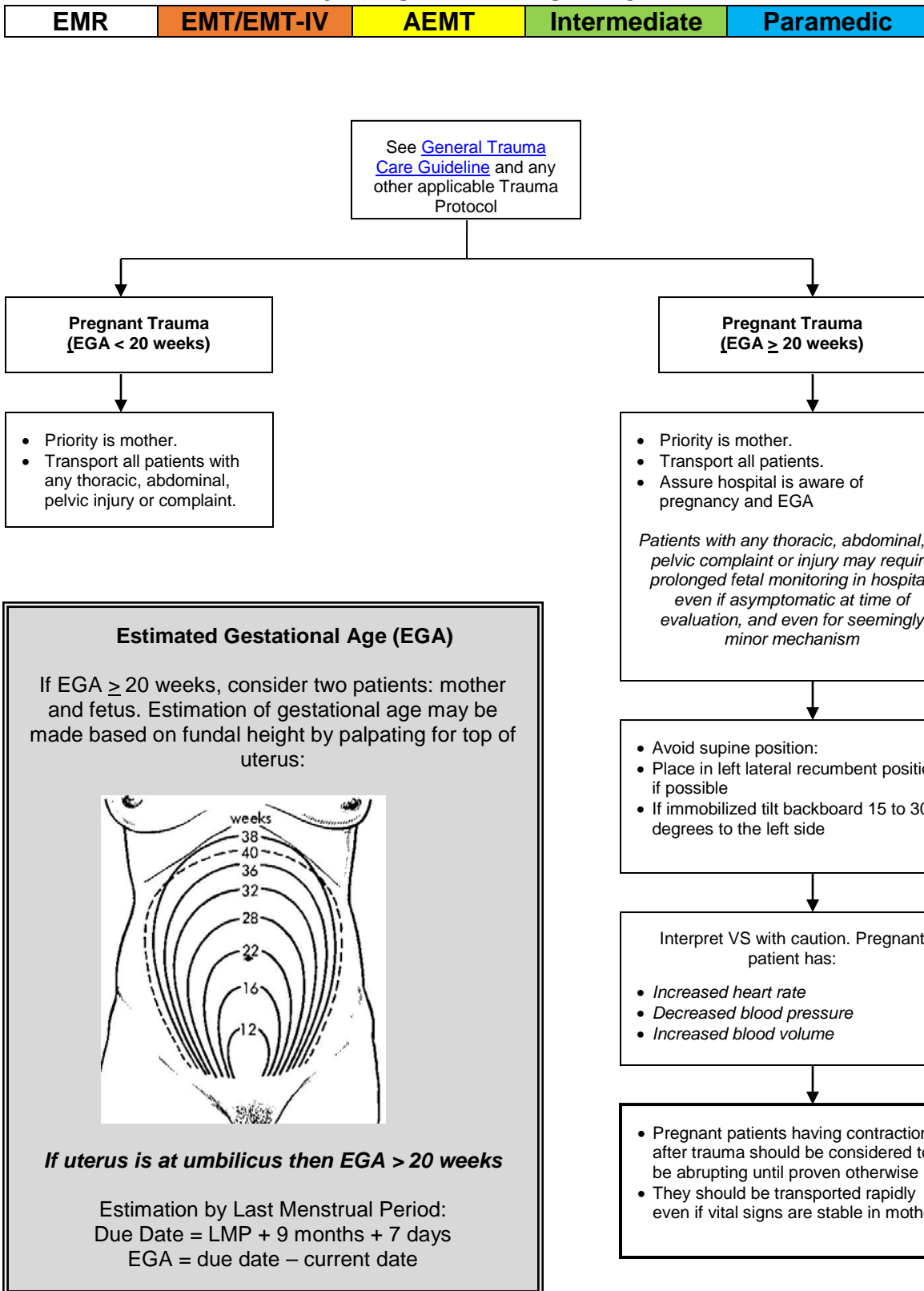
**Patients should never be transported between facilities while still immobilized on a long backboard. Please request that the sending facility remove patient from backboard after discussion with receiving facility.**

## 4110 SPECIAL TRAUMA SCENARIOS GUIDELINE

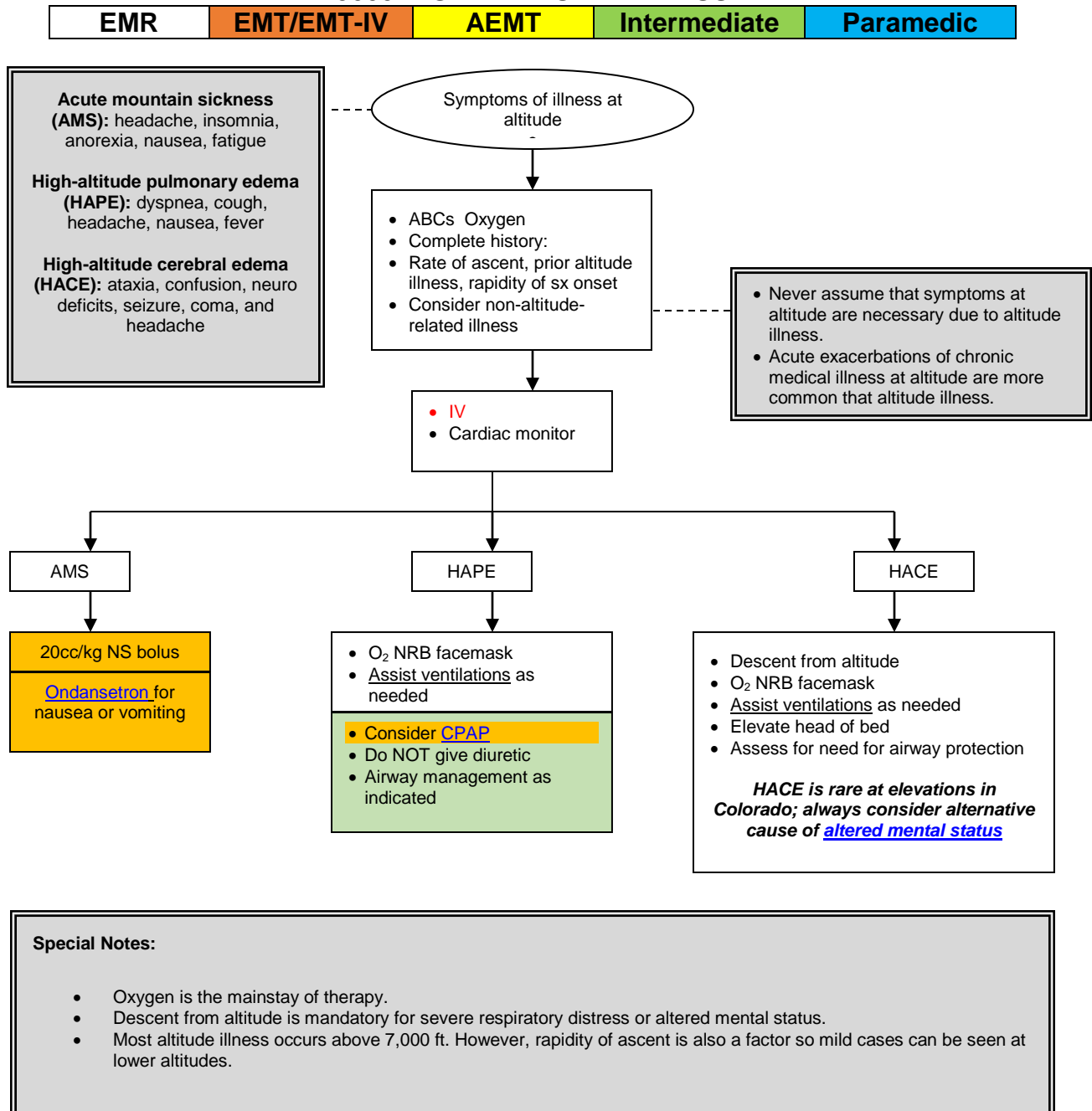
EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 4120 TRAUMA IN PREGNANCY



## 5000 HIGH ALTITUDE ILLNESS



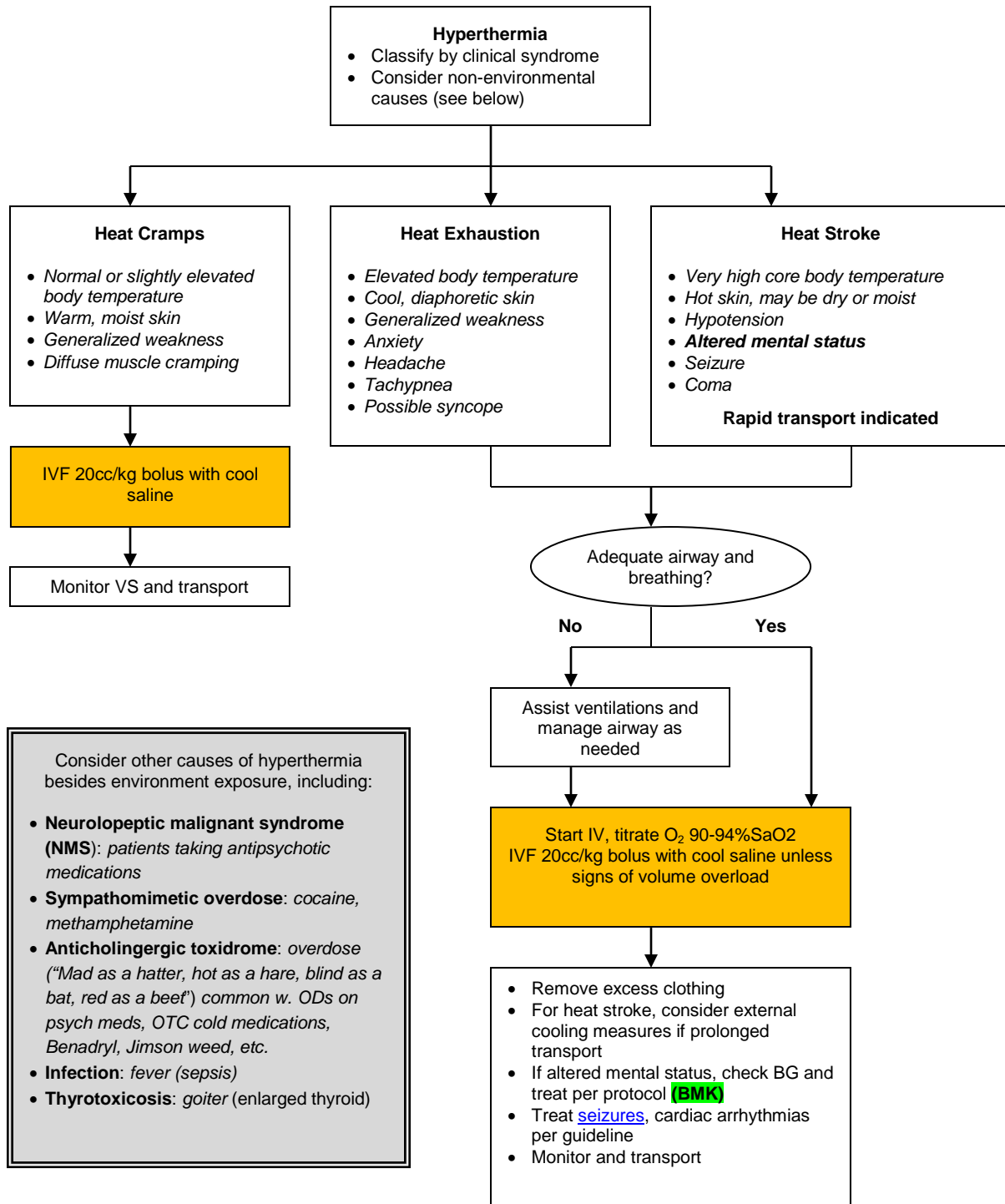
**Special Notes:**

- Oxygen is the mainstay of therapy.
- Descent from altitude is mandatory for severe respiratory distress or altered mental status.
- Most altitude illness occurs above 7,000 ft. However, rapidity of ascent is also a factor so mild cases can be seen at lower altitudes.



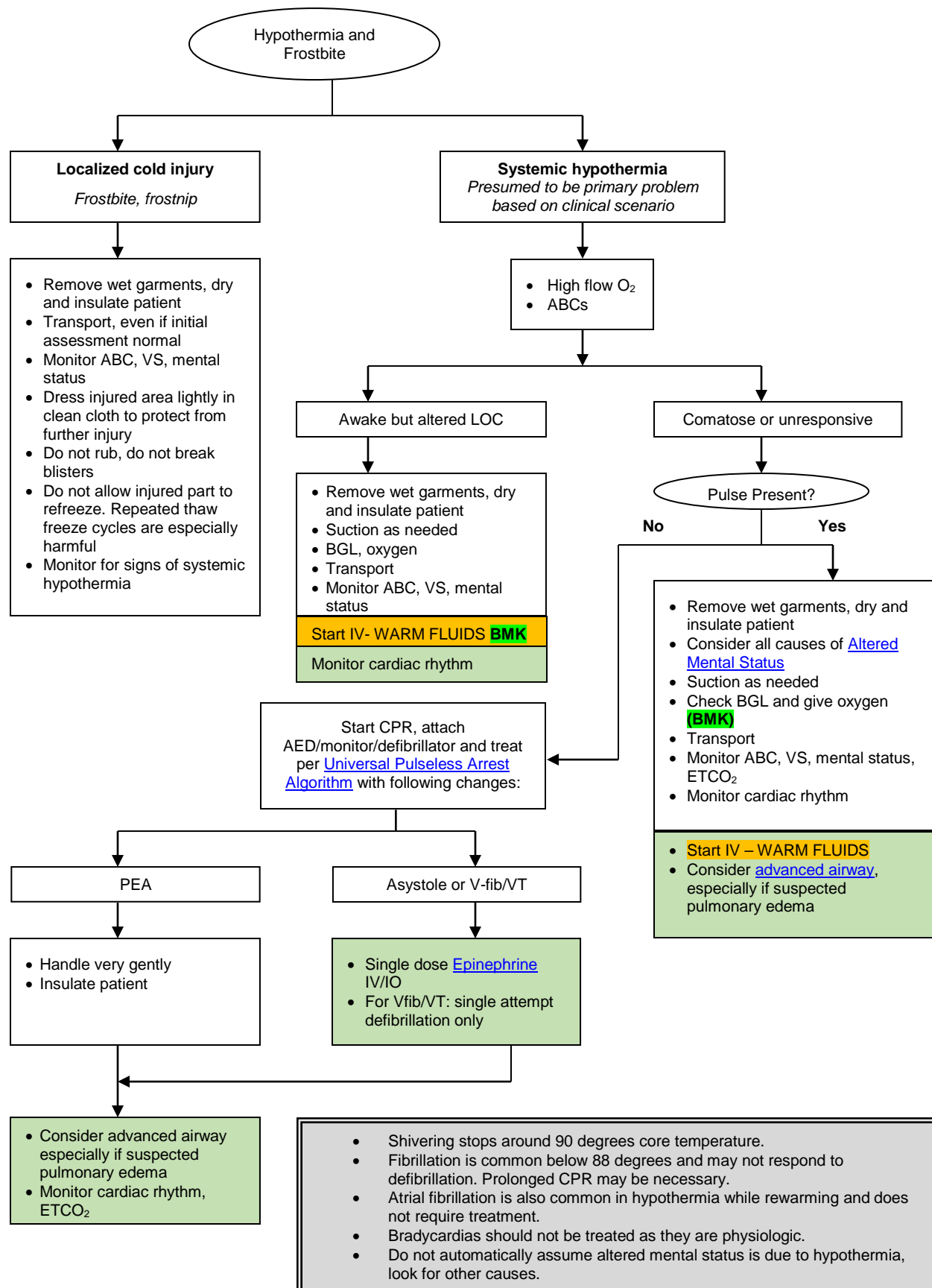
## 5010 ENVIRONMENTAL HYPERTHERMIA

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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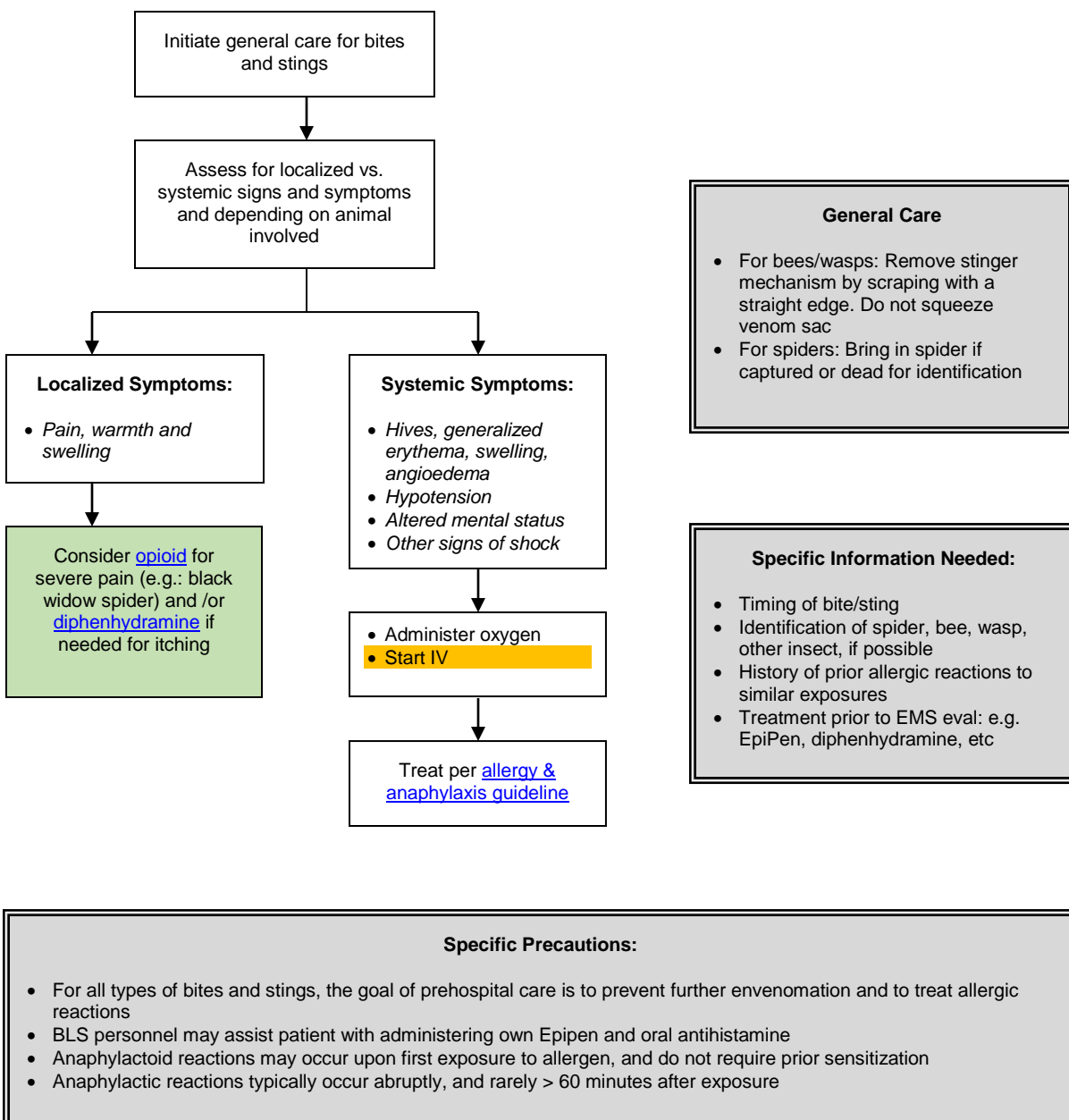
# 5020 ENVIRONMENTAL HYPOTHERMIA

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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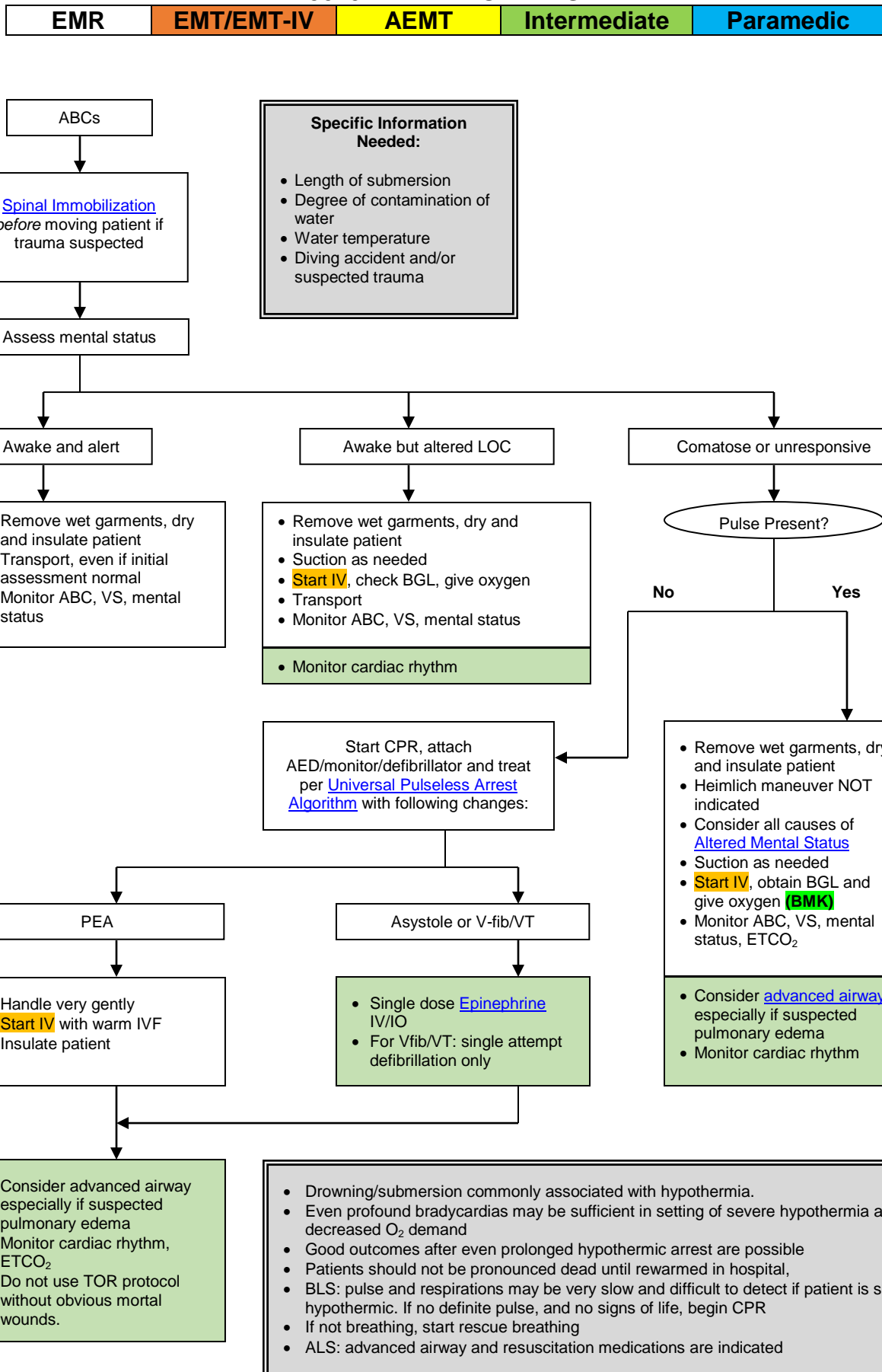


## 5030 INSECT/ARACHNID STINGS AND BITES GUIDELINE

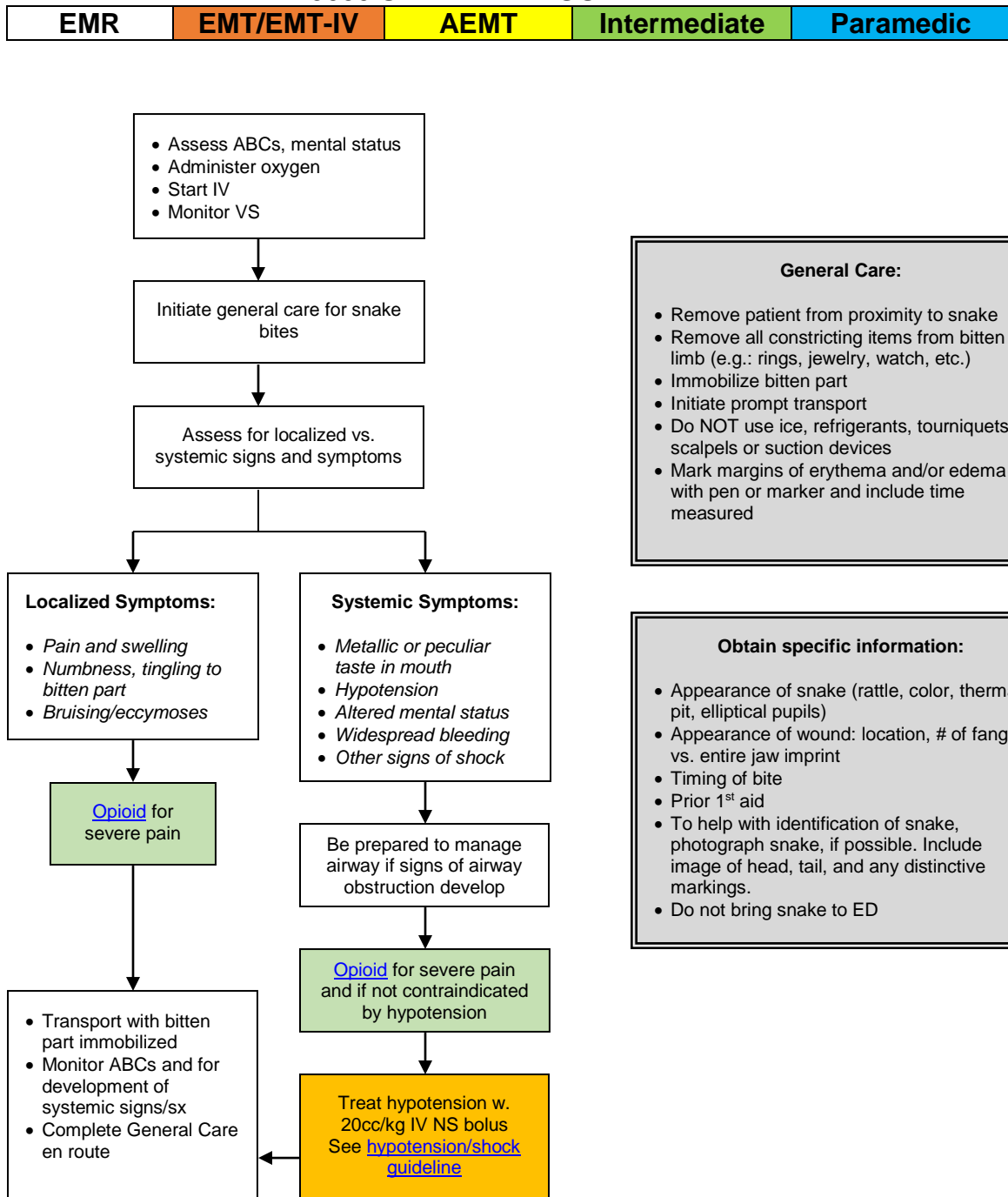
EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## 5040 NEAR DROWNING



## 5050 SNAKE BITE GUIDELINE



**General Care:**

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

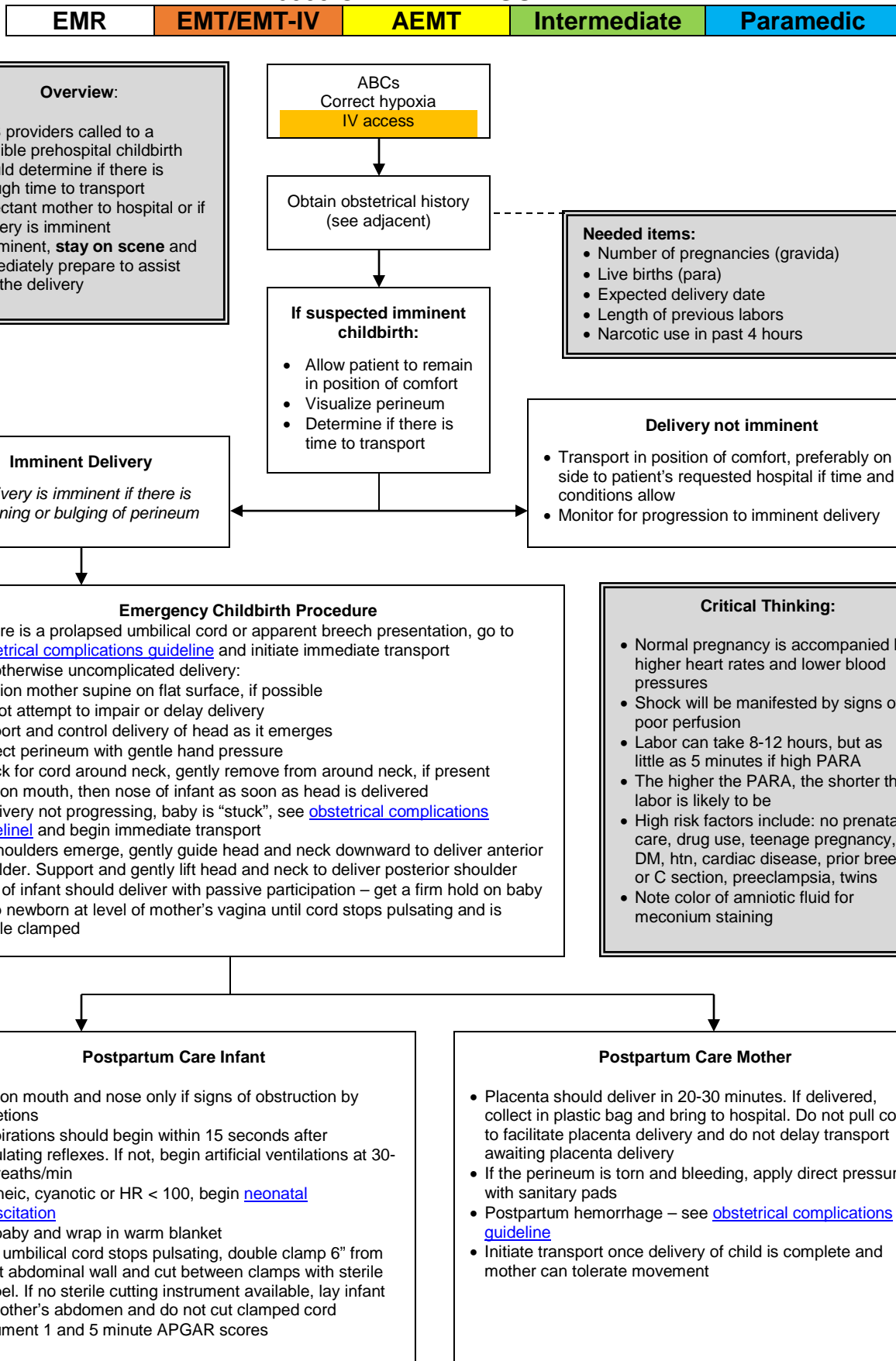
**Obtain specific information:**

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

**Specific Precautions:**

- **The Rattlesnake is the most common venomous snake in our RETAC.**
- Exotic venomous snakes, such as pets or zoo animals, may have different signs and symptoms than those of pit vipers. In case of exotic snakebite, contact base and consult zoo staff or poison center for direction.
- If adequate photo can be taken, it is not necessary to bring snake to ED.
- Never pick up a presumed-to-be-dead snake by hand. Rather, use a shovel or stick. A dead snake may reflexively bite and envenomate.
- > 25% of snake bites are "dry bites", without 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 CHILDBIRTH GUIDELINE



## 6010 OBSTETRICAL COMPLICATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### For All Patients with obstetrical complications

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

### Possible actions for specific complications (below)

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

#### Prolapsed Umbilical Cord

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

#### Breech Delivery

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

#### Postpartum Hemorrhage

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

#### Complications of Late Pregnancy

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

- High flow O<sub>2</sub> via NRB, IV access
- Suspect placental abruption or placenta previa
- Initiate rapid transport
- Position patient on left side
- Note type and amount of bleeding
- IV NS bolus for significant bleeding or shock

##### Eclampsia/Toxemia

- High flow O<sub>2</sub> via NRB, IV access, check BG **(BMK)**
- SBP > 140, DBP > 90, peripheral edema, headache, seizure
- Transport position of comfort
- Treat seizures with 2-4 gm of [Magnesium sulfate](#) IV over 10 minutes
- See [seizure guideline](#)

##### Shoulder Dystocia

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

## 6020 NEONATAL CONSIDERATIONS

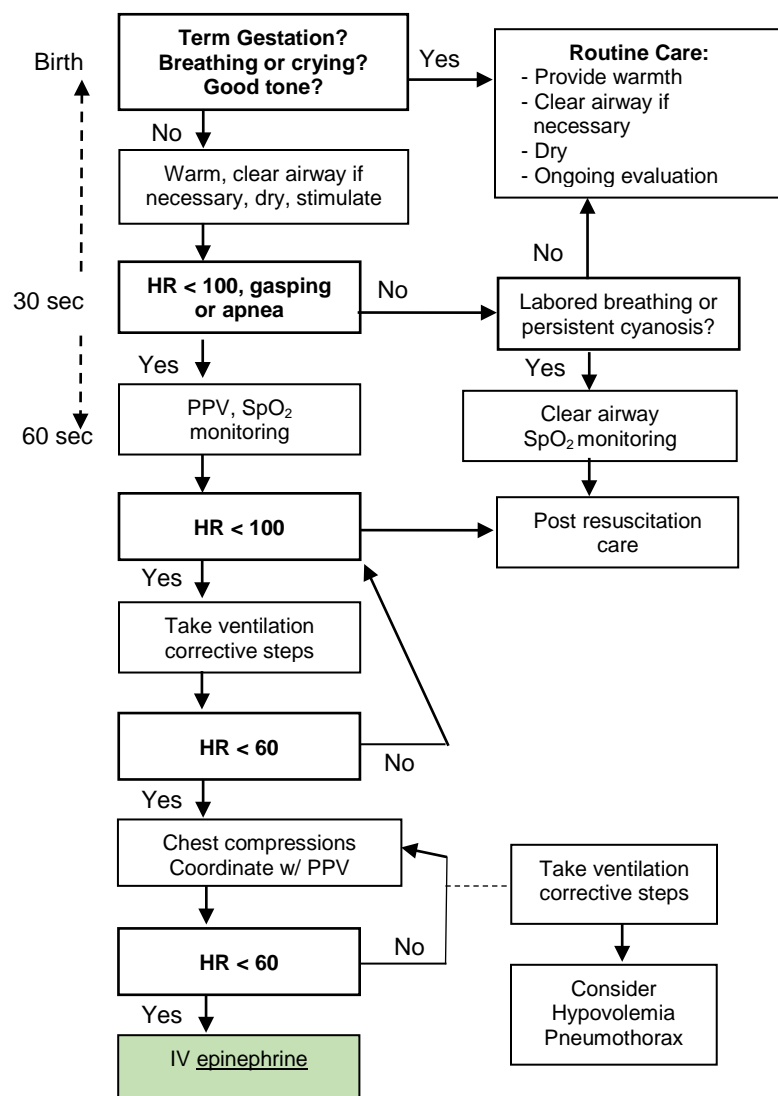
### General Considerations:

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



# 6030 PEDIATRIC NEONATAL RESUSCITATION

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## General Considerations (From 2015 AHA Guidelines)

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

## Assisting Ventilations:

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

## Chest compressions:

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

## Medications

- Epinephrine is indicated if the newborn's heart rate remains < 60 beats per minute after at least 30 seconds of PPV AND another 60 seconds of chest compressions coordinated with PPV using 100% oxygen

## 6040 GENERAL GUIDELINES FOR PEDIATRIC PATIENTS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### General Guideline:

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

### Specific Considerations:

The following should be kept in mind during the care of children in the prehospital setting:

1. Airways are smaller, softer, and easier to obstruct or collapse.
2. Respiratory reserves are small. A minor insult like improper position, vomiting, or airway narrowing can be a major problem.
3. Circulatory reserves are also small. The loss of as little as one unit of blood can produce severe shock in an infant. Conversely, 500 mls of unnecessary fluid can create acute pulmonary edema.
4. Don't forget to check BG if patient not acting right.
5. Obtain the parents' assessment of the patient's problem. They often can detect small changes in their child's condition.
6. The proper equipment is very important when dealing with the pediatric patient. A complete selection of airway management equipment and IV catheters should be available and stored in a separate pediatric kit.
7. Three main drugs used in pediatrics are oxygen, glucose and epinephrine.

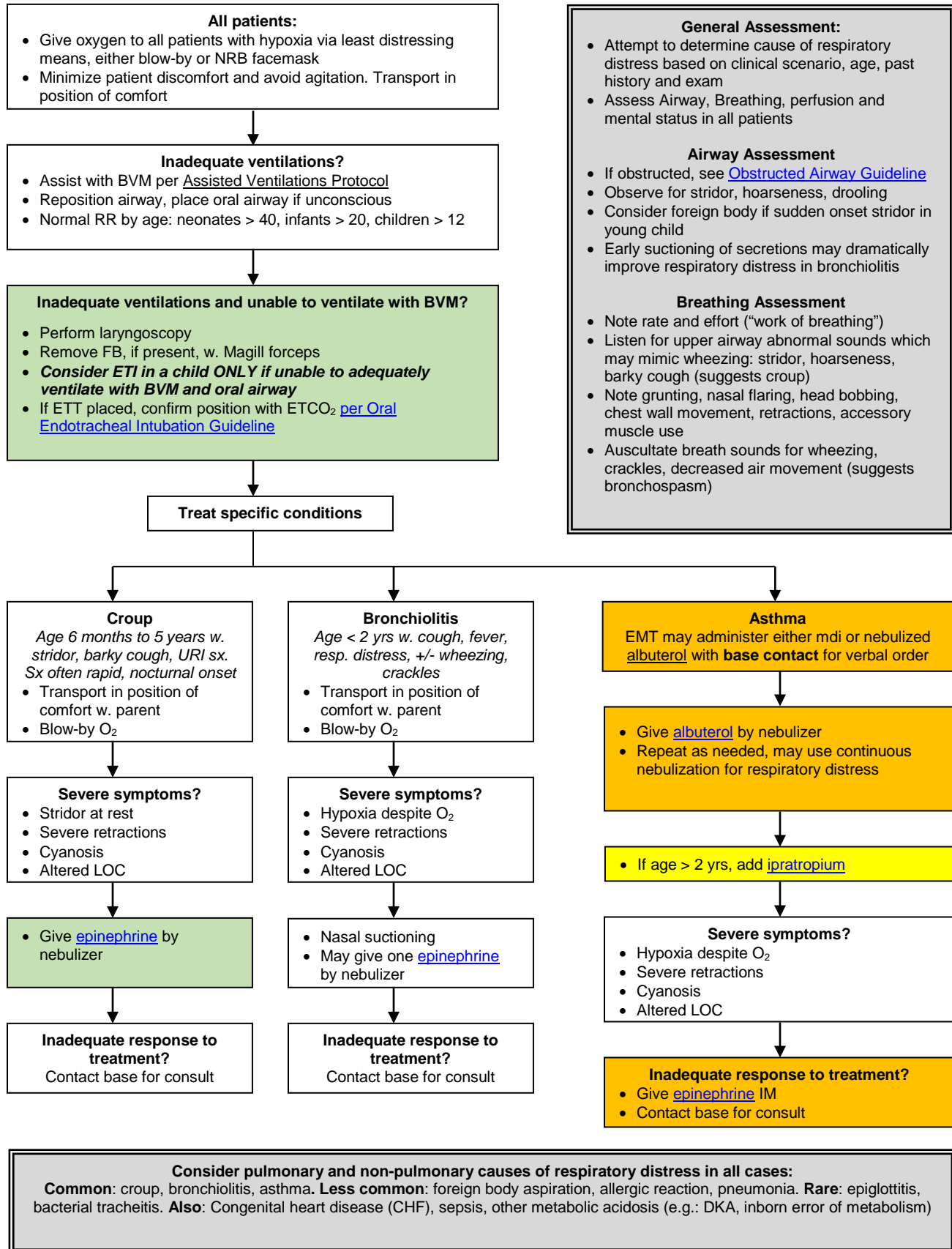
**ALWAYS USE THE LENGTH BASED TAPE FOR ALL PEDIATRIC PATIENTS (BMK). FOLLOW GUIDELINES FOR SIZING EQUIPMENT AND DRUG DOSAGES.**

**PATIENT COLOR LEVEL SHOULD BE CALLED IN TO ED WITH REPORT.**

8. When using these guidelines, remember the age breakdown used:
- a. Neonate: birth to one month
  - b. Infant: one month to 1 year
  - c. Child: 1 – 12 years or within length based tape sizing
  - d. Adult: ≥ 12 years old or larger than length based tape sizing

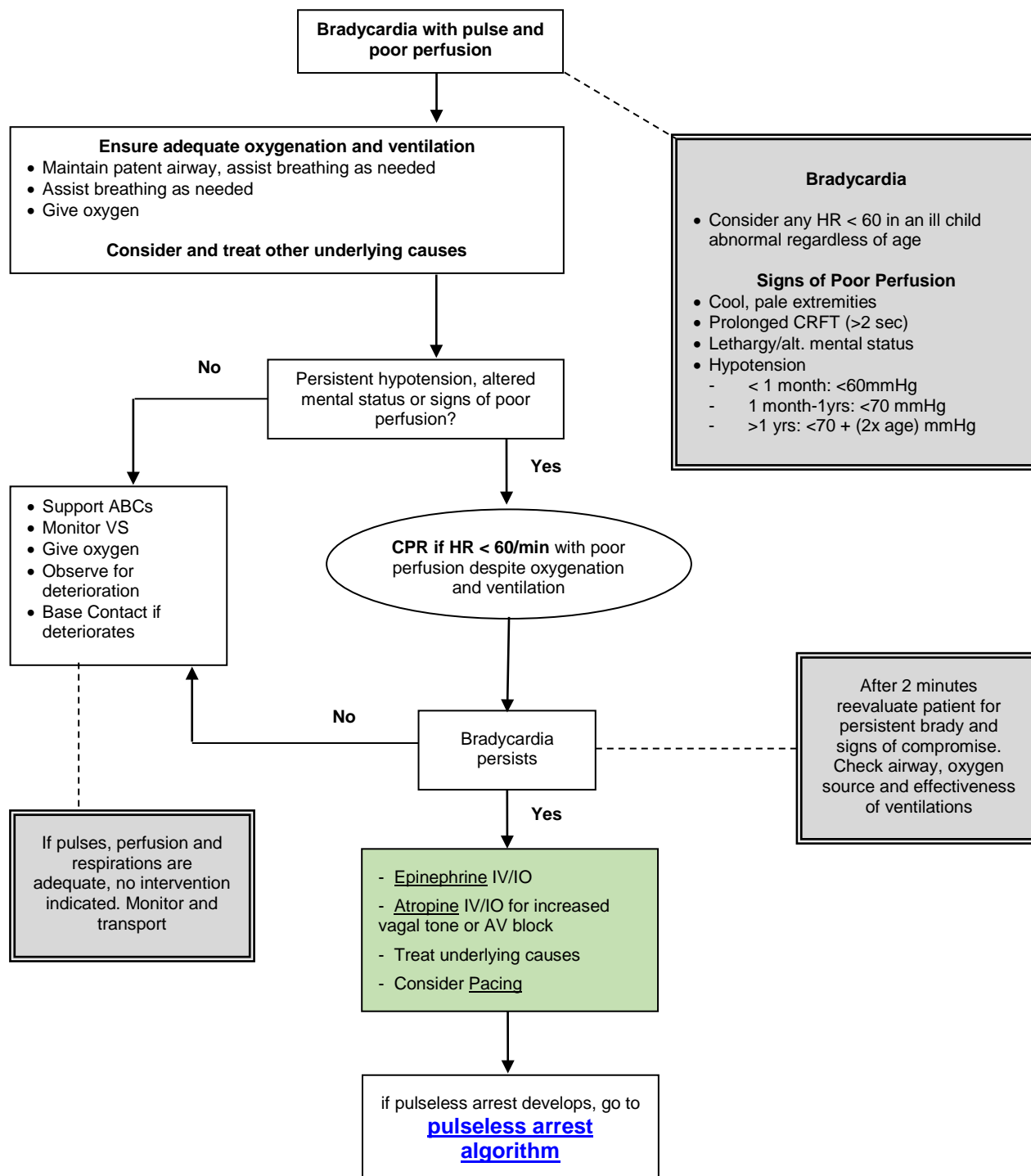
# 6050 PEDIATRIC UNIVERSAL RESPIRATORY DISTRESS ALGORITHM (AGE < 12 YEARS)

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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# 6060 PEDIATRIC BRADYCARDIA WITH POOR PERFUSION

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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<b>EMR</b>	<b>EMT/EMT-IV</b>	<b>AEMT</b>	<b>Intermediate</b>	<b>Paramedic</b>
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# 6080 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL PRINCIPLES

## General Guideline:

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

## Specific Information Needed For Patient Care Report

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

## Document Specific Objective Findings

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

## General Treatment Guidelines

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

## General Guidelines: Chest Compressions for 2 Rescuers

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

### **Neonate ( $\leq$ 1 month old)**

- A. 1 cycle of CPR = 3:1 chest compressions: breaths.
- B. Push hard and fast at a compression rate of 100/minute
- C. Minimize interruption to chest compressions
  - a. Continue CPR while defibrillator is charging, and resume CPR immediately after all shocks. Do not check pulses except at end of CPR cycle and if rhythm is organized at rhythm check
  - b. Increase in compression interruption correlates with decrease in likelihood of successful defibrillation
- D. Ensure full chest recoil
  - a. Represents diastolic phase for cardiac filling due to negative intrathoracic pressure

### **Infant and Child (1 month to 12 years old)**

- A. 1 cycle of CPR = 15:2 chest compressions: breaths

## 6080 PEDIATRIC (AGE < 12 YEARS) CARDIAC ARREST-GENERAL PRINCIPLES

- E. Avoid hyperventilation
  - a. Associated with barotrauma and air trapping
  - b. Makes CPR less effective by inhibiting cardiac output by increasing intrathoracic pressure and decreasing venous return to the heart
- F. Rotate compressors every 2 minutes during rhythm checks

### **General Guidelines: Defibrillation**

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

### **General Guidelines: Ventilation during CPR**

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

### **General Guidelines: Timing Of Placement Of Advanced Airway**

- A. ***BVM is preferred method of ventilation in all pediatric patients age < 8 years***
- B. Do not hyperventilate
- C. Always confirm advanced airway placement by objective criteria: ETCO<sub>2</sub>
  - a. Use continuous waveform capnography if available

### **General Guidelines: Pacing**

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

### **General Guidelines: ICD/Pacemaker patients**

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

### **Special Notes:**

- A. Consider reversible causes of cardiac arrest ("Hs And Ts"):

Hypovolemia	IV Fluid bolus
Hypoxia	Ventilation
Hydrogen Ion (acidosis)	Ventilation
Hyperkalemia	Sodium bicarbonate
Hypothermia	See hypothermia protocol
Toxins: e.g.: opioid overdose	Naloxone 2mg IVP
Tamponade (cardiac)	
Tension pneumothorax	Needle thoracostomy
Thrombosis (coronary)	
Trauma	

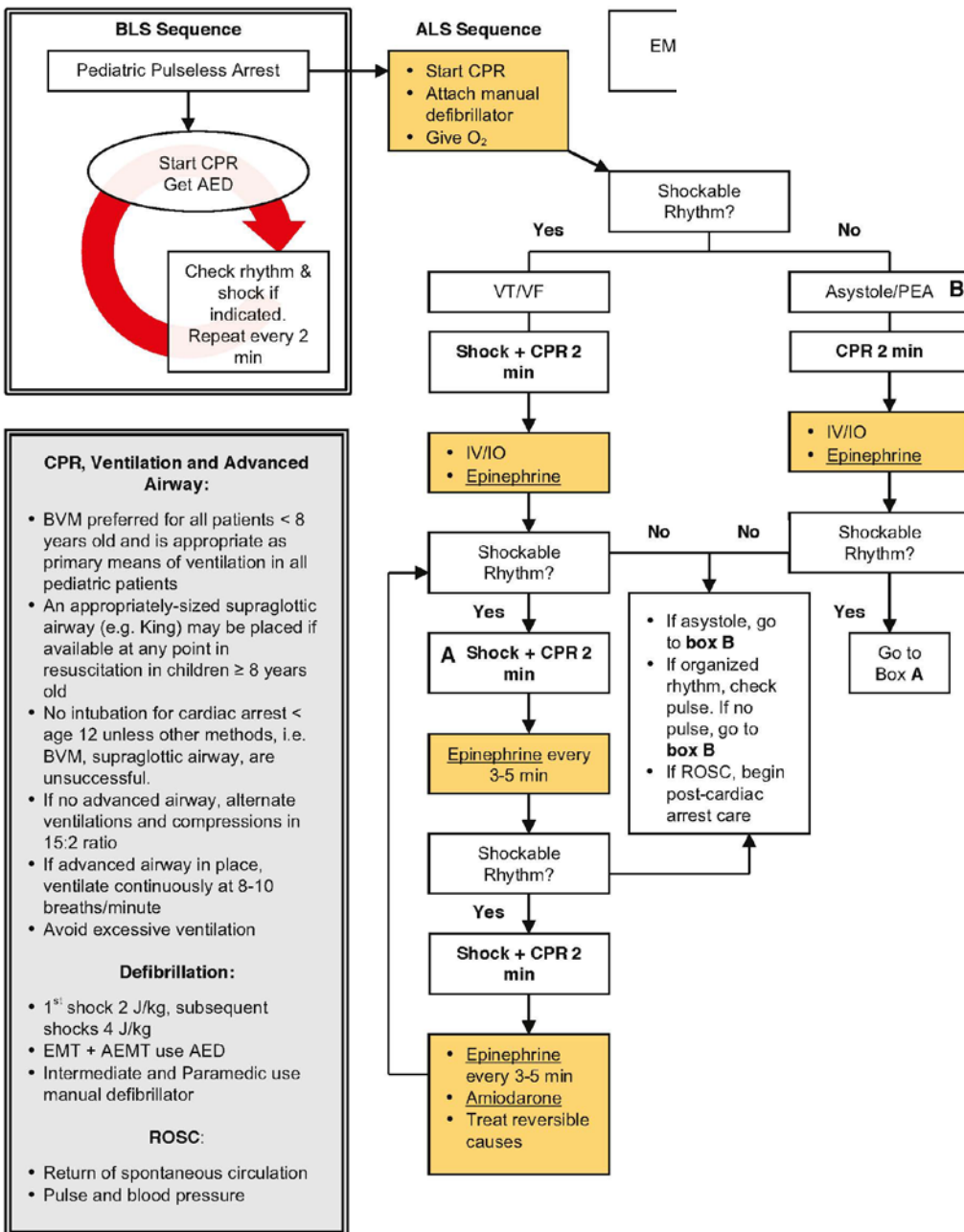
<b>EMR</b>	<b>EMT/EMT-IV</b>	<b>AEMT</b>	<b>Intermediate</b>	<b>Paramedic</b>
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# 6090 PEDIATRIC PULSELESS ARREST BLS/ALS ALGORITHM

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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## Regarding where to work arrest and presence of family members

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

# 6100 PEDIATRIC MEDICAL HYPOTENSION / SHOCK GUIDELINE

**EMR**

**EMT/EMT-IV**

**AEMT**

**Intermediate**

**Paramedic**

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

\*\*

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

## Septic Shock

Defined by:

1. Presence of Systemic Inflammatory Response Syndrome (SIRS)

AND

2. Suspected infection

AND

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

### PEDS SIRS criteria:

**Positive if two of T, HR or RR**

Temp  $> 100.4^{\circ}$  or  $< 96.8^{\circ}$  F

Age	HR	RR
< 2	>180	>35
2-5	>140	>30
6-12	>130	>20

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

SBP  $< 70 + 2 \times \text{age in years}$   
AND/OR signs of poor perfusion

- ABCs
- Complete set of vital signs
- Full monitoring
- Titrate  $O_2$  90-94% SaO<sub>2</sub>
- **IV access**
- ALS transport

Signs of poor perfusion?

*Altered mental status*  
*Tachycardia*  
*Cool, clammy skin*  
*Venous lactate  $> 4$  (see below)*

No

Recheck and monitor

If patient remains asymptomatic and clinically stable, treatment may not be necessary

Yes

Life-threatening brady or tachydysrhythmia?

Yes

Treat according to appropriate protocol

No

- Consider etiology of shock state
- **Give 20cc/kg NS bolus IV/IO and reassess**

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

- Sepsis
- Hemorrhage
- [Anaphylaxis](#)
- [Overdose](#)
- Cyanide or carbon monoxide poisoning
- Other: PE, MI, tension pneumothorax

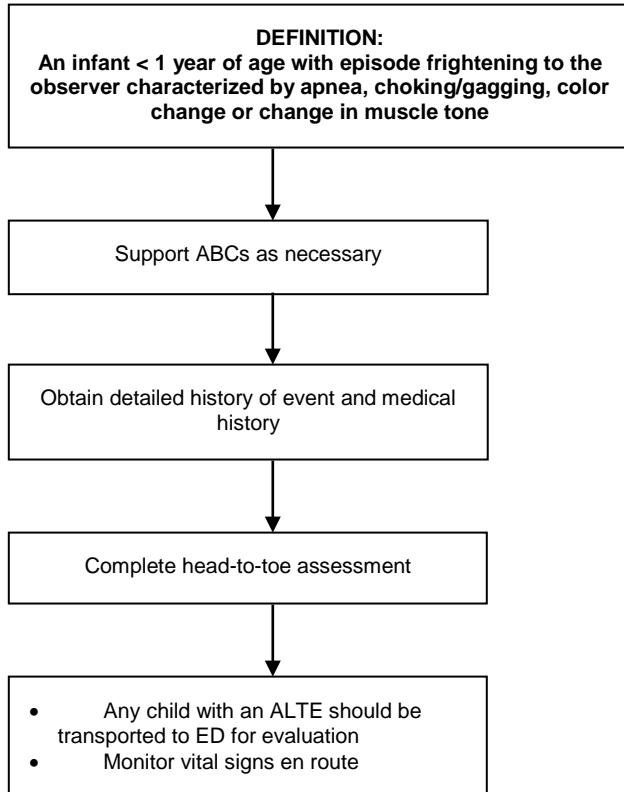
Repeat 20cc/kg boluses, reassessing for pulmonary edema, up to 3 boluses total or until goal of SBP  $> 70 + 2 \times \text{age in years}$  mmHg and signs adequate perfusion

For ongoing hypotension, poor perfusion or pulmonary edema, contact base for [dopamine drip](#)

If patient at risk for adrenal insufficiency, see [Adrenal Insufficiency guideline](#)

## 6110 PEDIATRIC APPARENT LIFE-THREATENING EVENT (ALTE)

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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**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?

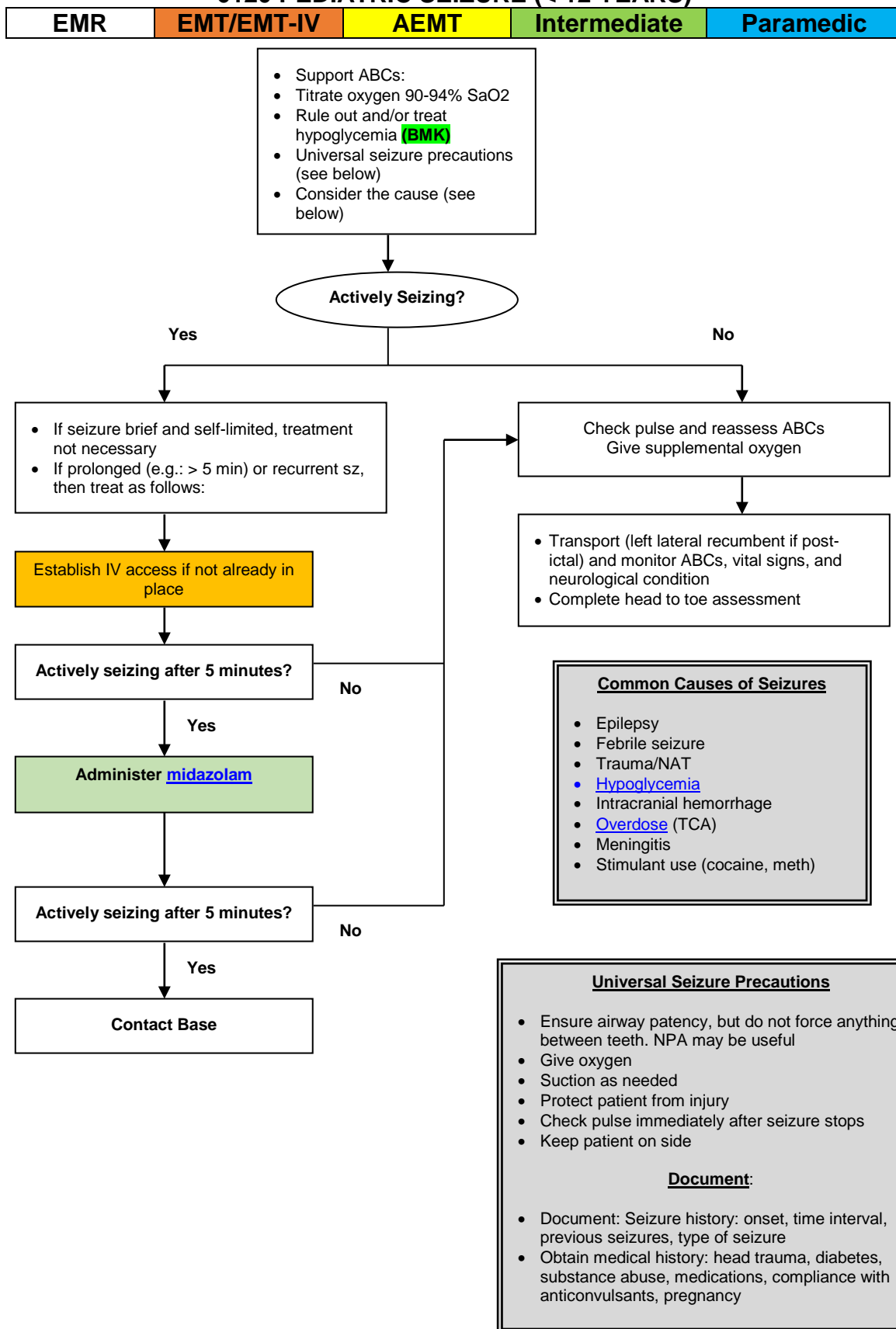
**Past Medical History:**

- 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

## 6120 PEDIATRIC SEIZURE (< 12 YEARS)



## 6130 PEDIATRIC TRAUMA CONSIDERATIONS (AGE < 12 YEARS)

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### Spinal Immobilization

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

### Spinal Immobilization criteria:

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

## 6140 CARE OF THE CHILD WITH SPECIAL NEEDS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### 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 Base Station for any concerns.

### 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. Tubes may be placed through the nose, mouth or abdomen and end in the stomach or jejunum (upper intestine) Always ask caretaker the type of feeding tube (does the tube end in the stomach or jejunum?) and when it was placed
- B. 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
- C. 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.
- B. Use bag-valve attached to the tracheostomy to assist ventilations if needed. May also attempt BVM with gloved finger over the tracheostomy
- C. Inability to ventilate and/or signs of respiratory distress (nasal flaring, retractions, hypoxia, etc) may indicate tracheostomy obstruction. Suction tracheostomy, passing the suction catheter no further than 6 cm. Limit suctioning time to minimum amount of time necessary to accomplish effective suctioning. Oxygenate between passes with the suction catheter.
- D. 0.5ml of saline may be instilled into the tracheostomy to assist suctioning of thick secretions
- E. If unable to ventilate through the tracheostomy tube and patient is apneic, bradycardic, or in pulseless arrest, remove tracheostomy tube and pass an appropriately sized endotracheal tube through the stoma approximately 1-2 inches, secure and ventilate. Appropriate depth must be based upon breath sounds, as right mainstem intubation is likely.
- F. Remember that caregivers are often the best people to change and suction a tracheostomy tube. Use them as your resource when possible.

### Central Venous Catheters (CVCs):

- A. Because of their size and location, a much greater risk of serious bacterial infections exist with CVCs compared to peripheral intravenous lines. Special care must be used when accessing such lines. **THESE SHOULD ONLY BE ACCESSED IF PATIENT IN EXTERMIS OR WITH BASE CONTACT.**
- B. Prior to accessing a CVC, hands should be washed and gloves worn. Vigorously scrub the CVC hub with an alcohol swab. The friction produced by scrubbing is the most effective action.
- C. A port is an implanted venous central venous catheter (below the surface of the skin). These devices require a non-coring (e.g. Huber) needle for accessing and should not be accessed in the field

## 7010 MEDICATIONS

Intermediate  
VO

Paramedic

### 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
  - Stable, undifferentiated, **regular**, monomorphic wide-complex tachycardia
  - 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:

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

##### Pediatric (Requires **Call in** and direct **verbal order**):

0.2 mg/kg IV bolus (max 6 mg), rapidly followed by normal saline flush.  
Additional dose of 0.2 mg/kg (max 12 mg) rapid IV bolus, followed by normal saline flush  
Contact medical control for further considerations

---

**Protocol**

- [Adult Tachyarrhythmia with Poor Perfusion](#)
  - [Pediatric Tachyarrhythmia with Poor Perfusion](#)
- 

**Special Considerations**

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



## 7020 MEDICATIONS

**EMT/EMT-IV****AEMT****Intermediate****Paramedic**

### **ALBUTEROL SULFATE (PROVENTIL, VENTOLIN)**

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#### **Description**

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

#### **Onset & Duration**

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

#### **Indications**

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

#### **Contraindications**

- Severe tachycardia is a relative contraindication
- 

#### **Adverse Reactions**

- Tachycardia
  - Palpitations
  - Dysrhythmias
- 

#### **Drug Interactions**

- Sympathomimetics may exacerbate adverse cardiovascular effects.
  - $\beta$ -blockers may antagonize albuterol.
- 

#### **How Supplied**

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

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

---

#### **Dosage and Administration**

##### **Adult:**

##### **Single Neb dose**

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

##### **Continuous Neb dose**

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

##### **Pediatric:**

##### **Single Neb dose**

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

---

**Protocol**

- [Asthma](#)
  - [COPD](#)
  - [Pediatric Respiratory Distress](#)
  - [Allergy and Anaphylaxis](#)
- 

**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.

## 7030 MEDICATIONS

Intermediate  
VO

Paramedic

### AMIODARONE (CORDARONE)

---

#### Description

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

---

#### Indications

- Pulseless arrest in patients with shock refractory VF/VT
  - Wide complex tachycardia not requiring immediate cardioversion due to hemodynamic instability
  - Following successful cardioversion of VF/VT, if used prior to defibrillation or for recurrent VF/VT
- 

#### Precautions

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

#### Contraindications

- 2<sup>nd</sup> or 3<sup>rd</sup> degree AV block
  - Cardiogenic shock
- 

#### Adverse Reactions

- Severe hypotension
  - Bradycardia
- 

#### Dosage and Administration

##### Adult:

##### **Pulseless Arrest (Refractory VT/VF)**

300 mg IV bolus.

Repeat once 150 mg IV bolus in 3-5 minutes.

##### **Post arrest following successful conversion of VT/VF**

150 mg IV bolus infusion over 10 minutes

##### **Symptomatic wide complex tachycardia with a pulse (CONTACT BASE)**

150 mg IV bolus infusion over 10 minutes.

##### **Pediatric:** (Use length based tape for appropriate dosing)

##### **Pulseless Arrest (Refractory VT/VF)**

5mg/kg IV over 3-5 minutes. (**CONTACT BASE** for additional doses)

---

#### Protocol

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

#### Special Considerations

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

## 7040 MEDICATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### ASPIRIN (ASA)

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#### Description

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

---

#### Indications

- Suspected acute coronary syndrome.
- 

#### Contraindications

- **Active** gastrointestinal bleeding
  - Aspirin allergy
- 

#### How Supplied

Chewable tablets 81mg

---

#### Dosage and Administration

- 324mg PO
- 

#### Protocol

- [Chest Pain](#)
- 

#### Special Considerations

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

## 7050 MEDICATIONS

Intermediate  
VO

Paramedic

### ATROPINE SULFATE

---

#### Description

Atropine is an endogenous antimuscarinic, anticholinergic substance. It is the prototypical anticholinergic medication with the following effects:

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

#### Indications

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

#### Precautions

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

#### Adverse Reactions

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

#### Dosage and Administration

##### Hemodynamically Unstable Bradycardia

###### Adult:

0.5 mg IV/IO bolus.

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

###### Pediatric: (Use length based tape for appropriate dosing)

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

##### Stable Bradycardia: **CONTACT BASE**

##### Poisoning/Overdose

**Adult:** 2 mg and contact base

**Pediatric: CONTACT BASE**

---

#### Protocol

- [Bradycardia](#)
  - [Neonatal Resuscitation](#)
  - [Poisoning/Overdose](#)
- 

#### Special Considerations

- Atropine causes pupil dilation, even in cardiac arrest settings

## 7060 MEDICATIONS

Intermediate  
VO

Paramedic

### **HALOPERIDOL (HALDOL)**

---

#### **Description**

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

---

#### **Onset & Duration**

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

#### **Indications**

- Sedation of a severely agitated combative patient
- 

#### **Contraindications**

- Suspected myocardial infarction
  - Hypotension
  - Respiratory or CNS depression
  - Pregnancy
  - Children < 8 years old
- 

#### **Precautions**

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

#### **Dosage and Administration**

Adults and Pediatrics > 8 years old  
Haloperidol – 5-10 mg IM

**BASE CONTACT** must be made for additional doses (consider if no effects within 10 minutes)

---

#### **Special Considerations**

- Extra-pyramidal reactions have been noted hours to days after treatment, usually presenting as spasm of the muscles of the tongue, face, neck, and back. This may be treated with diphenhydramine.
  - Hypotension and tachycardia secondary to Butyrophenone are usually self-limiting and should be treated with IV fluid bolus.
  - Use reduced dose in patients age ≥ 65
- 

#### **Protocol**

[Agitated/Combative Patient Guideline](#)

## 7070 MEDICATIONS

**EMT-IV****AEMT****Intermediate****Paramedic**

### **DEXTROSE 10% (D10W)**

---

#### **Description**

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

---

#### **Indications**

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

#### **Precautions**

- None
- 

#### **Dosage and Administration**

##### **Adult:**

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

Alternative: 25 gm (50 mL of 50% solution) IV/IO bolus

##### **Pediatric:** (Use length based tape for approximate weight)

<50kg administer 5mL/kg of 10% solution (maximum of 250 mL)

---

#### **Protocol**

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

#### **Special Considerations**

- The risk to the patient with ongoing hypoglycemia is enormous. With profound hypoglycemia and no IV access consider IO insertion.
- Draw blood sample before administration if possible.
- Use glucometer before administration, if possible.
- Use of D50 with extravasation may cause tissue necrosis; use a large vein and aspirate occasionally to ensure route patency. This is the primary reason to use D10.
- Dextrose can be irritable to the vein and the vein should be flushed after administration.

## 7080 MEDICATIONS

<b>AEMT VO</b>	<b>Intermediate VO</b>	<b>Paramedic</b>
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### ***DIPHENHYDRAMINE (BENADRYL)***

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#### **Description**

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

---

#### **Indications**

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

#### **Precautions**

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

#### **Side effects**

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

#### **Drug Interactions**

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

#### **Dosage and Administration**

##### **Adults:**

50 mg IV/IO/IM

**Pediatrics:** (Use length based tape for appropriate dosing)

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

---

#### **Protocol**

[Allergy/Anaphylaxis](#)



## 7090 MEDICATIONS

### Paramedic

#### **DOPAMINE (INTROPIN)**

---

##### **Description**

Endogenous catecholamine chemically related to epinephrine and norepinephrine. Increases blood pressure through combination of dopamine, alpha and beta receptor effects leading to increased heart rate, contractility and peripheral vasoconstriction.

---

##### **Indications**

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

##### **Contraindications**

- Hypovolemia
  - Hemorrhagic shock
- 

##### **Adverse Reactions**

- Tachydysrhythmias
  - Hypertension
  - Increased myocardial oxygen demand
- 

##### **Dosage and Administration**

**CONTACT BASE** for direct physician order

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

##### **Adult IV/IO:**

2~20 mcg/kg/min, Start at 5 mcg/kg/min, Titrate dose up 5 mcg/kg/min every 5 min to a max of 20 mcg/kg/min to achieve desired effect.

##### **Pediatrics IV/IO:** (Use length based tape for appropriate dosing)

2~20 mcg/kg/min, Start at 5 mcg/kg/min, Titrate dose up 5 mcg/kg/min every 5 min to a max of 20 mcg/kg/min to achieve desired effect.

---

##### **Protocol**

- [Medical Hypotension/Shock Guideline](#)
  - [Adult Bradycardia](#)
- 

##### **Special Considerations**

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

## INTRAVENOUS DRIP RATES FOR DOPAMINE

Concentration: 1600 mcg/ml

Weight	Dose (mcg/kg/min)					
		5	10	15	20	
	50 kg	10	20	30	40	microdrips/min
	60 kg	10	25	35	45	
	70 kg	15	25	40	50	
	80 kg	15	30	45	60	
	90 kg	15	35	50	70	
	100 kg	20	35	55	75	
	110 kg	20	40	60	85	

## 7100 MEDICATIONS

	EMR/EMT	EMT-IV	AEMT	Intermediate	Paramedic
Cardiovascular	N	N	N	VO	Y
Allergy IM/SQ	N	Y	Y	Y	Y
Resp (Asthma)	N	N	Y	Y	Y
Resp/Allergy IV	N	N	N	VO	Y
Auto-Injector	VO	Y	Y	Y	Y
Racemic	N	N	N	VO	Y

### 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
- Severe Croup

#### 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.

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

Continuous infusion titrated to effect:

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

##### **Asthma:**

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

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

0.3 mg (0.3 ml of a 1:1,000 solution) IM. May repeat dose x 3.

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

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

##### **Alternative to Racemic Epi: (for stridor at rest)**

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

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

**Systemic allergic reaction:**

Adult: 0.3 mg IM with autoinjector (adult EpiPen)

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

**Pediatric:** (Use length based tape for appropriate dosing)

**Cardiac arrest:**

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

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

**Bradycardia (CONTACT BASE)**

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

**Asthma**

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

**Moderate to Severe Allergic Reactions**

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

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

Continuous infusion titrated to effect: 1 mg in 250 ml of Normal Saline IV/IO infused at initial dose of 0.1 mcg/kg/min until age appropriate BP of  $> (70 + 2 \times \text{age in years})$  mmHg systolic achieved or to 0.5 mcg/kg/min.

**ALTERNATIVE to racemic epinephrine:** (for bronchiolitis, croup, epiglottitis, miscellaneous causes of stridor)

5 mL of 1:1000 epinephrine via nebulizer x 1

---

**Protocol**

- [Adult Universal Pulseless Arrest Algorithm](#)
- [Pediatric Pulseless Arrest ALS Algorithm](#)
- [Adult Bradycardia](#)
- [Neonatal Resuscitation](#)
- [Allergy and Anaphylaxis Guideline](#)
- [Bradycardia with Poor Perfusion](#)
- [Pediatric Respiratory Distress](#)

---

**Special Considerations**

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

## 7110 MEDICATIONS

<b>AEMT VO</b>	<b>Intermediate VO</b>	<b>Paramedic</b>
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### ***IPRATROPIUM BROMIDE (ATROVENT)***

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#### **Description**

Ipratropium is an anticholinergic, antimuscarinic bronchodilator chemically related to atropine.

---

#### **Onset & Duration**

- Onset: 5-15 min. after inhalation
  - Duration: 6-8 hr. after inhalation
- 

#### **Indications**

- Bronchospasm
- 

#### **Contraindications**

- Do not administer to children < 2 years
  - Soy or peanut allergy is a contraindication to 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 (2yrs – 12yrs)**

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

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

**Not indicated for more than 3 successive doses or continuous neb use**

---

#### **Protocol**

- [Asthma](#)
- [COPD](#)
- [Pediatric Respiratory Distress](#)

## 7120 MEDICATIONS

**AEMT****Intermediate****Paramedic**

### **LIDOCAINE 2% SOLUTION**

---

#### **Description**

Local anesthetic for relief of pain during intraosseous fluid administration.

---

#### **Indications**

- Analgesic for intraosseous infusion
- 

#### **Side Effects**

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

#### **Precautions**

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

#### **Dosage and Administration**

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

---

#### **Protocol**

[Intraosseous Administration](#)

---

#### **Special Notes**

- Seizure from lidocaine toxicity likely to be brief and self-limited. If prolonged, or status epilepticus, treat per seizure protocol
- Treat dysrhythmias according to specific guideline

## 7130 MEDICATIONS

### Paramedic

#### **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.

---

##### **Indications**

###### **Antiarrhythmic**

- Torsade de pointes associated with prolonged QT interval

###### **Muscle Relaxant**

- Eclampsia

##### **Precautions**

- Bradycardia
  - Hypotension
  - Respiratory depression
- 

##### **Adverse Reactions**

- Bradycardia
  - Hypotension
  - Respiratory depression
- 

##### **Dosage and Administration**

**Torsades de Pointes suspected caused by prolonged QT interval:**

2 gm, IV bolus

**Eclampsia:**

2-4 grams IV over 10 minutes

##### **Protocol**

- [Adult Universal Pulseless Arrest Algorithm](#)
- [Adult Seizures](#)
- [Obstetrical Complications](#)

## 7140 MEDICATIONS

Intermediate  
VO

Paramedic

### **MIDAZOLAM (Versed)**

---

#### **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.
- 

#### **Onset & Duration**

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

#### **Indications**

- Status epilepticus
  - Tranquilization of the severely agitated/combatative patient
  - Anxiolysis for cardioversion or transcutaneous pacing (TCP)
  - Treatment of severe muscle spasms associated with large muscle groups such as back or quadriceps muscle groups.
- 

#### **Contraindications**

- Hypotension
  - Respiratory depression
- 

#### **Adverse Reactions**

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

#### **Dosage and Administration**

##### **MIDAZOLAM:**

##### **Seizure or anxiolysis for cardioversion or transcutaneous pacing:**

##### **Adult:**

##### **IV/IO route: 3 mg**

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

##### **IN route: 5 mg**

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

##### **IM route: 10 mg**

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



**Pediatric:** (Use length based tape for appropriate dosing)

**IV/IO route** 0.1 mg/kg

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

**IN/IM route:** 0.2 mg/kg.

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

### **Tranquilization of severely agitated or combative patient OR anxiolysis for CPAP**

**Adult:**

**IV route:** 2 mg

**IN/IM route:** 5 mg

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

**Pediatric:**

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

---

### **Protocol**

- [Synchronized Cardioversion](#)
- [Transcutaneous Pacing](#)
- [CPAP](#)
- [Adult Seizure](#)
- [Pediatric Seizure](#)
- [Pediatric tachycardia with poor perfusion](#)
- [Agitated/Combative Patient](#)
- [Poisoning/Overdose](#)

---

### **Special Considerations**

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

## 7150 MEDICATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### 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

---

#### Indications

- For reversal of suspected opioid-induced CNS and respiratory depression
  - Coma of unknown origin
  - Seizure of unknown etiology (rule out narcotic overdose, specifically propoxyphene )
- 

#### Adverse Reactions

- Tachycardia
  - Nausea and vomiting
  - Pulmonary Edema
- 

#### Dosage and Administration

##### Adult:

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

In cases of severe respiratory compromise or arrest, 2 mg bolus IV/IO/IM is appropriate, otherwise drug should be titrated

##### Pediatrics: (Use length based tape for appropriate dosing)

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

---

#### Protocol

- [Universal Altered Mental Status Guideline](#)
  - [Poisoning/Overdose](#)
- 

#### Special Considerations

- Patients receiving naloxone **must** be transported to a hospital
- Narcotic-dependent patients may experience violent withdrawal symptoms. Before administering naloxone to a suspected opioid overdose, consider if supportive care alone may be adequate.

## 7160 MEDICATIONS

	EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
SL: PT assist	VO	VO	VO	Y	Y
SL: tab/spray	N	N	N	Y	Y
Paste	N	N	VO	VO	Y

### ***NITROGLYCERINE (NITROSTAT, NITROQUICK, etc)***

---

#### **Description**

Short-acting peripheral venodilator decreasing cardiac preload and afterload

---

#### **Onset & Duration**

Onset: 1-3 min.

Duration: 20-30 min.

---

#### **Indications**

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

#### **Contraindications**

- Suspected right ventricular ST-segment elevation MI (Inferior STEMI pattern plus ST elevation in right sided-precordial leads)
  - Hypotension SBP < 100
  - Use of erectile dysfunction (ED) medication (e.g. Viagra, Cialis) in last 36 hours
- 

#### **Adverse Reactions**

- Hypotension
  - Headache
  - Syncope
- 

#### **Dosage and Administration**

0.4 mg (1/150 gr) sublingually or spray, every 5 minutes  
PRN up to a total of 3 doses for persistent CP.

Nitropaste: 1" to chest if patient responds to SL NTG.

---

#### **Protocol**

- [Adult Chest Pain](#)
  - [CHF/Pulmonary Edema](#)
-

## 7170 MEDICATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
ODT	Y	Y	Y	Y
IV/IVP	IV only	Y	Y	Y

### ONDANSETRON (ZOFRAN)

---

#### Description

- Ondansetron is a selective serotonin 5-HT<sub>3</sub> receptor antagonist antiemetic. Ondansetron is the preferred antiemetic, if available.
- 

#### Indications

- Nausea and vomiting
- 

#### Contraindications

- Ondansetron: known QT prolongation syndrome
- 

#### Adverse Effects:

- Ondansetron: very low rate of adverse effects, very well tolerated. May cause QT prolongation.
- 

#### Dosage and Administration

##### Ondansetron:

##### Adult:

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

##### Pediatric < 4 years old:

2 mg IV/PO/ODT

##### Pediatric ≥ 4 years old:

4 mg IV/PO/ODT

---

#### Protocol

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

## 7180 MEDICATIONS

	Intermediate	Paramedic
Fentanyl	VO	Y
Morphine	VO	Y

### OPIOIDS (FENTANYL, MORPHINE)

---

#### Description

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

---

#### Indications

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

#### Contraindications

- Hypotension, hemodynamic instability or shock
  - Respiratory depression
- 

#### Caution/Comments:

- Opioids should only be given to hemodynamically stable patients and titrated slowly to effect.
  - The objective of pain management is not the removal of all pain, but rather, to make the patient's pain tolerable enough to allow for adequate assessment, treatment and transport
  - Respiratory depression, including apnea, may occur suddenly and without warning, and is more common in children and the elderly. Start with ½ traditional dose in the elderly.
  - Coadministration of opioids and benzodiazepines is discouraged and may only be done with direct physician verbal order.
  - Chest wall rigidity has been reported with rapid administration of fentanyl
- 

#### Dosage and Administration

##### **FENTANYL:**

##### **Adult:**

**IV/IO/IM route:** 1-2 mcg/kg, SLOW IV/IO bolus.

- Dose may be repeated after 10 minutes and titrated to clinical effect to a maximum cumulative dose 200mcg
- Additional dosing requires BASE CONTACT

**IN route:** 1-2 mcg/kg IN single dose.

- Repeat dosing only via IV route, and 10 minutes after initial IN dose up to a maximum cumulative dose of 200mcg
- Additional dosing requires BASE CONTACT

**Pediatric (1-12 years):** (Use length based tape for appropriate dosing)

**IV/IO/IM route:** 1 mcg/kg SLOW IV/IO bolus.

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

**IN route:** 1 mcg/kg IN single dose.

- Repeat dosing only via IV route, and 10 minutes after initial IN dose up to a maximum cumulative dose of 3 mcg/kg
- **IN route requires BASE CONTACT and approval for any patient < 5 years old, or any patient < 12 years old with indication other than isolated orthopedic injury or burns**

**Pediatric < 1 year: BASE CONTACT**

**MORPHINE:**

**Adult:**

**IV/IO/IM routes:** 4 mg.

- Repeat doses of 2.0 mg, up to 10 mg.
- Additional cumulative dosing > 10 mg requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

**Pediatric (1-12 years):** (Use length based tape for appropriate dosing)

**IV/IO/IM routes:** 0.1 mg/kg slowly.

- Maximum single dose is 5.0 mg.
- Additional cumulative dosing > 5 mg requires BASE CONTACT.
- **Morphine may not be given IN as it is poorly absorbed**

**Pediatric < 1 year: BASE CONTACT**

NOTE: IV route is preferred for more accurate titration. Continuous pulse oximetry is mandatory. Frequent evaluation of the patient's vital signs is also indicated. Emergency resuscitation equipment and naloxone must be immediately available.

---

**Protocol**

[Extremity Injuries](#)

[Adult Chest Pain](#)

[CHF/pulmonary Edema](#)

[Therapeutic Induced hypothermia](#)

[Abdominal Pain](#)

[Amputations](#)

[Burns](#)

[Bites/Stings](#)

[Snake Bites](#)

[Face and Neck Trauma](#)

[Chest Trauma](#)

[Abdominal Trauma](#)

[Spinal Trauma](#)

## 7190 MEDICATIONS

EMT/EMT-IV

AEMT

Intermediate

Paramedic

### 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

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#### Administration

One full tube 15 g buccal.

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#### Protocol

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

## 7200 MEDICATIONS

EMR	EMT/EMT-IV	AEMT	Intermediate	Paramedic
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### OXYGEN

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#### Description

Oxygen added to the inspired air increases the amount of oxygen in the blood, and thereby increases the amount delivered to the tissue. Tissue hypoxia causes cell damage and death. Breathing, in most people, is regulated by small changes in the acid-base balance and CO<sub>2</sub> levels. It takes relatively large decreases in oxygen concentration to stimulate respiration.

---

#### Indications

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

#### Precautions

- If the patient is not breathing adequately, the treatment of choice is assisted ventilation, not just oxygen.
  - When pulse oximetry is available, titrate SpO<sub>2</sub> per protocol. This may take some time.
  - Do not withhold oxygen from a COPD patient out of concerns for loss of hypoxic respiratory drive. This is never a concern in the prehospital setting with short transport times
- 

#### Administration

<u>Flow</u>	<u>LPM Dosage</u>	<u>Indications</u>
Low Flow	1-2 LPM	Minor medical / trauma
Moderate Flow	3-9 LPM	Moderate medical / trauma
High Flow	10-15 LPM	Severe medical / trauma

---

#### Special Notes

- Do not use permanently mounted humidifiers. If the patient warrants humidified oxygen, use a single patient use device.
- Adequate oxygenation is assessed clinically and with the SpO<sub>2</sub> while adequate ventilation is assessed with clinically and with ETCO<sub>2</sub>.



## 7200 MEDICATIONS

OXYGEN FLOW RATES		
METHOD	FLOW RATE	OXYGEN INSPIRED AIR (approximate)
Room Air		21%
Nasal Cannula	1 LPM	24%
	2 LPM	28%
	6 LPM	44%
Simple Face Mask	8 - 10 LPM	40-60%
Non-rebreather Mask	10 LPM	90%
Mouth to Mask	10 LPM	80%
	15 LPM	50%
Bag/Valve/Mask (BVM)	Room Air	21%
	12 LPM	40%
Bag/Valve/Mask with Reservoir	10-15 LPM	90-100%
OXYGEN -powered breathing device	hand-regulated	100%

## 7210 MEDICATIONS

	Intermediate	Paramedic
Antidote	N	Y
Cardiovascular	VO	Y

### ***SODIUM BICARBONATE***

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#### **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.

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#### **Indications**

- Tricyclic overdose with arrhythmias, widened QRS complex, hypotension, seizures
  - Suspected hyperkalemic pulseless arrest: consider in patients with renal failure
- 

#### **Contraindications**

- Metabolic and respiratory alkalosis
  - Hypocalcemia
  - Hypokalemia
- 

#### **Adverse Reactions**

- Metabolic alkalosis
  - Hyperosmolality may occur, causing cerebral impairment
- 

#### **Drug Interactions**

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

#### **Dosage and Administration**

**Adults and children (>10 kg), 8.4%**

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

1.0 mEq/kg slow IV push

Repeat if needed in 10 minutes.

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#### **Protocol**

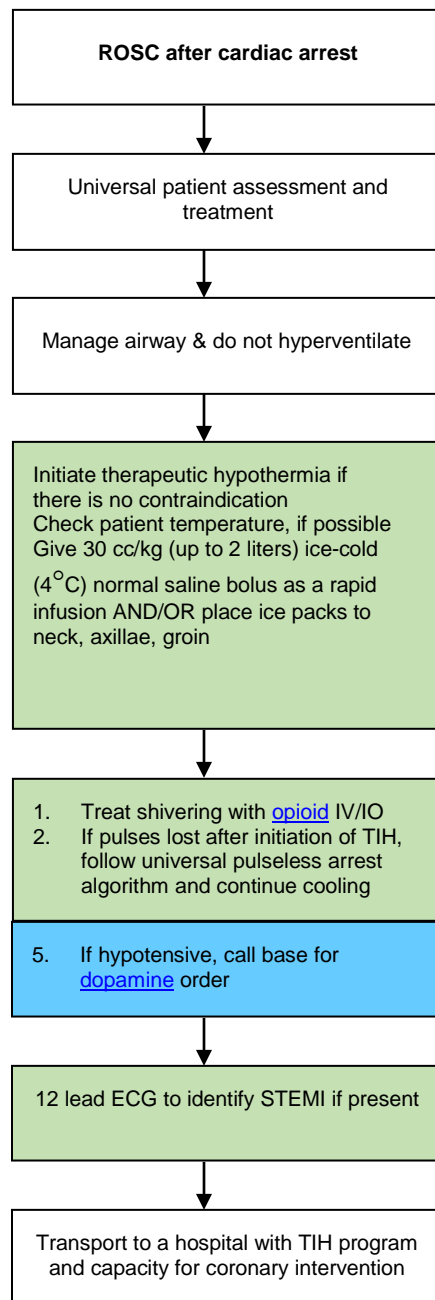
- [Adult Universal Pulseless Arrest Algorithm](#)
  - [Poisoning/Overdose](#)
- 

#### **Special Considerations**

- Sodium bicarbonate administration increases CO<sub>2</sub> which rapidly enters cells, causing a paradoxical intracellular acidosis.
- Sodium bicarb is no longer recommended for routine use in prolonged cardiac arrest. Its use in pulseless arrest should be limited to known or suspected hyperkalemia (e.g. dialysis patient).

# 8000 PROCEDURE GUIDELINE: THERAPEUTIC INDUCED HYPOTHERMIA AFTER CARDIAC ARREST

EMT-IV	AEMT	Intermediate	Paramedic
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**Return of spontaneous circulation (ROSC) criteria:**

- Pulse and measurable blood pressure
- Increase in ET<sub>CO</sub><sub>2</sub> on capnography

**Contraindications to TIH:**

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

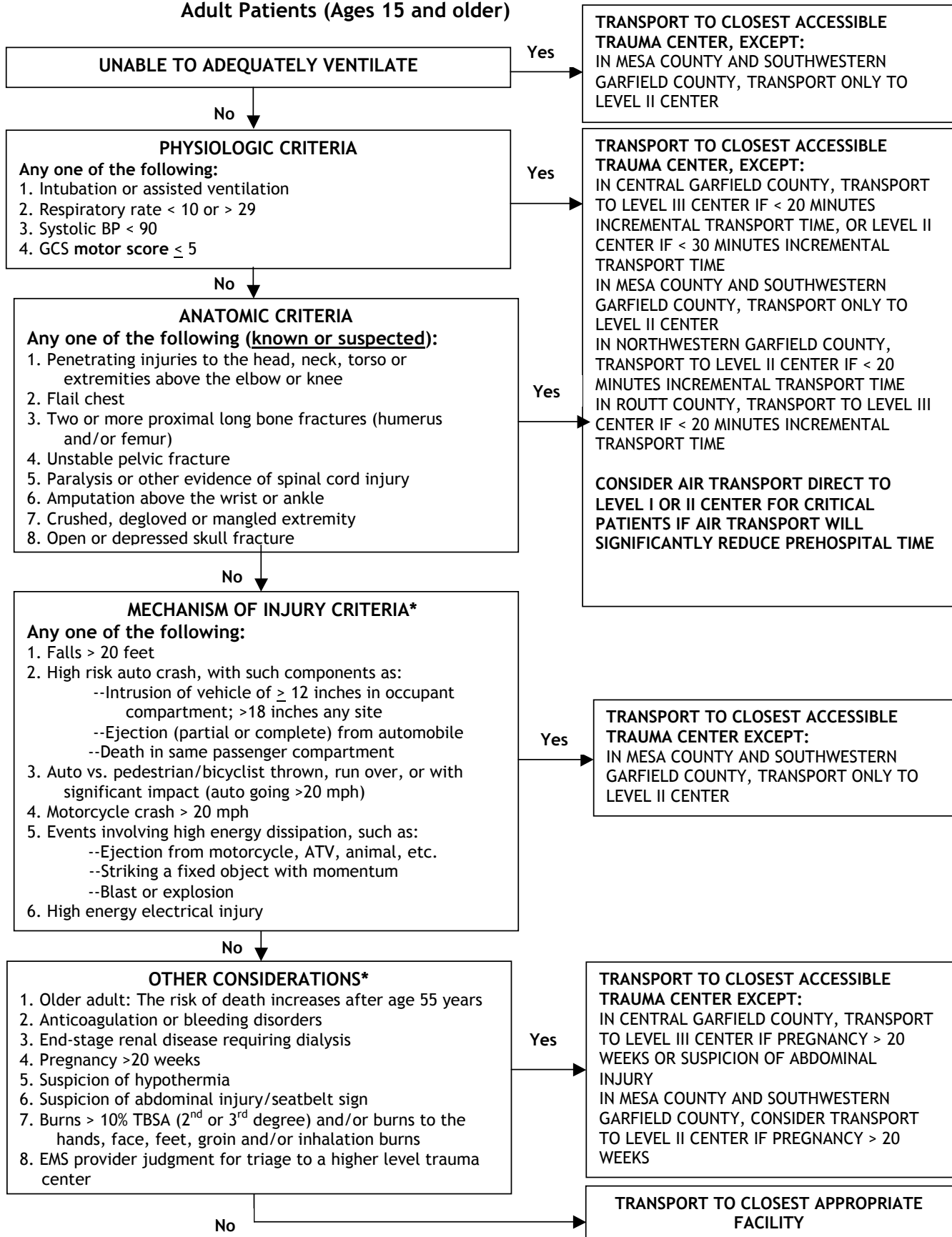
**Document:**

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

**Consider and Contact Base For Other Indications For Cooling:**

- Drowning
- Hanging or asphyxiation
- Hyperthermia

**EXHIBIT A NWRETAC Prehospital Trauma Triage Algorithm  
Adult Patients (Ages 15 and older)**



# **EXHIBIT B    NWRETAC Prehospital Trauma Triage Algorithm Pediatric Patients (Less than 15 years old)**

