City of Colorado Springs

Prehospital Practice Guidelines

Colorado Springs Fire Department and AMR

Revised 6/2023

AMERICAN MEDICAL RESPONSE®

Table of Contents

Section A: General Guidelines

Introduction. A001
Patient Determination A002
Consent A003
Patient Refusal A004
General Supportive Care A005
General Pediatric Overview A006
Patient Destination A007
Death in the Field. A008
Mandatory Reporting A009
Interfacility Transfers A010
Waiver A011
Law Enforcement Blood Draw A012
Advanced Directives A013

Section B: Procedures

Airway Procedures B001
Airway Management B002
Medication Assisted Airway Management. B003
Pain Management B004
Nausea Vomiting B005
Spinal Motion Restriction B006
Cardiac Related Procedures. B007
Monitoring Devices B008
Vascular Access B009
Wound Care Procedures B010
Miscellaneous Procedures B011
Tazer Probe Removal B012

Section C: Respiratory Emergencies

Standard Dyspnea Care. C001
Wheezes/Rhonchi C002
Rales C003
Stridor/FBAO C004

Section D: Cardiac Emergencies

Acute Coronary Syndrome D001
Bradydysrhythmia D002
Tachydysrhythmia D003
Cardiac Arrest D004
Neonatal Resuscitation D005
Hyperkalemia D006
Ventricular Assist Devices. D007
ROSC D008

Section E: Medical Emergencies

Behavioral (ETOH/Restraints) Emergency E001
Cerebral Vascular Accident. E002
Seizures E003
Sepsis/Infection E004
Allergy/anaphylaxis E005
Poisoning/overdose E006
Diabetic Emergency E007

Back Button

Section E: Medical Emergencies

OB/Gyn Emergency E008
OB Breech Delivery. E009
Epistaxis. E010
Alcohol Withdrawal E011

Section F: Traumatic Emergencies

Standard Trauma Care F001
Hemorrhagic Shock F002
Face, Neck, and Spine Injuries F003
Traumatic Brain Injuries F004
Chest, Abdomen, and Pelvic Injuries F005
Extremity and Amputation Injuries F006
Burn Injuries F007
Submersion Injuries F008
Traumatic Cardiac Arrest F009
Crush Injuries F010
Button Battery Ingestion F011

Section G: Environmental Emergencies

Bites and Stings G001
High Altitude Emergencies G002
Heat Emergencies G003
Cold Emergencies G004
Smoke Inhalation G005

Section H: Medications

Medication Overview. . . . . .
Acetaminophen (Tylenol). . . . . .
Adenosine. . . . . .
Albuterol. . . . . .
Amiodarone. . . . . .
Aspirin. . . . . .
Atropine. . . . . .
Calcium. . . . . .
Cefalolin (Ancef). . . . . .
Dexamethasone (Decadron). . . . . .
Dextrose. . . . . .
Diazepam (Valium). . . . . .
Diltiazem (Cardizem). . . . . .
Diphenhydramine (Benadryl). . . . . .
Droperidol (Inapsine). . . . . .
DuoDote. . . . . .
Epinephrine. . . . . .
Fentanyl. . . . . .
Glucagon. . . . . .
Honey. . . . . .
Hydromorphone (Dilaudid) . . . . . .
Hydroxycobalamin (Cyanokit). . . . . .
Ibuprofen (Motrin). . . . . .
Ipratroprium Bromide (Atrovent). . . . . .
IV Solutions. . . . . .
Ketamine. . . . . .
Ketorolac (Toradol). . . . . .
LEValbuterol (Xopenex). . . . . .
Magnesium Sulfate. . . . . .
Midazolam (Versed). . . . . .

Section H: Medications

Naloxone (Narcan).
Nitroglycerin.
Olanzapine (Zyprexa)
Ondansetron (Zofran).
Oral Glucose.
Oxygen.
Phenylephrine Hydrochloride (Neosynephrine).
Rocuronium.
Sodium Bicarbonate.
Succinylcholine.
Topical Ophthalmic Anesthetic.
Tranexamic Acid (TXA).
Vaccinations.
Vecuronium.

Section I: Special Situations

Approved Abbreviations. I001
HAZMAT. I002
MCI I003

Reviewed by

The following guidelines were reviewed by members of the Colorado Springs Fire Department (CSFD) Medical Division as well as members from the American Medical Response (AMR) Clinical Education Specialist (CES) department.

Approved by

The following guidelines were approved by the Colorado Springs Medical Direction Team consisting of Eric Stein Bronsky, MD, FACEP, Mathew Angelidis, MD, Brett Banks, DO, Timothy R Hurtado, DO, FACEP, Dave Hakkarinen, MD, FACEP, Eric Wu, MD, and Joseph Kelly, MD, as well as members of the Planes to Peaks Medical Director Committee.

Special Thanks

The Medical Director group would like to thank all those involved in developing, reviewing, and editing the Prehospital Practice Guidelines. The immense work, organization, and time devoted to the project reflects the passion and dedication each and every one of you have for cultivating the community in which you serve.

Back Button

Introduction

Description

The following guidelines have been developed and approved by the Colorado Springs Fire Department and American Medical Response (AMR) in conjunction with a working group representing SCRETAC, SECRETAC and P2PRETAC. The guidelines delineate the expected standard of care and acts allowed for EMT, EMT-IV, AEMT, EMT-I and Paramedic providers functioning under our medical direction.

Colorado EMS Providers working in the prehospital setting are expected to adhere to the scope of practice established in Colorado Department of Public Health and Environment, ***6 CCR 1015-3 CHAPTER TWO - RULES PERTAINING TO EMS PRACTICE AND MEDICAL DIRECTOR OVERSIGHT***. The working group utilizes these rules to establish guidelines to be used as guidelines for operation during prehospital EMS calls. They are also intended to serve as guidelines to ensure that all personnel falling under our medical direction are trained in proper prehospital patient care.

Understanding communication challenges faced by many of southern Colorado's EMS providers, medical director(s) may establish the circumstances and methods by which an EMS provider obtains authorization to perform any medical act, skill, or medication.

Where evidence-based practice has been available, the medical director group has diligently evaluated the research available and drafted guidelines that will assist EMS providers in providing the best possible patient care. Where evidence is lacking, we have relied on best practices, expert advice, and consensus to guide the development of the guideline or procedure. Moving forward, these guidelines are to be reviewed on a six-month basis and updated when necessary to reflect advances in the art and science pertaining to the care of acutely ill and injured patients.

No guideline can account for every clinical scenario encountered as EMS is performed in a stressful environment with time-critical decisions. No specific patient care matrix can be developed that will cover every type of injury, illness, and complicating circumstance that prehospital providers will encounter while providing on-scene care. From time to time, it is expected that circumstances will arise that are not covered within these guidelines. In such instances, providers should function within their scope of practice and use all available resources (including On-Line Medical Consultation) to ensure the best outcome supported by documented clinical reasoning and sound judgment.

These guidelines represent a significant change in formatting from previous versions. The hope is that by significantly streamlining them, these guidelines will be much more "user-friendly" for every level of provider covered under our medical direction. The guidelines are now presented in a format intended to reflect real-time decision-making processes. Although these new guidelines imply a specific sequence of actions and/or procedures, it may often be necessary to provide care out of sequence from that described, if dictated by clinical circumstances. Remember that there is no substitute for sound clinical judgment. We encourage providers to search for more in-depth knowledge and understanding of patient management principles by accessing up-to-date textbooks, literature, and research materials and to seek out continuing education opportunities related to the practice of prehospital medicine.

By moving the guidelines to an electronic format, it will be possible to immediately link directly to a referenced guideline, procedure and/or medication by clicking on a hyperlink, which is in blue and underlined. The guidelines can still be printed for reference guides; they just won't be quite as easy to navigate, especially during a real-time, decision-making situation.

Thanks to everyone who has aided in guideline development and review. Any project this complex and detailed is prone to errors. Please review these guidelines carefully and route any potential errors, unclear directions, or suggestions for improvement to your agency's EMS Officer or medical director.

Introduction

Finally, and most importantly, we thank every one of you for your dedication and commitment every day to providing the best, most compassionate prehospital medical care to the citizens of our respective communities.

Guideline Key

For guidelines using an algorithm format, acts allowed for each provider certification level are identified by borders around the appropriate instruction boxes using the following color key:

EMT	EMT-IV	Paramedic

Individual medication and procedure guidelines include a color-coded box at the top, indicating whether a specific provider level is allowed to administer the medication, if the medication can be administered as a standing order **(SO),** requires base contact for a verbal order **(VO),** and requirements for any repeat doses. Anywhere there is a "**NO**" it is not allowed.

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Medications or procedures that are only allowed to be performed by agencies with a current State-approved waiver to the acts allowed are clearly marked and indicated with an asterisk*and outlined or written in BROWN.

Medications and procedures will be CAPITILIZED, *italicized*, underlined and in written in *BLUE* to signify a hyperlink.

Teaching points deemed sufficiently important to be included in algorithm-based guidelines are located in grey-filled boxes.

Pediatric Guidelines

For the purposes of these guidelines, pediatric patients are defined as birth until patients' weight-based calculations equal the adult dose, see ***GENERAL PEDIATRIC OVERVIEW***. Pediatric specific information will be noted by **PURPLE TEXT**.

Guideline Education and Training

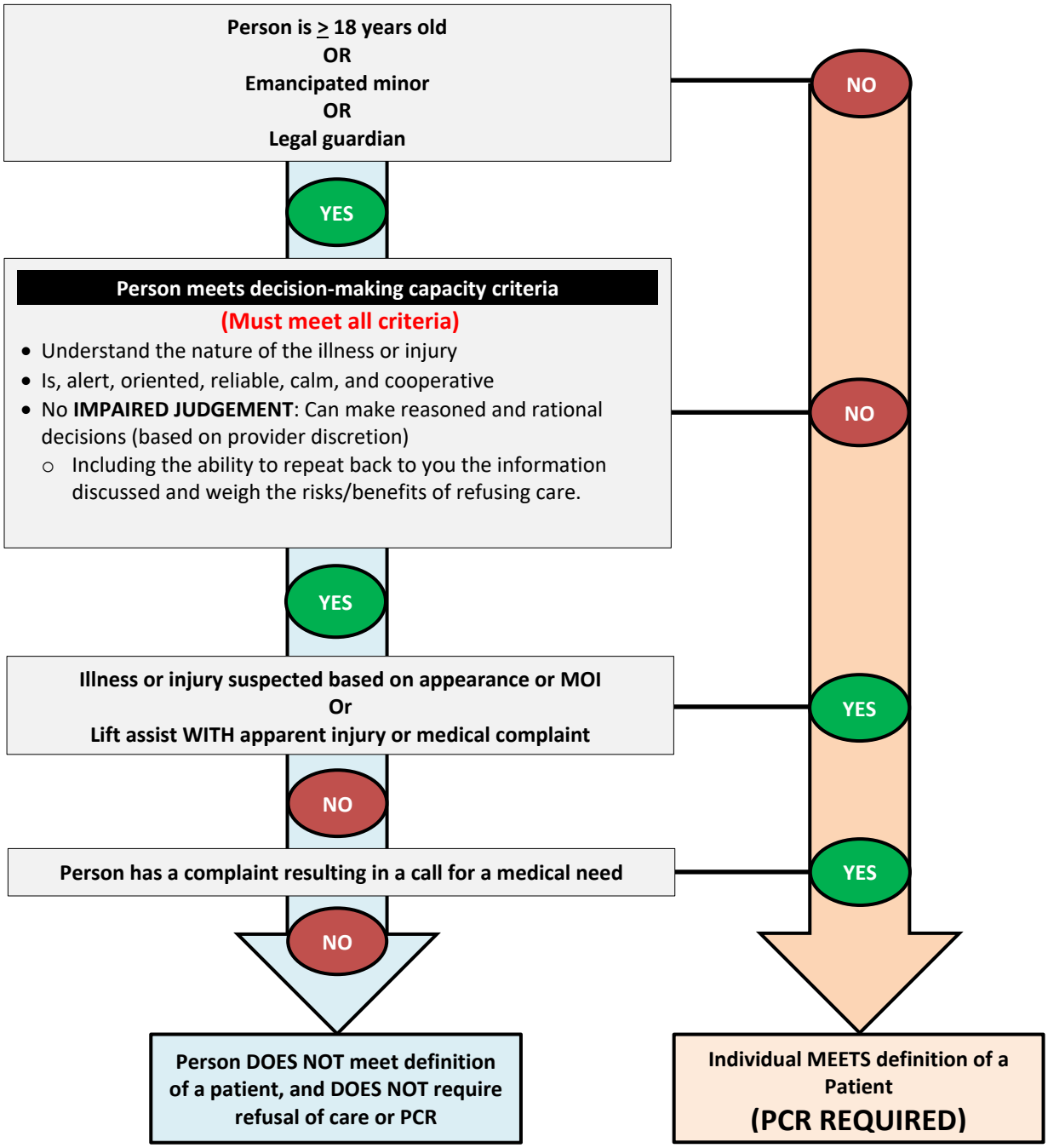
The curriculum for initial EMS provider training may not cover some of the treatments, procedures, and medications included in these guidelines. The acts allowed by Colorado's Chapter Two Rules are more extensive than those required to be taught using the *National EMS Scope of Practice* model.

Therefore, it is the responsibility of all EMS agencies and their Medical Directors to ensure that initial training, verification of competence, and maintenance of the skills falling outside traditional EMS education are documented for all agency providers. This may be of additional importance when training and orienting new providers, providers moving to a higher level of certification, and providers new to Colorado, prior to allowing them to practice independently.

Patient Determination

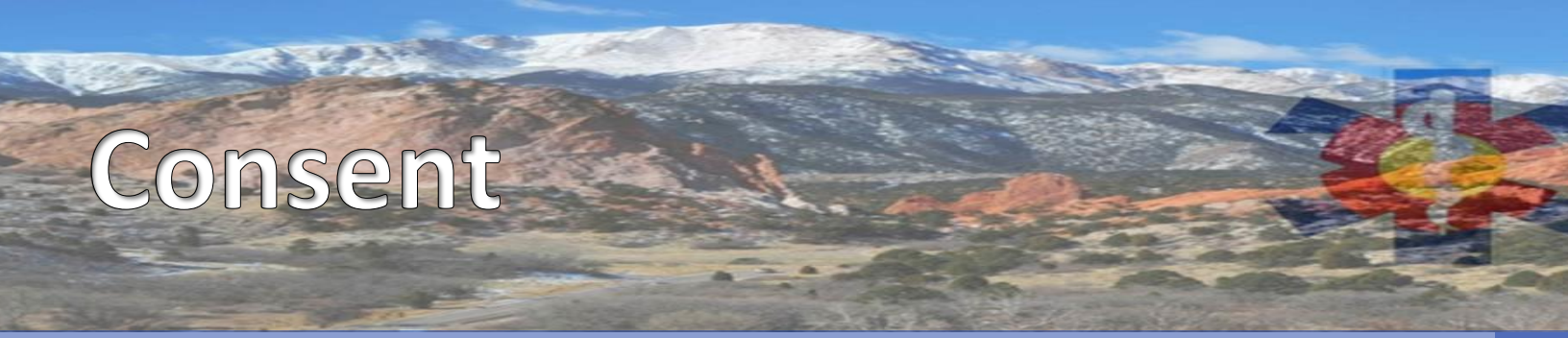
Description

a. This guideline is intended to refer to individual patient contacts
b. When in doubt as to whether individual is a "patient", err on the side of caution and perform a full assessment as well as documentation.
c. No guideline can anticipate every scenario and providers should use best judgment
d. If further care and evaluation is warranted **AND** the patient is refusing to be treated/transported, then a refusal **MUST** be completed. ***SEE REFUSAL GUIDELINE***



A002 Revised: 5/26/2023

Back Button



Consent

Decision Making Capacity

a. A person has appropriate decision making capacity if the individual or responsible party;
   - Is alert, oriented, reliable, calm, and cooperative **AND**
   - Is able to understand the nature and consequences of his or her illness or injury **AND**
   - Is able to understand the nature and consequences of the proposed or refused treatment **AND**
   - No **IMPAIRED JUDGEMENT**: Can make reasoned and rational decisions (based on provider discretion).
     i. Including the ability to repeat back to you the information discussed and weigh the risks/benefits of refusing care.

b. The patient should be assessed to determine that they are oriented, have an understanding of what happened, what may possibly happen if treated or not treated, and have a plan of action –such as how to get home from scene if refusing treatment.

c. If the patient does not have appropriate decision making capacity under these guidelines, consent should be obtained from another responsible party
   - Must also have appropriate decision making capacity and be legally "of age", spouse, adult son or daughter, parent, adult brother or sister, or legal guardian.

d. If the patient does not have appropriate mental capacity and none of the above persons can be reached, the person should be treated and transported to a medical facility.
   - It is preferable to enlist support and agreement in this course of action from law enforcement.

Consent

a. A patient has the right to consent to or to refuse treatment. If the patient does not have decision making capacity, a relative or guardian has this same right (see below).
   - Age of consent varies with different states. In general, the patient must be over 18 years of age or between 15 and 18 years and "emancipated," (i.e., living apart from his or her parents).
   - Emancipated Juvenile per Title 19 section 19-2-511 of the Colorado Revised Statutes is anyone $\geq$ 15 and $<$ 18 years of age who has, with the real or apparent consent of the juvenile's parents, demonstrated independence from the juvenile's parents matters of care, custody, and earnings. The term may include, but shall not be limited to, any such juvenile who has the sole responsibility for the juvenile's own support, who is married, or who is in the military.

b. Consent is "**implied**" when the patient is unable to consent to treatment due to age, mental status, or medical condition **AND** no responsible party is available to grant that consent.

c. In no event should legal consent procedures be allowed to delay immediately required treatment.
   - If the time delay to obtain lawful consent from an authorized person would present a serious risk of death or serious impairment of health, or would prolong severe pain or suffering of the patient, treatment may be undertaken to avoid that risk.

d. If the patient is a minor, consent should be from a competent biological parent, adopted parent, or legal guardian.
   - This includes school systems where loco parentis exist which allows teachers and other responsible adults to act on behalf of the student when the parent is not available.

e. 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.

Special Considerations

a. It is preferred to render care in “good faith” which may help reduce the risk of legal consequence for failure to treat and/or negligence
   - Do not let fear of legal consequences prevent rendering care

b. The best defense against any legal question of consent, decision making capacity, and the need for care, is a good prehospital care report.
   - A written account of the patient and care rendered will be invaluable if legal questions are raised months later and will convey competence and adherence to standards of care.

c. A medical provider with no previously established professional relationship with the patient has no medical authority to direct care on scene.
   - Contact your Supervisor or Medical Control if concerns arise.

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Back Button

Description

a. Any person who has **decision-making capacity** may refuse treatment, examination, or transport.
b. If further care and evaluation is warranted **AND** the patient is refusing to be treated/transported, then a refusal **MUST** be completed.
c. The patient or responsible party **MUST**:
    - Be alert, oriented, reliable, calm, and cooperative
    - Be able to understand the nature and consequences of his or her illness or injury
    - Be able to understand the nature and consequences of the proposed or refused treatment
    - Have no **IMPAIRED JUDGEMENT**: Can make reasoned and rational decisions (based on provider discretion).
    - Voluntarily refuse treatment or transport
d. The EMS personnel on scene are responsible for:
    - Reasonable assessment of the patient to determine if there is an injury, illness, or reason for transport and treatment. They should consider the nature of the incident, potential mechanism, obvious actions of the patient, as well as their verbal statements.
    - Making sure the refusal is informed and voluntary

Refusal Qualifications

a. The role of medical control contact is to assist in determining or verifying the patient's ability or inability to make medical treatment decisions and assist when transport should be done. It is imperative that an accurate and concise report be given for the physician to be able to provide situational advice.
b. Medical Control **DOES NOT** need to be made (standing order) in cases where **ALL** of the following are present:
    - Patient is one of the following:
        i. Is $\geq$ 18 years of age **or**
        ii. Emancipated minor or
        iii. Minor with parent-guardian on-scene or available via phone
        iv. Minor in the care of a school system (loco parentis)
    - **NO** life threatening/debilitating injuries or acute medical illness
    - **NO** reasonable expectation of patient condition worsening
c. Consider Medical Control contact **IF** further guidance is needed in situations such as, but not limited to the following:
    - Minor(s) is/are **NOT** left in the custody of the parents or guardians
    - All EMS personnel are **NOT** in agreement or have doubts regarding the patient's ability to refuse
    - Life threatening or debilitating injuries present
    - Acute medical illness present (with exception of resolved hypoglycemia with known diabetic etiology)
    - Potential life-threatening medical illness present

Documentation

a. All patients that are assessed **REQUIRE** at least one (**1**) set of vital signs as well as a patient care report.
b. Refer to local standard operating procedures or guidelines for agency specific documentation guidelines
c. If there is no signature, document reason in the narrative (i.e., patient refuses to sign etc.)

Individual Protocols

a. If the patient has a CARES initiated individual protocol, no patient refusal is needed

General Assessment/Care

Description

a. All patients will require a minimum amount of supportive care and assessment; while some will require a more advanced assessment and care. This guideline is designed to lay out the minimum requirements for BLS and ALS care with some situational specifics.

Assessment

a. A complete patient assessment is critical for identifying injuries or illness. It helps to create a working diagnosis that will guide treatment decisions by the healthcare provider. It involves five steps: scene evaluation, primary assessment, medical interview, secondary assessment, and reassessment.

Vital Signs

a. In most medical settings, the standard vital signs are as follow: pulse rate, SpO_2, respiratory rate, blood pressure, and body temperature/condition. In some instances, along with base vital signs, patient assessment can be expanded to evaluate $EtCO_2$, blood glucose, EKG (including 12 lead when clinically indicated), lung sounds, Glasgow Coma Scale (when clinically indicated), capillary refill, and/or pupils. The EMS provider is responsible for recognizing when to expand the needed vital signs to help ensure a comprehensive assessment.
   - If time allows, acquire multiple sets of vitals to identify trends
   - Unstable patients **SHOULD** have vital signs assessed every 5 minutes

b. Adult Vital Signs: Normal Ranges
   - Normal vital sign ranges for the average healthy adult while resting are:
     i. Blood pressure: 90/60 mm/Hg to 120/80 mm/Hg
     ii. Breathing: 12 to 18 breaths per minute
     iii. Pulse: 60 to 100 beats per minute
     iv. Temperature: 97.8°F to 99.1°F (36.5°C to 37.3°C)/average 98.6°F (37°C)

c. Pediatric Vital Signs: Normal Range, see ***GENERAL PEDIATRIC OVERVIEW***

General Supportive Care

a. Basic Life Support
   - Oxygen therapy
     i. Maintain patent airway and SpO_2 Sat $\geq$ 90% $\leq$ 98%
   - $EtCO_2$ monitoring, if clinically indicated
   - Monitor vital signs
   - Splinting/wound care if clinically indicated
   - Vascular access (IV/IO) if clinically indicated
   - Venous sampling (blood draw), if clinically indicated
   - Antiemetic, if clinically indicated
   - Transport to the **MOST** appropriate facility

b. Advanced Life Support
   - All of the BLS Supportive care listed above
   - Cardiac monitoring when clinically indicated
   - 12-Lead EKG assessment when clinically indicated including serial EKGs and post arrest evaluation
   - Pain management, if clinically indicated

General Pediatric Overview

Description

a. Pediatric patients are defined as birth until patients' weight based calculations equal the adult dose
   - Benzodiazepines are an exception to the above statement

Medical Treatment Age Ranges

a. Age ranges will differ for transport as well as MAAAM refer to specific guideline
   - For specific facility, see ***DESTINATION GUIDELINE***
   - For consent, see ***CONSENT GUIDELINE***
   - For MAAM, see ***WAIVER GUIDELINE***
   - For surgical cricothyrotomy, see ***AIRWAY PROCEDURES GUIDELINE***

Normal Pediatric Vital Sign Ranges

Pediatric Age Group	Blood Glucose	Respiratory Rate	Heart Rate	Systolic BP	Systolic Hypotension	Weight in lbs
The below values are meant to guidelines and can vary slightly from other pediatric reference tools						
Neonate (<28 days)	40 to 99	30 to 53	100 to 205	67 to 84	<60	4.5 to 7
Infant (1-12 months)	127 +/-24	30 to 53	100 to 190	72 to 104	<70	9 to 22
Toddler (1-2 years)	137 +/-24	22 to 37	98 to 140	86 to 106	<70 + (age in years x2)	22 to 31
Preschooler (3-5 years)	128 +/-24	20 to 28	80 to 120	89 to 112	<70 + (age in years x2)	31 to 40
School Age (6-11 years)	90 to 180	18 to 25	75 to 118	97 to 115	<70 + (age in years x2)	41 to 92
Adolescent (12 to 15 years)	90 to 130	12 to 20	60 to 100	110 to 131	<90	>110
Normal pediatric SpO2 values have not yet been decisively recognized and are lower in the immediate newborn period. Normal levels are stable with age. In general, a SpO2 of <92% should be a cause of concern and may be suggestive for a respiratory disease or cyanotic heart disease.						
Temperature ranges do not vary with age. Axillary, tympanic and temporal temps for screening (less accurate). The temperature to be considered a fever is pediatric patients is 100.4 F						
Reference: Chris Novak and Peter Gill for http://www.pedscases.com/						

Brief Resolved Unexplained Event (BRUE) formerly known as Apparent Life Threatening Event (ALTE)

a. An infant < 1 year of age with episode frightening to the observer characterized cyanosis or pale complexion; absent, decreased, or irregular breathing; marked change in muscle tone (hyper- or hypotonia); or altered responsiveness but resolved.
b. BRUE is diagnosed only when there is no explanation for a qualifying event after conducting an appropriate history and physical examination
   - Any child with an BRUE **SHOULD** be transported to ED for evaluation, monitor vital signs en route
c. Make sure to document the following:
   - Document observer's impression of the infant's color, respirations and muscle tone
   - 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?

Special Considerations

a. For pediatrics, reference Pediatric Field Guide, Broselow Tape, Handtevy Guide, or approved apps
b. Airways are smaller, softer, and easier to obstruct or collapse
c. Respiratory reserve is small. Minor insults such as improper positioning, emesis, stomach filled with air, or airway narrowing can lead to major problems.
d. Circulatory reserve is also small. The loss of one unit of blood is sufficient to account for severe shock or death in an infant. Conversely, 500 mL of unnecessary fluid can result in acute pulmonary edema.
e. Vital signs and level of consciousness are difficult to assess. History, a high index of suspicion, and "soft signs" can be critical. Listen to the parents. They know when changes have occurred, even if they have difficulty expressing what has changed.

Destination Guidelines (General)

Description

a. Destination choices should be based on the following:
   - Patient's request
   - Request by family, primary care physician, or caretaker
   - Nature and/or severity of the patient's condition
   - Proximity to hospital
   - Specialty care provided by a particular facility
   - If the patient exceeds EMS capabilities for stabilization, you may transport to **ANY** emergency department regardless of hospital destination level or capabilities.

b. If the patient has no hospital preference, transport them to the closest appropriate hospital. The destination decision **MUST** be documented in the destination box of the PCR and include the reason. (Closest - no preference, patient request, family request, staff request, trauma center, burn center; hospital divert, triage, paramedic divert).

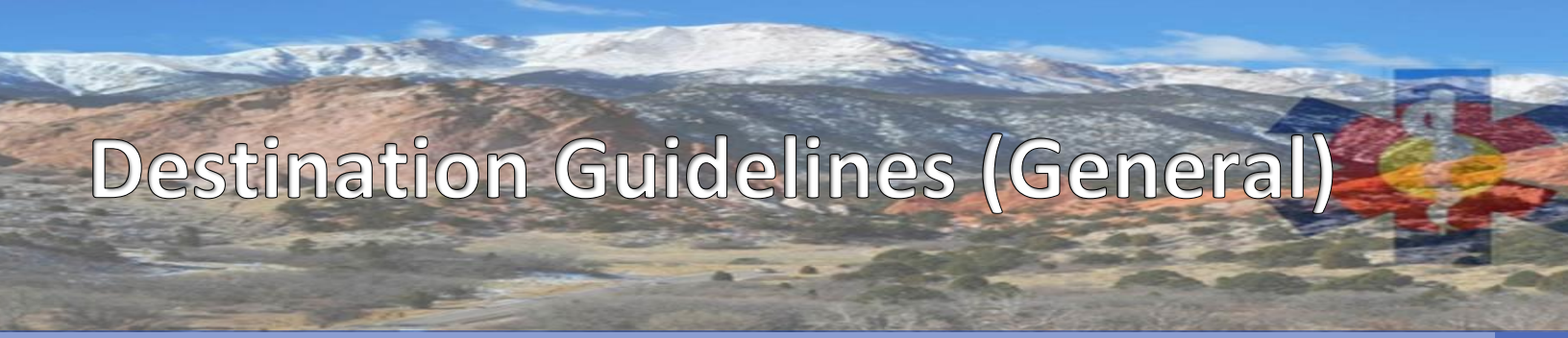
c. When necessary, responsibility for determining patient destination lies with the on-scene medical supervisor, **EXCEPT** in the following situations:
   - In multi-casualty incidents, the destination responsibility lies with the Medical Supervisor on scene, or, if appointed, the Transportation Unit Leader or Group Supervisor.
   - Police may determine hospital destination for individuals in custody or under arrest if not seriously ill or injured. In serious or critical situations, patients will be transported to the most appropriate facility.
   - Trauma patients meeting the criteria for transport to a trauma center **SHOULD** be taken to an appropriate trauma center designated pursuant to the Statewide Trauma Care System Act.

d. Destination guidelines may be overridden for patients in **EXTREMIS** who are **NOT** expected to survive transport to the appropriate designated hospital. Examples may include:
   i. Unmanageable airway emergencies
   ii. Active cardiopulmonary arrest
   iii. Imminent breach delivery (***EXCLUDING Children's)***

e. When a hospital is on divert, the patient **SHOULD** be transported to the next most appropriate hospital.
   - If **ALL** hospitals are on divert, facilities are then required to accept patient as if they are not on divert.

Children's Hospital Destination Guideline

a. Pediatric patients with any of the following care **SHOULD** be transported to Children's Hospital.
   - Any critically ill pediatric patient (provider discretion)
   - Cardiac arrest with ROSC
   - Status seizures
   - Medically complex child
   - Established patient with Children's hospital
   - Respiratory distress in the technology-dependent child
   - Suspected:
     i. Button Battery ingestion
     ii. Stroke
     iii. BRUE/ ALTE
     iv. Non-accidental trauma



Destination Guidelines (General)

Specific Destination Guidelines

Condition	Penrose Main	Memorial Central	St Francis	Memorial North	Grandview Hospital	St Francis InterQuest	Children's Hospital	Evans Army Hospital
Critical Illness: ADULT	YES	YES	YES	YES	NO	NO	NO	YES
General Illness: ADULT	YES	YES	YES	YES	YES	YES	NO	YES
Critical Illness: PEDIATRIC	NO	NO	NO	NO	NO	NO	YES ≤ 21	NO
General Illness: PEDIATRIC	YES	YES	YES	YES	YES	YES	YES ≤ 21	YES
STEMI	YES	YES	YES	YES	NO	NO	YES ≤ 17	NO
CVA: Last Known Normal ≤ 4 Hours	YES	YES	YES	YES	YES	NO	YES ≤ 17	NO
CVA: Last Known Normal > 4 to 24 hours	YES	YES	NO	NO	NO	NO	YES ≤ 17	NO
CVA: Last Known Normal > 24 hours	YES	YES	YES	YES	YES	YES	YES ≤ 17	NO
Behavioral/ETOH	YES	YES	YES	YES	NO	NO	YES ≤ 17	YES
SANE (sexual assault)	NO	YES	NO	YES Call Prior to Transport	NO	NO	YES ≤ 17	NO
OB < 20 weeks	YES	YES	YES	YES	YES	YES	NO	YES
OB ≥ 20 weeks	NO	YES	YES	YES	NO	NO	NO	YES

Back Button

Destination Guidelines (TRAUMA)

****If unable to adequately ventilate or Imminent arrest transport to the closest appropriate facility****

Trauma Criteria

PHSYIOLOGIC

- Intubation (advanced airway) or assisted ventilations
- GCS motor score ≤ 5
- Respiratory rate < 10 or > 29
- Any S/S of abnormal perfusion (i.e., Shock*) such as;
- Delayed cap refill >2 sec
  - **ADULTS**: Systolic BP <90
  - **PEDIATRICS**: *Low systolic BP for age; See Pediatric Field Guide**

PEDIATRIC (Additional Considerations)

- Any S/S of respiratory insufficiency;
  - Severe hypoxia
  - Accessary muscle use, grunting or abdominal breathing
- Any S/S of abnormal perfusion (*i.e. Shock**) such as;
  - *Depressed or deteriorating mental status**

AGE	SBP (mmHg)
<1 yr	<60
1-10 yrs	<70+(2x age in yrs)
>10 yrs	<90

ANATOMIC

- Penetrating injuries to the head, neck, torso, or extremities above the elbow or knee
- Flail chest
- TWO (2) or more proximal long bone fractures (humerus &/or femur)
- Unstable pelvic fracture
- Paralysis or other evidence of spinal cord injury
- Amputation above the wrist or ankle
- Crushed, degloved, or mangled extremity
- Open or depressed skull fracture

PEDIATRIC (Additional Considerations)

- *Elbow deformity**
- *Significant blunt trauma to chest and/or abdomen**
  - i.e. Flail chest, seatbelt sign
- *Suspected TBI with any of the following*
  - *Abnormal AVPU/following commands**
  - *CSF leak (nose ears)**
  - Open or depressed skull fracture
  - *Burns ≥ 20% BSA deep partial and/or full thickness**

MECHANISM OF INJURY

- Falls > 20 feet (**ADULT**) or 3x the height (**PEDIATRICS**)
- High risk auto crash, with such components as:
  - Intrusion of vehicle of 12 inches in occupant compartment; >18 inches any site
  - Ejection (partial or complete) from automobile
  - Death In same passenger compartment
  - Moderate/high speed crash with unrestrained or improperly restrained child
- Auto vs. Pedestrian/Bike thrown, run over, or with significant impact (auto going >20 mph)
- Motorcycle crash > 20 mph
- Events involving high energy dissipation, such as:
  - Ejection from motorcycle, ATV, animal, etc
  - Striking a fixed object with momentum
  - Blast, explosion, or high energy electrical injury

OTHER CONSIDERATION

- Older **ADULT**: the risk of death increases after age 55 years
- Anticoagulation or bleeding disorders
- End stage renal disease requiring dialysis
- Pregnancy > 20 weeks
- Suspicion of hypothermia
- Intra-abdominal injury/seat belt sign
- Burns >10% TBSA (2nd or 3rd degree) &/or to the hands, face, feet, groin, or inhalation injury
- EMS provider judgement for triage to a higher-level trauma center
- Suspicion of non-accidental trauma

Age Range	Penrose Main	MEMO Central	Saint Francis	MEMO North	Children's
<15	NO	YES	NO	NO	YES
15-17	YES	YES	NO	NO	YES
≥18	YES	YES	NO	NO	NO
<15	NO	YES	NO	NO	YES
15-17	YES	YES	NO	NO	YES
≥18	YES	YES	NO	NO	NO
<15	NO	YES	YES	YES	YES
15-17	YES	YES	YES	YES	YES
≥18	YES	YES	YES	YES	NO
<15	NO	NO	NO	NO	YES
15-17	YES	YES	YES	YES	YES
≥18	YES	YES	YES	YES	NO
Pregnancy ≥ 20 wks	NO	YES	YES	YES	NO

Any item denoted by an * and that is italicized is additional criteria NOT provided by the state

Level 4 Criteria or Undesignated Trauma: Non-life threating injuries AND absent of any above criteria	Grand View Hospital	St Francis InterQuest

A007 Revised: 5/26/2023 Back Button

Death in the Field

Description

a. It applies to patients of all ages, including victims of SIDS. It cannot address all possible contingencies; therefore, the provider should, when in doubt, attempt resuscitation.
   - Once advanced life support has been initiated, care should not be terminated except as outlined in these guidelines.

Death in the Field Indications

a. An obvious death in the field is a standing order if the below criteria is met.
b. Determination of death in the field (without initiation of resuscitation) should include the following instances;
   - Patient is unresponsive, pulseless, apneic, AND
     i. Decomposition, **or**
     ii. Rigor mortis or dependent lividity with warm air temperature, **or**
     iii. Down time ≥ 15 minutes as related by an apparently reliable source, **or**
     iv. Any advanced directive **or**
       - Physician orders as specified on the Colorado Medical Orders for Scope of Treatment (MOST) form: "No CPR. Do Not Resuscitate/DNR/Allow Natural Death".
       - Physical document not required, see ***ADVANCED DIRECTIVE GUIDELINE***
     v. Trauma that is incompatible with life, i.e.
       - Decapitation, exposed brain matter, incineration, etc.
     vi. Multiple casualty situations where system resources are required for stabilization of viable patients.
     vii. Meeting Cardiac Arrest Criteria, see ***MEDICAL CARDIAC ARREST GUIDELINE***
       - Unwitnessed arrest **AND** ≥ 73 years old, **AND** non-shockable rhythm

Termination of Resuscitation (TOR) Indications

a. Provider discretion, the timeframe to Termination of Resuscitation (TOR) can be extended.
   - Decision to terminate/withhold resuscitation **MUST** meet the respective criteria.
     i. **ADULTS**:
       - All Bokutoh criteria must be met to withhold resuscitation
         - Unwitnessed by anyone, age ≥73 years old, non-shockable rhythm
       - All BLS TOR criteria must be met to terminate at the 8-minute mark
         - No EMS witness, no ROSC, no defibrillation
       - Patients not meeting BLS TOR criteria should have a total of 37 minutes of resuscitation efforts
     ii. **PEDIATRICS**:
       - Recommend a minimum of 10 cycles (20 minutes)
b. $EtCO_2$ ≥30 with PPV may be used to guide extending the timeframe until TOR
   - Persistent $EtCO_2$ ≤10 with PPV can be indicative of poor prognosis, termination should not rely on $EtCO_2$ alone, the above criteria must be met.
c. Pregnancy, electrical injury, submersion injury, and/or hypothermia patients do not qualify for the TOR criteria. Refer to ***MEDICAL CARDIAC ARREST GUIDELINE***. If needed, contact medical direction for further clarification.
d. Trauma (all levels)
   - No ROSC following appropriate interventions, which may include opening the airway, bag-valve-mask ventilation, advanced airway, needle decompression, fluid therapy, and/or pelvic binding, proper bleeding control as clinically indicated.
   - Resuscitation is considered futile after 10 minutes

A008 Revised: 5/26/2023

Back Button

Death in the Field

Special Considerations

a. The following patients found pulseless and apneic warrant resuscitation efforts beyond 20 minutes and **SHOULD** be transported:
   - Hypothermia
   - Drowning with hypothermia and submersion ≤60 minutes
   - Pregnant patient with estimated gestational age ≥23 weeks (obvious pregnancy)
   - Lightning strike/significant electrocution

b. It is **NOT** recommended to transport patients to a facility without a pulse
   - In special circumstances where transport was initiated, care should be continued until the patient has been delivered to the appropriate facility.

c. Only the coroner can provide time of death. When documenting please use the phrase "termination of resuscitative efforts" and provide the time of termination and document the agency's primary medical director name as the standing order physician.
   - If medical control is contacted document the name of the physician and details of the discussion.

Potential Crime Scene

a. If the situation appears to be a potential crime scene;
   - During patient care limit scene alteration as much as possible beyond what is required for patient care and scene safety.
   - Observe the position of anything relevant to the body (such as sheets, weapons, etc.) and the position of the body. Make notes (for law enforcement) about these and about anything disturbed as soon as possible.
   - Do not leave the scene until law enforcement assumes control
   - Work with law enforcement to shield the body if in public view

Documentation

a. Documentation is extremely important when dealing with a death in the field or termination of resuscitation and **SHOULD** include the following:
   - Position of the patient when found
   - Details on the environment
   - Name of the physician or the agency's primary medical director as the standing order physician, if contacted for pronouncement
   - Name of the person/entity the patient was released to (police, nursing home, Hospice, coroner etc.)
   - How the DNR/ advanced directive was identified
   - Attach EKG to ePCR, if applicable

Mandatory Reporting

Description

a. This guideline is designed to assist the prehospital provider in determining mandatory reporting situations as per C.R.S. 19-3-304 passed in 2014 which extends the role of mandated reporters to EMS providers in Colorado.

Definition of Abuse

a. Any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation OR an act or failure to act which presents an imminent risk of serious harm.
b. Forms of Abuse
    - Neglect
    - Physical
    - Sexual
    - Emotional

Mandatory Reporting

a. Mandated reporters are to "register their suspicion" of abuse. This is not considered a direct accusation
b. Informing providers at the receiving facility of suspicions for DOES NOT meet the requirements of a mandated reporter - EMS providers ARE REQUIRED to register their suspicion with the appropriate authorities.
c. If the mandatory reporter suspects one of the following they are to immediately report the information to local law enforcement and/or appropriate authorities either by written and/or verbal report:
    - Known or suspected above mentioned abuse on a child or "at-risk elder," who is 70 or older
    - Adult with domestic assault injury
d. Report Information
    - The name, address, age, sex, and race
    - The name(s) and address(s) of the person(s) responsible for the suspected abuse or neglect (if known)
    - The nature and extent of the injuries (if known)
    - Knowledge of previous cases of known or suspected abuse or neglect
    - The family composition, including any siblings
    - The name, address and/or contact phone number, and occupation of the person making the report
    - Relation of the person making report to the child and/or how information was obtained
    - Any action taken by the reporting source
    - Any other information reporting person feels is important.
e. Mandatory reporters that **DO NOT** report abuse can be:
    - Charged with a class 3 misdemeanor
    - Liable for damages proximately caused by failing to report

Special Considerations

a. **Suspected Child Abuse/Neglect**: Call **1-844-CO-4-Kids or 1-844-264-5437** to report your concerns if law enforcement or appropriate authorities are unavailable.
b. **At-risk elder or an at-risk adult with an intellectual or developmental disability (IDD)**: An at-risk elder is any person 70 years of age or older. Call **(719) 444-5755** to report your concerns if law enforcement or appropriate authorities are unavailable.
c. Protecting patient confidentiality **DOES NOT** legally justify a failure to report
d. There is established immunity for reporters "acting in good faith"
e. During transport and treatment;
    - Confine history to pertinent medical needs
    - Observe patients behavior around caregivers
    - Provide same-sex provider if possible and respect patient's emotional needs
    - Don't judge, accuse or confront victim or suspected assailant
    - Protect evidence when dealing with assault, no washing or changing clothes

A009 Revised: 5/26/2023

Back Button

Interfacility Transfers

Description

a. Prehospital providers may, under the supervision and authorization of a medical director, perform advanced emergency medical care acts and or administer medications consistent with and **NOT** to exceed those listed in Appendices A through D of ***CHAPTER TWO - RULES PERTAINING TO EMS PRACTICE AND MEDICAL DIRECTOR OVERSIGHT***

b. The following medical skills and acts are approved for interfacility transport of patients, with the requirements that the skill, act or medication allowed must have been initiated in a medical facility under the direct order and supervision of licensed medical providers, and are NOT authorized for field initiation.

c. EMS providers should continue the same medical standards of care with regards to patient monitoring that were initiated in the facility.

d. EMS providers at any level of certification **SHALL** decline to transport any patient he or she believes requires a level of care beyond his or her scope of practice.

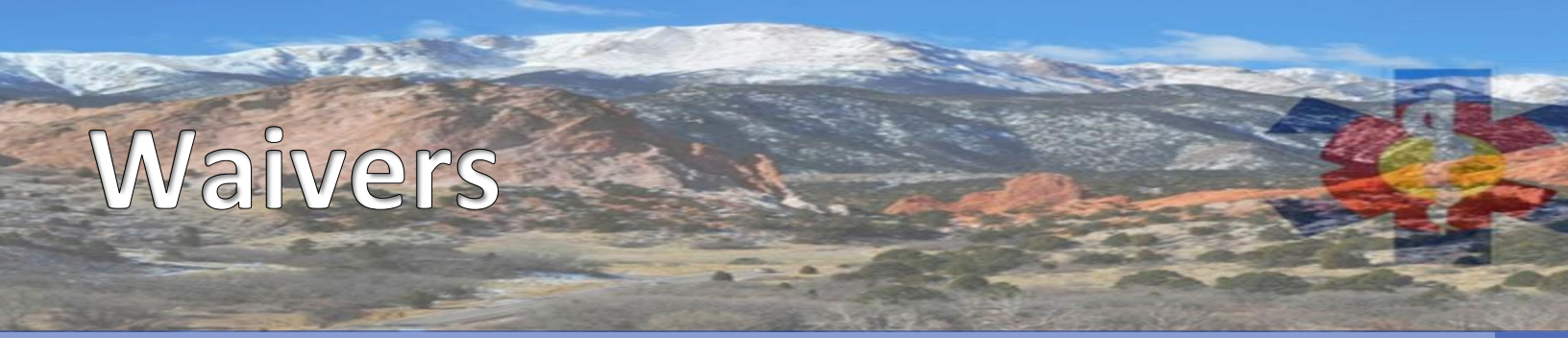
e. Patients who require special monitoring (e.g. central venous pressure, intracranial pressure), transport of multiple IV medications, or specialized equipment (i.e. intra-aortic balloon pump) should remain under the care of an experienced critical care practitioner, and every attempt should be made to transport these patients while maintaining an appropriate level of care. The capabilities of the facility and the transporting agency and, most importantly, the safety of the patient should be considered when making transport decisions.

f. Any medical skill and act not included in the following table is not allowed unless a waiver to the rules has been granted.

g. The EMS provider will determine transport priority and may delay the transfer due to high risk weather and/or patient condition assessment. Refer to individual agency policy.

Interfacility Transfers

Interfacility Transport Acts Allowed	EMT	EMT-IV	Paramedic
Fluid Administration/Maintenance			
Monitoring and maintenance of hospital/medical facility-initiated crystalloids	NO	YES	YES
Monitoring and maintenance of hospital/medical facility-initiated colloids (non-blood component) infusions	NO	NO	YES
Monitoring and maintenance of hospital/medical facility-initiated blood component infusion	NO	NO	YES
Initiate hospital/medical facility supplied blood component infusions	NO	NO	YES
Total parenteral nutrition (TPN) and/or vitamins	NO	NO	YES
Airway/Ventilation/Oxygen			
Ventilators - Automated Transport (ATV)[1]	NO	NO	YES
[1] Use of automated transport ventilators (ATVs) is restricted to the manipulation of tidal volume (TV or VT), respiratory rate (RR), fraction of inspired oxygen (FIO2), and positive end expiratory pressure (PEEP). Manipulation of any other parameters of mechanical ventilation devices by EMS providers requires a waiver to these rules.			
Aortic Balloon Pump Monitoring	NO	NO	NO
Chest Tube Monitoring	NO	NO	YES
Central Venous Pressure Monitor Interpretation	NO	NO	NO
Cardiac Medications			
Anti-arrhythmic - amiodarone - continuous infusion	NO	NO	YES
Anti-arrhythmic - lidocaine - continuous infusion	NO	NO	YES
Anticoagulant - glycoprotein inhibitors	NO	NO	YES
Anticoagulant - heparin (unfractionated)	NO	NO	YES
Anticoagulant - Low Molecular Weight Heparin (LMWH)	NO	NO	YES
Diltiazem/ Cardizem infusion	NO	NO	YES
Dobutamine	NO	NO	NO
Epinephrine - infusion	NO	NO	NO
Nicardipine	NO	NO	YES
Nitroglycerin, intravenous	NO	NO	YES
Norepinephrine	NO	NO	NO
Thrombolytics - Monitoring and Maintenance	NO	NO	YES
High Risk OB Medications			
Magnesium sulfate infusion	NO	NO	YES
oxytocin / Pitocin infusion	NO	NO	YES
Miscellaneous Medications			
Antibiotic infusions	NO	NO	YES
Antidote infusion - Sodium bicarbonate infusion	NO	NO	YES
Antiviral infusion	NO	NO	YES
Electrolyte infusion - Magnesium sulfate	NO	NO	YES
Electrolyte infusion - Potassium chloride	NO	NO	YES
Insulin	NO	NO	YES
Mannitol	NO	NO	YES
Methylprednisolone/ Solu-cortef - infusion	NO	NO	YES
Octreotide	NO	NO	YES
Pantoprazole/ Protonix	NO	NO	YES



Description

a. In Colorado, the EMS provider scope of practice is defined by the Colorado Division of Public Health and Environment (CDPHE). Their decisions are based on recommendations from the Colorado Emergency Medical Practice Advisory Council; a state council of experts in EMS. The EMS scope of practice for Colorado is known as "***CHAPTER TWO - RULES PERTAINING TO EMS PRACTICE AND MEDICAL DIRECTOR OVERSIGHT***"

b. If a medical director wishes to allow the EMS providers serving under their license to go beyond Chapter 2, granting additional medications or skills into their treatment options, they may apply to the EMPAC for a waiver of the skill or medication they wish to add; or for what additional indication they would like to use an existing medication. If enough medical directors are applying for the same waiver, the EMPAC can consider moving the waivered skill or medication into the standard scope of practice at the next review and revision.

c. Scope of practice waivers may be authorized by the medical director under standing orders or direct verbal order of a physician, including by electronic communications, depending upon what was specifically requested in the application and what the EMPAC specifically approved.

d. **NO** EMS provider shall function beyond their scope of practice identified in Chapter 2 until their medical director has received official written confirmation of the waiver being granted by the department AND the medical director has given them specific permission to do so.
Any waivered skill or medication within the prehospital guidelines will be **outlined, highlighted, or written in BROWN**

Specific System Waiver

Waivered	EMT	EMT-IV	Paramedic
Medications			
Cefazolin (Ancef)	**NO**	**NO**	**SO**
Ketamine (MAAM Induction ONLY)	**NO**	**NO**	**SO**
Ketamine (Pain Management))	**NO**	**NO**	**SO**
Rocuronium (MAAM ONLY)	**NO**	**NO**	**SO**
Succinylcholine (MAAM ONLY)	**NO**	**NO**	**SO**
Vecuronium (MAAM ONLY)	**NO**	**NO**	**SO**
Tranexamic Acid (TXA) Epistaxis	**SO**	**SO**	**SO**
Tranexamic Acid (TXA) Hemorrhage	**NO**	**NO**	**SO**
Skills			
Medication Assisted Airway Management (MAAM)	**NO**	**NO**	**SO**
OG Tube Insertion	**SO**	**SO**	**SO**
Finger Thoracostomy	**NO**	**NO**	**SO**
Closed Joint Reduction (Patella, Ankle ONLY)	**SO**	**SO**	**SO**

Law Enforcement Blood Draw

Description

a. This guideline is designed to assist the prehospital provider when requested to complete a blood draw for CSP

Procedure

a. If a blood draw is requested by CSP, the following procedures shall commence:
   - The State Trooper shall contact CSP Dispatch and advise the need for a blood draw.
   - CSP Dispatch shall contact CSFD Dispatch who will identify the closest available CSFD fire station to the State Trooper.
   - CSFD Dispatch will notify the fire station by phone with an estimated ETA for the State Trooper.
   - CSP understands that if an emergency call for service arises prior to the State Trooper's arrival at the fire station, the fire unit will respond to the call for service.
     i. Upon arrival of the State Trooper, CSFD will notify dispatch of an in-station alarm for a CSP blood draw. This request will take this fire unit out of service while performing the blood draw.
     ii. CSFD personnel will document this activity as indicated below.
   - If at any time during this process a significant emergency incident (i.e., structure fire, cardiac arrest, etc.) arises in the station's district, the company shall immediately return to service and respond to the emergency incident.
     i. CSP shall follow the above procedure to identify a different fire station to complete the blood draw procedure.
   - All materials for the blood draw procedure will be provided by CSP
     i. CSP will be responsible for all evidence collected as part of the blood draw procedure including storage and testing of the samples.
   - A Paramedic or an EMT-IV may perform the procedure

Blood Specimen Collection Instruction

a. Blood specimen collection **MUST** be performed only by a physician, registered nurse, emergency medical technician, or other qualified person.
b. The kit contains a shielded blood collection needle adapter. Please refer the instruction sheet for use.

Special Considerations

a. Complete documentation of procedure on ePCR system

Description

a. This guideline outlines minimum standards required to treat a patient with a valid Do Not Resuscitate order (DNR), state approved Medical Orders for Scope of Treatment (MOST), Physician Orders for Life-Sustaining Treatment (POLST), advanced care directives (ACD), and/or in the care of Hospice.

Special Considerations

a. Any EMS personnel, who, in good faith, complies with an advanced care directives, shall not be subject to civil or criminal liability or regulatory sanction for such compliance, pursuant to Section 15-18.6-104, C.R.S.
b. An individual with an ACD, DNR, and/or MOST etc. shall receive evaluation by EMS personnel and be provided appropriate and available palliative treatment and measures.
    - Any CPR Directive that is apparent and immediately available to EMS personnel that directs resuscitation not be attempted constitutes lawful authority to withhold or discontinue CPR.
    - Includes, but is not limited to, artificial ventilation, chest compression, delivering electric shock, placing tubes in the airway to assist breathing, or other basic and advanced resuscitative therapies.
c. There are many ways that an individual may make their wishes known regarding health care, particularly end-of-life decisions which may include, but is not limited to, documents such as a living will, medical durable power of attorney, CPR Directive, or other advance directives, including those from other states.
    - Any document or item of information or instruction that clearly communicates the individual's wishes or intent regarding CPR may be regarded as valid and the individual's wishes honored.
    - A valid CPR Directive that has been photocopied, scanned, faxed or otherwise reproduced shall be honored.
d. Careful and thorough assessments should be performed to identify complaints not related to the illness and care should be delivered with the utmost patience and compassion.
e. There may be circumstances in which you encounter patients (especially those in hospice) in cardiac arrest and DNR paperwork is not immediately available on scene. In this situation, it is justifiable to accept a verbal DNR verification from family members intimately involved with patient care, significant others, facility staff, etc.; it is not mandated to have the physical DNR paperwork in order to honor it.
f. In cases where the patient's status is unclear and the appropriateness of withholding resuscitation efforts questioned, EMS personnel should initiate CPR immediately and then contact medical control for oversight.

Key Terms

a. DNR/CPR Directive: A physician order to refrain from cardiopulmonary resuscitation.
b. MOST: A resource for the seriously ill that summarizes and consolidates important information about a patient's preferences for life-sustaining treatments including: CPR, artificial nutrition, and hydration.
c. POLST: A form for when a person becomes seriously ill or frail and toward the end of life. It gives medical orders to emergency personnel based on the current medical situation. POLST forms and advance directives are both advance care plans but they are NOT the same.
d. Do Not Intubate (DNI): A form outlining a patient's wishes to not have an endotracheal tube placed.
e. ACD: An expression of treatment preferences, guidelines, or instructions regarding medical treatment made by an individual, or for an individual by that individual's authorized agent, in advance of the need for such treatment.
    - Living Will: Legal document used to state certain future health care decisions when a person becomes unable to make decisions their own. It is only used at the end of life when a person is terminally ill or permanently unconscious. It will also describe the type of medical treatment the person would want or not want to receive. It can describe under what conditions an attempt to prolong life should be started or stopped.
    - Medical Power of Attorney (MPA): A legal document that allows an individual to delegate a person to make medical decisions when the individual cannot make decisions for themselves.

A013 Revised: 7/5/2016

Back Button

f. Hospice: Administer supportive care to individuals who are in the final phase of a terminal illness who require comfort care or non-terminal individuals who need assistance managing symptoms of life-limiting or chronic illness.
g. Comfort Measures: Refers to medical treatment of a terminally ill patient where the natural dying process is permitted to occur while assuring maximum comfort. To include but **NOT** limited to;
    - Clearing the airway, suctioning, supplemental oxygenation, CPAP, AND/OR nebulizers
    - Position of comfort AND/OR ***PAIN MANAGEMENT***
    - Anti-emetic to alleviate nausea and/or vomiting, see ***NAUSEA/VOMITING GUIDELINE***
    - Bleeding control AND/OR splinting

Specific Complaints

a. Cardiac Arrest
    - DNR: With a DNR patient, do not initiate resuscitative efforts or if resuscitative efforts have been initiated then cease care when a valid Colorado State approved DNR has been identified.
        i. In situations where the patient does not have one of the above acceptable valid forms then proceed with resuscitation.
    - DNI/MOST/POLST/ACD: Be sure to make every effort possible to honor the wishes of the patient and/or MPA as described in the Living Will or ACD.
        i. Patients in the care of Hospice should have a MOST form or other related documents outlining medical wishes.
        ii. If there is documentation of a DNI/MOST/POLST/ACD and/or in the care of Hospice, the patient should receive full treatment per guidelines with the exception of any intervention specifically prohibited.
b. Exacerbation of Preexisting Disease:
    - If the complaint is due to complications/exacerbation of the preexisting disease that motivated the patients decision to have a ACD/DNR/MOST etc., than provide ***GENERAL SUPPORTIVE CARE*** and ensure comfort measures as described above and as clinically indicated.
c. General Medical Complaint:
    - Treat the complaint per the clinically indicated guideline and provide ***GENERAL SUPPORTIVE CARE***
d. General Traumatic Injury:
    - Treat injury per the clinically indicated guideline and provide ***GENERAL SUPPORTIVE CARE***
e. Suicide:
    - Not all patients who attempt suicide are necessarily incapable of making a rational decision about their health care. Treat per the ***BEHAVIORAL HEALTH EMERGENCY*** guideline.
    - In some cases it may be appropriate to withhold resuscitation attempts in suicidal patients in cardiac arrest who have a preexisting DNR/MOST/POLST/ACD etc.

Airway Procedures

Provider Level	NPA	OPA	Continuous Positive Airway Pressure (CPAP)	Supraglottic Airway Device(s)	Oral Intubation	Nasal Intubation	Surgical and Needle Cricothyrotomy	Needle Decompression	Finger Thoracostomy
EMT	YES	YES	YES	YES	NO	NO	NO	NO	NO
EMT-IV	YES	YES	YES	YES	NO	NO	NO	NO	NO
Paramedic	YES	YES	YES	YES	YES	NO	YES	YES	YES

Nasopharyngeal Airway (NPA)

a. Indications:
- Unconscious/semi-conscious with an intact gag reflex needing airway support

b. Contraindications:
- Improper size
- Any resistance

c. Special Considerations:
- Can be utilized in patients potential basilar skull fractures when airway management is required

Oropharyngeal (OPA)

a. Indications:
- Unconscious without an intact gag reflex needing airway support

b. Contraindications:
- Gag reflex

c. Special Considerations:
- If ineffective consider a more advanced airway

Continuous Positive Airway Pressure (CPAP)

a. Indications:
- Respiratory conditions exhibiting severe distress or failure such as:
  i. CHF/Pulmonary Edema
  ii. High altitude pulmonary edema
  iii. Asthma
  iv. COPD/Emphysema
  v. Drowning/Near-Drowning
  vi. Pneumonia
  vii. Hyperkalemia

b. Contraindications:
- Respiratory or cardiac arrest
- Systolic BP < 90 mmHg
- Lack of gag reflex
- Altered mental status, unable to follow verbal instructions or signal distress
- Vomiting or active upper GI bleed
- Suspected or known pneumothorax
- Trauma
- Patient size or anatomy prevents adequate mask seal

c. Special Considerations:
- Should patient deteriorate on CPAP:
  i. Troubleshoot equipment
  ii. Consider advanced airway
  iii. Assess need for possible chest decompression due to tension pneumothorax
  iv. Assess for possibility of hypotension due to significantly reduced preload from positive pressure ventilation.
- There is no age criteria; it is based on size of the mask. If the mask properly fits (without modification), then use is allowed.
- In-line nebulized medications may be given during CPAP as clinically indicated and in accordance with manufacturer guidelines.
- Continuously monitor $EtCO_2$
- The default size of mask utilized is medium, this will fit the majority of patients
- If the patient is anxious consider mild sedation, see ***BEHAVIORAL EMERGENCY GUIDELINE***
- Consider pretreating with an antiemetic, see ***NAUSEA VOMITING GUIDELINE***

Supraglottic Airway

a. Indications:
- Cardiac arrest after assuring continuous compressions, defibrillation, and BLS airway management has been completed
- Unresponsive patient without a gag reflex
- Rescue airway when intubation is difficult/impossible due to patient access or airway anatomy

b. Contraindications:
- Intact gag reflex
- Obstructive lesions below the glottis
- Caustic ingestion
- Patients under/over height/length for tube size used
- Patients with known or suspected esophageal varices

c. Special Considerations:
- Ensure correct sizing per manufacturer recommendations for correct function
- Use with caution in patients with broken teeth, which may lacerate balloon, if applicable

Oral Endotracheal Intubation

a. Indications:
- Patients whose clinical condition warrants airway or breathing management due to worsening or impending respiratory compromise and/or the unconscious patient without a gag reflex.

b. Contraindications:
- None in the need for definitive airway management
- Pediatric patients <13 of age

c. Special Considerations:
- Have backup plans including proper rescue device equipment and supplies ready
- Video laryngoscopy is preferred during initial attempt, if available
- Utilize bougie, if applicable
- In addition to waveform capnography, confirm and document **3** other confirmations of correct placement
- Ventilate at age appropriate rates and/or condition
- If the intubated patient deteriorates, think "DOPE"
  i. Dislodgement, Obstruction, Pneumothorax, Equipment failure (no oxygen)

Airway Procedures

Cricothyrotomy

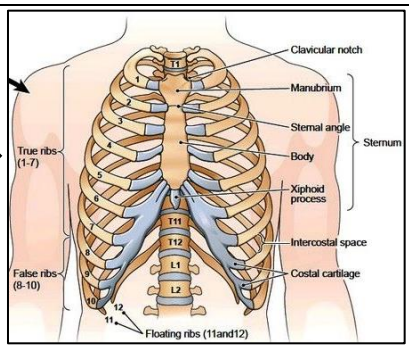
a. Indications:
- A life-threatening condition exists AND advanced airway management is indicated AND you are unable to establish an airway or ventilate the patient by any other means. ("Cannot intubate/cannot ventilate"). Examples include but are not limited to;
  i. Acute upper airway obstruction, which cannot be relieved by obstructed airway maneuvers.
  ii. Upper airway trauma with inability to orally intubate a patient who has severe respiratory insufficiency.
- Age range
  i. Age ≥8 years old: ***Surgical, bougie assisted***
  ii. Age 6 to 8 years old***: Needle (commercial device)***
    1. Provides 20 - 40 minutes of oxygenation
  iii. <6 years old: Not clinically indicated

b. Contraindications:
- Tracheal transection
- Significant trauma to the cricoid cartilage or larynx
- Unable to locate anatomical landmarks
- Needle Cricothyrotomy: Asthma

c. Special Considerations:
- Bleeding is common, even with correct technique, have suction available
- For surgical a cricothyrotomy, bougie assisted technique is preferred

Needle Decompression

a. Indications:
- Suspected tension pneumothorax associated with hypotension and/or poor perfusion
- Blunt or penetrating traumatic injury to the thorax in cardiac arrest



b. Contraindications:
- None in the emergency setting

c. Special Considerations:
- If patient deteriorates after needle decompression, be prepared to assist ventilation
- Acceptable locations include the 2nd or 3rd intercostal space at the midclavicular line or 4th or 5th intercostal space at the midaxillary line.
- **PEDIATRICS:** Depth of insertion for pediatrics is 1/3 the depth of the chest.
  i. Length based tape (<57 in/143 cm): Consider 1.5 inch 14- or 16-gauge catheter
  ii. Length based tape (≥57 in/143): Consider 3-inch 10 gauge catheter
- During insertion guide the catheter over the top of the lower rib.
- Angiocath may become occluded with blood or by soft tissue be prepared to repeat the procedure as clinically indicated.

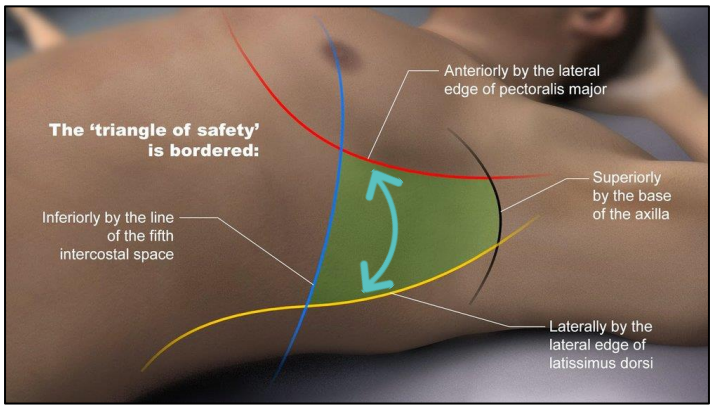
Airway Procedures

Finger Thoracostomy

d. Indications:
- AGE ≥ 13: Traumatic cardiac arrest with known or suspected injury to the chest.

e. Contraindications:
- Obvious non-survivable injury in the traumatic cardiac arrest
- AGE < 13

f. Special Considerations:
- Make sure to place patient into supine position with ipsilateral arm abducted and externally rotated.
    i. Hand is under or above the head
- Ensure the incision will be made at the 4th intercostal space, between the anterior axillary and midaxillary line of the affected side
    i. Incision should be 4-5 cm (1.5 to 2 inches) overlying the rib that is below the desired intercostal level of entry.
        1. The skin incision should be in the same direction as the rib itself
            a. In the direction from the anterior axillary line to the midaxillary line
- Use the haemostatic forceps to bluntly dissect a tract in the intercostal space
- Insert your full gloved finger into the space and perform a finger sweep to ensure access to the pleural space
- Apply the chest seal over the incision and ensure seal adequately placed
- Finger thoracostomy should be accompanied by an advanced airway and positive pressure ventilation to ensure adequate ventilation despite air entering the pleural cavity, and reduce the likelihood of re-accumulation of a tension pneumothorax due to entrainment of external air through an open thoracostomy site.



Airway Management

Definition:

a. The goal of airway management is to ensure patients receive adequate ventilation and oxygenation. This can be accomplished through various techniques including; but not limited to, basic positioning, adjuncts, and/or advanced level airways.
   - Assessment is crucial to the success of airway management helping to identify complications before they arise and thus ensuring a proper device is utilized in the right clinical situation.
   - A difficult airway is defined as the clinical situation in which a conventionally trained prehospital provider experiences difficulty with maintaining adequate ventilation and oxygenation.
     - Successful airway management is not defined as the placement of an endotracheal tube (ETT), it is the ability to effectively oxygenate and/or ventilate.

b. The infectious disease operational timeline is determined by Medical Direction.

Description

a. Many aspects of this guideline have been modified to achieve the highest level of EMS provider safety during an infectious disease crisis such as COVID-19; the guideline will be reviewed again for modification after the exposure threat has resolved.
b. All airway management should be performed with EMS provider in recommended PPE.
c. All attempts should be made to optimize oxygenation/ventilation prior to placement of an advanced airway to the maximum point possible.
d. Advanced airway placement in conjunction with continuous waveform $EtCO_2$ and pulse oximetry.
e. Consider early insertion of an advanced airway in arrest with suspicion of primary respiratory etiology.
f. Ensure perfusion status prior to placing an advanced airway i.e. BP $\geq$ 90, EtCO2 $\geq$ 30, MAP $\geq$ 60.
   - Administer early ***FLUID THERAPY***
   - Patients demonstrating inadequate perfusion administer an ***EPINEPHERINE INFUSION***
g. **NO MORE THAN (3) ETT TOTAL ATTEMPTS PER PATIENT**
   - Definition of an ETT intubation attempt is when the blade passes the teeth with the intent to insert an ETT through the vocal cords.
   - Recommend oxygen administration at 8 L via nasal cannula during ETT attempt
h. Consider cricothyrotomy in patients where effective oxygenation and/or ventilation cannot be provided.

Infectious Disease

a. Avoid AGPs unless absolutely necessary; if AGPs are necessary, perform using a barrier device (BD) when possible.
b. Advanced airway preference in order is as follows:
   - ALL SITUATIONS: iGel with viral filter > iGel with BD > Video Laryngoscopy (VL) intubation with filter > Video Laryngoscopy (VL) intubation with (BD) > VL intubation > iGel

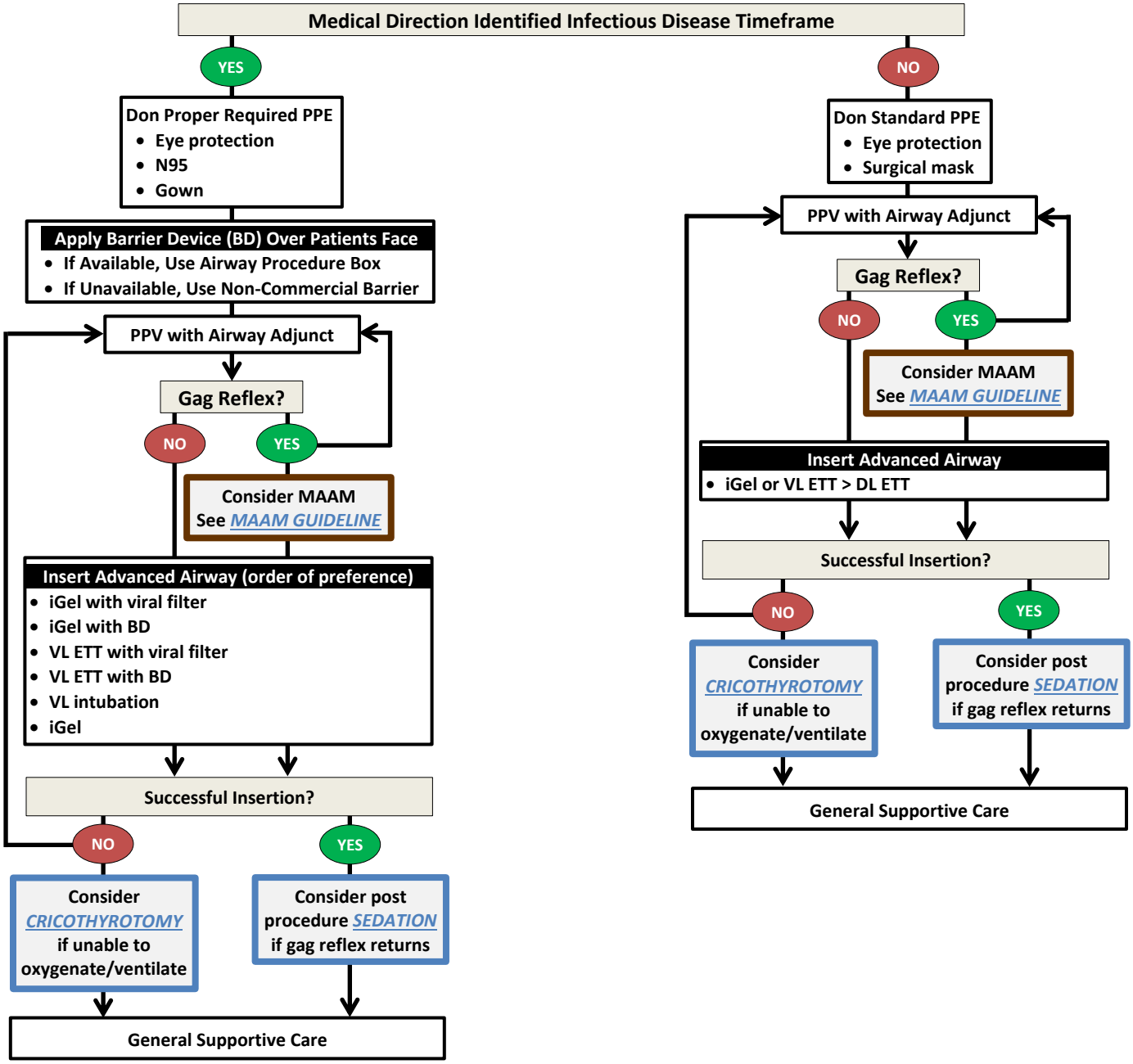
Non-Infections Disease

a. Advanced airway preference in order is as follows:
   - Respiratory Arrest/MAAM: iGel or VL intubation > DL intubation
   - Cardiac Arrest: Igel > VL intubation > DL intubation
   - ROSC: iGel or VL intubation > DL intubation

Airway Management

Description:

a. This algorithm is intended to assist the prehospital provider navigate airway management in the setting of imminent or current respiratory arrest.



Medication Assisted Airway Management (MAAM)

Description

a. Only paramedics that have successfully completed an approved training program sponsored by the agency for which the provider intends to utilize MAAM are authorized users of this guideline.
   - MAAM can be time consuming and is never an emergent airway. It is a complex airway management technique that requires substantial organization and understanding on the part of the paramedic.

b. MAAM certified paramedics must maintain proficiency
   - The agency for which the paramedic provides MAAM services must possess a valid procedure waiver from the Colorado Department of Public Health and Environment (CDPHE) and the Emergency Medical Practice Advisory Council (EMPAC).

c. All medications in this guideline will be given by standing order
   - Only MAAM waivered paramedics are allowed to administer MAAM specific medications

Indications (general)

a. Age of the patient **≥13** years old
b. MAAM candidates include, but not limited to;
   - Respiratory arrest or impending respiratory arrest
   - Inability to protect airway
   - Potential for airway compromise
   - Intact gag reflex
   - Trismus/clenched jaw

Selection Criteria

a. Principles of good selection will result in avoidance of almost all of the common difficulties in failing to secure a tracheal intubation.
b. There are three (3) basic rules regarding patient selection that must be reviewed every time a MAAM procedure is considered. These rules incorporate and summarize the general concepts of selection criteria outlined in detail in the MAAM course and are formatted as questions.
   - **Can I get a good facial seal with the Bag-Valve-Mask?**
   - **Is the airway patent?**
   - **Do I think I can place an advanced airway in this patient?**

Contraindications

a. Any absolute contraindication to the induction agent or paralytic
b. Patients who **DO NOT** meet the selection criteria for an advanced airway as discussed above
c. Patients who **DO NOT** possess a gag reflex, rendering MAAM medications unnecessary
d. Age of the patient **<13 YEARS OLD**

Complications

a. Cardiac dysrhythmias related to the use of succinylcholine
b. Malignant Hyperthermia or the suspected presence of pseudocholinesterase deficiency
c. Failure to place and advanced airway
d. Unrecognized esophageal intubation
e. Vomiting and aspiration
f. Hypotension
g. Excessive gagging on back-up airway when used in failed intubations

Patient Monitoring Requirements

a. Cardiac, blood pressure, pulse oximetry, respiratory rate, capnography, and a RASS score

Medication Assisted Airway Management (MAAM)

1. Can I get a good facial seal with the Bag-Valve-Mask?
2. Is the airway patent?
3. Do I think I can place and advanced airway?
4. Are there valid indications?
5. Is the patient ≥ 13 years old

YES

Attach all monitoring devices ($EtCO_2$/ EKG/SpO_2/ NiBP)
Preoxygenate 3 to 5 minutes
Discuss airway back up plan

Establish Vascular Access
- Normotensive: Administer 250 to 500 mL NS IV/IO
- Hypoperfusion: Follow *FLUID THERAPY GUIDELINE*

If inadequate perfusion initiate *EPINEPHRNE INFUSION*

Equipment set up
- Video Laryngoscopy (Preferred) or blade/handle
- Supraglottic Airway
- Bougie/stylet
- Suction
- ET Tube with 10 mL syringe
- Securing device
- Cricothyrotomy kit

MAAM Waivered Paramedic ONLY

STEP 1: Induce
- *KETAMINE*: 2 mg/kg IV/IO
  - MAX single dose of 200 mg

STEP 2: Paralyze
- *ROCURONIUM*: 1 mg/kg IV/IO
  - MAX single dose of 100 mg

or

- *SUCCINYCHOLINE*: 2 mg/kg IV/IO
  - Max single dose of 200 mg

STEP 3: Insert Advanced Airway:
- See *AIRWAY MANAGEMENT GUIDELINE*
- Ensure a NC is placed at high flow during attempts

STEP 4: Confirm advanced airway placement (4)
- Positive waveform capnography (print)
- Bi-lateral breath sounds
- Negative epigastric sounds
- One additional method

STEP 5: Secure advanced airway
- Place OG Tube (if allowed AND time allows)

Step 6: Sedation: PRN every 10 minutes
- *KETAMINE*: 0.5 mg/kg IV/IO
  - MAX single dose of 100 mg

OR

- *MIDAZOLAM*: Up to 5 mg IV/IO

Combined with

- *FENTANYL*: 50-100 mcg IV/IO

NO

Monitor $EtCO_2$/SpO_2 and manage the airway utilizing the *AIRWAY MANAGEMENT GUIDELINE* as best as possible

Special Considerations

When applicable, discuss procedure with patient and/or family members.
- Remember to check if there is a valid DNR in place.

Succinylcholine is ONLY to be given once.

It is anticipated that virtually no patient will ever require surgical cricothyrotomy as an emergent alternate airway.
- It should ONLY be utilized if the patient continues to deteriorate due to an inadequate airway.

VECURONIUM can be administered at 0.1 mg/kg IV/IO; MAX 10 mg to maintain paralysis for long distance transports.

Documentation is critical, describe a detailed account of the event.

Procedure MUST be followed by sedation

Watch for post procedure hypoperfusion and be ready for resuscitation.

Pain Management

Description

a. This guideline is designed to assist the prehospital provider effectively assess and manage patient pain and discomfort in the prehospital environment.
b. The objective of pain management is not the complete relief of all pain, but rather, to make a patient's pain tolerable enough to allow for adequate assessment, treatment, and transport.

Precautions

a. Most pain medications should only be given to hemodynamically stable patients and titrated slowly to effect. In hemodynamically unstable patients, consider giving smaller, incremental doses of ***FENTANYL*** or ***KETAMINE***.
b. Pain medications may cause changes in hemodynamic status and/or respiratory depression (including apnea) that can occur suddenly and without warning and are more common in children and the elderly.
c. Chest wall rigidity has been reported with rapid administration of ***FENTANYL***
d. Strongly consider **½** typical dosing in elderly patients or when combining benzodiazepines and opioids
e. ***HYDROMORPHONE*** has a slower onset and much longer period of affect (caution on stacking doses)

General Patient Care Requirements

a. All patients receiving pain medication should receive constant ECG, SpO_2, $EtCO_2$ and blood pressure monitoring. When this is not possible (i.e., in a back country environment), pulse oximetry and constant verbal engagement with the patient are the minimum monitoring requirements.

Other Medication Options

a. The administration of a combination of benzodiazepines and opiates, for the purpose of pain management associated with anxiety is permitted.
    - Ensure that the patient can independently maintain an open airway and normal breathing pattern, maintain normal hemodynamics, and respond appropriately to physical stimulation and verbal commands.
b. Consider an antiemetic prior to administration of an opioid for nausea, see ***NAUSEA VOMITING GUIDELINE***
c. Consider benzodiazepines for anxiety associated with pain, see ***BEHAVIORAL EMERGENCIES GUIDELINE***

Special Considerations

a. In trauma pain is secondary, look for major bleeding or threats to life first, once stabilized consider pain management.
b. ***FENTANYL*** is the first line medication for pain associated with ACS, pregnant patients including OB/GYN, ***CARDIOVERSION***, or ***TRANSCUTANEOUS PACING***, unless allergy exists.
c. For patients with history of substance abuse consider non-narcotic options to manage pain if applicable.

Pain Management

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG as clinically indicated
Use an age-appropriate pain scale to measure patient's level of pain

General supportive care
Manage pain with non-invasive treatments (if applicable) such as position of comfort, rest, ice, splinting and elevation
Transport & monitor VS/condition

If applicable Establish Vascular Access

Minor Pain (1-3)

ACETAMINOPHEN; **PRN every 6 hours**

- **ADULT: 500-1,000 mg PO**
- **PEDIATRIC: 15 mg/kg PO, MAX dose of 750 mg.**

OR

IBUPROFEN; **PRN every 6 hours**

- **ADULT: 600 mg**
- **PEDIATRIC ≥ 6 MONTHS: 10 mg/kg PO, MAX dose of 600 mg**

OR

***KETORALAC*; NOT REPEATED**

- **ADULT: 15 mg IV/IO or 30 mg IM**
- **PEDIATRIC ≥ 2 YEARS: 0.5 mg/kg IV/IO/IM, MAX dose 15 mg IV/IO or 30 mg IM.**

OR

ACETAMINOPHEN IV/IO; **PRN every 6 hrs**

- **ADULT: 500-1,000 mg**
  - **< 50 kg: 500 mg**
  - **≥ 50 kg: 1,000 mg**
- **PEDIATRIC: 15 mg/kg, MAX dose of 750 mg**

Moderate Pain (4-6)

***KETORALAC*; NOT REPEATED**

- **ADULT: 15 mg IV/IO or 30 mg IM**
- **PEDIATRIC ≥ 2 YEARS: 0.5 mg/kg IV/IO/IM, MAX dose 15 mg IV/IO or 30 mg IM.**

OR

ACETAMINOPHEN IV/IO; **PRN every 6 hrs**

- **ADULT: 500-1,000 mg**
  - **< 50 kg: 500 mg**
  - **≥ 50 kg: 1,000 mg**
- **Pediatric: 15 mg/kg, MAX dose of 750 mg**

AND/OR

FENTANYL; **PRN every 10 minutes**

- **ADULT: 50-100 mcg slow bolus IV/IO or IN/IM**
- **PEDIATRIC: 1 mcg/kg slow bolus IV/IO or IN/IM.**

Severe Pain (≥7)

*****Waivered ONLY*****

***KETAMINE*; PRN every 20 minutes**

- **ADULT and PEDIATRIC ≥ 20 kg:**
  - **IV/IO: 0.25 mg/kg MAX single dose of 30 mg**
    - **Repeat up to 1 mg/kg/hr, cumulative dose.**
    - **If time allows, add to a 50 mL NS or D_5W bag, administer over 5-10 minutes & titrate to effect**
  - **IM: 0.5 mg/kg MAX single dose of 50 mg**
    - **Repeat up to 1 mg/kg/hr, cumulative dose.**
  - **IN: 0.5 mg/kg MAX single dose of 50 mg**
    - **Repeat up to 1.5 mg/kg/hr, cumulative dose.**

FENTANYL; **PRN every 10 minutes**

- **ADULT: 50-100 mcg slow bolus IV/IO or IN/IM**
- **PEDIATRIC: 1 mcg/kg slow bolus IV/IO or IN/IM.**

OR

HYDROMORPHONE; **NOT REPEATED**

- **ADULT: 0.5 mg slow bolus IV/IO or IM**
- **PEDIATRIC ≥20 kg: 0.005 mg/kg slow bolus IV/IO or IM**

Nausea/Vomiting

Description

a. Through the administration of an antiemetic the chance of aspiration can be reduced due to excessive vomiting and increase the effectiveness of pain management medications administered prehospital.
b. In addition, by disrupting the stimulus to vomit and by reducing nausea, the patient can be more comfortable during transport.

Indications

a. Nausea or vomiting stemming from any medical or traumatic complaint
b. Prophylaxis treatment for *PAIN MANAGEMENT*, *CPAP*, *SPINAL MOTION RESTRICTION*
c. Prophylaxis treatment for any patient with high risk of motion sickness

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG, if clinically indicated

***ONDANSETRON*; PRN every 10 minutes up to 2 TOTAL doses**
- **ADULT: 4 mg ODT**
- **PEDIATRIC ≥ 40 kg: 4 mg ODT**

Establish Vascular Access

***ONDANSETRON*; PRN every 10 minutes up to 2 total doses**
- **ADULT: 4 mg IV/IO/IM/IN/PO**
- **PEDIATRIC < 40 kg: 0.1 mg/kg IV/IO/IM/IN/PO**

***DROPERIDOL*; PRN every 10 minutes up to 2 total doses**
- **ADULT: 2.5 mg SLOW IV/IO or IM**
- **PEDIATRIC: 2 to 12 YEARS OLD: 0.01 mg/kg IV/IO or IM; MAX SINGLE DOSE of 1.25 mg**

Hypotension or Dehydration

NO → **General Supportive Care**

YES → **Consider**

FLUID THERAPY
- **ADULT and: 20 mL/kg bolus repeated as needed**
- **PEDIATRIC: 20 mL/kg bolus repeated as needed**

General Supportive Care

Special Considerations

- **Vomiting or diarrhea may be symptoms of a more serious problem, but all cause some degree of hypovolemia. The most serious causes are GI bleed or other intra-abdominal catastrophe. A rare cardiac patient may also present with vomiting or diarrhea as the predominant symptom.**
- **Vomiting as an isolated symptom should always be suspected to be secondary. Consider ingestion, cardiac disease, or other serious conditions. May be the initial presentation of CO poisoning.**
- **Dehydration may be particularly severe in children with simple vomiting and diarrhea. Vascular access may be very difficult to start, particularly with infants. Transport for definitive treatment is usually best.**
- **Blood in the GI tract is an irritant and can cause vomiting as well as diarrhea.**

Spinal Motion Restriction (SMR)

Description

a. This guideline is modeled after the National Emergency X-Radiography Utilization Study (NEXUS) criteria

Mechanism and/or preexisting medical condition that imply POTENTIAL need for spinal splinting

Establish manual in-line cervical stabilization

Are any of the following present?

- **IMPAIRED JUDGEMENT from intoxication or recreational drugs, distracting injury/illness, and/or CANNOT make rational decisions**
- **Barrier to evaluate for spinal injury (e.g. language or development barrier)**
- **Patient ≥ 65 or ≤ 5 years of age**
- **Neurologic deficits or complaints such as numbness, tingling, or weakness**
- **Midline tenderness to palpation, especially significant pinpoint isolated tenderness**

YES

Manual Inline Stabilization
Remind patient NOT to move

Neuro exam reveals obvious motor or sensory deficit

YES

Patient REQUIRES SMR

NO

Patient is alert, orientated, reliable, calm, and cooperative

NO

Patient REQUIRES SMR

YES

Patient DOES NOT require SMR

- **Release manual inline stabilization**
- **Leave cervical spine splint in place**
- **Transport patient in position of comfort**
- **General supportive care**
- **Document cervical clearance**

NO

Patient DOES NOT require SMR
General Supportive Care

Spinal Motion Restriction (SMR)

- **Includes cervical collar and acceptable devices**
  - **Not necessarily a backboard**
- **Acceptable devices**
  - **Ambulance stretcher**
  - **Vacuum mattress**
  - **Scoop stretcher**
  - **Long spine board (last resort)**

Special Considerations

- **Self-extrication from a vehicle with assistance is considered better than standard extrication procedures.**
- **Unconscious blunt trauma patients or anatomic deformity of the spine REQUIRES SMR**
- **Penetrating Trauma DOES NOT require SMR**
- **Use caution when assessing for spinal injury in elderly patients because they have a higher risk for injury and may have minimal symptoms.**
- **Always err on the side of caution and restrict motion if any of the criteria are NOT obviously clear**
- **Neurological exam documentation is REQUIRED in patients with potential cervical or high thoracic trauma, including serial exams.**
- **If the patient is agitated, see *BEHAVIORAL EMERGENCY GUIDELINE***

Cardiac Related Procedures

Provider Level	Cardiac Monitoring (Noninterpretive)	Cardiac Monitoring (Interpretive)	12-Lead EKG	Automated External Defibrillator	Manual Defibrillation	Synchronized Cardioversion	Transcutaneous Pacing (TCP)	Vagal Maneuvers
EMT	YES	NO	YES	YES	NO	NO	NO	NO
EMT-IV	YES	NO	YES	YES	NO	NO	NO	NO
Paramedic	YES	YES	YES	YES	YES	YES	YES	YES

Cardiac Monitoring

a. Indications:
- Patients with clinical syndromes or situations at increased risk of cardiac arrhythmias
- Patients who experience transient symptoms such as seizure, brief resolved unexplained event (BRUE) dizziness, palpitation, syncope, and/or chest pain that may suggest a cardiac arrhythmia.
- Routine monitoring of heart rate

b. Contraindications:
- None in the emergency setting

c. Special Considerations:
- Avoid placement directly over implanted devices
- Avoid placement over medication patches. Remove patch, cleanse skin, and apply electrodes

12-Lead EKG

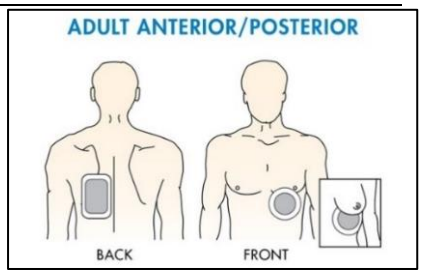
a. Indications:
- Patients with clinical syndromes or situations at increased risk of cardiac arrhythmias
- Patients with suspicion of acute coronary syndromes
- Post cardiac arrest patients

b. Contraindications:
- None in the emergency setting

c. Special Considerations:
- Consider right sided or posterior 12-lead EKG if inferior or posterior myocardial infarction is suspected
- Small areas of hair on the client's chest or extremities may be shaved
- If patient's skin is exceptionally oily, scaly, or diaphoretic rub the electrode site with a dry 4" × 4" gauze pad or alcohol pad before applying the electrode to help reduce interference in the tracing.
- During the procedure, ask the patient to breathe normally. If the respirations distort the recording, ask the client to hold his breath briefly to reduce baseline wander in the tracing.

Automated External Defibrillator (AED) and Manual Defibrillation

a. Indications:
- Patients in cardiopulmonary arrest and/or pulseless ventricular tachycardia and/or ventricular fibrillation
  i. Consider Dual Sequential External Defibrillation (DSED) for refractory VF/VT not responding after **3** consecutive attempts



b. Contraindications:
- Patients with a pulse

c. Special Considerations:
- Infant pads are generally used for patients < 1 year of age or < 15 kg
- Anterior/posterior pad placement is preferred

d. Energy Setting
- AED: **ADULT:** Automated, **PEDIATRIC** > Neonate, **NOT ALLOWED** for neonate pediatric patients
- Manual Defibrillation: **ADULT:** maximum joules, repeat as needed **PEDIATRIC:** 4 joules/kg repeated as needed

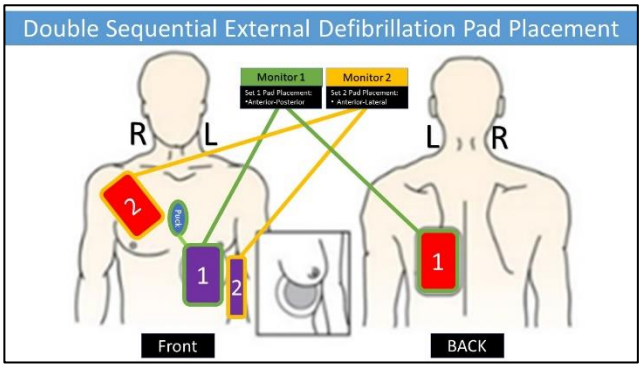
B007 Revised: 5/26/2023

Back Button

Cardiac Related Procedures

Double Sequential External Defibrillation (DSED):

a. Setting: AED and Manual mode
b. Dose:
   - **ADULT:** maximum joules, repeat as needed
   - **PEDIATRIC:** 4 joules/kg repeated as needed
c. Technique:
   - Place one set anterior/posterior and the 2nd set anterior/lateral
   - Ensure the pads are not touching each other
   - Charge and defibrillate both monitors simultaneously

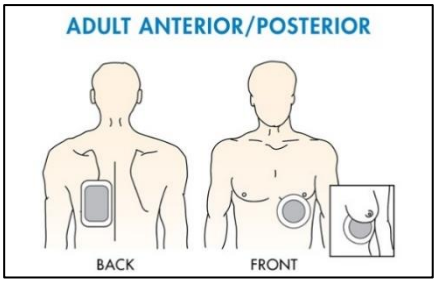


Synchronized Cardioversion

a. Indications:
   - Tachydysrhythmia with a pulse (ventricular tachycardia, torsades de pointe, SVT, A-fib/Flutter with RVR, etc.) and signs of poor perfusion.
b. Contraindications:
   - Repetitive, self-terminating, short-lived tachycardias (i.e. runs of non-sustained VT)
c. Special Considerations:
   - Anterior/posterior pad placement is preferred
   - Do not be overly concerned about the dysrhythmias that normally occur in the few minutes following successful cardioversion. These usually respond to time and adequate oxygenation and should only be treated if they persist more than 5 minutes.
   - ***PAIN MANAGEMENT*** may be used in conscious patients prior to cardioversion
   - ENERGY SETTING
     i. **ADULT:** Maximum joules, repeat as needed
     ii. **PEDIATRIC:** 2 joules/kg, repeat as needed

Transcutaneous Pacing (TCP)

a. Indications:
   - Bradydysrhythmia with a pulse and signs of poor perfusion.
b. Contraindications:
   - Moderate to severe hypothermia
   - Pulseless cardiac arrest
   - Traumatic induced bradycardia
c. Special Considerations:
   - Anterior/posterior pad placement is preferred
   - Consider ***PAIN MANAGEMENT***
   - Muscle tremors may complicate evaluation of pulses; femoral pulse may be more accurate. Utilizes $EtCO_2$ to help identify improved perfusion
   - Studies indicate no relationship between body surface area, weight, and capture thresholds and although most children will achieve capture between 50 to 100 mA higher current requirements are possible.
   - The pacing rate must be set high enough to perfuse the patient
   - ENERGY SETTING
     i. **ADULT:** Set rate at 60 beats per minute, begin energy at lowest dose and increase energy until electrical capture.
     ii. **PEDIATRIC:** Set rate at 80 beats per minute, begin energy at lowest dose and increase energy increase energy until electrical capture.



B007 Revised: 5/26/2023

Back Button

Cardiac Related Procedures

Vagal (Valsalva) Maneuvers

a. Indications:
- Stable tachydysrhythmia

b. Contraindications:
- Patient unable to attempt the maneuver or follow commands

e. Special Considerations:
- Patients should be instructed on how to perform vagal maneuvers properly before attempting one
- Preferred Technique
    i. To improve conversions success rate, place the patient in Trendelenburg position and if the patient is able have them draw their knees to their chest. Once in position have the patient blow out the plunger of a 10 mL syringe
    ii. In pediatrics a bag of ice with water (easily moldable) can be applied to the face.
    iii. Any vagal maneuver has a higher success rate when held for 30 seconds
    iv. Repeat as needed until conversion or patient becomes unstable

Monitoring Devices

Provider Level	Blood Glucose Monitor	SpO_2	$EtCO_2$	SpCO Monitor
EMT	YES	YES	YES	YES
EMT-IV	YES	YES	YES	YES
Paramedic	YES	YES	YES	YES

Blood Glucose Monitor

a. Indications:
- Known or suspected diabetic related complaints
- Patients with metabolic or endocrine disorders and presenting with non-specific complaints
- Patients with altered mental status
- Bradycardia or hypothermia in infants
- Newborn delivery in the field with abnormal APGAR score
- Traumatic brain injury
- Seizures

b. Contraindications:
- None

c. Special Considerations:
- Hypo/Hyperglycemia numbers are relative to patients normal blood glucose level

SpO_2

a. Indications:
- Any and all patients who require an assessment and/or respiratory complaint

b. Contraindications:
- None

c. Special Considerations:
- Inaccurate measurements may be caused by:
  i. CO poisoning
  ii. Elevated levels of bilirubin, carboxyhemoglobin, or methemoglobin
  iii. Externally applied coloring (such as nail polish)
  iv. Severe anemia or low arterial perfusion
  v. Motion artifact
  vi. Hydroxycobalmin administration

$EtCO_2$

a. Indications:
- Initial and continuous confirmation of advanced airway placement
- Any patient receiving CPR
- Any patient with a respiratory complaint or depression
- Any patient with suspected shock
- Any patient receiving pain management or sedation

b. Contraindications:
- None

c. Special Considerations:
- All patients with an advanced airway and/or CPR will have $EtCO_2$ monitored and documented.
  i. Copies of the post advanced airway waveform and waveform at time of transfer of care to receiving facility will be attached to the Patient Care Record (PCR).
- Patients with normal cardiac and pulmonary function should have a level of 35 to 45 mmHg

B008 Revised: 5/26/2023

Back Button

- If no $EtCO_2$ is detected, evaluate 3 factors:
    i. Loss of airway function: improper tube placement, apnea
    ii. Loss of circulatory function: cardiac arrest, exsanguination, massive PE
    iii. Equipment malfunction: tube dislodgement, adapter is disconnected , or obstruction

- $EtCO_2$ value > 10 may be utilized to confirm the quality of chest compressions and the adequacy of an airway including BVM and advanced devices. $EtCO_2$ value 10-20 represents high quality compressions.
    i. If $EtCO_2$ value significantly increases, assess for ROSC.
    ii. In the post resuscitation patient, no effort should be made to lower $EtCO_2$.

SpCO Monitor

a. Indications:
    - Known or suspected carbon monoxide poisoning
b. Contraindications:
    - None
c. Special Considerations:
    - Be sure to follow manufacturer instructions as some require no direct sun light on probe sensor
    - Inaccurate readings may occur due to misplaced/dislodged probes.
    - If an abnormal level of CO is detected, always confirm by measuring other fingers and average
    - Inaccurate measurements may be caused by;
        i. Elevated levels of bilirubin, carboxyhemoglobin, or methemoglobin
        ii. Externally applied coloring (such as nail polish)
        iii. Severe anemia or low arterial perfusion
        iv. Motion artifact
        v. Hydroxycobalmin administration

Vascular Access

Provider Level	IV Access (Peripheral)	IV Access (External Jugular)	IV Access (Umbilical Vein)	IV Access (Arteriovenous Fistula)	IV Access PICC/Central	Intraosseous Access
EMT	NO	NO	NO	NO	NO	NO
EMT-IV	YES	NO	NO	NO	NO	YES
Paramedic	YES	YES	NO	NO	NO	YES

Intravascular (IV) Access

a. Indications:
- Where fluid replacement therapy and/or intravascular medications may be clinically indicated

b. Contraindications:
- No absolute contraindications exist

c. Special Considerations:
- Avoid placing a peripheral IV in an injured, infected, or burned extremity
- Avoid placing a peripheral IV in a site with a arteriovenous (AV) fistula or an atrophied extremity (stroke patient)
- Continuous monitoring is indicated to ensure that the IV has not infiltrated
- If an accidental arterial puncture occurred, as evidenced by arterial pulsation of blood out of the catheter, remove the catheter and apply direct pressure using gauze for at least 10 minutes.
- Peripherally inserted central catheter (PICC) access including tunneled catheters or implanted ports is **NOT** allowed

Intraosseous (IO) Access

a. Indications:
- For adults and pediatrics anytime in which vascular access is difficult to obtain and/or failed in the emergent, urgent, or medically necessary cases.

b. Contraindications:
- Fracture of the targeted bone
- Previous orthopedic procedures near insertion site (prosthetic limb or joint)
- IO within the past 24 to 48 hours in the targeted bone
- Infection at the insertion site
- Inability to locate landmarks or excessive tissue over the insertion site

c. Approved Sites:
- EZ-IO
    i. Humeral Head (proximal humerus)
    ii. Proximal tibia
    iii. Distal femur
- Manual IO
    i. Proximal tibia

d. Special Considerations:
- Consider alternate site if excessive tissue is present at insertion site
- Consider alternate site if infection/burn is present at insertion site
- Treat infusion pain per the ***PAIN MANAGEMENT*** guideline

Wound Care Procedures

Provider Level	Extremity Splinting	Eye Irrigation Non-Invasive	Eye Irrigation Morgan Lens	Hemostatic Agent	Occlusive Dressing	Pelvic Binder	Pressure Dressing	Traction Splint	Tourniquet	Wound Packing
EMT	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES
EMT-IV	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES
Paramedic	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Extremity Splinting

a. Indications:
- Any time a patient complains of extremity pain post trauma, regardless of deformity presence
- In the presence of gross deformity with circulatory compromise, splint extremity in anatomically correct position

b. Contraindications:
- None

c. Special Considerations:
- Do not allow a deformed extremity to distract you from life threatening injures that need immediate attention
- Extremity CMS needs to be checked/documented before and after splinting

Eye Irrigation: Non-Invasive

a. Indications:
- Removal of foreign substance from the eye
- Chemical burns to the eye after consulting the MSDS or Emergency Response Guideline Manual

b. Contraindications:
- Laceration or penetrating injury to the globe of the eye
- Chemical burn when chemical is reactive with water

c. Special Considerations:
- MACE is an oil based product. Irrigation with water will only spread the irritant.
- Safety comes first. Do not irrigate if substance is unknown and there is concern for provider/patient safety
- Consider ***TOPICAL OPHTHALMIC ANAESTHETIC***

Eye Irrigation: Invasive (Morgan Lens)

a. Indications:
- Chemical burns to the eye after consulting the MSDS or Emergency Reponses Guideline Manual

b. Contraindications:
- Laceration or penetrating injury to the globe of the eye or the eyelid
- Chemical burn when chemical is reactive with water
- Patients who have been sprayed in the eye with MACE

c. Special Considerations:
- The Morgan Lens can be used when lengthy irrigation time is required
- Consider ***TOPICAL OPHTHALMIC ANAESTHETIC***

Wound Care Procedures

Hemostatic Agents

a. Indications:
   - Patients with external bleeding that is not controlled effectively by direct pressure and dressing

b. Contraindications:
   - **None when used in the emergency setting**

c. Special Considerations:
   - Hemostatic agents should be used in conjunction with direct pressure

Occlusive Dressing

a. Indications:
   - Open wounds to the abdomen, injures to the neck involving large vessels, and open wound to the chest when an air tight seal is needed to prevent further injury.

b. Contraindications:
   - None

c. Special Considerations:
   - For open wounds to the chest frequently monitor the patient for developing a tension pneumothorax

Pelvic Binder

a. Indications:
   - Stabilization of a known or suspected unstable pelvic fracture

b. Contraindications:
   - Suspected isolated hip fracture

c. Special Considerations:
   - Improper placement of a pelvic binder can do more harm than good. Placement should be at the level of the greater trochanters, not the iliac wing (top of the hip bone).
   - Tighten to anatomic position as overtightening can cause increased bleeding.

Pressure Dressing

a. Indications:
   - To maintain pressure once direct pressure has controlled external bleeding

b. Contraindications:
   - None

c. Special Considerations:
   - None

Traction Splint

a. Indications:
   - Stabilization of a known or suspected mid-shaft femur fracture

b. Contraindications:
   - Suspected injury to the knee or close to the knee, hip, pelvis, or lower leg/ankle of injured leg

c. Special Considerations:
   - **DO NOT** release manual traction until splint is properly placed and holding traction

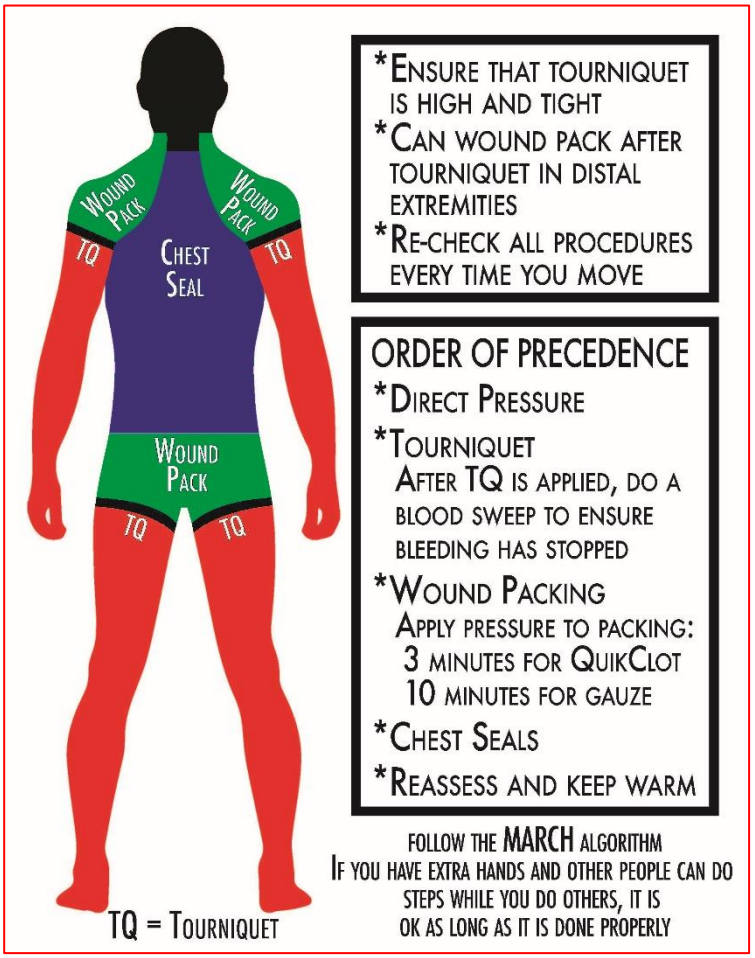
Wound Care Procedures

Tourniquet

a. Indications:
   a. Patients with external bleeding in an extremity that is not controlled effectively by direct pressure and dressing
b. Contraindications:
   a. None
c. Special Considerations:
   a. Be sure to document when, where, and by whom the tourniquet was placed (write time of application on tourniquet or patient)
   b. **DO NOT** cover tourniquet
   c. More than one may be needed in addition to the application of the original

Wound Packing

a. Indications:
   - Large open junctional wounds where packing is needed in conjunction to direct pressure and dressing application
     i. Axilla, inguinal areas, and extremities
b. Contraindications:
   - Large wounds to the trunk
c. Special Considerations:
   - If hemostatic agent gauze is used for wound packing hold direct pressure to the hemorrhaging vessel for 3 minutes
   - If non-hemostatic agent gauze is used for wound packing hold direct pressure to the hemorrhaging vessel for 10 minutes
   - Be aware and cautious of neck wounds.
     i. Look for cavitation wounds and/or subcutaneous emphysema.
     ii. If present, apply occlusive dressing.



B010 Revised: 5/26/2023

Back Button

Miscellaneous Procedures

Provider Level	Gastric Tube Insertion (oral)	Gastric Tube Insertion (nasal)	Suction (upper airway)	Suction (tracheobronchial)	Venous Blood Sampling (Blood Draw)	Joint Reduction
EMT	YES	NO	YES	NO	NO	YES
EMT-IV	YES	NO	YES	NO	YES	YES
Paramedic	YES	NO	YES	YES	YES	YES

Orogastric Tube Insertion

a. Indications:
- Adult and pediatric patients following placement of advanced airway
- Maintenance of previously placed gastric tube (Paramedic **ONLY**)

b. Contraindications:
- Actual or suspected laceration or perforation of the esophagus
- Ingestion of a caustic substance

c. Special Considerations:
- Anticoagulant use (e.g., Coumadin, warfarin) or disorders of coagulopathy (hemophilia) is a relative contraindication

Suctioning

a. Indications:
- Obstruction of the airway or stoma (secondary to secretions, blood, or any other substance) that need to be cleared
- Clear secretions, blood, etc. in a patient currently being assisted by an airway adjunct such as an OPA/NPA, endotracheal tube, tracheotomy tube, or cricothyrotomy tube

b. Contraindications:
- None

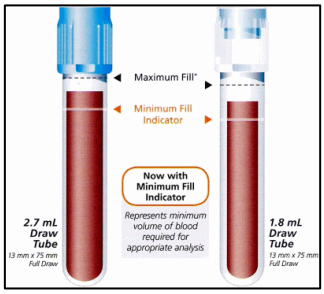
c. Special Considerations:
- Suctioning, particularly through endotracheal tubes, always risks suctioning the available oxygen, as well as the fluid, from the airway. Limit the suction time to a few seconds while the catheter is being withdrawn.
- Patients with pulmonary edema may have endless frothy secretions. Be sure to allow time for the patient to breathe, even though it is tempting to continue suctioning.
- Complications may be caused both by inadequate and overly vigorous suctioning. Technique and choice of equipment are very important. Choose equipment with enough power to suction large amounts rapidly to allow time for ventilation.

Blood Draw (Non-Law)

a. Indications:
- Blood sampling should be considered in any patient where lab testing would be medically beneficial.

b. Contraindications:
- None

c. Special Considerations:
- **DO NOT** delay time sensitive treatments or transport in order to attain blood sampling.
- Avoid areas with cellulitis, hematomas, vascular shunt/graphs, and/or vascular access devices.
- Order of blood draw: **RED**, **BLUE**, **GREEN**, LAVENDER
  i. Ensure the **BLUE** tube has been filled to marker line.



B011 Revised: 5/26/2023

Back Button

Miscellaneous Procedures

Joint Reduction

a. Indications:
   - Severe pain with suspected dislocation in all ages

b. Contraindications:
   - Altered mental status precluding patient from cooperating with reduction attempts
   - Another more likely diagnosis (AC separation, fracture, etc.)

c. Approved Sites:
   - Patella
   - Ankle

d. Special Considerations:
   - Check neurovascular status and document before and after any reduction attempt.
   - Cease attempts after three (3) failed attempts or pain out of proportion to injury

e. Patient Monitoring Requirements:
   - Pain scale, pre and post neurovascular exams

f. Technique:
   - Knee:
     i. Ask a partner to firmly support the upper leg.
     ii. With one hand, firmly grasp the top of the distal thigh with your thumb on the lateral edge of the patella.
     iii. With the other hand, place it under the lower leg (about mid to distal calf) and slowly extend (straighten) the knee
     iv. As you straighten the leg, apply constant pressure with your thumb on the lateral edge of the patella, pushing the patella medially.
        1. The patella will generally reduce with the leg in near complete extension.
        2. If significant difficulty is met or if the patient can not tolerate the pain despite pain medications, STOP the procedure. Splint the extremity in position and transport to the nearest appropriate facility.
   - Ankle:
     i. This procedure should only be done if there are signs of neurovascular compromise (skin tenting, loss of pulses, delayed cap refill) in open or closed injuries.
        1. Open injuries should generally be left alone and splinted in place as long as neurovascular status remains intact.
        2. If there is an open injury with neurovascular compromise, irrigate with at least 1L of saline prior to reduction attempt.
     ii. Ask a partner to firmly support the distal lower leg. If possible, have the patient's knee flexed as much as tolerated. Knee flexion reduces tension of the calf muscles making reduction easier.
     iii. Place one hand under the heel and firmly cup the heel.
     iv. With the other hand on top of the foot, firmly grasp the midfoot.
     v. Apply longitudinal in line traction (pull the foot down towards you) and rotate in a manner to recreate anatomic alignment.
        1. There should be no significant resistance met during this reduction. If significant resistance is met, STOP the procedure, splint the extremity in position, and immediately transport the patient to the closest appropriate facility.
     vi. Splint the reduced ankle to prevent a recurrent dislocation.

Tazer Probe Removal

Provider Level	Removal
EMT	YES
EMT-IV	YES
Paramedic	YES

Description

a. Taser uses technology that interrupts muscular functioning resulting in painful contractions that can be incapacitating. EMS personnel may be requested to assess patients after Taser deployment, and/or to remove Taser probe lodged in someone's skin.
b. Complete medical documentation is required whether or not EMS transports the patient.
    - If the patient is not being transported, make sure the refusal documentation includes a good history of events leading up to and following the Taser event.

Indications

a. Taser probe(s) imbedded in skin.

Contraindications

a. Patient is **NOT** physically under control or accessible.
b. When the Taser probe is imbedded in an eye, the face, neck, spinal column, breast, groin, a joint space or vascular structure, the probe **SHOULD NOT** be removed in the field AND the patient **MUST** be transported for treatment.

Precautions

a. Confirm that the Taser has been shut off and the barb cartridge has been disconnected from the Taser device.
b. When a Taser probe is used in conjunction with pepper spray propellant there is a burn hazard.
    - Electrical arcing from imperfect (but still effective) probe contact can ignite the propellant.
    - The resulting combustion may not leave visible burns but may lead to complaints of heat and localized pain. If the patient complains of these symptoms, evaluate for possible minor burns.
c. Be aware that secondary injuries may result from falls sustained after the device has been deployed. Subjects should not be dazed or confused following device deployment.
d. There have been reports of deaths involving the use of a Taser on a combative patient. Review of these outcomes indicates the use of improper or prone restraint, patient use of drugs and patients presenting with excited delirium and hyperthermia as co-morbid factors. It is imperative that these patients receive a thorough assessment for these risk factors, and are not improperly restrained.
    - A patient presenting with any of these risk factors should be transported for further evaluation.

Complications

a. The subject must be transported to the hospital if he or she meets any of the following criteria:
    - Probe lodged in any of the above listed sensitive areas.
    - Subject has a previous cardiac history.
    - Subject appears intoxicated.
    - Subject is non-compliant to direct instructions.
b. Inspect probe for breakage or other abnormal findings, if probe is not intact, the patient needs to be transported for further evaluation.

Special Considerations

a. If the patient is over 40 years old or has a history of cardiac issues an ECG is indicated.
b. Removed probes should be handled like contaminated sharps and should be disposed of accordingly.
    - Law enforcement will provide the necessary sharps container so that the probes can be logged as evidence.

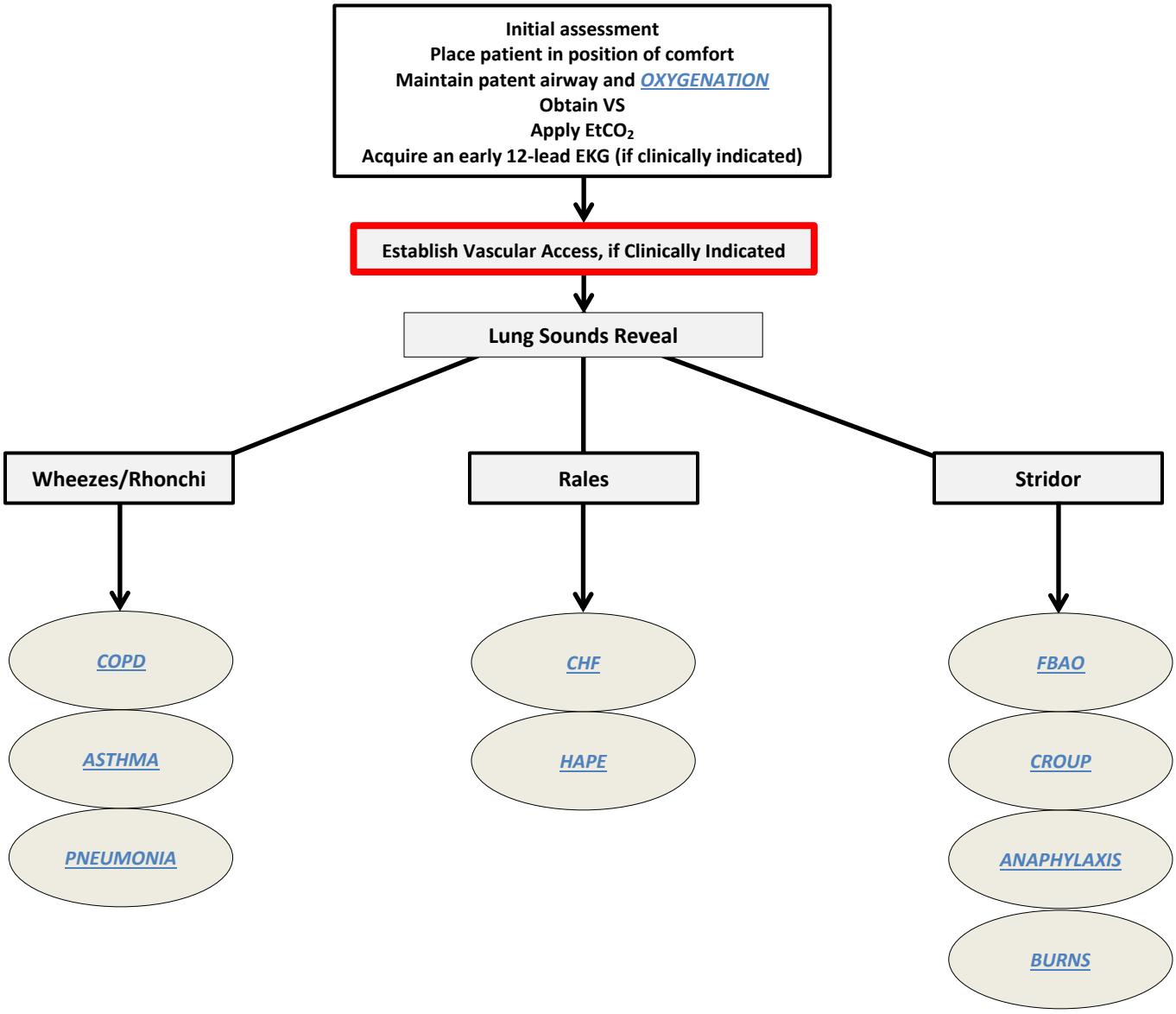
B012 Revised: 5/26/2023

Back Button

Standard Dyspnea Care

Description

a. Causes of respiratory distress can be numerous, making the assessment and treatment difficult. This guideline is designed to create a simplified and standard treatment algorithm.
b. The goal is to maximize both oxygenation and ventilation without causing hyperoxemia.
c. Lungs sounds in conjunction with $EtCO_2$ and SpO_2 are crucial during the assessment and are **REQUIRED** on every respiratory distress patient.
d. There are many non-pulmonary causes of dyspnea. If clear lung sounds are present, consider other causes such as: pulmonary embolus, myocardial infarction, carbon monoxide, and/or anxiety.
e. If certified, consider medication assisted airway management (MAAM) in any patient experiencing dyspnea **WITH** imminent respiratory failure or respiratory arrest.
f. For pediatrics, reference Pediatric Field Guide, Broselow Tape, Handtevy Guide, or approved apps



Wheezes/Rhonchi

ALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 2.5 mg in 3 mL NS
- PEDIATRIC <2: 1.25 mg in 3 mL NS

OR

LEVALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 1.25 mg in 3 mL NS, MAX 7.5 mg
- PEDIATRIC <2: 1.25 mg in 3 mL NS, MAX 3.75 mg

IPRATROPRIUM; PRN every 15 minutes
- ADULT: 0.5 mg in 3 mL via neb
- PEDIATRIC: 0.25 mg in 3 ml via neb

Consider (severe cases)

CONTINOUS NEB
- ADULT: 7.5 mg of *ALBUTEROL* in 9 mL via neb
- PEDIATRIC: NOT ALLOWED

Establish Vascular Access

Patient Condition Improved

YES

A General Supportive Care

NO

Consider CPAP
- ADULT: see *CPAP GUIDELINE*
- PEDIATRIC: see *CPAP GUIDELINE*

If patient Condition Improved, continue to BOX A

NO

ASTHMA	COPD

EPINEPHRINE 1:1,000; PRN every 3-5 minutes
- ADULT: 0.5 (0.5 mL) mg IM
- PEDIATRIC: 0.01 mg/kg (0.01 mL/kg) IM

Consider (If no improvement)

MAGNESIUM SULFATE; NOT REPEATED
- ADULT: 2 grams in 50 mL NS or D_5W IV/IO over 10 minutes
- PEDIATRIC: 50 mg/kg in 50 mL NS or D_5W IV/IO over 10 minutes

If patient Condition Improved at Any time, continue to BOX A

DEXAMETHASONE; NOT REPEATED
- ADULT: 10 mg IV/IO/IM/PO
- PEDIATRIC: 0.6 mg/kg up to a MAX of 10 mg IV/IO/IM/PO

OR

METHYLPREDNISOLONE; NOT REPEATED
- ADULT: 125 mg bolus IV/IO slow over 2 minutes or IM
- PEDIATRIC: 2 mg/kg bolus IV/IO slow over 2 minutes or IM; MAX of 125

See *AIRWAY MANAGEMENT GUIDELINE*

Consider: Severe Cases

EPINEPHRINE INFUSION
- ADULT and PEDIATRIC: 1 mg Epinephrine in a 1,000 mL NS or 0.5 mg in 500 mL NS, IV/IO infusion wide open to gravity
  - Continuously reassess BP until titrated effect
  - BP > 90 systolic (≥ Peds Guide recommendation), and/or return of distal pulses, and/or improved mental status

Consider: If imminent respiratory arrest
- MAAM (if allowed), see *MAAM GUIDELNE*

Special Considerations
- IM epinephrine is only indicated for most severe attacks & not responding to inhaled bronchodilators.
  - Use extreme caution when administering. Cardiopulmonary monitoring is mandatory.
- IV magnesium may be beneficial in some patients with status asthmatics & should not be given routinely but should be reserved for life-threatening attacks NOT responding to conventional therapy.
- Wheezing may be a presentation of pulmonary edema, "cardiac asthma" if suspected see *RALES GUIDELINE*

Rales

Suspected Cause

Congestive Heart Failure/Other

Establish Vascular Access

Consider early CPAP
- ADULT: *see CPAP GUIDELINE*
- PEDIATRIC: see *CPAP GUIDELINE*

NITROGLYCERIN; Repeat 0.4 mg sublingual every 5 minutes PRN titrated to symptoms and blood pressure
- ADULT:
  - SBP 100 to 120: 0.4 mg sublingual
  - SBP 121 to 200: 0.8 mg sublingual
  - SBP > 200: 1.2 mg sublingual
- PEDIATRIC: NOT ALLOWED

Consider (if available)

NITROGLYCERIN PASTE
- ADULT:
  - 0.5" to 2" applied to hairless skin, cover to prevent smearing
- PEDIATRIC: NOT ALLOWED

If ETCO2 reveals bronchospasm or clinical suspicion

ALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 2.5 mg in 3 mL NS
- PEDIATRIC <2: 1.25 mg in 3 mL NS

OR

LEVALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 1.25 mg in 3 mL NS, MAX 7.5 mg
- PEDIATRIC <2: 1.25 mg in 3 mL NS, MAX 3.75 mg

IPRATROPRIUM; PRN every 15 minutes
- ADULT: 0.5 mg in 3 mL via neb
- PEDIATRIC: 0.25 mg in 3 ml via neb

Consider (severe cases)

CONTINOUS NEB
- ADULT: 7.5 mg of *ALBUTEROL* in 9 mL via neb
- PEDIATRIC: NOT ALLOWED

Conditioned Improved?

NO → See *AIRWAY MANAGEMENT GUIDELINE*

If imminent respiratory arrest, consider:
- MAAM, see *MAAM GUIDELINE*

YES → **General Supportive Care**

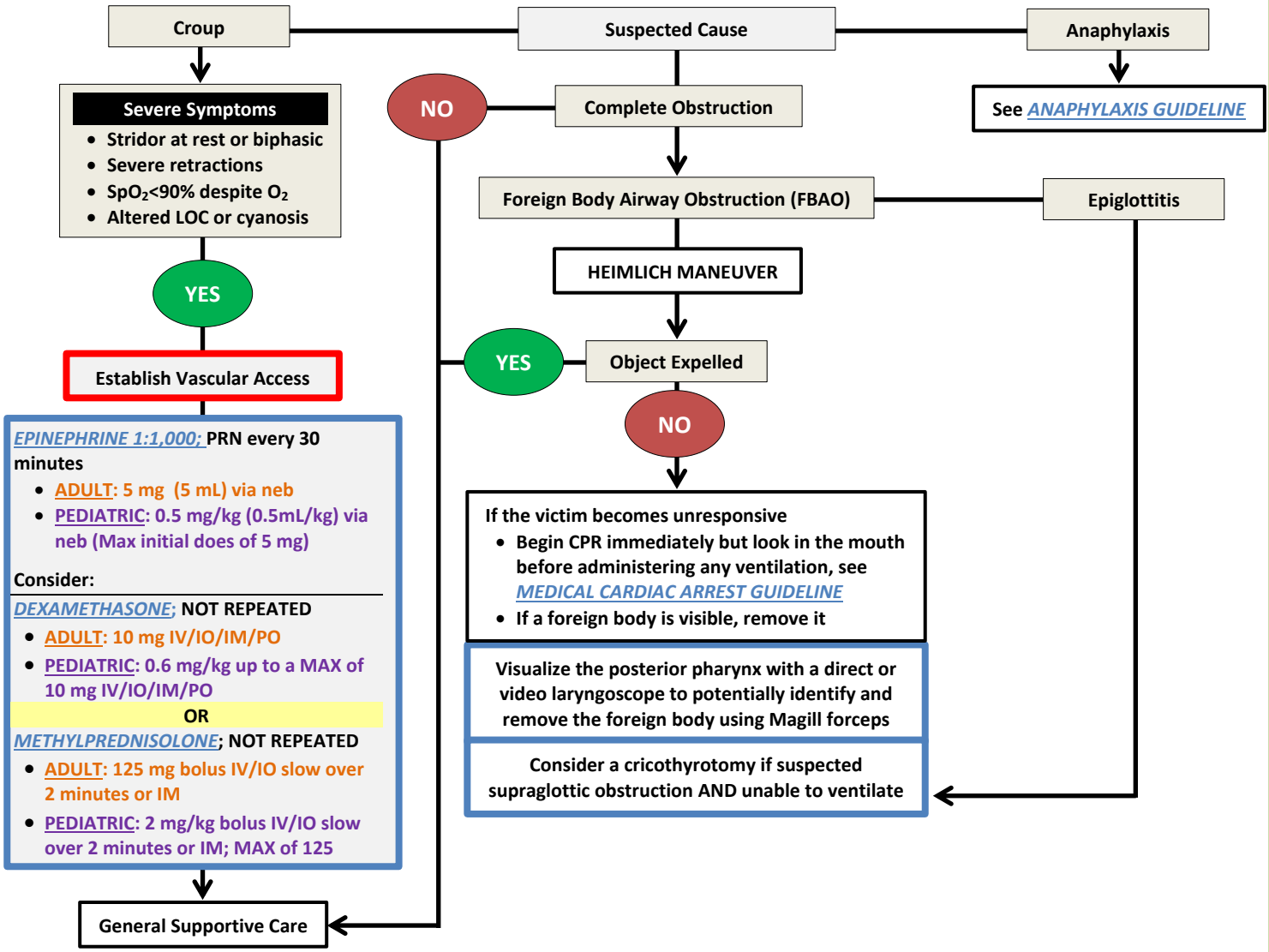
High Altitude Pulmonary Edema

Immediate descent
General Supportive Care

Consider early CPAP
- ADULT: see *CPAP GUIDELINE*
- PEDIATRIC: see *CPAP GUIDELINE*

Special Considerations
- Refer to *DYSPNEA GUIDELINE* for initial treatment
- Consider myocardial infarction in all these patients and obtain a 12 lead EKG. See *ACS GUIDELINE*
- Treat dysrhythmia as per appropriate guideline.
- Consider treatment of anxiety, see *BEHAVIORAL EMERGENCY GUIDELINE*
- Avoid nitroglycerin in any patient who has used phosphodiesterase inhibitors including, but not limited to the following; Viagra or Levitra in the past 24 hours or Cialis in the past 48 hours due to possible severe hypotension.
- If signs and symptoms of cardiogenic shock with poor perfusion, consider *EPINEPHRINE INFUSION*

Stridor/FBAO



Special Considerations
- Causes of stridor include the following but are not limited to; croup, foreign body obstruction, allergic reactions, trauma, infection, and masses - Do not perform blind finger sweep in the mouth and posterior pharynx - For visibly pregnant or obese patients perform chest thrusts - Epiglottitis is rare but should be considered in unimmunized children and immunized adults. Keep patient calm and minimize agitation. Airway manipulation is best done in the facility. Prepare for emergency cricothyrotomy.

Receiving Facility Capability						
Check Availability with EMResource						
Condition	PMC	SFMC	MC	MN	GV	CH
NON-STEMI	A/P	A/P	A/P	A/P	A	P
STEMI	A/P	A/P	A/P	A/P	X	P
A=Adult, P=Pediatric X=Does not accept						

Acute Coronary Syndrome

Description

a. The goal is to identify a patient with ST-segment elevation myocardial infarction (STEMI) in the prehospital setting and provide advanced notification to the receiving facility to minimize delay to definitive care.

Definitions

a. **STEMI Alert Notification**: Any patient with ACS complaint(s) associated with conclusive EKG criteria as defined in the below algorithm.

b. **CARDIAC Other Notification**: Any patient with ACS complaint(s) with inconclusive EKG criteria not indicative of a STEMI.
   - This can include but not limited to AVR elevation, Wellens/DeWinter's, LBBB, ST depression of 1 mm or greater in V1-V4 (posterior), ventricular pacemaker, and/or dysrhythmias.

c. **Consultation**: If unsure if patient is appropriate for STEMI Alert, contact Medical Control for consultation.

Documentation Requirements

a. Time of first patient contact, time of first EKG, time of activation and ensure uploaded EKG.

Initial assessment
Positive findings of ACS signs/symptoms
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG

***ASPIRIN;* NOT REPEATED**
- **ADULT: 324 mg tablets**
- **PEDIATRIC: NOT ALLOWED**

- **ST-segment elevation (STE) of at least 1 mm in two or more anatomically contiguous leads, or**
- **12-Lead ECG computer interpretation of "ACUTE MI" BLS ONLY or**
- **Modified Sgarbossa's Criteria (if LBBB or ventricular pacemaker present):**
  i. **Concordant ST-segment elevation ≥ 1 mm in any lead**
  ii. **Concordant ST depression ≥ 1 mm in leads v1-v3**

YES

Activate STEMI Alert
Transmit EKG

Attach Defibrillation Pads

NO

Activate CARDIAC: Other
Transmit EKG

Establish Vascular Access

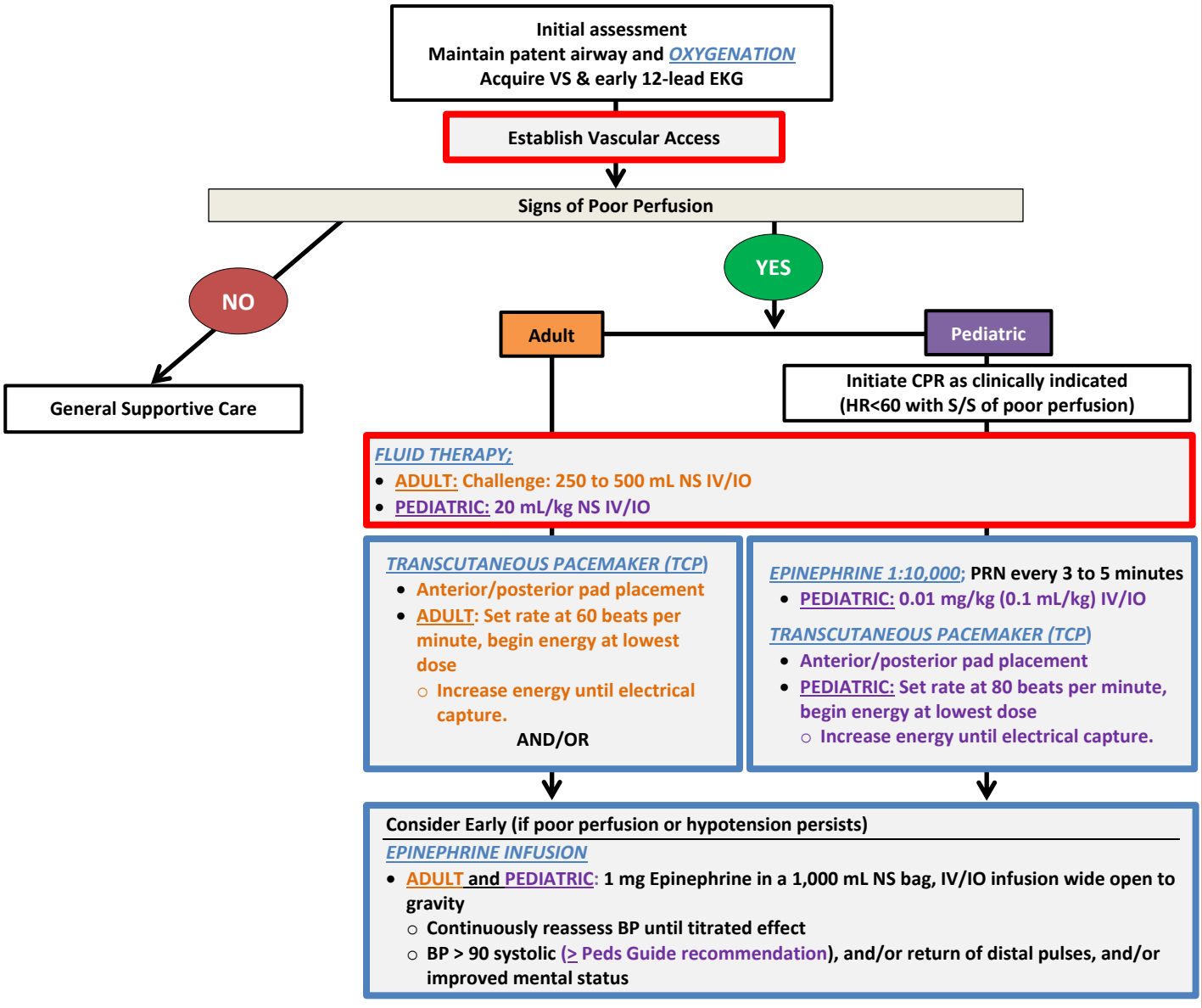
***FLUID THERAPY;* PRN until systolic BP between 80-100**
- **Challenge: 250 to 500 mL NS IV/IO**

Consider *PAIN MANAGEMENT*

If signs of poor perfusion, consider:

EPINEPHRINE INFUSION
- **ADULT and PEDIATRIC: 1 mg Epinephrine in a 1,000 mL NS or 0.5 mg in 500 mL NS, IV/IO infusion wide open to gravity**
  - **Continuously reassess BP until titrated effect**
  - **BP > 90 systolic (≥ Peds Guide recommendation), and/or return of distal pulses, and/or improved mental status**

Bradydysrhythmias



Special Considerations

- Once stable, consider *PAIN MANAGEMENT GUIDELINE*
- Symptomatic and severe bradycardia is typically related to:
  - Ischemia
  - Medications (beta blocker, calcium channel blocker)
  - Electrolytes (hyperkalemia)
- Capture thresholds in children are like those in adults
- In pediatrics, identify and treat any potential respiratory etiologies
- If stable and there is a 2nd degree type 2 or 3rd degree AV block, attach pacer pads and be prepared for transcutaneous pacing

Tachydysrhythmias

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG

Establish Vascular Access

FLUID THERAPY;
- ADULT: Challenge: 250 to 500 mL NS IV/IO
- PEDIATRIC: 20 mL/kg NS IV/IO

Signs of poor perfusion → YES

NO

Wide complex QRS > 0.12 sec → YES

NO

VAGAL MANEUVERS

NO

ADENOSINE (if regular); Repeat x1 if no improvement
- ADULT: 12 mg rapid bolus IV/IO, with a 20 mL NS flush
- PEDIATRIC: 0.2 mg/kg rapid bolus IV/IO (max 12 mg), with a 20 mL NS flush

DILTIAZEM (if irregular); Repeat x1 ONLY after 15 minutes
- ADULT: 20 mg IV/IO bolus over 2 to 5 minutes, repeat at 25 mg IV/IO
- PEDIATRIC: NOT ALLOWED

Consider *SYNCHRONIZED CARDIOVERSION* if unsuccessful

SYNCHRONIZED CARDIOVERSION; PRN if no improvement
- ADULT: Maximum joules
- PEDIATRIC: 2 J/kg

Consider *PAIN MANAGEMENT*
Sedation (if hemodynamically stable &/or time allows)

Consider *MAGNESIUM* if Torsades De Pointes with a pulse; NOT REPEATED
- ADULT: 2 grams in 50 mL NS or D_5W over 10 minutes IV/IO
- PEDIATRIC: NOT ALLOWED

Consider *SYNCHRONIZED CARDIOVERSION* if unsuccessful

Successful Conversion/Rate Control

YES → General Supportive Care
Acquire Post Conversion 12-lead

NO → *AMIODARONE* (regular monomorphic ONLY)
- ADULT: 150 mg in a 50 mL NS or D5W IV/IO over 10 minutes
- PEDIATRIC: NOT ALLOWED

Special Considerations

- Consider contacting Medical Control for direction if conversion is unsuccessful
- Chronic atrial fibrillation is rarely a cause of hemodynamic instability, especially if rate is < 150 bpm. First correct hypoxia and/or hypovolemia, before considering cardioversion.
- Sinus tachycardia rarely exceeds 150 bpm in adults; or 220 bpm in children < 8 years and does not require or respond to cardioversion, treat underlying causes.

Cardiac Arrest (medical)

General Electrotherapy

a. For pediatrics, reference Pediatric Field Guide.
b. Consider ***DOUBLE SEQUENTIAL EXTERNAL DEFIBRILLATION*** in refractory VT/VF after 3 consecutive attempts of standard defibrillation.
c. If applicable, switch the heart monitor settings to the pediatric mode during pediatric cardiac arrest patients.

General Chest Compressions

a. **PREGNANCY**:
    - Left-lateral tilt is used to improve maternal hemodynamics during cardiac arrest; the degree of tilt should be at a tilt ≥30° or manually displace the uterus.
    - Performed from either the patient's left side with the 2-handed technique or the patient's right side with the 1-handed technique.

General Airway Management

a. **ADULT ≥ 19**:
    - **Passive Oxygenation**: Passive O_2 at 8 L via iGel
    - **Positive Pressure Ventilation (PPV)**: Initiate after 3 cycles (6 minutes of passive oxygenation unless suspected hypoxic arrest suspected (e.g., asphyxiation, status asthmaticus).
    - **Advanced Airway Preferences:** See ***AIRWAY MANAGEMENT GUIDELINE***
b. **PEDIATRIC < 18**:
    - **Positive Pressure Ventilation**: If hypoxic arrest suspected (e.g., asphyxiation, status asthmaticus), begin PPV immediately.
    - **Advanced Airway**: Can be placed any time suspicion of primary respiratory etiology.
        i. Placement should not interrupt compressions.

Return of Spontaneous Circulation (ROSC)

a. See ***ROSC GUIDELINE***

General Environment

a. Ensure full recommended PPE prior to making contact and/or while performing high risk airway or resuscitation procedures.
b. Evaluate the scene for any evidence that may help identify a potential infectious disease, identify reversible causes early.
c. CPR in a moving ambulance or on a cot is ineffective and is not recommended to transport pulseless patients to a facility.
    - In general, work cardiac arrest on scene either to ROSC or the field pronouncement, see ***DEATH in the FIELD GUIDELINE***.
d. Family presence during resuscitation is preferred by most families, it is rarely disruptive, and may help in the grieving process for family members. Family presence during resuscitation is recommended, unless disruptive to resuscitation efforts.

General Medication

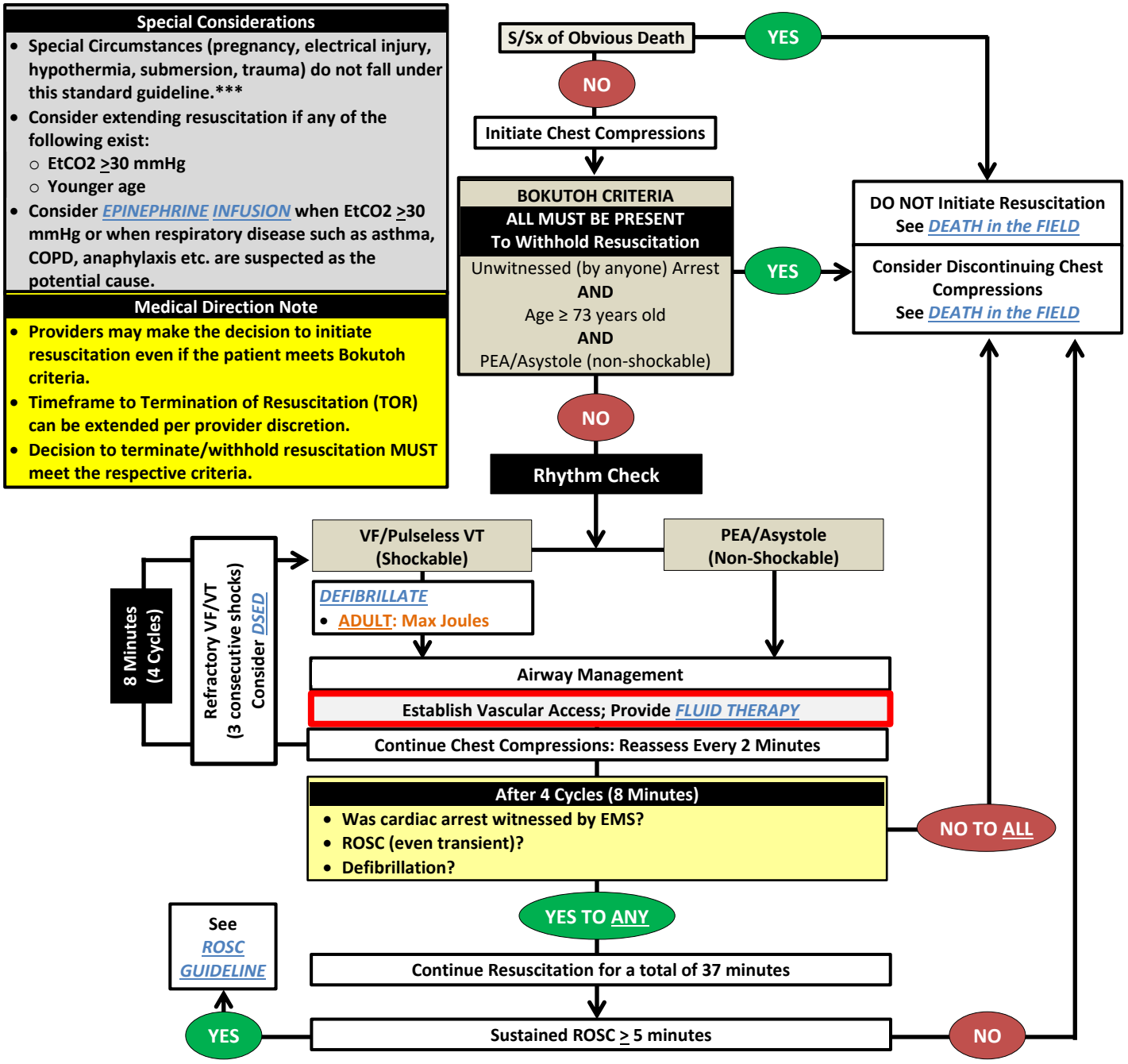
a. In suspected hyperkalemic arrest, consider ***CALCIUM*** and ***SODIUM BICARBONATE***
b. Consider ***MAGNESIUM*** for polymorphic VT/Torsade's De Pointes
c. Consider ***CYANOKIT*** for suspected cyanide poisoning.
    - Extend resuscitation period at least 15 minutes after administration.
d. Consider ***EPINEPHRINE*** infusion when EtCO2 ≥30 mmHg or when respiratory disease such as asthma, COPD, anaphylaxis etc. are suspected as the potential cause in **ADULTS ≥19** years old.

Special Circumstances***

a. Pregnant patients need their fetus delivered. Emergent transport to an Emergency Department with the capacity for emergency Cesarean is recommended.
b. Electrical injury, submersion injury, and hypothermia patients should have efforts continued for longer. Case reports have shown survival with intact neurological function well beyond standard resuscitation windows. Consider early transport even if the patient remains in arrest. You may contact medical direction for further clarification.

Cardiac Arrest (medical)

ADULT ≥ 19 Years Old: Cardiac Arrest Algorithm



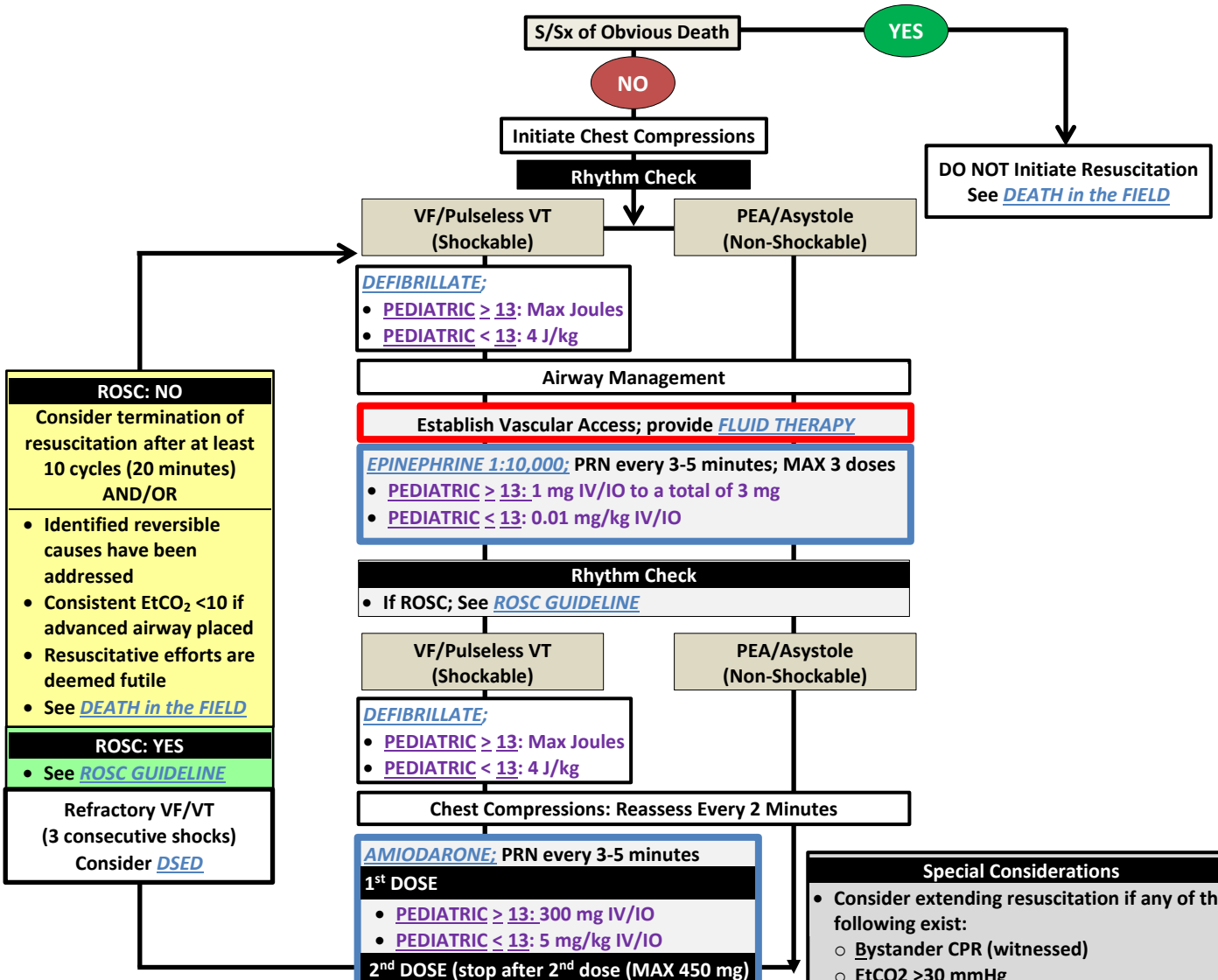
D004 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Cardiac Arrest (medical)

PEDIATRIC: <18: Cardiac Arrest Algorithm



Special Considerations

- Consider extending resuscitation if any of the following exist:
  - Bystander CPR (witnessed)
  - EtCO2 ≥30 mmHg
  - Age ≤73
  - ROSC ≤8 minutes (intermittent)
  - Shockable rhythm exists
  - Special Circumstances (pregnancy, electrical injury, hypothermia, submersion, trauma) do not fall under this standard guideline.

Medical Direction Note

- Timeframe to Termination of Resuscitation (TOR) can be extended per provider discretion.
- Decision to terminate/withhold resuscitation MUST meet the respective criteria.

D004 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Neonatal Resuscitation

History and Presentation

a. History of mother: age, due date, prenatal care, previous pregnancies and problems, high risk, medications, duration of labor, foul-smelling or stained amniotic fluid, possibility of twins.
b. If baby is **NOT** delivered and head is **NOT** appearing at vaginal opening with contractions, transport rapidly and consider stopping the ambulance for delivery as clinically indicated.
c. If baby is not delivered, but head visible with contractions (crowning), delivery is imminent.

Special Considerations

a. 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)
b. Assist ventilations at a rate of 40-60 breaths per minute to maintain HR > 100 and use 2 person BVM when possible
c. For CPR, 2 thumbs-encircling hands technique preferred
    - Allow full chest recoil
    - 3:1 ratio for compressions to ventilations, with 90 compressions and 30 breaths per minute, to achieve 120 events per minute.
d. Coordinate with ventilations so chest compressions are **NOT** delivered simultaneously
e. Consider, hypoglycemia, hypovolemia and pneumothorax
f. Suction is **ONLY** indicated when there is an obvious obstruction to spontaneous breathing or those requiring positive-pressure ventilation.
g. Neonatal resuscitation, unlike most other resuscitation situations, requires careful attention to temperature.
h. When needed to establish vascular access in the, immediate interosseous (IO) access is preferred, then later if needed obtain a peripheral IV access site.
    - NO pressure infusion bag recommended for infant IO access, instead use manual pressure for administration of medications.

APGAR

a. Document APGAR score at 1 and 5 minutes
b. APGAR Scoring Chart

Indicator		0 Point	1 Point	2 Point
A	Activity (muscle tone)	Absent	Flexed arms and legs	Active
P	Pulse	Absent	< 100 BPM	>100 BPM
G	Grimace (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
A	Appearance (skin color)	Blue; pale	Pink body, blue extremities	Pink body and extremities
R	Respiration	Absent	Slow and irregular	Vigorous cry

Neonatal Resuscitation

Maternal Care
Initial assessment
Maintain patent airway and *OXYGENATION*
Obtain VS
If allowed, establish vascular access

Fetal Delivery

Dry, warm, position, suction (if clinically indicated), stimulate

Evaluate Heart Rate, Color, and Respirations

- Gasping, apneic or HR<100 → A Positive pressure ventilation
- Weak cry, cyanotic, & HR>100 → Supplemental oxygen
- Breathing, pink, & HR >100 → B General supportive care

Condition improved after 30 seconds?

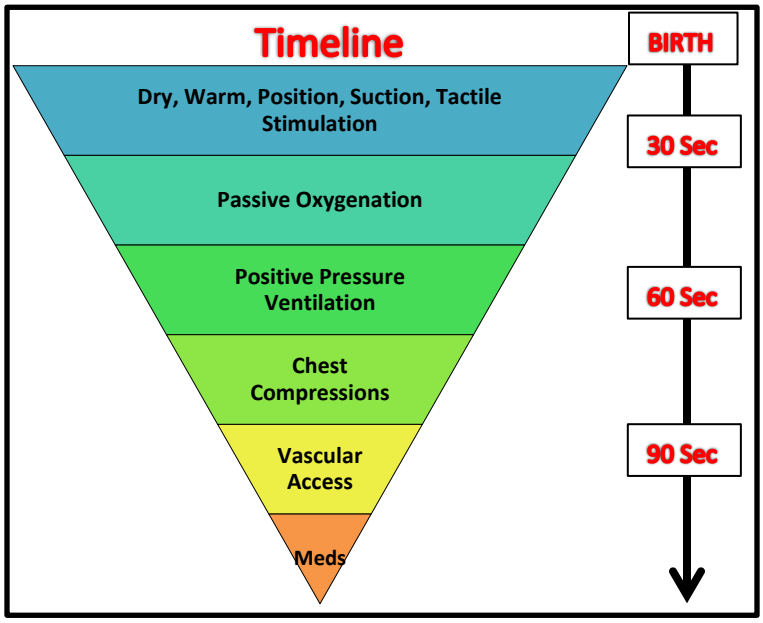
	NO	YES
Positive pressure ventilation	HR<60 BPM	Proceed to BOX B
Supplemental oxygen	Proceed to BOX A	Proceed to BOX B

Repeat Cycle

HR<60 BPM
Initiate chest compressions
Establish vascular access

Condition Improved after 60 Seconds?

NO	YES
EPINEPHRINE 1:10,000; PRN every 3-5 minutes • PEDIATRIC: 0.01 mg/kg(0.1 mL/kg) IV/IO	Proceed to BOX B



D005 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Hyperkalemia

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG

Establish Vascular Access

FLUID THERAPY;

- ADULT: Challenge: 250 to 500 mL NS IV/IO
- PEDIATRIC: 20 mL/kg NS IV/IO

Strong suspicion of hyperkalemia or documented Lab Value of K+ > 6mEq/L AND EKG demonstrates;

Moderate (6.5-8.0 mEq/L)		Loss of P wave Prolonged QRS complex ST-segment elevation Ectopic beats and escape rhythms
Severe (> 8.0 mEq/L)		Progressive widening of QRS complex Sine wave Ventricular fibrillation Asystole Axis deviations Bundle branch blocks Fascicular blocks

NO

General Supportive Care

YES

ALBUTEROL; PRN x1

- ADULT: 10 mg (in 12 mL) via neb; MAX 20 mg
- PEDIATRIC: NOT ALLOWED

OR

LEVALBUTEROL;

- ADULT: 2.5 mg (in 6 mL) via NEB, administered back-to-back; MAX 7.5 mg
- PEDIATRIC: NOT ALLOWED

Consider early CPAP

- ADULT: see *CPAP GUIDELINE*
- PEDIATRIC: NOT ALLOWED

CALCIUM CHLORIDE; PRN every 10 minutes to a MAX 3 doses

- ADULT: 1 gram slow bolus over 2 to 5 minutes IV/IO
- PEDIATRIC: NOT ALLOWED

OR

CALCIUM GLUCONATE; PRN every 10 minutes to a MAX 3 doses

- ADULT: 3 grams slow bolus over 2 to 5 minutes IV/IO
- PEDIATRIC: NOT ALLOWED

SODIUM BICARBONATE; PRN until cessation of seizures or QRS shortens to <100 ms (if applicable)

- ADULT: 100 mEq bolus IV/IO of an 8.4% solution
  - In severe cases consider drip; Mix 150 mEq (150 mL) in 1,000 mL NS and administer at 200 mL/hr
- PEDIATRIC: NOT ALLOWED

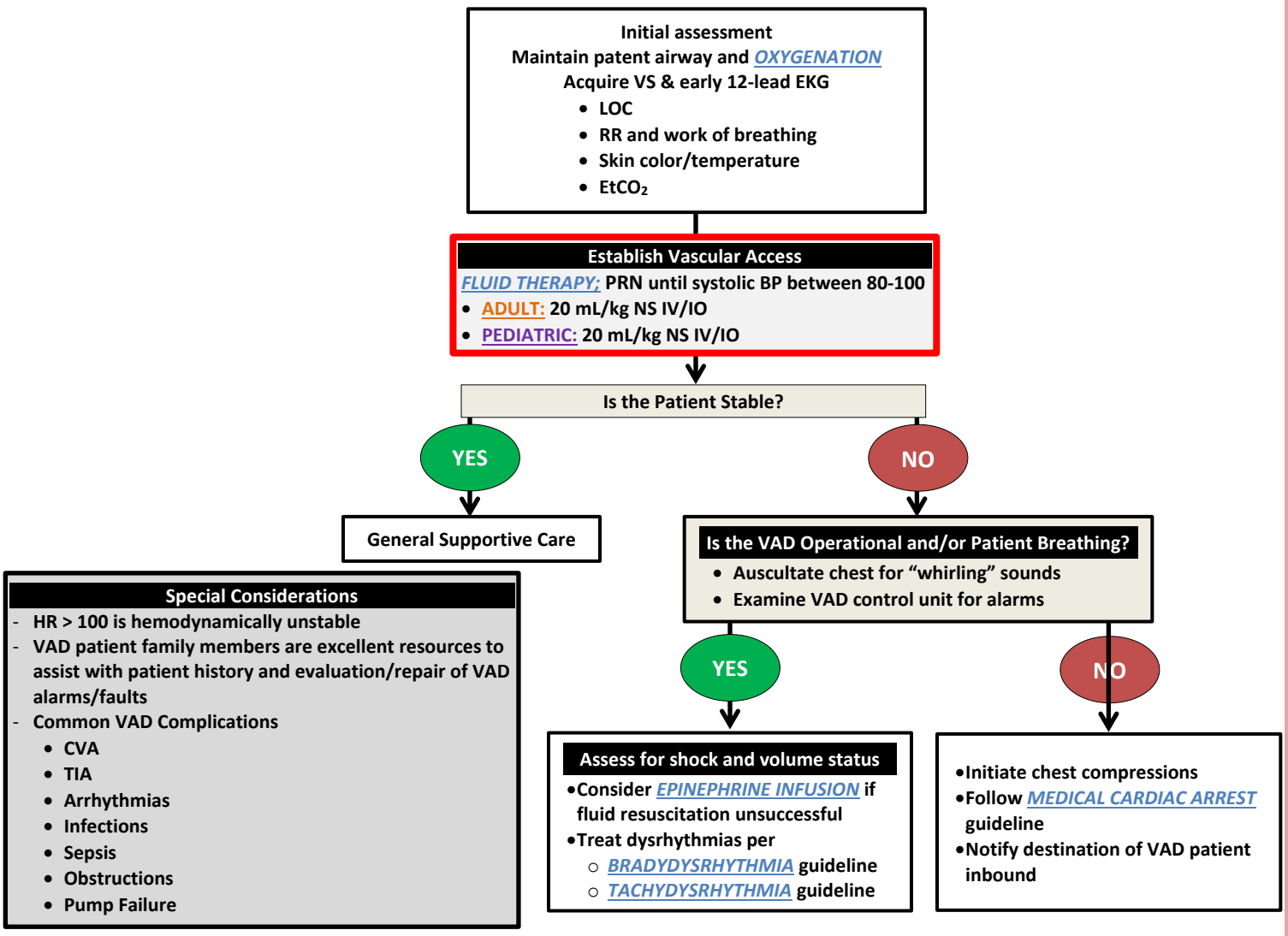
Special Considerations

- Suspect hyperkalemia in any patient with a new bradyarrhythmia or AV block, especially patients with renal failure, on hemodialysis, rhabdomyolysis, or taking any combination of ACE inhibitors, potassium-sparing diuretics, and potassium supplements.
- Untreated, severe, states of hyperkalemia can suddenly decompensate into asystole or ventricular fibrillation. A high index of suspicion and rapid treatment is required in order to prevent cardiac arrest.
- If patient progresses into cardiac arrest, follow *MEDICAL CARDIAC ARREST* guideline

Ventricular Assist Devices

Description

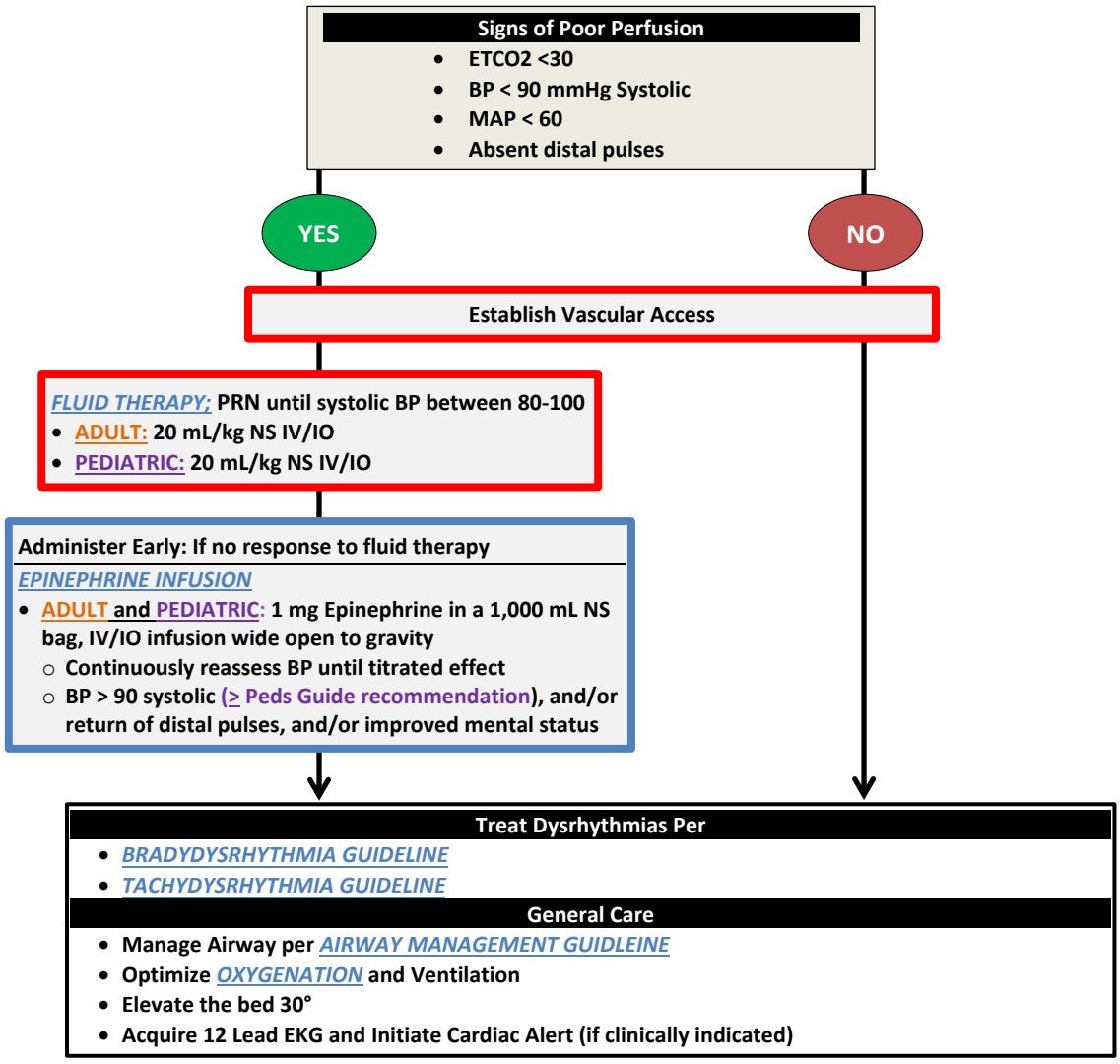
a. A Ventricular Assist Device (VAD) is a mechanical device used to support circulation in a patient with significant ventricular dysfunction.
   - The Left Ventricular Assist Device (LVAD) is typically used to support the left ventricle and provide additional cardiac output.
   - This device can be placed short term to bridge patients until they can receive a heart transplant or long term for people who are not candidates.
   - LVAD patients can be identified by an electric driveline cable that comes directly out of their abdomen and connects to an external control pack powered by two external batteries they will be wearing with a bag, harness or vest. The patient still has underlying heart function and rhythm that can be assessed and treated as appropriate per guidelines.
   - Typically, LVAD patients have no discernible pulse. Blood pressure measurement requires manual BP cuff and Doppler, therefore utilize other parameters for patient assessment (see below).



Return of Spontaneous Circulation (ROSC)

Description

a. The condition of post-resuscitation patients fluctuates rapidly and continuously, close monitoring is required.
b. Try to avoid rapid movement, ensure to assess perfusion status, and stabilize prior to packaging and transport.
   - Initial End tidal CO_2 may be elevated immediately post-resuscitation but will usually normalize. While goal is 35 to 45 mmHg avoid hyperventilation to achieve.
   - Titrate fluid resuscitation and pressor administration to maintain SBP of 90 to 100 mmHg or Mean Arterial Pressure (MAP) of 60 mmHg.



Behavioral Emergencies

Description

a. Behavioral/medical/traumatic emergencies can arise due to anxiety, mental illness, substance abuse or another medical conditions. Symptoms can range from mild to severe. Most behavioral emergencies are mild to moderate in nature and can be managed using verbal de-escalation and/or de-escalation with medication(s).
   - **Mild (RASS 0 to 2):** Behavior which includes irritability, verbal aggression, anxiety, and/or depression.
   - **Moderate (RASS 2 to 3):** Increased restless/irritable behavior that escalates to verbal and/or physical aggression toward self or others.
   - **Severe (RASS 3 to 4):** Behavior which includes poor impulse control, aggressive excitement, non-purposeful movements, and/or unrelenting violent/disruptive behavior **AND** has the potential to require restraint.

IMPROVED MONTGOMERY COUNTY RICHMOND AGITATION SEDATION SCALE (RASS)			
SCORE	**TERM**	**DESCRIPTION**	**EMS ACTIVITY**
+4	**Combative**	Overtly combative, violent, immediate danger to staff	Unsafe to care for patient without maximal assistance, require law enforcement assistance
+3	**Very Agitated**	Pulls or removes tube(s) or catheter(s), aggressive	Struggles aggressively and forcefully against care. Routine EMS care impossible.
+2	**Agitated**	Frequent non-purposeful movement, fights interventions	Resists EMS care, requires gentle physical redirection to allow for routine EMS care
+1	**Restless**	Anxious, but movements are not aggressive or vigorous	Verbally redirectable, follows commands, routine EMS care possible
0	**Alert and Calm**	Calm behavior	
-1	**Drowsy**	Not fully alert but has sustained awakening and eye contact to voice (>10 seconds)	Awakens to voice
-2	**Light Sedation**	Briefly awakens to voice (<10 seconds)	Awakens to bumps/potholes in roadway during transport or application of oxygen via NC or NRB
-3	**Moderate Sedation**	Movement or eye opening to voice (no eye contact)	Eyes open to physical exam, venous tourniquet application and/or BP cuff
-4	**Deep Sedation**	No response to voice, but movement or eye contact to physical stimulation	Responds to insertion of NPA or IV start
-5	**Unarousable**	No response to voice or physical stimulation	No response to insertion of OPA/NPA or IV start
Remember to document the event/behavior in detail within the ePCR			

Indication for Restraint

a. Use restraints **ONLY** if attempts at verbal de-escalation are unsuccessful and when a justifiable behavioral/medical/traumatic emergency is present. This is defined as an underlying behavioral/medical/traumatic condition posing an immediate safety risk to the individual, EMS provider, and/or the public.
   - If restraining a patient will place EMS/Fire personnel in harm's way, providers are allowed to disengage the restraint process.

Restraint Considerations

a. **AVOID PRONE POSITIONING**; transition the patient from the prone position as soon as possible.
b. A restrained patient may never be left unattended.
c. Continuously monitor vital signs and airway to prevent injury, aspiration, or harm.
d. Peace officers shall not use, direct, or unduly influence EMS providers with regards to medical care.
e. Thoroughly document restraint rationale and type utilized, re-evaluations, all persons involved including peace officer, any injury to the patient or provider, as well as patient condition upon hospital transfer of care.
f. If handcuffs are placed by a peace officer, the officer **MUST** accompany EMS during transport in the ambulance or the patient must be transitioned to soft restraints prior to leaving the scene.
g. Be aware of potential complications from preexisting medical conditions with the application of restraints such as obesity, ACS, diabetes etc.

Behavioral Emergencies

Initial assessment
Acquire VS (if possible)
Attempt de-escalation techniques
Respect personal space

NO

Scene Assessment
EMS Provider(s) in harm's way?

YES

Disengage Patient Contact

Suspected Cause

Medical Emergency
Trauma, Endocrine, Infection, and/or hypoxia
Treat per Specific Guideline

Behavioral Emergency
Anxiety/Psych: See below
Suicidal: Use the Assessment Tool

Suicidal Ideation Assessment Tool

1	Wish to be dead, nonspecific active suicidal thoughts without a plan or intent to act
2	Active suicidal ideation with specific plan and intent
3	Preparatory acts (plan, telling friends, writing letters, giving away belongings etc.)
4	Actual, aborted or interrupted attempt

Lower Risk	Higher Risk
May leave in place, see *REFUSAL GUIDELINE*	High consideration for transport if CRT is unavailable

Apply physical Restraints, if indicated
Reassess motor, sensory, and circulation status
If physical restraints are ineffective to allow medical care, reassess the need for chemical intervention

Select Medication Based on Clinical Assessment
Substance Induced Agitation: Benzodiazepines preferred
Psychiatric Induced Agitation: Droperidol preferred

MILD (+1 to +2)

OLANZAPINE: NOT Repeated
- ADULT: 10 mg ODT
- PEDIATRIC >10: 5 mg ODT

OR

DROPERIDOL: PRN every 10 minutes
- ADULT ≥ 13: 2.5 mg IV/IO or 5 mg IM
  - MAX 5 mg
- PEDIATRIC <13: NOT ALLOWED

OR

MIDAZOLAM: PRN every 10 minutes
- ADULT: Up to 1.25 mg IV/IO/IN or 2.5 IM
  - MAX 2.5 mg
- PEDIATRIC ≥ 2: Up to 0.1 mg/kg IV/IO/IN/IM
  - MAX single dose 2.5 mg

MODERATE (+2 to +3)

DROPERIDOL: PRN every 10 minutes
- ADULT ≥ 13: 5 mg IV/IO or 10 mg IM
  - MAX 10 mg
- PEDIATRIC <13: NOT ALLOWED

OR

MIDAZOLAM: PRN every 10 minutes
- ADULT: Up to 2.5 mg IV/IO/IN or 5 mg IM
  - MAX 5 mg
- PEDIATRIC ≥ 2: Up to 0.1 mg/kg IV/IO/IN/IM
  - MAX single dose 2.5 mg

OR

DIAZEPAM: PRN every 10 minutes
- ADULT: Up to 5 mg IV/IO/IM
  - MAX 10 mg
- PEDIATRIC ≥ 2: Up to 0.25 mg/kg IV/IO/IM
  - MAX dose 5 mg

SEVERE (+3 to +4)

DROPERIDOL: PRN every 10 minutes
- ADULT ≥ 13: 10 mg IV/IO/IM
  - MAX 20 mg
- PEDIATRIC <13: NOT ALLOWED

OR

MIDAZOLAM: PRN every 10 minutes
- ADULT: Up to 5 mg IV/IO/IN/IM
  - MAX 10 mg
- PEDIATRIC ≥ 2: 0.1 mg/kg IV/IO/IN/IM
  - MAX single dose 2.5 mg

OR

DIAZEPAM: PRN every 10 minutes
- ADULT: Up to 10 mg IV/IO/IM
  - MAX 20 mg
- PEDIATRIC ≥ 2: Up to 0.25 mg/kg IV/IO/IM
  - MAX dose 5 mg

Establish Vascular Access
Consider *FLUID THERAPY;*
- ADULT: 20 mL/kg NS IV/IO
- PEDIATRIC: 20 mL/kg NS IV/IO

Post Sedation Resuscitation and Monitoring
- Maintain patent airway and *OXYGENATION*
- Early 12-lead EKG if clinically indicated
- Monitor VS closely such as $EtCO_2$, RR, O2 Sat etc.
- If hyperthermia suspected, see *HEAT RELATED EMERGENCY*

E001 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Cerebral Vascular Accident

Receiving Facility Capability Check Availability with EMResource						
Condition	**PMC**	**SFMC**	**MC**	**MN**	**GV**	**CH**
LKN < 4 Hours	A/P	A/P	A/P	A/P	A	P≤17
LKN ≥ 4 to 24 hours	A	X	A	X	X	P≤17
LKN > 24 Hours	A/P	A/P	A/P	A/P	A/P	P≤17
A=Adult, P=Pediatric X=Does not accept						

Stroke Screening

a. Utilize the BE-FAST stroke screening in conjunction with a neurological assessment
b. If there are any positive findings during the exam, consider a stroke alert.
   - **B**alance: Is the person experiencing a sudden loss of balance or coordination?
   - **E**yes: Is the person having a sudden change in vision or trouble seeing, or abnormal pupils?
   - **F**ace: Does one side of the face droop?
   - **A**rms: Does one arm drift?
   - **S**peech: Is their speech slurred or strange?
   - **T**ime: What time did symptoms begin? When was patient last known well?

MSTU Request Criteria

1) +Neurological deficit
- Onset ≤ 12 hours

2) 18 years and above
3) No obvious signs or recent trauma
4) No reported pregnancy

If available, request MSTU anytime last known normal ≤ 12 hours

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS
12-lead EKG if clinically indicated & time allows
Perform neuro/BE-FAST exam & BGL evaluation

Establish Vascular Access

Stroke Center Facilities

1) Facilities that provide TPA
- Grandview
- Memorial Central
- Memorial North
- Penrose Main
- St. Francis

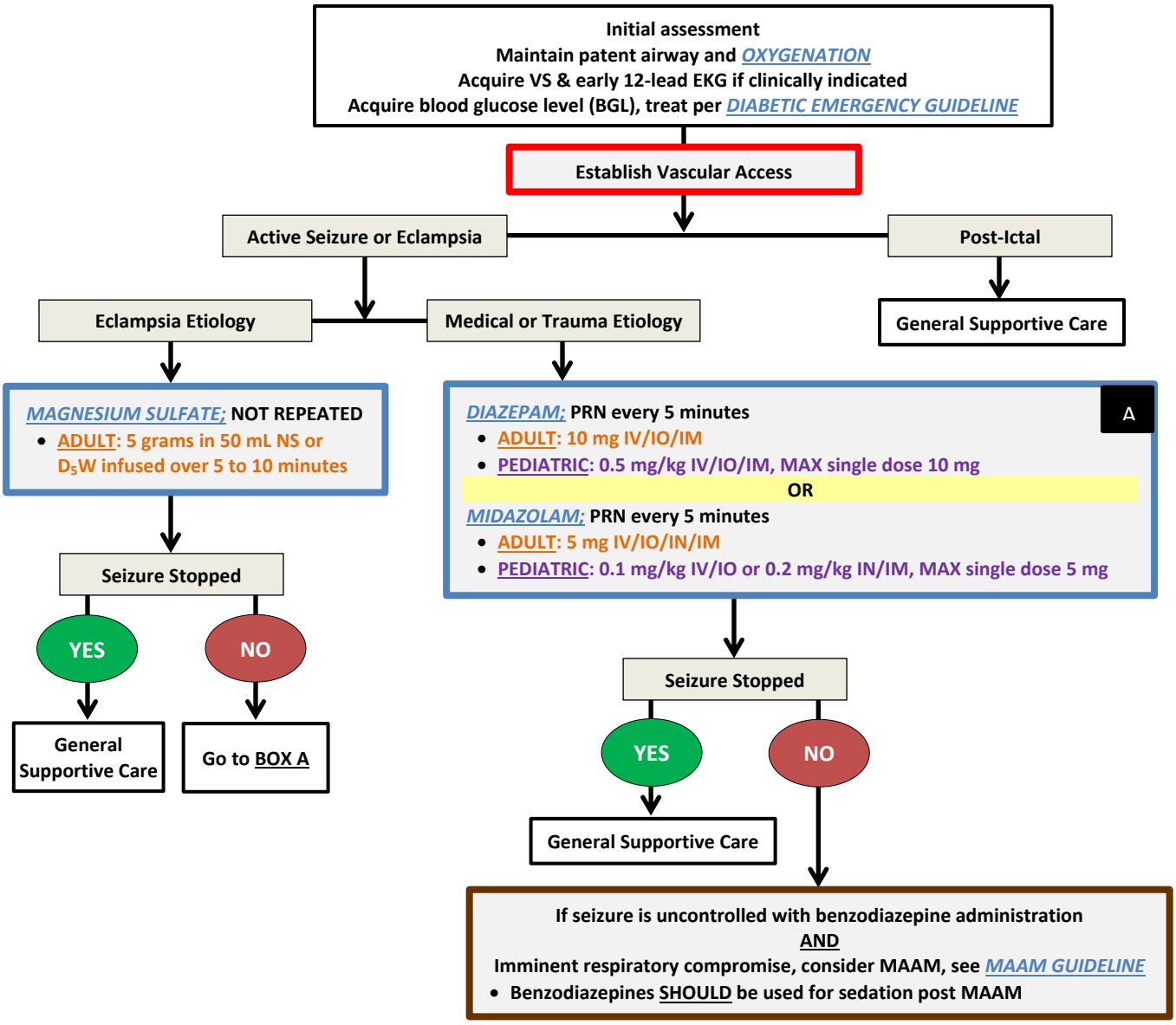
2) Facilities that provide TPA & intracranial intervention treatment
- Memorial Central
- Penrose Main

Last Known Normal ≤ 4 hours	Last Known Normal > 4 to 24 hours Or Unknown Timeframe	Last Known Normal > 24 hours
Activate Stroke Alert	Activate Stroke Alert	Transport to Closest Appropriate Facility
Transport to Closest Facility that Provides TPA	Transport to Closest Facility that Provides Intracranial Intervention	General Supportive Care
General Supportive Care	General Supportive Care	

Special Considerations

- **Be mindful of airway compromise, see *AIRWAY MANAGEMENT GUIDELINE***
- **If allowed, consider MAAM in the patient whose airway is compromised, see *MAAM GUIDELINE***
- **If possible, elevate the head of the bed 30° during transport**
- **If possible, continually monitor EKG**
- **If possible, establish two 18G or larger IV access sites**
- **Not all neurologic deficits are caused by stroke. Look for treatable medical conditions such as hypoglycemia, hyperglycemia, hypothermia, hypoxia, hypotension, encephalopathy, infection, seizure, and/or hyperthermia.**
- **Treat hypoglycemia per *DIABETIC EMERGENCY GUIDELINE***
- **Treat seizures per *SEIZURE GUIDELINE***
- **Treat infection per *SEPSIS/INFECTION GUIDELINE***
- **Treat hyperthermia per *HEAT EMERGENCIES GUIDELINE***
- **There is no substantial evidence of acute blood pressure management in the prehospital setting for acute stroke therefore, hypertension SHOULD just be monitored, avoid excessive fluid administration.**

Seizures

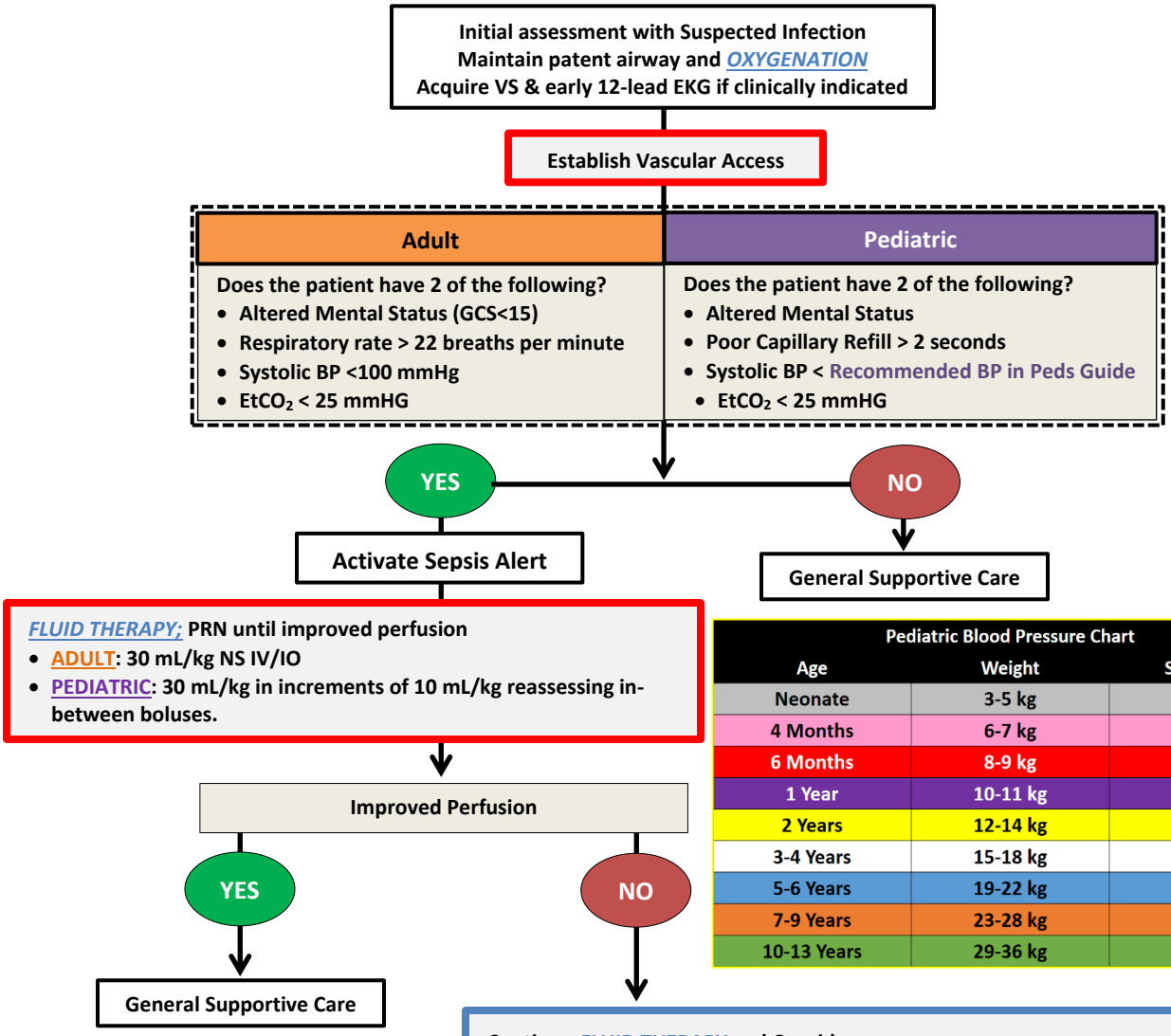


Special Considerations
- Assess possibility of occult trauma and substance abuse - Be prepared to assist ventilations especially if versed is used - In patients over the age of 50, seizures may be due to dysrhythmias or stroke. Of these, dysrhythmia is the most important to recognize in the field. - Consider nonconvulsive status epileptics in the patient with a prolonged post-ictal state that is not improving. Manage this state with continued benzodiazepine administration - Pregnant patients DO NOT need to be actively seizing to administer, if there was witnessed seizure activity prior to arrival the patient SHOULD receive magnesium - Post-Partum seizures can occur up to 6 weeks after delivery and should be administered magnesium sulfate

Sepsis/Infection

Description

a. These patients should be transported to a comprehensive facility capable of facilitating early "surviving sepsis guidelines".
b. Administration of effective intravenous antimicrobials within the first hour of recognition of septic shock and severe sepsis without septic shock is the goal of therapy.
c. Providers **SHOULD** evaluate during transport for potential source of infection (urine, lung exam, full skin exam) and report any potential sources to the receiving hospital.



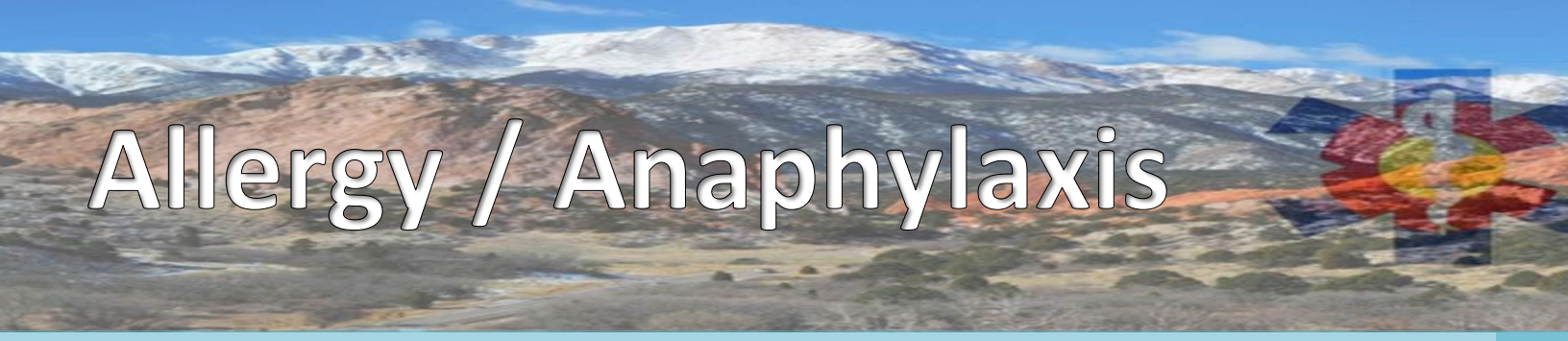
Pediatric Blood Pressure Chart		
Age	Weight	Systolic BP
Neonate	3-5 kg	67-84
4 Months	6-7 kg	65-105
6 Months	8-9 kg	65-105
1 Year	10-11 kg	70-110
2 Years	12-14 kg	75-110
3-4 Years	15-18 kg	75-110
5-6 Years	19-22 kg	90-115
7-9 Years	23-28 kg	90-115
10-13 Years	29-36 kg	95-120

Continue *FLUID THERAPY* and Consider:

EPINEPHRINE INFUSION

- ADULT ONLY: 1 mg Epinephrine in a 1,000 mL NS or 0.5 mg in 500 mL NS, IV/IO infusion wide open to gravity
  - Continuously reassess BP until titrated effect
  - BP > 90 systolic, and/or return of distal pulses, and/or improved mental status

Allergy / Anaphylaxis



Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG if clinically indicated

Establish Vascular Access

Generalized Allergic Reaction

DIPHENHYDRAMINE; NOT REPEATED — **A**
- ADULT: 50 mg bolus IV/IO/IM/PO
- PEDIATRIC: 2 mg/kg bolus IV/IO/IM/PO, NOT to exceed 50 mg

→ General Supportive Care

Moderate to Severe Allergic Reaction or Anaphylaxis

→ Dyspnea

Dyspnea: YES
EPINEPHRINE 1:1,000; PRN every 3-5 minutes
- ADULT: 0.5 mg IM
- PEDIATRIC: 0.01 mg/kg (0.01 mL/kg) IM

ALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 2.5 mg in 3 mL NS
- PEDIATRIC <2: 1.25 mg in 3 mL NS

OR

LEVALBUTEROL; PRN every 10 minutes
- ADULT and PEDIATRIC >2: 1.25 mg in 3 mL NS, MAX 7.5 mg
- PEDIATRIC <2: 1.25 mg in 3 mL NS, MAX 3.75 mg

IPRATROPRIUM; PRN every 15 minutes
- ADULT: 0.5 mg in 3 mL via neb
- PEDIATRIC: 0.25 mg in 3 ml via neb

Consider (severe cases)

CONTINOUS NEB
- ADULT: 7.5 mg of *ALBUTEROL* in 9 mL via neb
- PEDIATRIC: NOT ALLOWED

Dyspnea: NO → Signs of Poor Perfusion

Signs of Poor Perfusion: YES
EPINEPHRINE 1:1,000; PRN every 3-5 minutes
- ADULT: 0.5 mg IM
- PEDIATRIC: 0.01 mg/kg (0.01 mL/kg) IM

DEXAMETHASONE; NOT REPEATED
- ADULT: 10 mg IV/IO/IM/PO
- PEDIATRIC: 0.6 mg/kg up to a MAX of 10 mg IV/IO/IM/PO

OR

METHYLPREDNISOLONE; NOT REPEATED
- ADULT: 125 mg IV/IO/IM/PO
- PEDIATRIC: 2 mg/kg IV/IO/IM/OP MAX of 125

DIPHENHYDRAMINE; NOT REPEATED
- See BOX A for dosing

Consider CPAP (if dyspnea unresolved)
- ADULT: see *CPAP PROCEDURE*
- PEDIATRIC: see *CPAP PROCEDURE*

Signs of Poor Perfusion: NO → Go to BOX A

Special Considerations
- EMT may use EpiPen auto injector if available whenever epinephrine IM indicated.
- Consider *FLUID THERAPY* to treat hypotension
- Lethal edema may be localized to the tongue; uvula or other parts of the upper airway and restrict air flow. Examine closely and be prepared for early intubation before swelling compromises airway.
  - If clinically indicated consider MAAM, see *MAAM GUIDELINE*
- Be cautious when administering epinephrine in patients >50 years of age, those with cardiac disease, and/or those with HR >150.
  - 12-lead EKG SHOULD be completed

Consider CPAP (if dyspnea unresolved): NO → Conditioned Improved

Conditioned Improved: YES → General Supportive Care

Consider: Severe Cases

EPINEPHRINE INFUSION
- ADULT and PEDIATRIC: 1 mg Epinephrine in a 1,000 mL NS or 0.5 mg in 500 mL NS, IV/IO infusion wide open to gravity
  - Continuously reassess BP until titrated effect
  - BP > 90 systolic (≥ Peds Guide recommendation), and/or return of distal pulses, and/or improved mental status

E005 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Poisoning and Overdose

Description

a. Although there are some nuances to each individual poison and/or overdose the general treatment is predominantly the same and includes: scene safety, maintain airway patency, treat for shock when clinically indicated and transport to the closest appropriate facility.
   - The prehospital provider is not expected to know every substance in an overdose or poisoning but rather the general classification or toxidrome (see below).

b. Consider contacting Poison Control at **1-800-222-1222**
   - Poison Control may assist in allowing a patient to stay at home for nontoxic ingestions/exposures as well as assist in the management of toxic ingestions.
   - A release of care (refusal) **MUST** be completed if the patient is not transported

Special Considerations

a. Symptoms differ, but certain common syndromes may suggest particular toxidrome
   - Different patients poisoned with the same substance may present with very different symptoms.
   - Patients who have multiple substances are less likely to have symptoms characteristic of a single substance
   - Consider treating a suspected antihistamine overdose similar to a TCA overdose

b. There are few specific "antidotes." Product labels and home kits can be misleading and dangerous.

c. Do not neutralize acids with alkalis. Do not neutralize alkalis with acids. These "treatments" cause heat-releasing chemical reactions that can further injure the GI track.

d. A commonly missed external contamination is gasoline. Be sure that gasoline spilled on trauma victims is washed off promptly and clothing removed to prevent irritant burns.

e. Inhalation poisoning is particularly dangerous to rescuers. Recognize an environment with continuing contamination, don proper PPE, and extricate rapidly or avoid altogether.

f. Treat seizures per ***SEIZURE GUIDELINE***

g. Treat nausea and vomiting per the ***NAUSEA VOMITING GUIDELINE***

h. If the patient is presenting with withdrawal symptoms, treat per ***BEHAVIORAL EMERGENCY GUIDELINE***

i. **DO NOT** rely on patient history of ingestion, especially in suicide attempts

j. If applicable, consider ***HAZMAT and DECON GUIDELINE***

Specific Toxidrome Information

Toxidrome Findings								
Toxidrome	**Mental Status**	**Pulse**	**RR**	**BP**	**Pupil**	**Skin**	**Temp**	**Specific Medication**
Opiate	**Depressed**	↓	↓	↓	**Pinpoint**	**Cool**	↓	**Narcan**
Sedative-hypnotic	**Depressed**	↓	↓	↓	**Normal**	**Normal**	**Normal**	**NA**
Sympathomimetic	**Agitated**	↑	**Normal**	↑	**Dilated**	**Diaphoretic**	↑	**Benzodiazepine**
Cholinergic	**Agitated**	↑↓	**Normal**	↑↓	**Dilated**	**Diaphoretic**	**Normal**	**Atropine**
Anticholinergic	**Agitated/delirium**	↑	↑↓	↑↓	**Dilated**	**Dry**	↑	**Benzodiazepine**
Withdrawal Syndromes								
Opioids	**Agitated**	↑	↑	↑	**Dilated**	**Normal to wet**	↑	**Opioid**
Sedative-hypnotic	**Normal**	↑	**Normal**	↑	**Dilated**	**Wet**	**Normal**	**Benzodiazepine**

Poisoning and Overdose

Initial Assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG if clinically indicated
Identify substance

Establish Vascular Access, Consider *FLUID THERAPY*

Signs of Poor Perfusion

- **YES** → **Specific Substance**
- **NO** → **General Supportive Care**

Specific Substance

- **Beta Blocker**
- **Calcium Channel Blocker**
- **Tricyclic or other Na+ Channel Blocker or antihistamine with QRS >100 ms**

Beta Blocker

GLUCAGON; **PRN x 1 if available**

- **ADULT: Maximum available dose up to 5 mg IV/IO**
- **PEDIATRIC: 0.1 mg/kg IV/IO/IM**

Consider

ATROPINE; **PRN every 1 minute for symptom resolution**

- **ADULT: 1 mg bolus IV/IO**
- **PEDIATRIC: 0.02 mg/kg bolus IV/IO**

Consider (if refractory to glucagon AND epinephrine infusion)

CALCIUM CHLORIDE; **PRN every 10 minutes to a MAX of 3 doses**

- **ADULT: 1 gram slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: 20 mg/kg slow bolus over 2 to 5 IV/IO; NOT to exceed 1 gram**

OR

CALCIUM GLUCONATE; **PRN every 10 minutes to a MAX of 3 doses**

- **ADULT: 3 grams slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: 60 mg/kg slow bolus over 2 to 5 minutes IV/IO; NOT to exceed 1 gram**

Calcium Channel Blocker

CALCIUM CHLORIDE; **PRN every 10 minutes to a MAX of 3 doses**

- **ADULT: 1 gram slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: 20 mg/kg slow bolus over 2 to 5 IV/IO; NOT to exceed 1 gram**

OR

CALCIUM GLUCONATE; **PRN every 10 minutes to a MAX of 3 doses**

- **ADULT: 3 grams slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: 60 mg/kg slow bolus over 2 to 5 minutes IV/IO; NOT to exceed 1 gram**

GLUCAGON; **PRN x 1 if available**

- **ADULT: Maximum available dose up to 5 mg IV/IO**
- **PEDIATRIC: 0.1 mg/kg IV/IO/IM**

Tricyclic or other Na+ Channel Blocker or antihistamine with QRS >100 ms

SODIUM BICARBONATE; **PRN until cessation of seizures or QRS shortens to <100 ms (if applicable)**

- **ADULT and PEDIATRIC >2: 100 mEq bolus IV/IO of an 8.4% solution**
- **In severe cases consider drip; Mix 150 mEq (150 mL) in 1,000 mL NS and administer at 200 mL/hr**

Consider (If perfusion does NOT improve in any poisoning or overdose)

EPINEPHRINE INFUSION

- **ADULT and PEDIATRIC: 1 mg Epinephrine in a 1,000 mL NS or 0.5 mg in 500 mL NS, IV/IO infusion wide open to gravity**
  - **Continuously reassess BP until titrated effect**
  - **BP > 90 systolic (≥ Peds Guide recommendation), and/or return of distal pulses, and/or improved mental status**

Poisoning and Overdose

Organophosphate

DUMBELLS Signs

Consider Scene Safety

ATROPINE; **PRN every 1 minute for symptom resolution**

- **ADULT: 2 mg bolus IV/IO**
- **PEDIATRIC: 0.05 mg/kg bolus IV/IO**

Stimulant

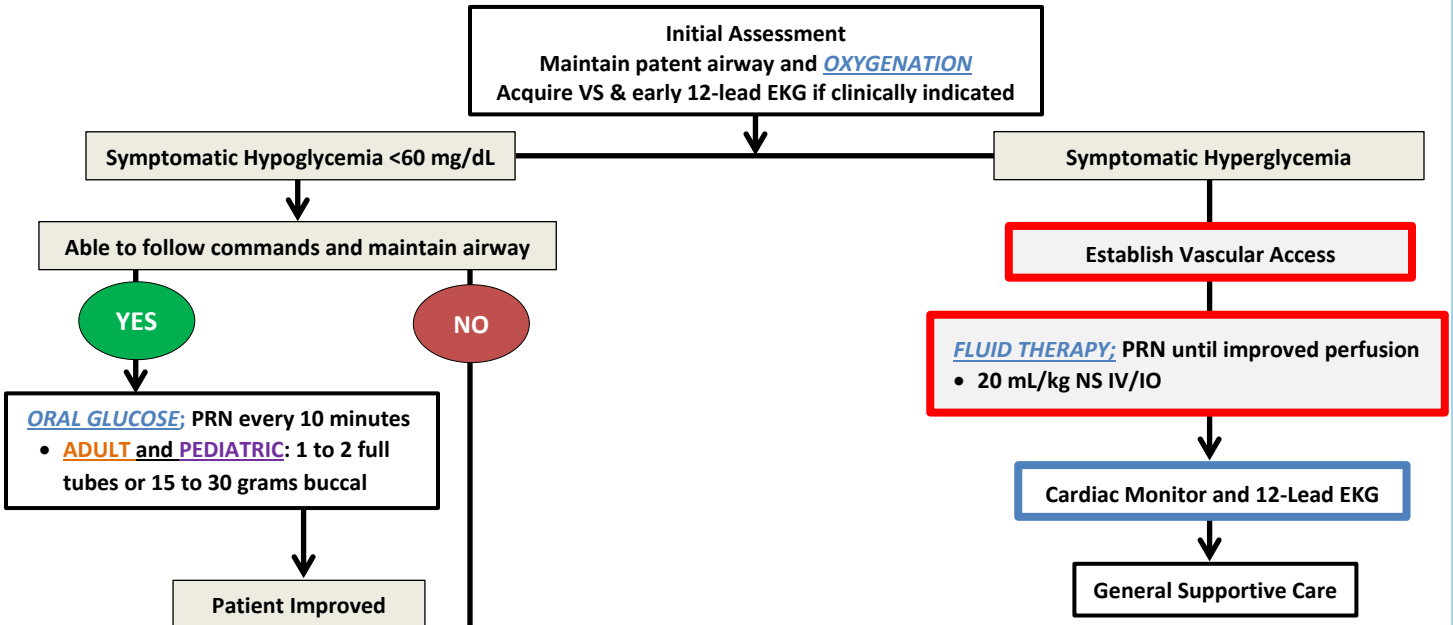
Treat per *BEHAVIORAL EMERGENCY GUIDELINE*

Opioid

NALOXONE; **PRN until desired effect**

- **ADULT: Initial dose at 0.5 mg to 1 mg bolus IV/IO/IM/IN**
  - **2nd dose PRN: 1 mg to 2 mg**
  - **3rd dose PRN: 2 mg to 4 mg**
  - **If patient symptoms redevelop consider repeating at last therapeutic dose**
  - **If symptoms do not improve at 4 mg, consider other causes**
- **PEDIATRIC:**
  ***>20 kg*: 0.5 mg bolus IV/IO/IM/IN titrate up to 2 mg TOTAL**
  ***<20 kg*: 0.01 mg/kg bolus IV/IO/IM/IN up to 2 mg**

Diabetic Emergency



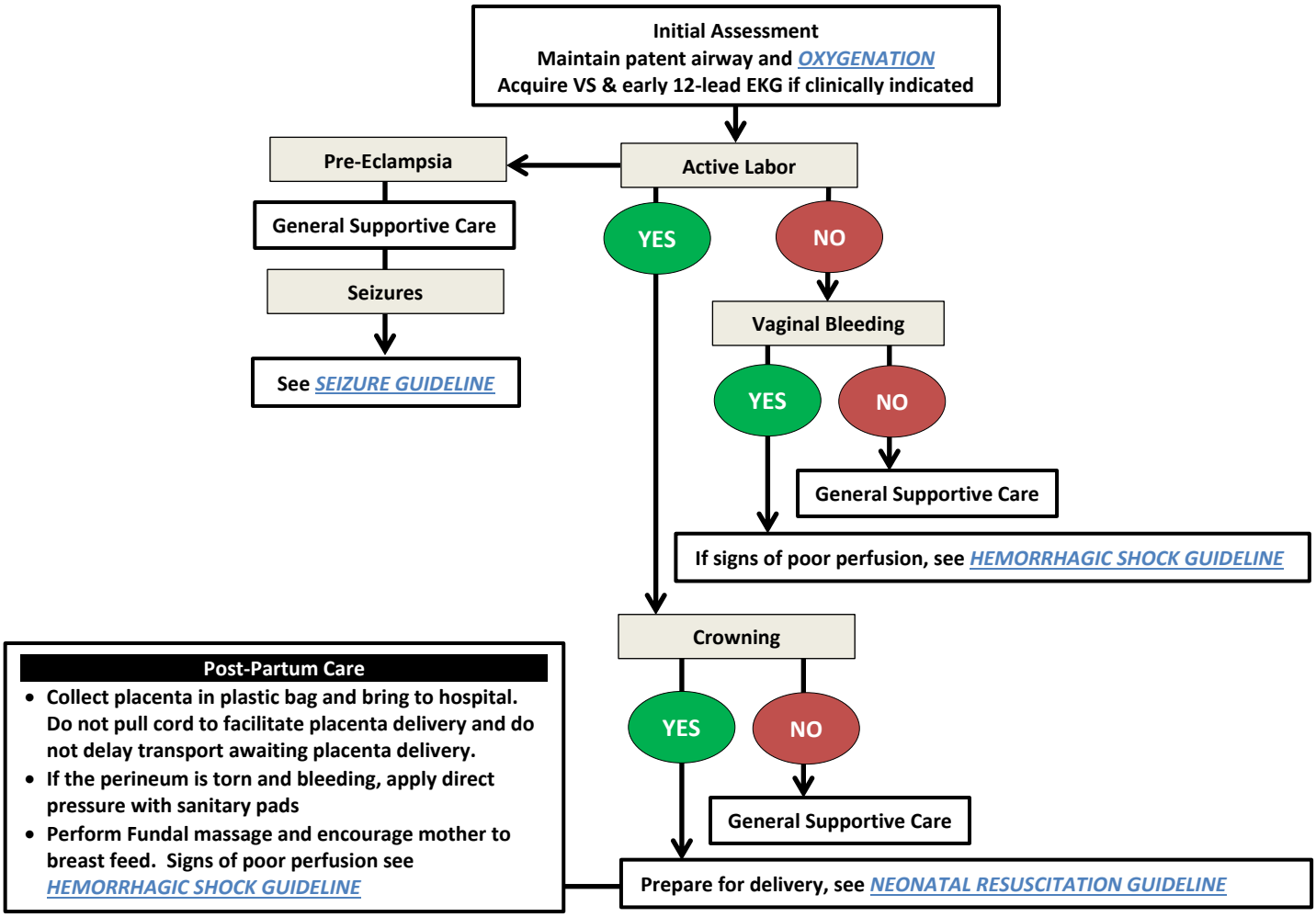
Special Considerations

- DO NOT let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Hyperglycemia may aggravate cerebral edema in a patient with a cerebral vascular accident. A BGL should always be determined prior to administration of glucose.
- Hyperglycemia is treated with fluids. These patients are volume depleted, glucose will begin to clear with adequate hydration
- If hypoglycemic patients have returned to baseline and wish to refuse care make certain that the patient eats complex carbohydrates and that there is someone to observe them for repeat hypoglycemic episodes. See *REFUSAL GUIDELINE*
- If symptoms do not resolve after treatment, consider other causes
- A sugary juice mixture or similar product can be substituted for *ORAL GLUCOSE*

OB/GYN Emergency

Receiving Facility Capability						
Check Availability with EMResource						
Condition	PMC	SFMC	MC	MN	GV	CH
Pregnancy < 20 Weeks	A/P	A/P	A/P	A/P	A	X
Pregnancy ≥ 20 Weeks	X	A/P	A/P	A/P	X	X
Breech	A/P	A/P	A/P	A/P	A/P	X

A=Adult, P=Pediatric X=Does not accept



Post-Partum Care

- Collect placenta in plastic bag and bring to hospital. Do not pull cord to facilitate placenta delivery and do not delay transport awaiting placenta delivery.
- If the perineum is torn and bleeding, apply direct pressure with sanitary pads
- Perform Fundal massage and encourage mother to breast feed. Signs of poor perfusion see HEMORRHAGIC SHOCK GUIDELINE

Special Considerations

- Patient with prolapsed cord should be placed in left lateral recumbent position in Trendelenburg. The knee-chest position is generally described as the preferred position, but seems difficult to perform safely in a moving vehicle. If adequate restraints are available to *comfortably* and *safely* restrain, knee-chest may be preferred.
- Breech presentation should be placed in the knee to chest position
- Supine hypotension occurs after 20 weeks in some women, due to compression of the Inferior Vena Cava by the gravid uterus. The left lateral recumbent position is optimum for avoiding this.
- Treat pain per PAIN MANAGEMENT GUIDELINE
- Treat nausea/vomiting per NAUSEA VOMITING GUIDELINE
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring.
- Consider transport to the closest emergency department for any one of the following conditions;
  - Abnormal presentation
  - Severe vaginal bleeding
  - Cardiac arrest with gestation ≥23 weeks

OB Breech Emergency

Receiving Facility Capability Check Availability with EMResource						
Condition	PMC	SFMC	MC	MN	GV	CH
Pregnancy < 20 Weeks	A/P	A/P	A/P	A/P	A	X
Pregnancy ≥ 20 Weeks	X	A/P	A/P	A/P	X	X
Breech	A/P	A/P	A/P	A/P	A/P	X

A=Adult, P=Pediatric X=Does not accept

Initial Assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG if clinically indicated

Type of Complication

Breech

- 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

Deliver the leg

Deliver the other leg

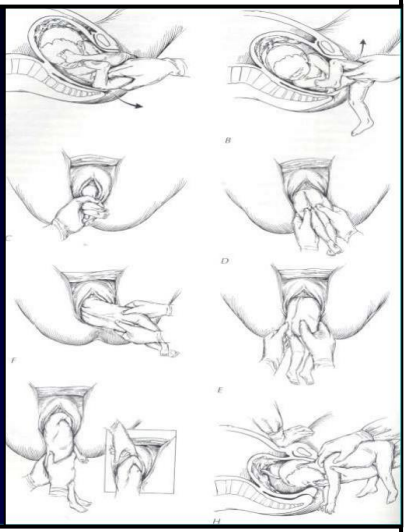
Grasp ankles, deliver to the umbillicus

Keep sacrum anterior, deliver to the clavicles

Rotate 90° deliver right arm

Rotate 180° to deliver the left arm

Keep fingers over maxillary process and deliver the head keeping body parallel



Prepare for delivery, see *NEONATAL RESUSCITATION GUIDELINE*

General Supportive Care
Rapid Transport to closest appropriate facility

Cord Presentation

Wrapped Around the Neck?

YES

Nuchal Cord

- Gently maneuver and loosen the cord off the neck
- If not possible, consider clamping and cutting the cord in place

Prepare for delivery, see *NEONATAL RESUSCITATION GUIDELINE*

NO

Prolapsed Cord

- Elevate the presenting part
- Consider knee chest position
- Manually insert 2 fingers into the vagina and push the presenting part upwards to alleviate pressure
- Keep cord warm and moist

General supportive care
Rapid Transport to closest appropriate facility

Special Considerations

- These techniques may not be feasible in all situations or does every OB complication be expected or well managed in the field. This guideline should be considered "best advice" for rare, difficult scenarios. In every case, initiate immediate transport to definite care
- Breech presentation occurs in 3–4% of term deliveries and is more common preterm
- ***Shoulder Dystocia***: Be sure to support the head and facilitate delivery by placing mother with buttocks just off the end of bed, flex her thighs upward and apply gentle open hand pressure above the pubic bone.
- Treat seizures per *SEIZURE GUIDELINE*
- Treat pain per *PAIN MANAGEMENT GUIDELINE*
- Treat nausea/vomiting per *NAUSEA VOMITING GUIDELINE*

Epistaxis

Description

a. If suspected trauma evaluates for septal hematoma
b. If using *TRANEXAMIC ACID* to control a nosebleed **DO NOT** use *NEOSYNEPHRINE*

Initial assessment
Maintain patent airway and *OXYGENATION*
Acquire VS & early 12-lead EKG if clinically indicated

Establish vascular access

Bleeding from one or both nares?

YES

***FLUID THERAPY;* If needed, consider**
- **20 mL/kg NS IV/IO**

TRANEXAMIC ACID
- **ADULT: 250 mg Topical or IN, repeat PRN**
- **PEDIATRIC: 100 mg (1 mL) Topical or 50 mg (0.5 mL) IN; Repeat PRN**
  - **Have the patient clear the nostrils (blow nose)**
  - **Place TXA on onto a 2x2 gauze pad or cotton ball**
  - **Insert TXA soaked pad into affected nostril(s)**
  - **Apply nose clamps**

Other Option if TXA Unavailable
PHENYLEPHRINE
- **Have the patient clear the nostrils (blow nose)**
- **Administer 2 sprays to each nostril with patient gently sniffing**
- **Apply nose clamps**

General Supportive Care

NO

General Supportive Care

Special Considerations

- There is no clear association with hypertension and nose bleeds, complete a thorough medical and trauma assessment.
- Often nose bleeds are associated with patients taking anticoagulants or antiplatelet medications try to attain a medication list for the receiving facility.
- If the ADULT patient refuses the TXA then treat with direct pressure and *PHENYLEPHRINE*
  - Follow the PEDIATRIC algorithm
- Let the receiving hospital know if TXA was used to control the nose bleed

Alcohol Withdrawal

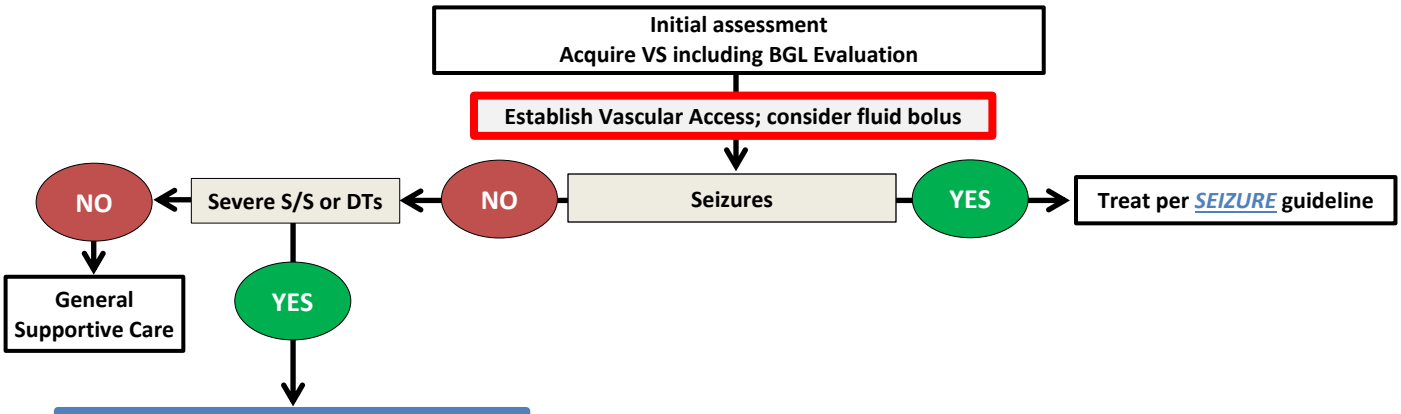
Description

a. Alcohol withdrawal symptoms usually appear when an individual discontinues or reduces alcohol intake after a period of prolonged consumption. In most cases, mild symptoms may start to develop within hours of the last drink. It has a broad range of symptoms from mild tremors to a condition called delirium tremens, which results in seizures and could progress to death if not recognized and treated promptly.

- Severe symptoms include hypertension/tachycardia AND two or more of the following:
  i. Severe tremors, even with arms not extended: tested by "arms extended and fingers spread apart."
  ii. Drenching sweats
  iii. Continuous tactile disturbances: ask "Have you had any itching, pins and needles sensation, any burning, any numbness, or do you feel bugs crawling on or under your skin?"
  iv. Continuous auditory disturbances: ask "Are you more aware of sounds around you? Are they harsh? Do they frighten you? Are you hearing anything that is disturbing to you? Are you hearing things you know are not there?"
  v. Continuous visual disturbances: ask "Does the light appear to be too bright? Is its color different? Does it hurt your eyes? Are you seeing anything that is disturbing to you? Are you seeing things you know are not there?"
- Delirium Tremens (DTs): Severe form of alcohol withdrawal that can be life-threatening if not treated properly. DTs usually begin 48 hours after last alcohol consumption and is most severe 4-5 days after last alcohol consumption. Typical duration of DTs is 2-3 days but can last up to 8 days.

Special Considerations

a. Acute Illness/Injury: abnormal vital signs, physical complaint that may indicate underlying illness/trauma, seizure, hypoglycemia, trauma, head injury.
b. Obtain a RASS score before and after administration of sedation.



E011 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

General Trauma Management

Description

a. Traumatic injuries require prompt care and transportation.
b. Any chest or abdominal injuries, and all head injuries that result in a change or loss of consciousness, **SHOULD** receive an emergency department evaluation unless refused by a decisional patient or guardian, see *PATIENT REFUSAL GUIDELINE*
c. Always have a high index of suspicion for injury based on mechanism of injury in conjunction with pertinent medical history.
d. All trauma treatment guidelines cover both adult and pediatric injuries.
e. For pediatrics, reference Pediatric Field Guide, Broselow Tape, Handtevy Guide or approved apps.

Special Considerations

a. $EtCO_2$ **SHOULD** be utilized in any major trauma to help identify early signs of hypoperfusion.
   - **MUST** be used (if available) in all severe TBI patients to manage eucapnea and avoid hyper or hypoventilation
b. Certain trauma situations call for assessment and treatment that goes beyond the standard treatment given for the patient's presenting complaints and injury.
c. Prompt recognition of compensated shock/injuries, aggressive prehospital interventions, and rapid transport to the closest appropriate facility will most likely improve outcomes.
   - Scene times in traumatic injuries should be **10** minutes or less if possible.
   - Invasive treatments should be performed en route.
   - Early notification to receiving facility will allow time to prepare for appropriate personnel and equipment.
d. Trauma in pregnancies can complicate assessment and treatment. Patients with any thoracic, abdominal, or pelvic complaint/injury may require prolonged fetal monitoring in the facility; this is true even if asymptomatic or seemingly minor mechanism. Encourage transport of all patients.
   - Avoid supine position, place in left lateral recumbent ≥30°
   - Interpret VS with caution due to increased heart rate, decreased blood pressure, and increased blood volume
   - Traumatic cardiac arrest with suspected gestation ≥23 weeks indicates rapid transport to closest appropriate facility for peri-mortem c-section consideration.

Initial Assessment
Consider C-spine precautions; see *SPINAL MOTION RESTRICTION GUIDELINE*
Treat for shock, if clinically indicated
If applicable, control bleeding;
- **Direct pressure and/or**
- **Tourniquet and/or**
- **Hemostatic agent and/or**
- **Pressure point and/or**
- **Pelvic binder and/or**
- **Wound packing (junctional injuries ONLY)**

Maintain patent airway and *OXYGENATION*
Monitor $EtCO_2$ and Obtain VS and maintain 36°C (96.8°F) or greater body temperature
Complete a neurologic exam, if clinically indicated

Establish Vascular Access, if Clinically Indicated

Type of Trauma

Isolated/Multisystem	Cardiac Arrest
HEAD/FACE/NECK/SPINAL	*BLUNT/PENETRATING*
CHEST/ABDOMEN/PELVIS	
EXTREMITY/AMPUTATION	
BURNS	

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Back Button

Hemorrhagic Shock

If applicable, control bleeding
- Direct pressure and/or
- Tourniquet and/or
- Hemostatic agent and/or
- Pressure point
- Pelvic binder
- Wound packing (junctional injuries)

↓

Establish Vascular Access

↓

Signs and Symptoms of Poor Perfusion

- **YES** → **Manage Heat Loss**
  Apply Space Blanket
- **NO** → **General Supportive Care**

FLUID THERAPY: PRN until restoration of distal pules, improved mental status and/or permissive hypotension levels reached (80 to 100 systolic or ≥ Peds Guide recommendation)
- **10 mL/kg NS IV/IO**

↓

Suspected Shock ≤ 3 Hours
AND
NO Contraindications for TXA Found

- **YES** → **_TRANEXAMIC ACID_: NOT REPEATED**
  - **ADULT: 2 grams in 50 mL NS or D_5W over 10 minutes, IV/IO**
  - **PEDIATRIC 30 mg/kg MAX dose of 2 grams**
- **NO** → **General Supportive Care**

Pediatric Blood Pressure Chart

Age	Weight	Systolic BP
Neonate	3-5 kg	67-84
4 Months	6-7 kg	65-105
6 Months	8-9 kg	65-105
1 Year	10-11 kg	70-110
2 Years	12-14 kg	75-110
3-4 Years	15-18 kg	75-110
5-6 Years	19-22 kg	90-115
7-9 Years	23-28 kg	90-115
10-13 Years	29-36 kg	95-120

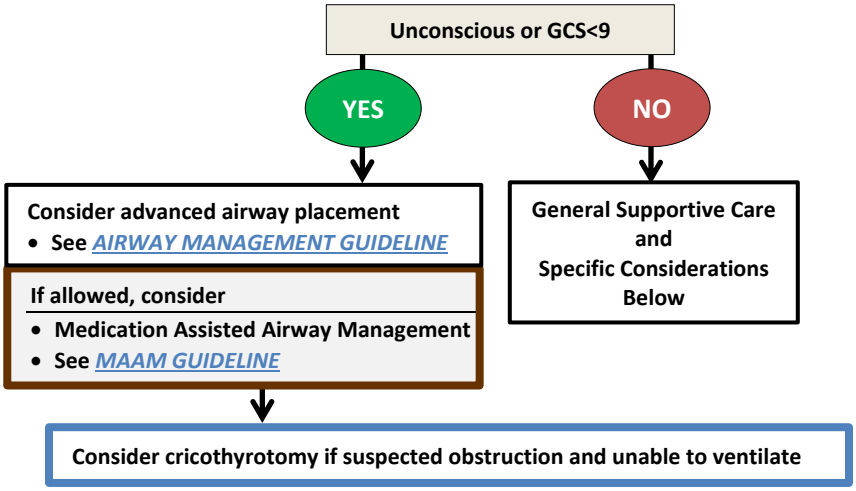
Special Considerations
- These patients should be transported to a designated trauma center (see _DESTINATION GUIDELINE_)
- Poor perfusion in the pediatric patient includes the "fatal five" which are tachycardia, altered mental status, respiratory compromise, decreased or absent peripheral pulses, and delayed capillary refill (> 2 seconds).
- Be mindful of the “Triad of Death” which includes hypothermia, coagulopathy, and acidosis. Be sure to keep the patient warm and be cautious of excessive fluid administration
- If patient meets Trauma Activation criteria, interventions SHOULD be performed en route to the facility to minimize scene time.
- Make sure to maintain the blood pressure between 80 and 100 mmHg systolic (permissive hypotension)

Face, Neck and Spine Injuries

Description

a. Although there are some nuances to each individual injury the general treatment is predominantly the same and includes: control all major bleeding, maintain airway patency, consider cervical spine precautions, consider pain management, and treat for shock when clinically indicated and rapid transport to the closest appropriate facility.

b. If stable consider pain management, see *PAIN MANAGEMENT GUIDELINE*



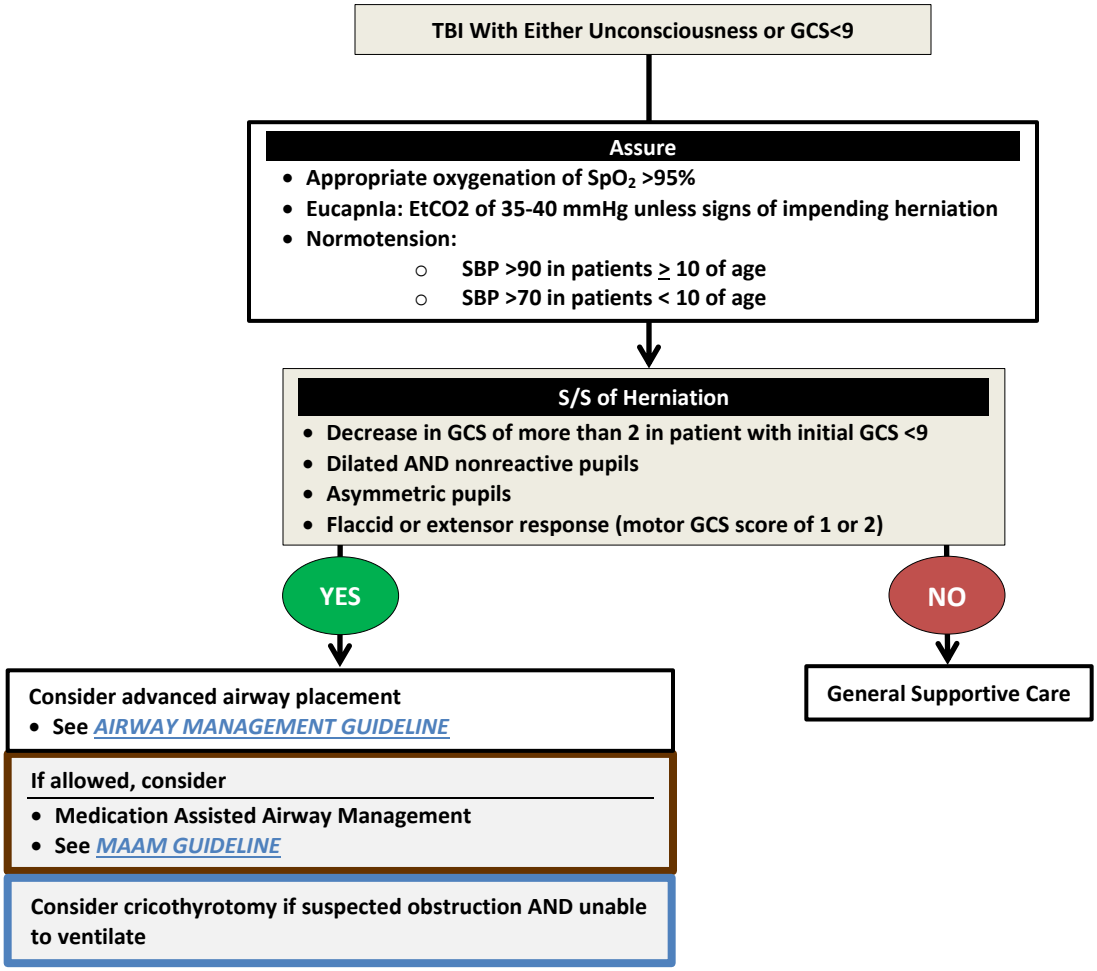
Specific Considerations

- **HEAD and FACE INJURIES:**
  - Treat seizures per *SEIZURE GUIDELINE*
  - Treat agitation per *BEHAVIORAL EMERGENCY GUIDELINE*
  - Obtain BGL value
  - Cover/protect both eyes as clinically indicated
  - Do not try to block drainage from ears or nose
  - Save avulsed teeth in saline-soaked gauze, do not scrub clean
- **NECK and SPINAL INJURIES:**
  - Consider occlusive dressing for penetrating neck wounds
  - If hypotension is unresponsive to simple measures, it is likely due to other injuries. Neurologic deficits make these other injuries hard to evaluate. Cord injury above the level of T-8 removes tenderness, rigidity, and guarding as clues to abdominal injury.
  - Spinal Motion Restriction (SMR) NOT indicated for penetrating trauma.
- **HYPOTENSION:**
  - If signs of poor perfusion due to suspected bleeding, see *HEMORRHAGIC SHOCK GUIDELINE*
  - If signs of poor perfusion unresponsive to fluid therapy and HIGH suspicion of neurogenic shock, consider *EPINEPHRINE INFUSION*
- **ATHLETIC EQUIPMENT:**
  - DO NOT remove helmet or shoulder pads prior to EMS transport unless they are interfering with the management of acute life-threatening injuries.
    - If the helmet or shoulder pads are removed, then BOTH MUST be removed to keep spinal alignment.
    - Consider removing equipment for long transports
  - The helmet and pads should be considered one unit. Therefore, if one is removed, then the other should be removed as well to assure neutral spinal alignment.
  - All athletic equipment is NOT the same and athletic trainers on scene should be familiar with equipment

Traumatic Brain Injury (TBI)

Description

a. In traumatic brain injuries, obtain BGL value, elevate head 30° if possible and if applicable, position cervical splinting to avoid impeding vascular drainage
b. Treat seizures per ***SEIZURE GUIDELINE***
c. Treat agitation per ***BEHAVIORAL EMERGENCY GUIDELINE***

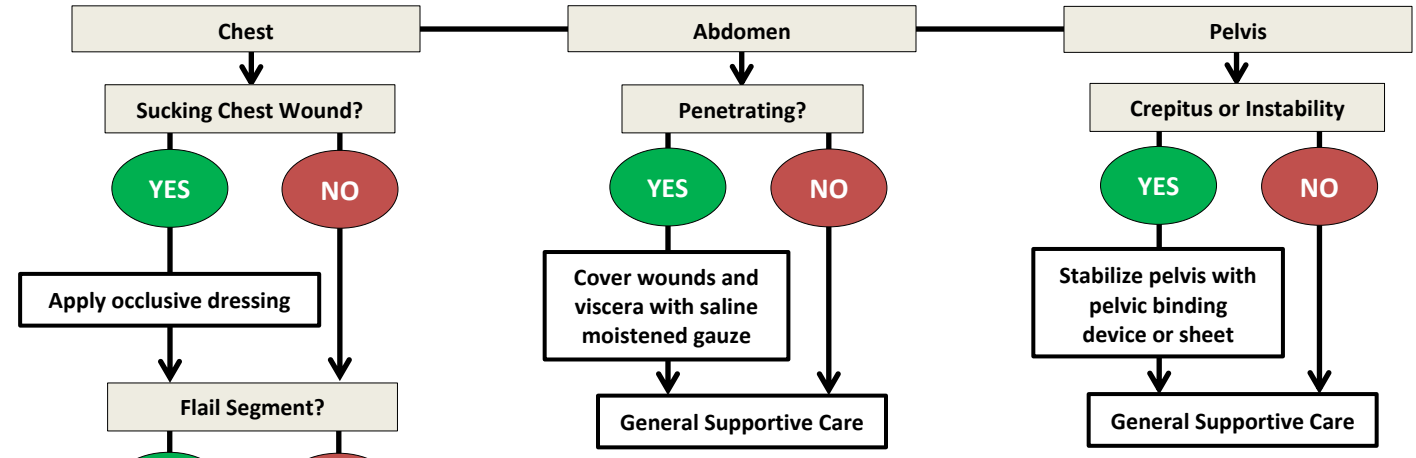


Chest, Abdomen, and Pelvic Injuries

Description

a. Although there are some nuances to each individual injury the general treatment is the predominantly same and includes, control all major bleeding, maintain airway patency, consider cervical spine precautions, consider pain management, treat for shock when clinically indicated, and rapid transport to the closest appropriate facility.

b. If stable consider pain management, see *PAIN MANAGEMENT GUIDELINE*



Perform *NEEDLE DECOMPRESSION*

If imminent respiratory failure and If approved, consider:

- Medication Assisted Airway Management
- See *MAAM GUIDELINE*

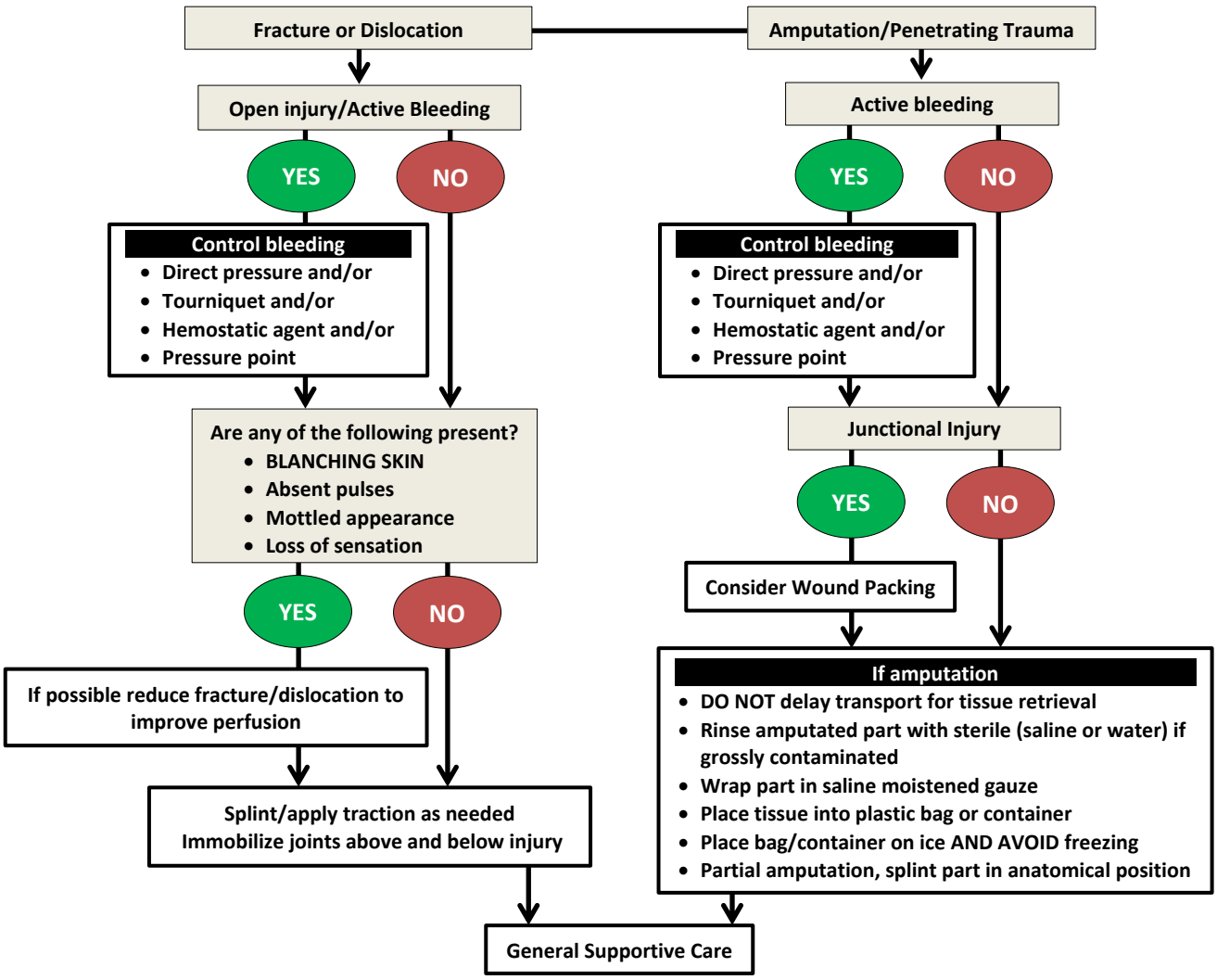
Special Considerations

- **CHEST:**
  - Consider medical causes of respiratory distress such as asthma, pulmonary edema or COPD that have either caused trauma or been aggravated by it.
  - Consider medical cause in any car crash
  - Chest injuries sufficient to cause respiratory distress are commonly associated with significant blood loss. Look for hypovolemia
- **ABDOMEN:**
  - The extent of abdominal injury is difficult to assess in the field. Be very suspicious with significant blunt trauma; injuries to multiple organs is often the case.
  - Patients with spinal cord injury or altered sensation due to drugs, alcohol, or head injury may not complain of tenderness and may lack guarding in the presence of significant intra-abdominal injury.
- **PELVIS:**
  - Immediate treatment of pelvic fractures is centered on controlling life-threatening injuries, particularly severe hemorrhage. Commercial pelvic binders can be used but the simplest method to decrease pelvic volume is to wrap a sheet securely around the patient's pelvis.
  - When applying, ensure placement returns the pelvis to anatomical position per manufacturer recommendations and DO NOT OVER TIGHTEN
- **HYPOTENSION:**
  - If signs of poor perfusion due to suspected bleeding, see *HEMORRHAGIC SHOCK GUIDELINE*

Extremity/Amputation Injuries

Description

a. Although there are some nuances to each individual injury the general treatment is the predominantly same and includes, control all major bleeding, maintain airway patency, consider cervical spine precautions, consider pain management, treat for shock when clinically indicated, and rapid transport to the closest appropriate facility.
b. If signs of poor perfusion due to suspected bleeding, see ***HEMORRHAGIC SHOCK GUIDELINE***
c. If stable, consider pain management, see ***PAIN MANAGEMENT GUIDELINE***
d. Peripheral neurovascular status **SHOULD** be documented on all extremity injuries and before and after splinting procedures.
e. Document approximate time of injury
f. **DO NOT** allow severely angulated, open, bloody fractures to distract you from life threatening injuries
g. Approved dislocation reduction locations limited to patella and ankles
    a. If attempt to relocate injury is unsuccessful after 3 attempts, splint in position found and transport.
h. Consider ***CEFAZOLIN*** with suspected open extremity fracture or amputation proximal to the hand or foot



Burn Injuries

Description

a. Monitor airway closely with any suspected airway or inhalation burns. Edema may become severe but **NOT** usually in the 1st hour. Intubation **SHOULD** be performed for any concerns of worsening airway.
b. Consider carbon monoxide/cyanide poisoning if victim was in a confined space, see *POISIONING OVERDOSE GUIDELINE*
c. Circumferential burns to extremities and/or trunk are dangerous due to potential vascular compromise secondary to soft tissue swelling.
d. Burn patients are prone to hypothermia. **DO NOT** cool burns that involve ≥10% body surface area (BSA)
e. **DO NOT** overlook the possibility of multiple system trauma or child abuse with burn injuries
f. The patient's palm represents 1% of their BSA, use the "rule-of-9's" as a reference
g. If shock present or the patient is unconscious, consider underlying causes
h. Use appropriate personal protective equipment when treating patients with chemical burn
i. If stable, consider pain management, see *PAIN MANAGEMENT GUIDELINE*

Stop the burning process
Remove constrictive clothing or jewelry

Thermal

Cover with Dry Dressing

Burn Percentage
- ADULT: ≥ 2nd burn ≥15% BSA
- PEDIATRIC or ELDERLY: 2nd burn ≥10% BSA
- All Ages: 3rd Degree burn ≥2%

YES

Consider *FLUID THERAPY* (A)
- Age ≥14: 500 mL/hr NS or LR
- 5 to 13 years: 250 mL/hr NS or LR
- Age <5: 125 mL/hr NS or LR

General Supportive Care

If inhalation burn AND respiratory failure present, consider Medication Assisted Airway Management (if allowed)
- See *MAAM GUIDELINE*

NO

General Supportive Care

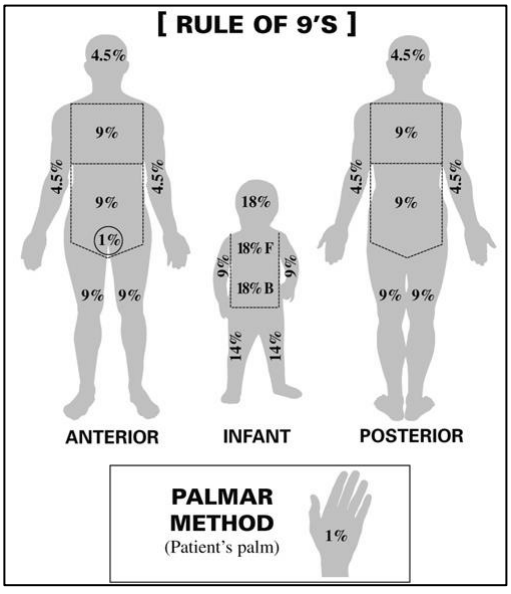
Electrical

Suspect spinal injury secondary to tetanic muscle contractions

Cardiac Monitor and 12 Lead EKG

Consider *FLUID THERAPY* (See BOX A)
General Supportive Care

[RULE OF 9'S]



Chemical

Decontaminate
- Consult ERG FIRST
- Brush off any dry chemicals or powder and, if appropriate, continuously flush area with water or NS for 15 minutes

Eye Involvement

YES

Consider *TOPICAL OPHTHALMIC ANESTHETIC*

Consider *FLUID THERAPY* (See BOX A)

NO

General Supportive Care

F007 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Submersion Injuries

Description

a. Drowning and near drowning refer to submersion injuries.
b. Predisposing factors include alcohol abuse, drug Intoxication, barotrauma, and syncope secondary to a medical condition (MI, Seizures, diabetes, cerebrovascular accident, arrhythmias, etc.)
   - Spinal precautions **SHOULD** be used when a suspected or known traumatic mechanism preceded the drowning.
   - Closed head injury **SHOULD** be suspected in any near drowning victim who is unconscious or demonstrates changing mental status
c. Barotrauma is associated with SCUBA diving with the worst cases being air embolism or CNS Bends and can occur within 3 hours of surfacing. Any SCUBA diver who is a near drowning victim and exhibits AMS and/or dyspnea with clear lung sounds **SHOULD** be assumed to have one of these.
d. **ALL** submersions should be transported. Even if patients initially appear fine, they can deteriorate.
   - Monitor closely, pulmonary edema often occurs due to aspiration, hypoxia, and other factors. It may not be evident for several hours after near-drowning.
   - If patient refuses transport, assure they are aware of future risk of decompensation and document

Manage airway, see *AIRWAY MANAGEMENT GUIDELINE*
Remove wet clothing
Dry and keep patient warm
Be prepared for vomiting

Conscious

Dyspnea

NO → **General Supportive Care** → **NO** → **Abnormal Lung Sounds** → **YES**

YES → **Abnormal Lung Sounds** → **YES**

Special Considerations

- If patient is hypothermic, defibrillation may be unsuccessful until the patient is rewarmed. Prolonged CPR may be needed.
- If seizures present treat per *SEIZURE GUIDELINE*
- Good outcomes after even prolonged hypothermic arrest are possible; patients with suspected hypothermia should be transported
- Pulse and respirations may be very slow and difficult to detect if severely hypothermic. If no definite pulse, and no signs of life, begin CPR
- If hypothermic, treat per *COLD EMERGENCIES GUIDELINE*
- Be suspicious of non-accidental trauma in pediatrics

Unconscious

Pulse

NO → See *MEDICAL CARDIAC ARREST GUIDELINE*

YES → **Look for Other Causes**
General Supportive Care

ALBUTEROL; **PRN every 10 minutes**
- ADULT and PEDIATRIC >2: **2.5 mg in 3 mL NS**
- PEDIATRIC <2: **1.25 mg in 3 mL NS**

OR

LEVALBUTEROL; **PRN every 10 minutes**
- ADULT and PEDIATRIC >2: **1.25 mg in 3 mL NS, MAX 7.5 mg**
- PEDIATRIC <2: **1.25 mg in 3 mL NS, MAX 3.75 mg**

IPRATROPRIUM; **PRN every 15 minutes**
- ADULT: **0.5 mg in 3 mL via neb**
- PEDIATRIC: **0.25 mg in 3 ml via neb**

Consider (severe cases)

CONTINOUS NEB
- ADULT: **7.5 mg of *ALBUTEROL* in 9 mL via neb**
- PEDIATRIC: **NOT ALLOWED**

Consider CPAP
- ADULT: see *CPAP GUIDELINE*
- PEDIATRIC: see *CPAP GUIDELINE*

F008 Revised: 5/26/2023

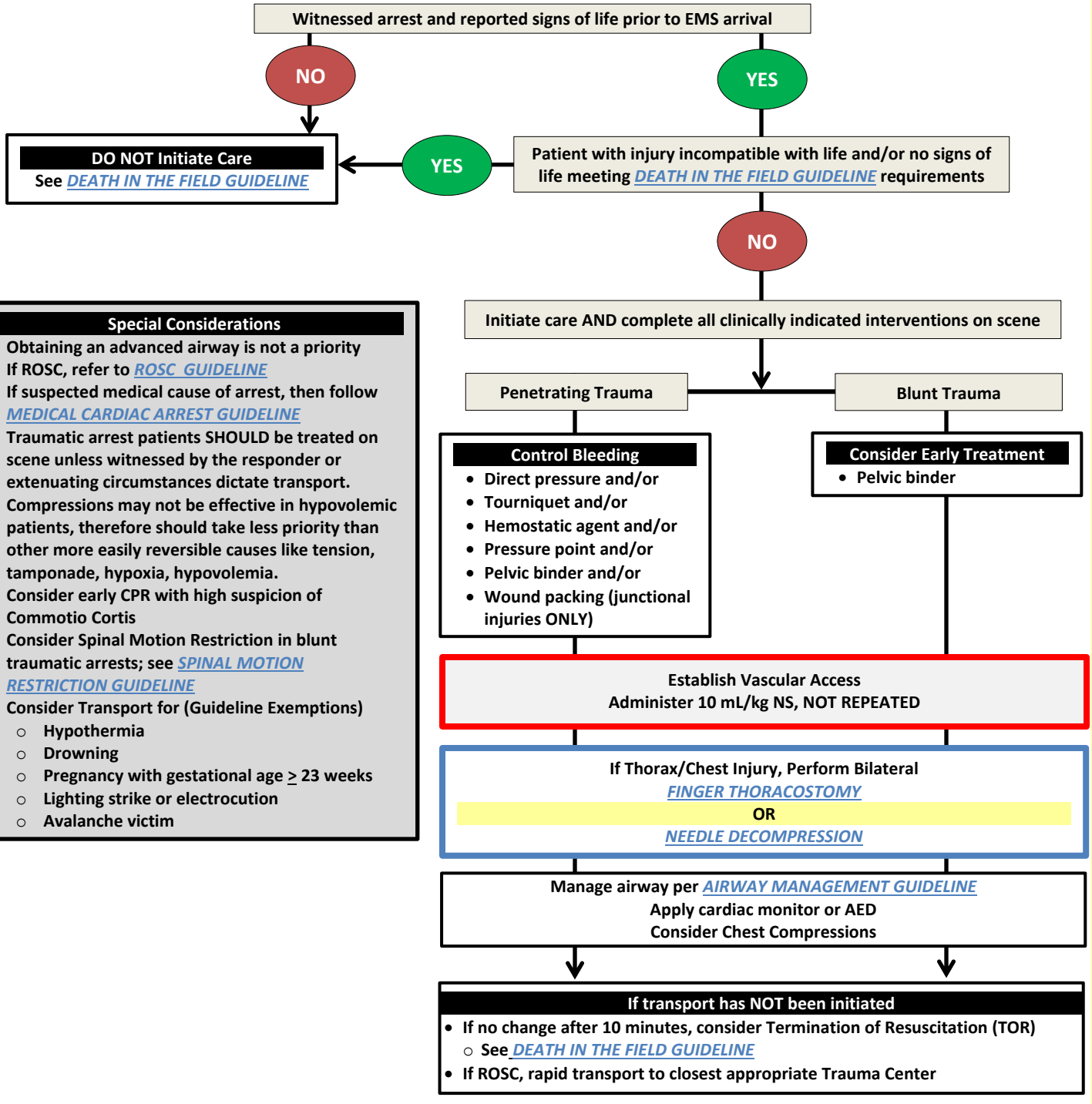
Back Button

EMT | EMT-IV | Paramedic

Cardiac Arrest (Traumatic)

Description

a. This guideline is designed to assist the prehospital provider's treatment of traumatic cardiac arrest.
   - If ROSC is **NOT** achieved, consider Termination of Resuscitation (TOR)



Special Considerations

- Obtaining an advanced airway is not a priority
- If ROSC, refer to *ROSC GUIDELINE*
- If suspected medical cause of arrest, then follow *MEDICAL CARDIAC ARREST GUIDELINE*
- Traumatic arrest patients SHOULD be treated on scene unless witnessed by the responder or extenuating circumstances dictate transport.
- Compressions may not be effective in hypovolemic patients, therefore should take less priority than other more easily reversible causes like tension, tamponade, hypoxia, hypovolemia.
- Consider early CPR with high suspicion of Commotio Cortis
- Consider Spinal Motion Restriction in blunt traumatic arrests; see *SPINAL MOTION RESTRICTION GUIDELINE*
- Consider Transport for (Guideline Exemptions)
  - Hypothermia
  - Drowning
  - Pregnancy with gestational age ≥ 23 weeks
  - Lighting strike or electrocution
  - Avalanche victim

Crush Injuries

Description

a. *FLUID THERAPY* and medication administration **is PREFERRED** prior to extrication whenever possible.
b. Large volume resuscitation prior to removal of the crush object and extrication is critical to preventing secondary renal failure, cardiac dysrhythmias, and death.
c. Consider pain management, see *PAIN MANAGEMENT GUIDELINE*
d. If suspected major bleeding, see *HEMORRHAGIC SHOCK GUIDELINE*

Crush Syndrome

FLUID THERAPY; **PRN until improved perfusion**
- **20 mL/kg NS IV/IO**

CALCIUM CHLORIDE; **PRN every 10 minutes; MAX 3 doses**
- **ADULT: 1 gram slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: NOT ALLOWED**

OR

CALCIUM GLUCONATE; **PRN every 10 minutes; MAX 3 doses**
- **ADULT: 3 grams slow bolus over 2 to 5 minutes IV/IO**
- **PEDIATRIC: NOT ALLOWED**

SODIUM BICARBONATE; **PRN until cessation of seizers or QRS shortens to <100 ms (if applicable)**
- **ADULT: 100 mEq bolus IV/IO of an 8.4% solution.**
  - **In severe cases consider drip; Mix 150 mEq (150 mL) in 1,000 mL NS and administer at 200 mL/hr**
- **PEDIATRIC: NOT ALLOWED**

General Supportive Care

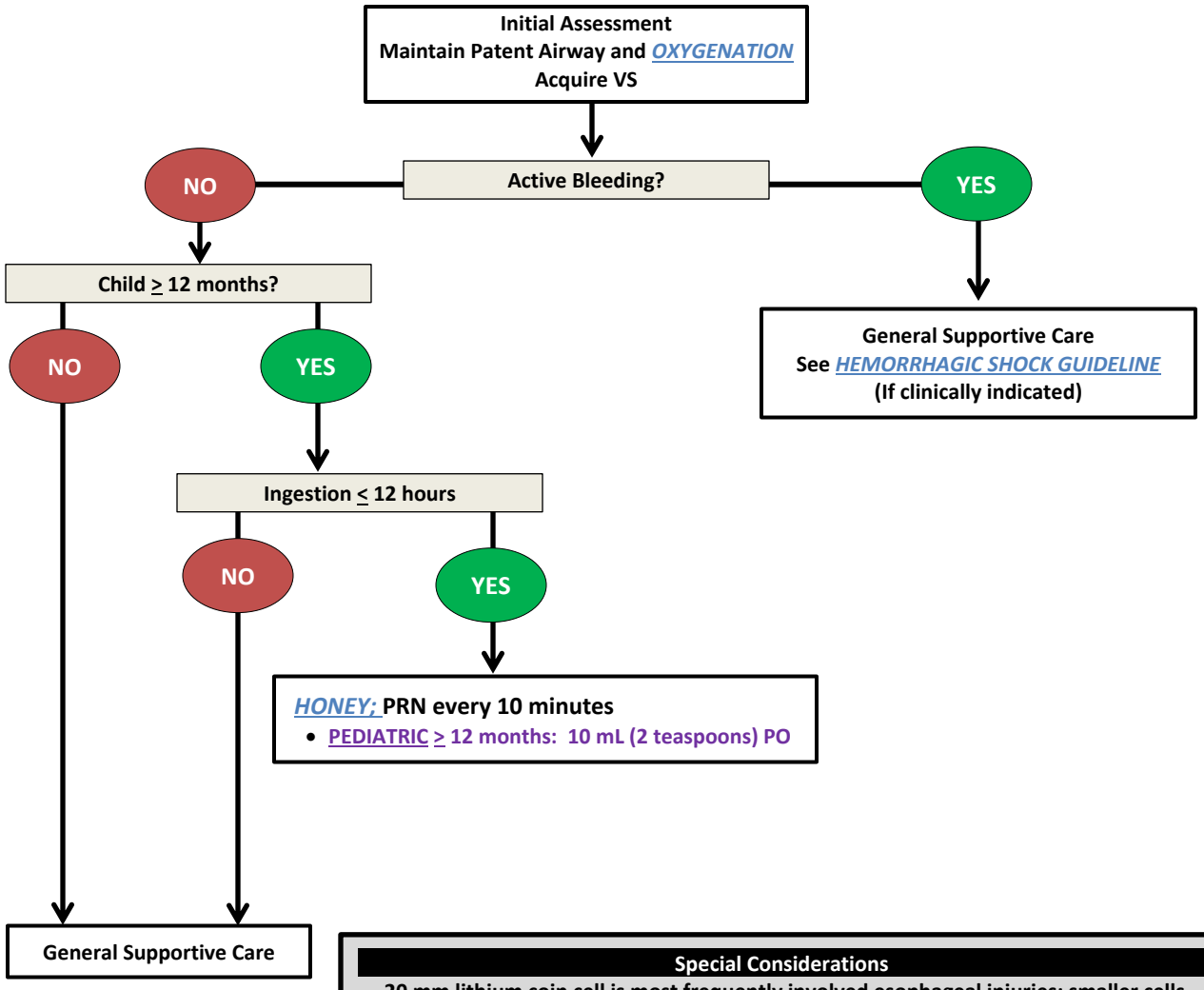
Special Considerations

- **Crush syndrome may cause profound hyperkalemia resulting in dysrhythmias, monitor EKG if possible**
- **Crush syndrome is usually seen with compression of 4 to 6 hours but may occur in as little as 20 minutes**
- **If possible monitor patient for signs of compartment syndrome (pain, pallor, paresthesia's, pulselessness)**
- **Crush injury victims can 3rd space > 12 liters in the first 48 hrs.**
- **Do not overlook treatment of additional injuries, airway compromise, hypothermia/ hyperthermia**

Button Battery Ingestion

Description

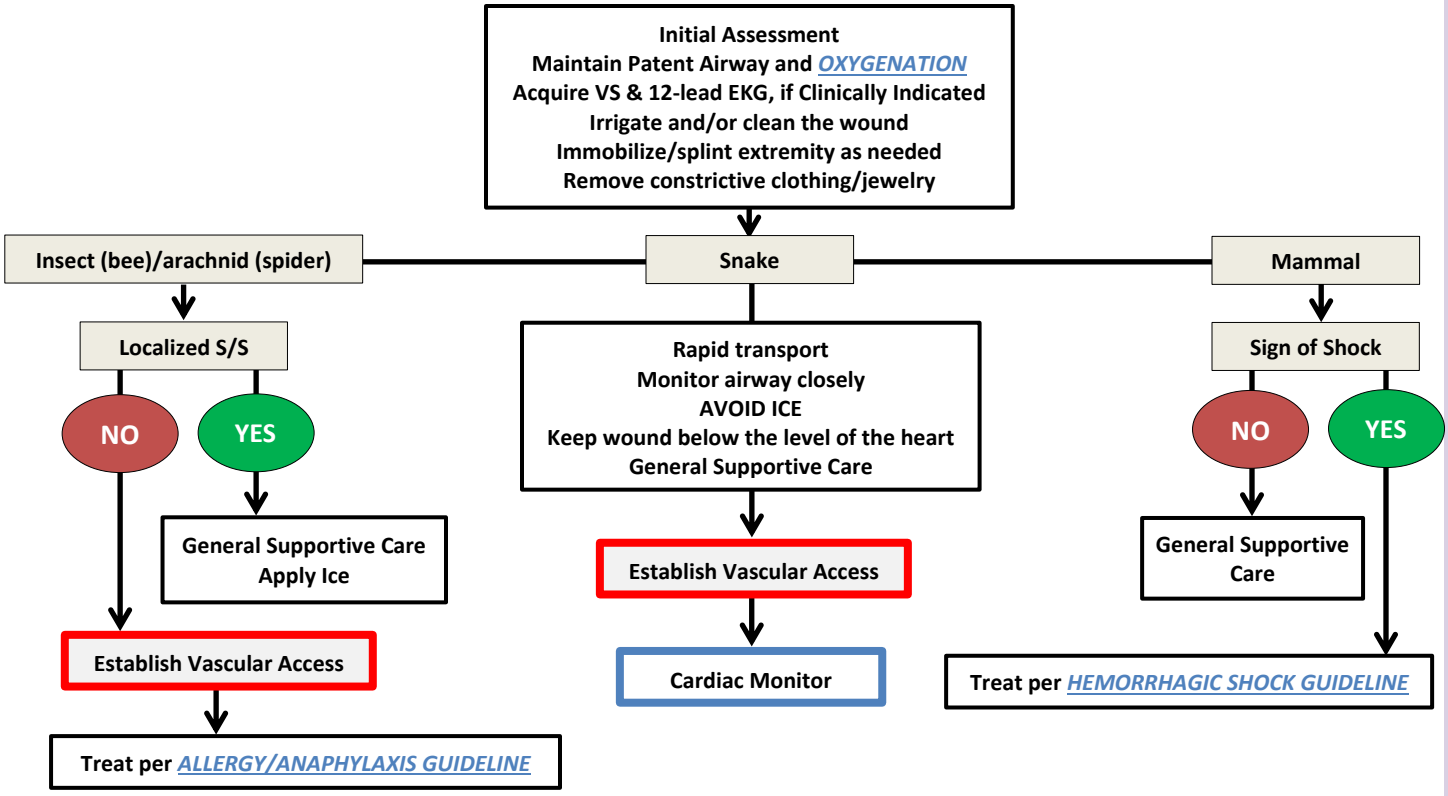
a. There is a very rapid onset of tissue injury and injury continues for days to weeks after removal.
b. The orientation of the battery within the esophagus may be helpful in predicting the anatomic direction of tissue necrosis and thus the extra- esophageal structures at highest risk of injury.
c. When using honey utilize commercial honey rather than specialized or artisanal honey.
d. Be sure to notify the receiving facility as soon as possible.



Special Considerations

- 20 mm lithium coin cell is most frequently involved esophageal injuries; smaller cells lodge less frequently but also cause serious injury or death.
- Assume hearing aid batteries are <12 mm.
- Treat nausea and vomiting via the *NAUSEA.VOMITING GUIDELINE*
- Treat pain via the *PAIN MANAGEMENT GUIDELINE*
- If applicable transport to the closest Pediatric Specialized Facility
  - Children's Hospital

Bites and Stings



Special Considerations

- Considercontacting the US Poison Control Center for guidance. 1-800-222-1222
- If stable, consider pain management, see *PAIN MANAGEMENT GUIDELINE*

- INSECT (bee)/ARACHNID (spider):
  - Remove stinger mechanism by scraping with a straight edge and do not squeeze venom sac
  - If possible, try to bring the spider for identification and recognize prior history of allergy to bite/sting
  - Black Widow spider bites have minimal pain initially but may develop muscular pain and severe abdominal pain
  - Brown Recluse spider bites are painless to minimally painful. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days

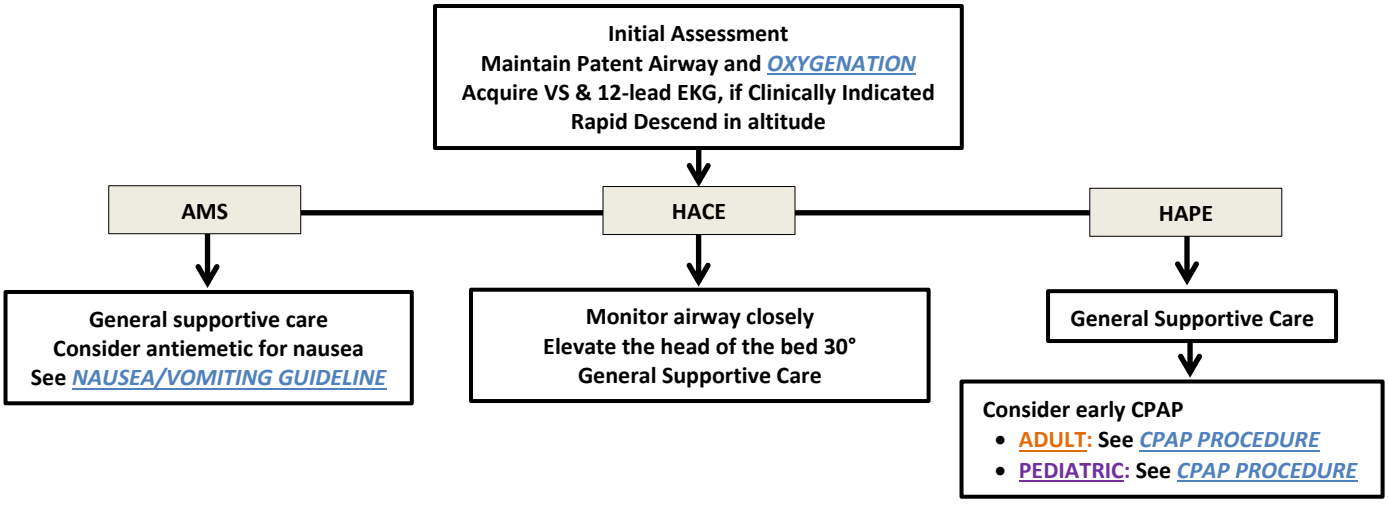
- SNAKE:
  - Venomous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, etc.
  - A "dry bite" without envenomation can occur in a significant percentage of cases (50% in coral snake, 25% from pit viper).
  - Mark a spot above and below the bite, note the time and repeat the measurement every 10 to 15 minutes during transport
  - Contact closest facility regarding available anti-venom
  - DO NOT apply tourniquets

- MAMMAL:
  - Human bites have a very high risk of infection due to oral bacteria
  - Carnivore bites are much more likely to become infected and some may have risk of Rabies exposure
  - Cat and/or dog bites may rapidly progress to infection due to a specific bacterium
  - Anyone found sleeping in a room with a bat should be evaluated for consideration of rabies vaccinations

High Altitude Emergencies

Description

a. Acute exacerbations of chronic medical illness at altitude are more common than altitude illness
b. Although there are some nuances to each individual sickness the general treatment is predominantly the same and includes: maintain airway patency, consider antiemetic, descent, and if needed transport to the closest appropriate facility
    - The mainstay of treatment is descent from altitude. Even a loss of 2,000-3,000 feet makes enough difference in the O_2 content of air that symptoms may be relieved or stop progressing.
    - Oxygen administration can also relieve symptoms and may allow more time for orderly evacuation
c. Recognition of the problem is the most critical part of treating high altitude emergencies and usually is out of proportion to those being experienced by the rest of the party. Healthy individuals are at a high risk for the following.
    - Acute Mountain Sickness (AMS):
        i. Is the most frequent type of altitude sickness encountered and can begin to appear at around 6,500 ft. above sea level, although most people will tolerate up to 8000 ft. without difficulty.
        ii. Altitude illness should **NOT** be suspected below 6,500 ft
        iii. Symptoms often manifest themselves and generally subside in one to two days, but they occasionally develop into the more serious conditions.
        iv. AMS is a diagnosis of exclusion; **ALL** other possible causes of symptoms should be evaluated
        v. Symptoms include headache, insomnia, anorexia, nausea, and fatigue
    - High Altitude Cerebral Edema (HACE):
        i. Is rare at elevations in Colorado; always consider alternative cause of altered mental status
        ii. Symptoms include ataxia, confusion, headache, neurological deficits, seizures, and coma
        iii. Cerebral edema may exhibit, with confusion and a stroke-like picture with focal deficits
    - High Altitude Pulmonary Edema (HAPE):
        i. The most effective and reliable treatment is immediate descent and administration of supplemental oxygen as well as CPAP.
        ii. Symptoms include dyspnea, cough, headache, nausea, and/or fever



Heat Emergencies

Initial Assessment
Maintain Patent Airway and *OXYGENATION*
Obtain VS and 12-lead EKG, if Clinically Indicated
Obtain blood glucose level
Obtain patient temperature, if possible
Remove from heat source, if applicable

Heat Cramps

General Supportive Care

Hyperthermia/or Heat Stroke

Initiate cooling measures
- Remove clothing and/or
- Cool ambient air and/or
- Apply ice pack to groin, armpit AND neck

Establish Vascular Access
FLUID THERAPY; **PRN until improved perfusion**
- **20 mL/kg NS IV/IO**

Cardiac Monitor

Severe Shivering?

NO

YES

Discontinue Cooling Measures

General Supportive Care

FENTANYL; **PRN every 10 minutes**
- **ADULT: 50-100 mcg slow bolus IV/IO or IN/IM**
- **PEDIATRIC: 1 mcg/kg slow bolus IV/IO or IN/IM**

Special Considerations

- Extremes of age are more prone to heat emergencies
- If suspected Excited Delirium treat per *BEHAVIORAL EMERGENCY GUIDELINE*
- Treat hypoglycemia per *DIABETIC EMERGENCY GUIDELINE*
- Treat seizures per *SEIZURE GUIDELINE*
- Treat nausea or vomiting per *NAUSEA/VOMITING GUIDELINE*
- If the temperature is unable to be measured, treat the patient based on the suspected temperature
- HEAT CRAMPS:
  - Heat Cramps consist of benign muscle cramping due to dehydration and usually is not associated with an elevated temperature
  - Signs and symptoms include normal or slightly elevated body, temperature, warm, moist skin, generalized weakness, and/or diffuse muscle cramping
- HEAT EXHAUSTION:
  - Heat Exhaustion consists of dehydration and salt depletion
  - Signs and symptoms include elevated body temperature cool, diaphoretic skin, generalized weakness, anxiety, headache, tachypnea, and/or possible syncope
- HEAT STROKE:
  - Heat Stroke is present with a patient who demonstrates altered mental status or seizure, temporal temp >103°F
  - Signs and symptoms include hot, dry skin with cessation of sweating, hypotension, altered mental status, seizure and/or coma
- OTHER CAUSES:
  - Neuroleptic malignant syndrome (NMS): patients taking antipsychotic medications
  - Sympathomimetic overdose: cocaine, methamphetamine
  - Anticholinergic toxidrome: overdose; common with ODs on psych meds, OTC cold medications, Benadryl, Jimson weed, etc.
  - Infection: fever (sepsis)
  - Thyrotoxicosis: goiter (enlarged thyroid)

Cold Emergencies

Initial Assessment
Maintain patent airway and *OXYGENATION*
Obtain VS and 12-lead EKG, if Clinically Indicated
Obtain blood glucose level
Obtain patient temperature, if possible
Remove wet clothing, dry and insulate the patient, if applicable

Frost Bite

Rewarm extremity
- Warm ambient air and/or
- Warm pack (wrapped in towel)

If applicable, loosely wrap/splint the injury and elevate above the heart

Consider pain management
See *PAIN MANAGEMENT GUIDELINE*

General Supportive Care

Moderate to Severe Hypothermia

Initiate warming measures
- Warm ambient air and/or
- Apply warm pack to groin, armpit, AND neck
- Use care in moving and transporting the patient
- Apply Cardiac Monitor

Pulse Present (Assess for 60 seconds)

NO

Treat per *CARDIAC ARREST GUIDELINE*
(With Below Modifications)
- Transport: The only criteria for obvious death/TOR is a frozen chest wall that is non compressible.
  - VF/VT: Defibrillate x1 time as needed and withhold repeat defibrillation attempts and medication administration until the patient is ≥30°C.
- EtCO2: NOT a reliable guide for resuscitation in severe hypothermia
- Medications: Medications such as *EPINEPHRINE* and *AMIODARONE* are ineffective, avoid administration.

YES

Establish Vascular Access
FLUID THERAPY; PRN until improved perfusion
- 20 mL/kg NS IV/IO, warm if available

General Supportive Care
- Treat bradycardia passively
- Transcutaneous pacing and/or epi pressor can be ineffective or harmful, withhold treatment

Special Considerations

- FROSTBITE:
  - Thawing is extremely painful and should be deferred until controlled conditions, preferably in the facility. Careful monitoring, pain medication, prolonged re-warming, and sterile handling are required.
  - DO NOT directly apply heat packs or begin the rewarming process if there is risk of refreezing
- HYPOTHERMIA:
  - Shivering does not occur below 90 °F (32°C). Below this the patient may not feel cold, and occasionally will even undress and appear vasodilated.
  - The hypothermic myocardium is very sensitive to movement and sudden movements may precipitate ventricular fibrillation with temperature less than 88°F (30°C).

Smoke Inhalation

(Cyanide/Carbon monoxide Exposure)

Description

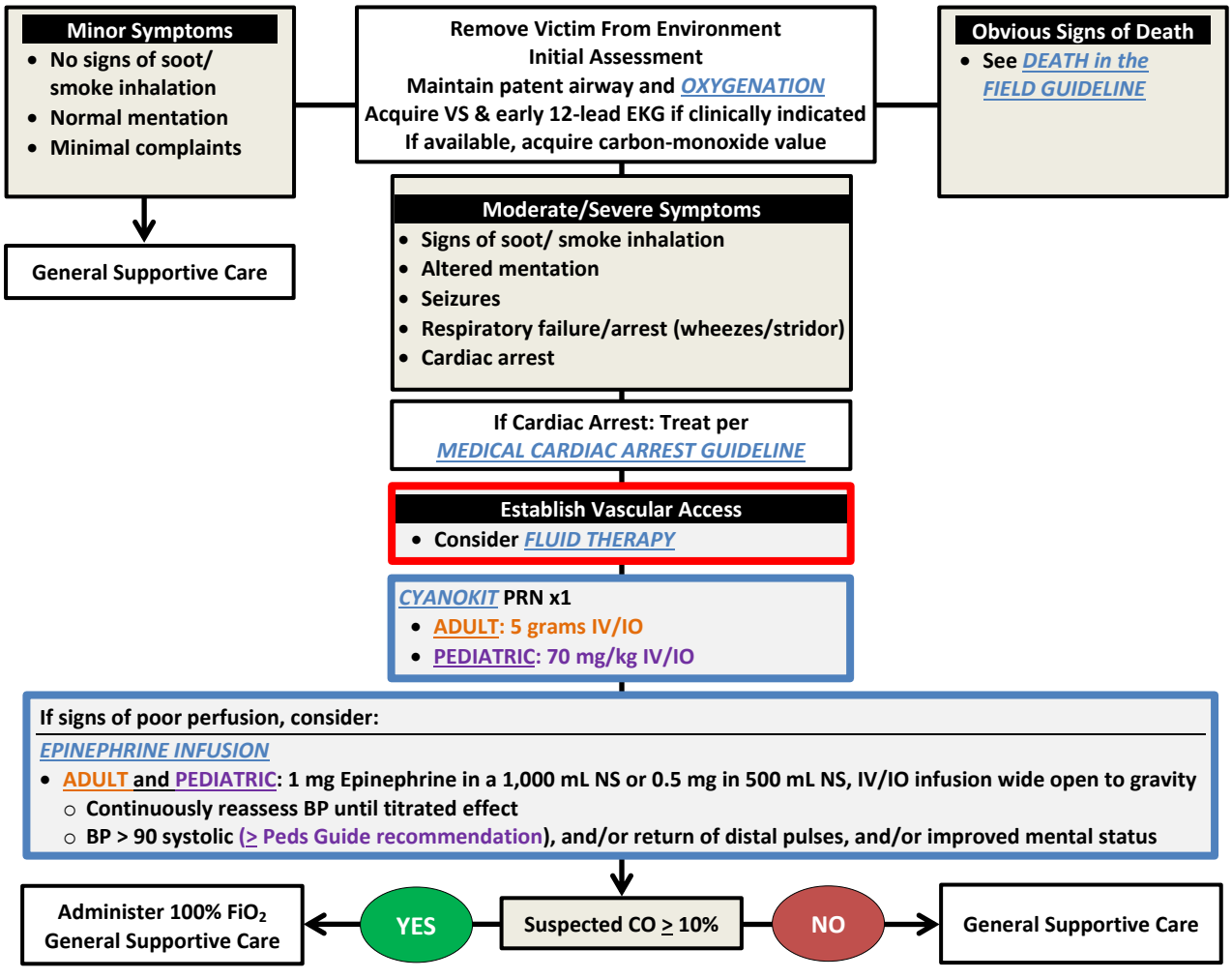
a. Carbon monoxide and cyanide are extremely lethal toxic compounds that can cause significant morbidity and mortality.
   - Smoke inhalation victims present a unique challenge because they can be exposed to both substances.

b. With cyanide, patients can present with symptoms within a few minutes and if inhaled, the victim might detect a bitter, almond odor
   - Noticeable by approximately 60% of the population.

c. It is important to note that a patient's skin can be a normal or slightly ashen appearance despite tissue hypoxia.

Special Considerations

a. Inhalation poisoning is particularly dangerous to rescuers. Recognize an environment with continuing contamination, don proper PPE, and extricate rapidly or avoid altogether.
b. Treat seizures per *SEIZURE GUIDELINE*
c. Treat bronchospasms/wheezes per *WHEEZES/RHOCHI GUIDELINE*
d. Treat nausea and vomiting per the *NAUSEA VOMITING GUIDELINE*
e. If the patient is presenting with anxiety symptoms, treat per *BEHAVIORAL EMERGENCY GUIDELINE*
f. Recommend all structure fire victims be reported to Fire Fighter Rescue Survey.



G005 Revised: 5/26/2023

Back Button

EMT | EMT-IV | Paramedic

Medication Overview

Description

a. All care, in regard to the administration of medications, assessment, and performance of procedures, shall be provided in accordance with the practitioner's scope of practice, defined by the most recent version of the ***COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIORNMENT 6CCR1015-3, CHAPTER 2***.
    - As such, specific care guidelines will **NOT** be delineated within these guidelines, **EXCEPT** to denote restrictions on the scope of practice.

Special Considerations

a. The appropriate process for safe medication administration includes:
    - **C**losed loop communication.
    - **C**ross-check (Double-check) with another prehospital provider to verify appropriateness of medication including routes.
b. For pediatrics, reference Pediatric Field Guide or approved apps
c. There are several types of errors that can occur when administering medications and can relate to the prehospital providers knowledge of misuse, underuse, and overuse. EMS agencies should work to establish a system of Just Culture; this is an approach to workplace safety that assumes humans, despite their best intentions to do the right thing, will make mistakes. This ideology, combined with a robust quality improvement program that promotes accurate, honest reporting, can limit mistakes.
    - Self-reporting medication and/or procedure errors is critical to the improvement of the system. It is **NOT** used as a pathway to punitive measures, but rather helps identify potential system improvements and is highly encouraged.
    - A report of a medication error will be reviewed through the QA/CQI process and should be treated with respect and focus on identifying a root cause.
d. Medications that are on back order or considered to be on a "shortage" will be dealt with on a case by case basis, including potential alternatives and/or use of the particular medication past its expiration date.
e. At any time, the prehospital provider can lower the recommended dose of any medication as long as it is justified in the patient care report.
    - Potential reasons include but are not limited to liver or kidney failure, age, weight, and/or potential interactions with other medications.
f. An EMT-IV may, under the supervision and authorization of the medical director, administer medications and classes of medications which exceed those listed in Appendices B and D of these rules for an EMT-IV under the **DIRECT VISUAL SUPERVISION** of a paramedic **WHEN** the following conditions have been established:
    - The patient **MUST** be in cardiac arrest or in extremis (defined as at the point of death)
    - At no time can the EMT provider administer controlled substances, even if delegated by the Paramedic.

Medication Overview

Approved Medication and Routes

Medications	EMT	EMT-IV	EMT-IV (Extremis)	Paramedic
Acetaminophen (Tylenol)	SO	SO	SO	SO
Adenosine	NO	NO	NO	SO
Albuterol	SO	SO	SO	SO
Amiodarone	NO	NO	NO	SO
Aspirin	SO	SO	SO	SO
Antibiotics	NO	NO	NO	SO
Atropine	NO	NO	NO	SO
Blood products	NO	NO	NO	SO
Cefazolin (ancef)	NO	NO	NO	SO
Calcium	NO	NO	NO	SO
Dexamethasone (Decadron)	NO	NO	NO	SO
Dextrose	NO	SO	SO	SO
Diazepam (valium)	NO	NO	NO	SO
Diltiazem (Cardizem)	NO	NO	NO	SO
Diphenhydramine (Benadryl)	NO	NO	SO	SO
Droperidol (Inapsine)	NO	NO	NO	SO
DuoDote	SO	SO	SO	SO
Epinephrine 1:1,000 IM	SO	SO	SO	SO
Epinephrine IV **ONLY**	NO	NO	SO	SO
Epinephrine Auto Injector	SO	SO	SO	SO
Fentanyl	NO	NO	NO	SO
Glucagon	NO	NO	SO	SO
Honey	SO	SO	SO	SO
Hydromorphone (dilaudid)	NO	NO	NO	SO
Hydroxocobalamin (Cyanokit)	NO	NO	SO	SO
Ibuprofen (Motrin)	SO	SO	SO	SO
Ipratropium Bromide (Atrovent)	SO	SO	SO	SO
IV Solutions	NO	SO	SO	SO
Ketamine	NO	NO	NO	SO
Ketorolac (Toradol)	NO	NO	NO	SO
LevAlbuteol (Xopenex)	SO	SO	SO	SO
Magnesium sulfate	NO	NO	NO	SO
Methylprednisolone (Solu-Medrol)	NO	NO	NO	NO
Midazolam (versed)	NO	NO	NO	SO
Naloxone (Narcan) IN	SO	SO	SO	SO
Naloxone (Narcan) injection	NO	SO	SO	SO
Neo synephrine	SO	SO	SO	SO
Nitroglycerin (patient assisted)	NO	NO	NO	NO
Olanzapine (Zyprexa)	NO	NO	NO	SO
Ondansetron (Zofran) ODT	SO	SO	SO	SO
Ondansetron (Zofran) IV	NO	SO	SO	SO
Oral Glucose	SO	SO	SO	SO
Oxygen	SO	SO	SO	SO
Rocuronium	NO	NO	NO	SO
Sodium bicarbonate	NO	NO	NO	SO
Succinylcholine	NO	NO	NO	SO
Tranexamic Acid (TXA): Epistaxis	SO	SO	SO	SO
Tranexamic Acid (TXA): Hemorrhage	NO	NO	NO	SO
Topical ophthalmic anesthetics	NO	NO	NO	SO
Vaccines	NO	NO	NO	SO
Vecuronium	NO	NO	NO	SO

Routes of Administration	EMT	EMT-IV	Paramedic
Aerosolized	YES	YES	YES
Atomized	YES	YES	YES
Auto-Injector	YES	YES	YES
Buccal	YES	YES	YES
Endotracheal Tube (ET)	NO	NO	NO
Extra-abdominal umbilical vein	NO	NO	NO
Intradermal	NO	NO	YES
Intramuscular (IM)	YES	YES	YES
Intranasal (IN)	YES	YES	YES
Intraosseous (IO)	NO	YES	YES
Intravenous (IV) Piggyback	NO	NO	YES
Intravenous (IV) push	NO	YES	YES
Nasogastric	NO	NO	YES
Nebulized	YES	YES	YES
Ophthalmic	NO	NO	YES
Oral (PO)	YES	YES	YES
Rectal (PR)	NO	NO	YES
Subcutaneous (SC)	NO	NO	YES
Sublingual	YES	YES	YES
Topical	YES	YES	YES
Use of mechanical infusion pumps	NO	NO	YES

Revised: 5/26/2023

Back Button

Acetaminophen (Tylenol)

Provider Level	PO Dose	IV/IO Dose
EMT	SO	NO
EMT-IV	SO	NO
Paramedic	SO	SO

Description

a. Acts centrally through the activation of the descending serotonergic pathways. Increases that pain threshold by inhibiting the prostaglandin synthesis through the COX pathways. Does not have a significant anti-inflammatory or antiplatelet effects. Antiphyretic effect by inhibiting the prostaglandin synthesis in the CNS and blocking the actions of endogenous pyrogens at the hypothalamic thermoregulatory centers.

Onset & Duration

a. Onset: 30 to 60 minutes PO, 5-15 min IV
b. Duration: Up to 4 to 6 hours

Indications

a. Mild to moderate pain
b. Fever

Contraindications

a. Hypersensitivity to drug
b. Hepatic Impairment/failure
c. Suicide Attempt

Adverse Reactions

a. Stevens-Johnson syndrome
b. Angioedema
c. Oliguria
d. Pulmonary edema

Dosage & Administration

a. **Adult**:
   - PO: 500 to 1,000 mg; PRN every 6 hours
   - IV/IO
     i. < 50 kg: 500 mg over 15 minutes; PRN every 6 hours
     ii. ≥ 50 kg 1,000 mg over 15 minutes; PRN every 6 hours
b. **Pediatric:** 15 mg/kg PO
   - IV/IO over 15 minutes; PRN every 6 hours
   - **MAX** dose of 750 mg

Special Considerations

a. Consider other medications that the patient is taking and if Acetaminophen is part of that medication and the dose they have received in the day. (**MAX** daily dose Adult 4,000 mg, Pediatric 60 mg/kg)
b. Chronic alcoholic is at a higher risk for developing hepatotoxicity from Acetaminophen

Revised: 5/26/2023

Back Button

Adenosine (Adenocard)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. 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

a. Onset: Immediate
b. Duration: 10 seconds

Indications

a. Narrow complex supraventricular tachyarrhythmia

Contraindications

a. Patients with second or third degree A–V block or sick sinus syndrome; underlying blocks or conduction defects can be associated with prolonged sinus arrest when using adenosine
b. Any irregular tachycardia. Specifically never administer to an irregular wide-complex tachycardia, which may be lethal.

Adverse Reactions

a. Chest, jaw or throat pain and shortness of breath
b. Flushing lightheadedness, and palpitations

Dosage & Administration

a. **Adult**: 12 mg rapid bolus IV/IO, combined with a 20 mL NS flush.
    - May repeat once at 12 mg rapid bolus IV/IO
b. **Pediatric:** 0.2 mg/kg rapid bolus IV/IO (max of 12 mg), combined with a 20 mL NS flush.
    - May repeat once at 0.2 mg/kg (max of 12 mg) rapid bolus IV/IO.

Special Considerations

a. Carbamazepine (Tegretol®) may potentiate the AV-nodal blocking effect of adenosine.
b. Continuous EKG monitoring and a 12-lead EKG should be performed and documented before and after
c. Transient asystole and AV blocks are common at the time of administration
d. Adenosine is not effective in atrial flutter or atrial fibrillation
e. Adenosine is safe in patients with a history of Wolff-Parkinson-White syndrome, if the rhythm is regular and QRS complex is narrow.
    - Never administer adenosine to patients with Wolff-Parkinson-White syndrome associated with atrial fibrillation, instead move to direct ***CARDIOVERSION***
f. May precipitate bronchospasm in patients with reactive airway disease
g. May not be effective in heart transplant patients, consider halving the initial dose to avoid potential heart block

Revised: 5/26/2023

Back Button

Albuterol Sulfate

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

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

Onset & Duration

a. Onset: 5 to 15 minutes
b. Duration: 3 to 4 hours

Indications

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

Contraindications

a. Severe tachycardia (Relative contraindication)

Adverse Reactions

a. Tachycardia, palpitations, tremors, anxiety, dysrhythmias

Dosage & Administration

a. Single Dose Neb
   - **Adult and Pediatric >2:** Albuterol sulfate solution 0.083% (2.5 mg in 3 mL) by nebulizer
     i. Repeat as needed every 10 minutes
   - **Pediatric <2:** Mix 1.5 mL (half of one unit dose bottle of 3 mL premixed solution) with 2 mL of saline
     i. Repeat as needed every 10 minutes
b. Continuous Neb
   - **Adult:** 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: NOT ALLOWED**
c. Hyperkalemia
   - **Adult:** 10 mg (in 12 mL) via nebulizer, administered back-to-back; **MAX** 20 mg
   - **Pediatric: NOT ALLOWED**

Special Considerations

a. Can combine with atrovent
b. ß-blockers may antagonize albuterol
c. Consider in-line nebulized albuterol for patients requiring endotracheal intubation or CPAP due to severe respiratory distress.

Revised: 5/26/2023

Back Button

Amiodarone

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. Amiodarone has multiple effects with a quick onset. It is a complex, wide–spectrum medication which is typically categorized as a Class III antiarrhythmic due to its lengthening of the effective refractory period by prolongation of the action potential duration. However, it also demonstrates strong sodium channel antagonism, some calcium and potassium channel inhibition, and noncompetitive blockade of alpha and beta–adrenergic receptors.

Onset & Duration

a. Onset: Within minutes
b. Duration: Serum concentrations drop to 10% within 30 to 45 minutes and half-life of up to 50 days

Indications

a. Pulseless arrest in patients with shock-refractory or recurrent VF/VT
   - **Pediatric:** <13
   - **Adolescent:** 13 to 18 years old
b. Regular Wide Complex tachycardia (WCT) refractory to cardioversion

Contraindications

a. 2nd or 3rd degree AV block
b. Cardiogenic shock
c. Ventricular escape beats or accelerated idioventricular rhythms
d. Irregular wide complex tachycardia of unknown origin
e. Cardiac arrest due to suspected hypothermia

Adverse Reactions

a. Hypotension
b. Bradycardia

Dosage & Administration

a. Cardiac Arrest
   - **Adolescent: 13 to 18**:
     i. VF/VT Cardiac Arrest: 300 mg IV/IO bolus
        1. May give additional 150 mg IV/IO bolus after 3 to 5 minutes if recurrent VF/VT;
           a. **MAX** 450 mg
   - **Pediatric < 13:**
     i. VF/VT Cardiac Arrest: 5 mg/kg IV/IO bolus
        1. Repeat every 3 to 5 minutes**; MAX** 15 mg/kg
b. Refractory WCT with a pulse
   - **Adult:**
     i. 150 mg in a 50 mL NS or D5W IV/IO over 10 minutes
        1. **NOT** repeated
   - **Pediatric**: **NOT ALLOWED**

Special Considerations

a. Amiodarone causes prolongation of the QT interval and may induce Torsades de Pointes. This effect may be exacerbated in the presence of other medications that cause QT prolongation (i.e., procainamide, etc.).
b. Consider continuous 12 lead ECG monitoring, when possible

Revised: 5/26/2023

Back Button

Aspirin

Provider Level	1st Dose	Repeat Dose
EMT	SO	NO
EMT-IV	SO	NO
Paramedic	SO	NO

Description

a. Aspirin (Acetylsalicylic Acid) 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.

Onset & Duration

a. Onset: 5 to 30 minutes
b. Duration: 3 to 6 hours

Indications

a. Symptoms secondary to suspected acute coronary syndrome

Contraindications

a. Patients who have experienced signs of severe allergic reaction or anaphylaxis with the use of aspirin

Adverse Reactions

a. Rash, gastrointestinal ulcerations, abdominal pain, upset stomach, heartburn, drowsiness, headache, cramping, nausea, gastritis, and bleeding.

Dosage & Administration

a. **Adult**: 4 chewable tablets (324 mg) PO
   - **NOT** repeated
b. **Pediatric: NOT ALLOWED**

Special Considerations

a. Patients with suspected acute coronary syndrome taking warfarin (Coumadin), clopidogrel etc, can be administered aspirin.
b. (Plavix) or other oral anticoagulants may still be given aspirin

Revised: 5/26/2023

Back Button

Atropine Sulfate

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. Atropine is an endogenous antimuscarinic, anticholinergic substance. It is the prototypical anticholinergic medication with the following effects:
   - Increased heart rate and AV node conduction
   - Urinary retention
   - Pupillary dilation (mydriasis)
   - Decreased sweat, tear and saliva production (Antisialogogue properties) and GI motility

Onset & Duration

a. Onset: Immediate
b. Duration: 4 hours

Indications

a. Suspected beta blocker overdose
b. As an antidote for certain insecticide exposures (e.g., organophosphates) or suspected nerve gas with symptoms of excess cholinergic stimulation.
c. Extreme salivation post ketamine administration

Contraindications

a. None in the emergency setting

Adverse Reactions

a. Anticholinergic toxidrome in overdose

Dosage & Administration

a. Suspected beta blocker OD
   - **Adult**: 1 mg bolus IV/IO bolus, every minute until symptom resultion
   - **Pediatric:** 0.02 mg/kg bolus IV/IO bolus, every minute until symptom resultion

d. Extreme salivation post ketamine administration
   - **Adult**: 0.5 mg bolus IV/IO; **NOT** repeated
   - **Pediatric:** 0.02 mg/kg bolus IV/IO; **MAX** single dose 0.5 mg; **NOT** repeated

b. Organophosphate Poisoning/Nerve gas
   - **Adult**: 2 mg bolus IV/IO, every minute as needed for symptom resolution
   - **Pediatric:** 0.05 mg/kg bolus IV/IO, every minute as needed for symptom resolution

Special Considerations

a. Maybe ineffective in patients with a heart transplant
b. Contact receiving facility early if suspected chemical exposure

Revised: 5/26/2023

Back Button

Calcium

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. Calcium is a cardioprotective agent in the setting of severe hyperkalemia:
   - Increased contractility
   - May increase ventricular automaticity
   - Decrease heart rate
   - Produces effects similar to and additive with those of digitalis

Onset & Duration

a. Calcium Chloride
   - Onset: 5 to 15 minutes
   - Duration: Dose dependent up to 4 hours

b. Calcium Gluconate
   - Onset: Immediate
   - Duration: 30 minutes to 2 hours

Indications

a. Hyperkalemia
b. Severe crush injuries
c. Adult pulseless arrest associated with any of the following clinical conditions:
   - Known hyperkalemia
   - Renal failure with or without hemodialysis history
   - Suspected calcium channel blocker toxicity
d. Hydrofluoric Acid burns (calcium gluconate)
e. Calcium channel blocker overdose with hypotension and bradycardia
f. Beta blocker overdose with hypotension and bradycardia **REFRACTORY** to Glucagon **AND** vasopressor

Contraindications

a. Known hypercalcemia
b. Not indicated for routine treatment of pulseless arrest
c. In the setting of digoxin toxicity, calcium may worsen cardiovascular function

Adverse Reactions

a. Extravasation of calcium salts will cause necrosis of tissue
b. Rapid injection of calcium gluconate may cause vasodilatation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope and cardiac arrest. Administer slowly (no faster than 2 mL/min) and stop if patient complains of distress.
c. Avoid combining or administering with sodium bicarbonate within the same vascular access line (incompatible), calcium will precipitate if mixed with sodium bicarbonate.
   - Multiple vascular access sites preferred, but if not available, flush catheter thoroughly before administering one medication after another.

Revised: 5/26/2023

Back Button

Calcium

Dosage & Administration

a. Calcium Chloride 10%
- **Adult:**
  i. Hyperkalemia or Calcium/Beta Channel Blocker Overdose: 1 gram slow bolus over 2 to 5 minutes IV/IO.
     - May repeat dose every 10 minutes for total of three (3) doses.
  ii. Severe Crush Injury and/or Cardiac Arrest from Suspected Hyperkalemia: 1 gram bolus IV/IO
- **Pediatric:**
  i. Calcium/Beta Channel Blocker Overdose: 20 mg/kg slow bolus over 2 to 5 minutes IV/IO, **NOT** to exceed 1 gram.
     - May repeat every 10 minutes for total of three (3) doses.
  ii. Severe Crush Injury and/or Cardiac Arrest from Suspected Hyperkalemia:
     - **NOT ALLOWED**

b. Calcium Gluconate 10%
- **Adult:**
  i. Hyperkalemia or Calcium/Beta Channel Blocker Overdose: 3 grams slow bolus over 2 to 5 minutes IV/IO.
     - May repeat dose every 10 minutes for total of three (3) doses.
  ii. Severe Crush Injury and/or Cardiac Arrest from Suspected Hyperkalemia: 3 gram bolus IV/IO
  iii. Hydrofluoric burn: Commercially prepared, or mixed with water soluble lubricant. Apply topically to affected area.
     - First line treatment in hydrofluoric acid burns
- **Pediatric:**
  i. Calcium/Beta Channel Blocker Overdose: 60 mg/kg, **NOT** to exceed 1 gram slow bolus over 2 to 5 minutes IV/IO.
     - May repeat every 10 minutes for total of three (3) doses.
  ii. Severe Crush Injury and/or Cardiac Arrest from Suspected Hyperkalemia:
     - **NOT ALLOWED**
  iii. Hydrofluoric burn: Commercially prepared, or mixed with water soluble lubricant. Apply topically to affected area.
     - First line treatment in hydrofluoric acid burns

Special Considerations

a. Calcium chloride contains three times the amount of elemental calcium in the same volume of calcium gluconate
b. Monitor vascular access patency closely, make sure to flush after administration with normal saline

Revised: 5/26/2023

Back Button

Cefazolin (Ancef)

Waivered Medication		
Provider Level	**1ST Dose**	**Repeat Dose**
EMT	**NO**	**NO**
EMT-IV	**NO**	**NO**
Paramedic	**SO**	**NO**

Description

a. Cefazolin is a first-generation cephalosporin and binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. This results in the weakening of the bacterial cell wall and causes cell lysis.

Onset & Duration

a. Onset: Approximately 1 to 2 hours
b. Duration: Approximately 8 hours

Indications

a. Suspected open extremity fracture (indicated by visible bone, deformity with break in overlying/adjacent skin)
b. Amputation

Contraindications

a. Known cephalosporin allergy
b. Age <1 years old

Adverse Reactions

a. Nausea, vomiting, diarrhea
b. Itching, skin rash, anaphylaxis

Dosage & Administration

a. **Adult:** 1 gram in 50 mL NS or D_5W over 10 minutes IV/IO, **NOT** repeated
b. **Pediatric > 1:** 30 mg/kg in 50 mL NS or D_5W over 10 minutes IV/IO, **NOT** repeated
c. **Pediatric < 1: NOT ALLOWED**

Special Considerations

a. Be alert for hypersensitivity reaction
b. IV incompatible with Amiodarone
c. Seizures may occur if inappropriately high doses are administered to patients with impaired renal function
d. Known penicillin allergy is not considered a contraindication

Revised: 5/26/2023

Back Button

Dexamethasone (Decadron)

Provider Level	1ST Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	NO

Description

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

Onset & Duration

b. Onset: Within 5 to 10 minutes
c. Duration: Up to 72 hours

Indications

a. Moderate to severe allergic reaction or anaphylaxis
b. Severe asthma
c. COPD Exacerbation
d. Suspected Croup with resting stridor **ONLY**
e. Suspected Addisonian crisis (cardiovascular collapse in patient at risk for adrenal insufficiency)

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Gastrointestinal bleeding (in oral doses only)
b. Hypertension
c. Hyperglycemia

Dosage & Administration

a. **Adult**:
   - 10 mg bolus IV/IO/IM/PO, **NOT** repeated
b. **Pediatric:**
   - 0.6 mg/kg IV/IO/IM/PO up to a **MAX** of 10 mg, **NOT** repeated

Special Considerations

a. It is not considered a first line drug; **DO NOT** delay transport to administer this drug
b. If administering orally consider mixing it with juice or water

Revised: 5/26/2023

Back Button

Dextrose (Intravenous)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. Glucose is the body's basic fuel and is required for cellular metabolism and is distributed in the tissues and provides a prompt increase in circulating blood sugar.
b. Glucose use is regulated by insulin, which stimulates storage of excess glucose from the bloodstream, and by glucagon, which mobilizes stored glucose into the bloodstream.

Onset & Duration

a. Onset: 1 minute
b. Duration: Varies on degree of hypoglycemia

Indications

a. Any clinical condition of concern for hypoglycemia and blood glucose reading less than 60 mg/dL

Contraindications

a. Intracranial or intraspinal hemorrhage with blood glucose reading ≥60 mg/dL (relative)
b. Severe traumatic brain injuries with blood glucose reading ≥60 mg/dL

Adverse Reactions

a. Dextrose is generally free of side effects for most patients and should be used whenever a question of hypoglycemia exists.
b. Extravasation may cause tissue necrosis; if extravasation does occur, immediately stop administration and apply a cold compress.

Dosage & Administration

a. **Adult**
   - 12.5 to 25 grams (50 mL of a 50% solution) IV/IO bolus
     i. May repeat up to 25 grams IV/IO if glucose level is <60 mg/dL with continued altered mental status after 5 to 10 minutes
     ii. Alternative: 25 grams (250 mL of a 10% solution) IV/IO infusion
b. **Pediatric**
   - <13 years: 10 mL/kg of a 10% solution IV/IO bolus
     i. To make 10% dextrose: Add 25 grams of dextrose 50% solution to 250 mL (or 50 grams in 500 mL) of normal saline.
     ii. Administer over 10 minutes or until patient condition improves

Special Considerations

a. If newborn is symptomatic consider breastfeeding as the initial treatment
b. Effect is delayed in elderly people with poor circulation or patients who have been hypoglycemic for a prolonged period of time.
c. With profound hypoglycemia and no IV access consider IO insertion
d. Monitor vascular access patency closely, make sure to flush after administration with normal saline
e. If patient not being transported, assure patient eats complex carbohydrates prior to release of care
f. Repeat BGL value every 30 minutes as needed

Revised: 5/26/2023

Back Button

Diazepam (Valium)

Condition	Sedation/Seizure	
Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. It is a benzodiazepine central nervous system depressant that produces sedation

Onset & Duration

a. Onset: 1 to 5 minutes
b. Duration: Up to 3 hours

Indications

a. Seizure
b. Sedation of the severely anxious, agitated, and/or combative patient as a second line to midazolam
c. Treatment of severe alcohol withdrawal/DTs

Contraindications

a. Known hypersensitivity
b. Procedural sedation

Adverse Reactions

a. Drowsiness, fatigue
b. Respiratory depression, including apnea
c. Hypotension and volume-related tachycardia

Dosage & Administration

a. Agitation: PRN every 10 minutes
   - Mild (RASS +1 to +2):
     i. **Adult**: Up to 2.5 mg IV/IO/IM; **MAX** total 5 mg
     ii. **Pediatric > 2:** Up to 0.25 mg/kg IV/IO/IN/IM, **MAX** single dose 5 mg
   - Moderate (RASS +2 to +3) or Severe Alcohol Withdrawal/DTs
     i. **Adult**: Up to 5 mg IV/IO/IM; **MAX** 10 mg
     ii. **Pediatric > 2:** Up to 0.25 mg/kg IV/IO/IN/IM; **MAX** single dose 5 mg
   - Severe (RASS +3 to +4)
     i. **Adult**: Up to 10 mg IV/IO/IM; **MAX** total 20 mg
     ii. **Pediatric > 2:** Up to 0.25 mg/kg IV/IO/IM; **MAX** single dose 5 mg
b. Active Seizures: PRN every 5 minutes
   - **Adult**: 10 mg IV/IO/IM
   - **Pediatric:** 0.5 mg/kg IV/IO/IM; **MAX** single dose 10 mg

Special Considerations

a. Strongly consider ½ typical dosing in elderly patients or when combining with opioids
b. Use caution in patients considered hypotensive
c. Extreme care must be used in the elderly, to very ill patients and to those with limited pulmonary reserve because of the possibility that apnea.

Revised: 5/26/2023

Back Button

Diltiazem (Cardizem)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. Diltiazem is a calcium channel blocker used in the treatment of certain types of tachyarrhythmias. It relaxes the smooth muscles in the walls of arteries, causing systemic vasodilatation. It's negative dromotropic properties at both the SA and AV node, coupled with its moderately negative inotropic effects make diltiazem a favorable medication for heart rate control with less severe side effects than those commonly demonstrated by other medications of this class.

Onset & Duration

a. Onset: 2 to 5 minutes
b. Duration: Less than 8 hours

Indications

a. Reentrant narrow complex supraventricular tachydysrhythmias.
b. Atrial fibrillation or atrial flutter with a rapid ventricular response

Contraindications

a. Patients with sick sinus syndrome or AV heart block in the absence of a functioning artificial pacemaker.
b. Any wide QRS tachycardia resulting from a poisoning or drug overdose, ventricular tachycardia, or Wolf–Parkinson–White (WPW) syndrome associated with either atrial flutter or atrial fibrillation.
c. Hypotension <100 systolic

Adverse Reactions

a. Transient drops in blood pressure are expected.
b. Patients with preexisting nodal disease can develop sinus arrest, increased AV block, complete heart block, and asystole.
c. The administration of diltiazem to the patient in ventricular tachycardia may result in ventricular fibrillation and death.

Dosage & Administration

a. **Adult**: 20 mg IV/IO bolus over 2 to 5 minutes.
    - May repeat after 15 minutes at 25 mg IV/IO bolus over 2 to 5 minutes.
b. **Pediatric: NOT ALLOWED**

Special Considerations

a. Monitor patient closely in those patients who are taking oral beta–blockers
b. Should be used with great caution in patients prone to diminished cardiovascular preload

Revised: 5/26/2023

Back Button

Diphenhydramine (Benadryl)

Provider Level	1ST Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	NO

Description

a. Diphenhydramine is an antihistamine which blocks the action of histamines released from cells during an allergic reaction. It has direct CNS effects, which may be stimulant, or more commonly depressant, depending on individual variation. Diphenhydramine also has an anticholinergic and antiparkinsonian effect which is used to treat acute dystonic reactions to antipsychotic or antiemetic medications (e.g. Haldol®, Thorazine®, Reglan®, Compazine®, Inapsine®).

Onset & Duration

a. Onset: Within 1 minute
b. Duration: 6 to 12 hours

Indications

a. General allergic reaction
b. Anaphylaxis
c. Dystonic medication reactions or akathisia (agitation or restlessness)

Contraindications

a. None in the emergency setting

Adverse Reactions

a. Drowsiness
b. Dilated pupils
c. Dry mouth and throat
d. Flushing

Dosage & Administration

a. Adult: 50 mg bolus IV/IO/IM/PO
    a. **NOT** repeated
b. Pediatric: 2 mg/kg bolus IV/IO/IM/PO
    a. **NOT** to exceed 50 mg
    b. **NOT** repeated

Special Considerations

a. May potentiate the effects of alcohol or other depressants
b. MAO inhibitors may prolong and intensify anticholinergic effects of antihistamines
c. In high doses (overdose), prolonged QT and seizures may occur

Revised: 5/26/2023

Back Button

Droperidol (Inapsine)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. Dopamine receptor blockade in brain, predominantly dopamine-2 receptor. When reuptake is prevented, a strong antidopaminergic, antiserotonergic response occurs. Droperidol reduces motor activity, anxiety, and causes sedation; also possesses adrenergic-blocking, antifibrillatory, antihistaminic, and anticonvulsive properties

Onset & Duration

a. Onset: IV Within 10 minutes; IM within 20 minutes
b. Duration: Up to 4 to 6 hours

Indications

a. Mild, moderate and severe, agitation
b. Nausea/Vomiting

Contraindications

a. Hypersensitivity to drug
b. Parkinson's Disease
c. Depressed mental status
d. Known or suspected prolonged QT interval
    - QTc interval > 460 msec in females or > 450 msec in males

Adverse Reactions

a. Extrapyramidal symptoms (dystonia)
b. QT prolongation
c. Drowsiness

Dosage & Administration

a. Agitation; PRN every 10 minutes
    - Mild (RASS +1 to +2):
        i. **Adult**: 2.5 mg IV/IO or 5 mg IM; **MAX** total of 5 mg
        ii. **Pediatric: NOT ALLOWED**
    - Moderate (RASS +2 to +3)
        i. **Adult**: 5 mg IV/IO or 10 mg IM; **MAX** total of 10 mg
        ii. **Pediatric: NOT ALLOWED**
    - Severe (RASS +3 to +4)
        i. **Adult**: 10 mg IV/IO/IM; **MAX** total of 20 mg
        ii. **Pediatric: NOT ALLOWED**
b. Nausea/Vomiting: PRN every 10 minutes up to 2 total doses
    - **Adult:** 2.5 mg IV/IO or IM
    - **Pediatric (2 to 12 years old):** 0.01 mg/kg IV/IO or IM; **MAX** single dose of 1.25 mg

Special Considerations

a. Use caution in elderly patients with dementia related psychosis.
b. Utilize caution if combined with other medications that may prolong the QTI (ondansetron).
c. **DO NOT** combine with ***OLANZAPINE***

Revised: 5/26/2023

Back Button

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. DuoDote Auto-injectors are a combination of 2 medications; Atropine Sulfate and 2-PAM Chloride, which are used to treat organophosphate poisoning and other nerve agents.
b. DuoDote is packaged in premixed Intramuscular Auto-Injectors - 2.1mg Atropine + 600mg 2-PAM.

Onset & Duration

a. Onset: 2 to 3 minutes with peak effect in to 15 minutes
b. Duration: 2 to 3 hours

Indications

a. Known or suspected expose to Organophosphates, Nerve Agents, or similar toxins with one or more of the following symptoms:
   - Seizures
   - Coma

DUMBELS	
(D) Diarrhea	(B) Bronchorrhea
(U) Urination	(E) Emesis
(M) Miosis (constricted pupils)	(L) Lacrimation (*Tearing*)
(B) Bradycardia	(S) Salivation

Contraindications

a. None in the emergency setting

Adverse Reactions

a. Anticholinergic toxidrome in overdose (Atropine Sulfate)
b. Impaired vision
c. Increased BP and HR
d. Headache

Dosage & Administration

a. **Adult:**
   - Moderate Symptoms:
     i. Single Auto-injector IM; repeat as needed 2 times; **3 TOTAL** doses
   - Severe Symptoms:
     i. 3 Auto-injectors administered in rapid succession IM; **NOT REPEATED**
b. **Pediatric:**
   - **NOT ALLOWED**

Special Considerations

a. Vacate Exposure
b. Request HAZMAT and Additional CSFD/AMR responders
   - Each Apparatus carries a total of 1- 3 auto-injectors per seat, for the responders.
c. Atropine can be administered (Paramedics ONLY) if DuoDote stock has been used.
d. Exposure to Nerve Agents and similar toxins can cause seizures – See ***SEIZURE GUIDELINE***
e. If mass casualty: Advise receiving hospital to activate nerve agent antidote stockpile takes approx. two hours to deliver from Denver.

Revised: 5/26/2023

Back Button

DuoDote

Administration:

Before Injecting[1]

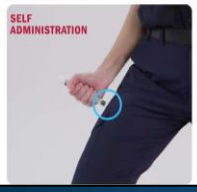
Important: Do not remove gray safety release until ready to use.
CAUTION: Never touch the green tip (needle end)!

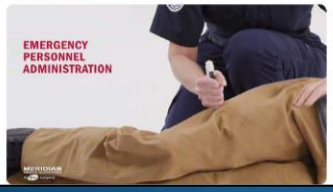
1. Tear open plastic pouch at any of the notches.
   Remove the DuoDote (atropine and pralidoxime chloride injection), for intramuscular use Auto-Injector from the pouch.
2. Place the DuoDote Auto-Injector in your dominant hand. (If you are right-handed, your right hand is dominant.)
   Firmly grasp the center of the DuoDote Auto-Injector with the green tip (needle end) pointing down.
3. With your other hand, pull off the gray Safety Release.
   The DuoDote Auto-Injector is now ready to be administered.



Select Site[1]

4. The injection site is the mid-outer thigh area.
   The DuoDote Auto-Injector (atropine and pralidoxime chloride injection), for intramuscular use can inject through clothing. However, make sure pockets at the injection site are empty.





Inject[1]

5. Swing and firmly push the green tip straight down (a 90° angle) against the mid-outer thigh.
   Continue to firmly push until you feel the DuoDote Auto-Injector (atropine and pralidoxime chloride injection), for intramuscular use trigger. IMPORTANT: After the auto-injector triggers, hold firmly in place against the injection site for approximately 10 seconds.

Inject[1]

6. Remove the DuoDote Auto-Injector (atropine and pralidoxime chloride injection), for intramuscular use from the thigh and look at the green tip.
   If the needle is visible, the drug has been administered. If the needle is not visible, check to be sure the gray safety release has been removed, and then repeat above steps beginning with step 4, but push harder in step 5.

Needle visible

Needle not visible

After Injecting[1]

7. After the drug has been administered, push the needle against a hard surface to bend the needle back against the DuoDote Auto-Injector (atropine and pralidoxime chloride injection), for intramuscular use.

8. Put the used DuoDote Auto-Injector back into the plastic pouch, if available. Leave used DuoDote Auto-Injector(s) with the patient to allow other medical personnel to see the number of DuoDote Auto-Injector(s) administered.

9. Immediately move yourself and the patient away from the contaminated area and seek definitive medical care for the patient.

Back Button

Epinephrine

Epinephrine (1:1,000) IM: ANAPHYLAXIS ONLY			Epinephrine (1:1,000 or 1:10,000) IV/IO			Epinephrine (1:1,000) Nebulized		
Provider Level	**1st Dose**	**Repeat Dose**	**Provider Level**	**1st Dose**	**Repeat Dose**	**Provider Level**	**1st Dose**	**Repeat Dose**
EMT	**SO**	**SO**	**EMT**	**NO**	**NO**	**EMT**	**NO**	**NO**
EMT-IV	**SO**	**SO**	**EMT-IV**	**NO**	**NO**	**EMT-IV**	**NO**	**NO**
Paramedic	**SO**	**SO**	**Paramedic**	**SO**	**SO**	**Paramedic**	**SO**	**SO**

Description

a. Catecholamine with alpha (α) and beta (β) effects

Onset & Duration

a. Onset: Immediate
b. Duration: 3 to 5 minutes

Indications

a. Cardiac Arrest (Medical)
   - **PEDIATRIC:** ≤ 18 years old
b. Bradycardia with inadequate perfusion
c. Uncompensated Shock
d. Peri-advanced airway hypoperfusion (systolic BP<90, E_tCO_2<30, MAP<60 etc)
e. Anaphylaxis/Allergic Reaction/Asthma
f. Croup with resting stridor **ONLY**

Contraindications

a. Not used to specifically treat hypovolemic and/or hemorrhagic shock
b. Cardiac arrest due to suspected hypothermia or trauma

Adverse Reactions

a. Angina pectoris or myocardial infarction
b. Anxiety, tremors, palpitation, and headache

Dosage & Administration

Adult		
Indication	**Concentration and Route**	**Dose**
Allergic Reaction/ Anaphylaxis / Asthma • Signs of poor perfusion or Asthma	Epi 1:1,000 IM	0.5 mg (0.5 mL) • Repeat as needed every 5 minutes
Croup	Epi 1:1,000 Nebulized	5 mg (5 mL) • Repeat as needed **AFTER** 30 minutes
Uncompensated Shock/ Severe Asthma - Prei-advanced airway hypoperfusion - Anaphylactic - Septic - Cardiogenic - Neurogenic	**Mix**: Inject 1 mg of epi *(either conscentration)* into 1,000 mL Normal Saline bag or 0.5 mg in 500 mL NS to achieve • 1 mcg/mL concentration • Attach to a Macro drip set	IV/IO infusion wide open to gravity Continuously reassess BP until titrated effect • BP > 90 systolic, and/or return of distal pulses, and/or improved mental status
Medical Cardiac Arrest ≥ 19 Years Old: - Suspected respiratory etiology - Unexplained elvated EtCO2 ≥ 30	**Mix**: Inject 1 mg of epi *(either conscentration)* into 1,000 mL Normal Saline bag or 0.5 mg in 500 mL NS to achieve • 1 mcg/mL concentration • Attach to a Macro drip set	IV/IO infusion wide open to gravity Continuously reassess BP until titrated effect • BP > 90 systolic, and/or return of distal pulses, and/or improved mental status

Revised: 5/26/2023

Back Button

Epinephrine

Pediatric		
Indication	**Concentration and Route**	**Dose**
Medical Cardiac Arrest ≥ 13 ≤ 18 years old	Epi 1:10,000 IV/IO	1 mg • Repeat every 3 to 5 minutes; **MAX** 3 doses for the entire arrest
Medical Cardiac Arrest < 13 years old	Epi 1:10,000 IV/IO	0.01 mg/kg (0.1 mL/kg) • **MAX** sing dose 1 mg (10 mL) • Repeat every 3 to 5 minutes; **MAX** 3 doses for the entire arrest
Allergic Reaction/ Anaphylaxis / Asthma • Signs of poor perfusion or Asthma	Epi 1:1,000 IM	0.01 mg/kg (0.01 mL/kg) • **MAX** single dose 0.5 mg (0.5 mL) • Repeat as needed every 5 minutes
Croup	Epi 1:1,000 Nebulized	0.5 mg/kg (0.5 mL/kg) • **MAX** single dose 5 mg (5 mL) • Repeat as needed **AFTER** 30 minutes
Bradycardia with Shock	Epi 1:10,000 IV/IO	0.01 mg/kg (0.1 mL/kg) • Repeat every 3 to 5 minutes
Uncompensated Shock/ Severe Asthma - Prei-advanced airway hypoperfusion - Anaphylactic - Cardiogenic - Neurogenic	**Mix**: Inject 1 mg of epi *(either conscentration)* into 1,000 mL Normal Saline bag or 0.5 mg in 500 mL NS to achieve • 1 mcg/mL concentration • Attach to a Macro drip set	IV/IO infusion wide open to gravity Continuously reassess BP until titrated effect • ≥ Peds Guide recommendation, and/or return of distal pulses, and/or improved mental status

Special Considerations

a. Bradycardias in the setting of an acute MI are common and may be beneficial. **DO NOT** treat unless there are signs of poor perfusion (systolic BP<90, E_tCO_2<30, MAP<60 etc).
b. Pediatric bradycardias are most commonly secondary to hypoxia. Correct the ventilation first.
c. Auto injector can be administered by **ALL** EMS Personnel via standing order (**SO**)
d. Patient's over 40 years of age or with previous cardiac disease/illness should be reassessed often for signs of cardiac compromise.
e. If administering 2 mg of epi in a 500 mL bag during cardiac arrest and ROSC is achieved, TKO and titrate to a BP of > 90 systolic
f. Avoid combining or administering with sodium bicarbonate within the same vascular access line (incompatible).
    - Multiple vascular access sites preferred, but if not available, flush catheter thoroughly before administering one medication after another
g. Reasoning for humeral head IO site: ONLY in OHCA is to achieve correct flow rate of epi.
h. During MAAM procedure in patients with traumatic injuries be sure to discontinue the epi drip post MAAM procedure.

Revised: 5/26/2023

Back Button

Fentanyl (Sublimaze)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. A potent, synthetic-opioid analgesic agent
b. Depresses the central nervous system and sensitivity to pain

Onset & Duration

a. Onset: 60 to 90 seconds
b. Duration: 30 to 60 minutes

Indications

a. An analgesic used for the reduction of moderate to severe pain
b. An analgesic used for post MAAM procedure
c. Treatment of shivering in the heat stroke/hyperthermic patient after rapid cooling

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Respiratory Depression
b. Bradycardia (rare)
c. Chest wall rigidity has been reported with rapid administration of fentanyl

Dosage & Administration

a. **Adult**:
   - 50-100 mcg slow bolus IV/IO IM/IN
   - Repeat every 10 minutes as needed
b. **Pediatric**:
   - 1 mcg/kg slow bolus IV/IO; IM/IN
   - Repeat every 10 minutes as needed

Special Considerations

b. Use caution in patients with hemodynamic instability, respiratory depression or shock
a. Watch for synergistic effects when given with other CNS depressing medications
b. May cause nausea and vomiting, administer slowly and consider an antiemetic
c. Strongly consider ½ typical dosing in elderly patients or when combining with benzodiazepines

Revised: 5/26/2023

Back Button

Glucagon

Condition	Hypoglycemia		Beta/Calcium Channel Blocker Overdose	
Provider Level	1st Dose	Repeat Dose	1st Dose	Repeat Dose
EMT	NO	NO	NO	NO
EMT-IV	NO	NO	NO	NO
Paramedic	SO	SO	SO	SO

Description

a. A naturally occurring hormone within the human body that works opposite from insulin and increases concentration of glucose in the bloodstream. Glucagon also causes smooth muscle relaxation and increases myocardial contractility.

Onset & Duration

~~a.~~ Onset: Within 20 minutes for hypoglycemia, 5 minutes for Beta/Calcium Blocker Overdose

b. Duration: Varies depending on route administered; 15 minutes IV, 1 to 2 hours IM

Indications

a. Hypoglycemic patient in which oral dextrose is contraindicated and/or an IV cannot be established

b. Calcium channel and/or beta blocker overdose if patient is symptomatic

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Nausea and/or vomiting

Dosage & Administration

a. **Adult**:
   - Hypoglycemia: 1 mg IM
     i. **NOT** repeated
   - Beta/Calcium Channel Blocker Overdose: Maximum available dose up to 5 mg IV/IO, repeat once if symptoms do not resolve (if available)

b. **Pediatric:**
   - Hypoglycemia: 0.5 mg IM
     i. **NOT** repeated
   - Beta/Calcium Channel Blocker Overdose: 0.1 mg/kg IV/IO, repeat once if symptoms do not resolve (if available)

Special Considerations

a. Glucagon will not be effective in reversing hypoglycemia in a patient with no liver glycogen store due to things such as alcoholism or malnutrition.

Revised: 5/26/2023

Back Button

Honey

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. The goal is to create a barrier between the mucus membranes and the battery, specifically the esophagus. Honey will coat the stomach allowing the battery that has been ingested to slow down damage to the upper and lower Gastrointestinal system. Beyond coating the affected area and the battery to slow the overall leak of battery acid honey will help neutralize the tissue pH. This decreases the burning process of the soft tissues and slows the adhering process of the battery.

Onset & Duration

a. Onset: Immediate
b. Duration: 10 to 15 min

Indications

a. Suspected button battery ingestion ≤ 12 hours

Contraindications

a. Inability to swallow or protect airway
b. Age <12 months

Adverse Reactions

a. None noted

Dosage & Administration

a. **Adult and Pediatric ≥ 12 months:** 10 mL (2 teaspoons) PO every 10 minutes, no max dose.

Special Considerations

a. Utilize commercial honey rather than specialized or artisanal honey.
b. Button/Coin Batteries have a very high mortality rate, administer and transport immediately to appropriate facility.
c. Do not induce vomiting.

Revised: 5/26/2023

Back Button

Hydromorphone (Dilaudid)
Non-IFT/Field Administration

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	NO

Description

a. Opioid analgesics with desired effects of analgesia, euphoria, and sedation. It depresses the central nervous system and sensitivity to pain and increases venous capacitance, decreases venous return and produces mild peripheral vasodilation.

Onset & Duration

a. Onset: 3 to 5 minutes
b. Duration: 2 to 4 hours

Indications

a. An analgesic used for the reduction of moderate to severe pain

Contraindications

a. Known hypersensitivity
b. Hypotension < 90 systolic

Adverse Reactions

a. Respiratory Depression
b. Bradycardia (rare)

Dosage & Administration

a. **Adult**:
   - 0.5 mg slow bolus IV/IO or IM
   - **NOT REPEATED**
b. **Pediatric >20 kg:**
   - 0.005 mg/kg slow bolus IV/IO or IM
   - **NOT REPEATED**

Special Considerations

a. Use caution in patients with hemodynamic instability, respiratory depression or shock
b. Watch for synergistic effects when given with other CNS depressing medications.
c. May cause nausea and vomiting, administer slowly and consider an antiemetic.
d. Strongly consider ½ typical dosing in elderly patients or when combining with benzodiazepines
e. IV route is preferred because of more accurate titration and maximal clinical effect. IO/IM are acceptable alternatives when IV access is not readily available.
f. HR, E_tCO_2, and pulse oximetry monitoring required post administration.
g. Caution as it has long half-life and full affect may take 20 to 30 minutes to be appreciated (caution with stacking)

Revised: 5/26/2023

Back Button

Hydroxocobalamin (Cyanokit)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

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

Onset & Duration

a. Onset: Rapid
b. Duration: Variable

Indications

a. Known or suspected severe hydrogen cyanide toxicity or exposure
    a. Exremis with altered mental status, respiratory failure, poor perfusion, dysrhythmias, chest pain, and/or seizures.

Contraindications

a. Known allergy to hydroxocobalamin or cyanocobalamin, but consider administration if life threatening cyanide toxicity

Adverse Reactions

a. Hypertension, nausea, headache
b. Change in urine and secretion color as well as skin redness
c. CO-oximetry including carboxyhemoglobin levels can be inaccurate

Dosage & Administration

a. **Adult**: 5 grams IV/IO, may repeat once; **MAX** 10 grams
    - Reconstitute the 5 gram vial of hydroxocobalamin with 200 mL of 0.9% normal saline (lactated ringers or D_5W can be substituted if needed).
        i. Use the spike on the hydroxocobalamin vial to introduce the normal saline INTO the hydroxocobalamin vial. The line on the hydroxocobalamin vial marks 200 mL.
        ii. Following the addition of the diluent (normal saline) to the vial, the vial should be repeatedly inverted or rocked (**NOT** shaken) for at **LEAST** 60 seconds prior to infusion.
b. **Pediatric:** 70 mg/kg IV/IO; **MAX** initial dose 5 grams; **NOT** repeated
    - Reconstitute the calculated amount of hydroxocobalamin with 200 mL of 0.9% normal saline (lactated ringers or D_5W can be substituted if needed)
        i. Use the spike on the hydroxocobalamin vial to introduce the normal saline INTO the hydroxocobalamin vial. The line on the hydroxocobalamin vial marks 200 mL.
        ii. Following the addition of the diluent (normal saline) to the vial, the vial should be repeatedly inverted or rocked (**NOT** shaken) for at **LEAST** 60 seconds prior to infusion.

Special Considerations

a. Assure separate IV line (this medication cannot be given in the same line as other medications)
b. EMT and above can admin if they are at a mine under the Mine Acts

Revised: 5/26/2023

Back Button

Ibuprofen (Motrin)

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. Ibuprofen is a propionic acid nonsteroidal anti-inflammatory drug. The anti-inflammatory mechanism is due to decreased prostaglandin synthesis. The analgesic activity is effective in cases where inflammation has caused sensitivity of pain receptors.

Onset & Duration

a. Onset: 30 to 60 minutes
b. Duration: Up to 4 to 6 hours

Indications

a. Mild to moderate pain
b. Frostbite or frozen extremity

Contraindications

a. Hypersensitivity to drug
b. Current or recent history of GI disease and/or bleeding
c. ACS
d. Pregnancy
e. Patient on blood thinner not including aspirin
f. Children < 6 months old

Adverse Reactions

a. Bradycardia
b. Oliguria (urinating only small amounts)
c. Bronchospasms
d. Angioedema
e. May enhance hypoglycemia
f. Blood thinning

Dosage & Administration

a. **Adult**: 600 mg PO; PRN every 6 hours
b. **Pediatric: ≥ 6 months:** 10 mg/kg PO; PRN every 6 hours, **MAX** dose of 600 mg

Special Considerations

a. Use caution with renal disease

Revised: 5/26/2023

Back Button

Ipratropium Bromide (Atrovent)

Provider Level	1ST Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. An anticholinergic agent which inhibits interaction of acetylcholine at parasympathetic receptor sites on the bronchial smooth muscle.

Onset & Duration

a. Onset: Within 3 minutes
b. Duration: 6 hours

Indications

a. Adjunct bronchodilator for asthma, chronic bronchitis, allergy/anaphylaxis, and emphysema which is not being adequately controlled by a beta adrenergic agent such as albuterol.

Contraindications

a. Patients with history of hypersensitivity to the drug

Adverse Reactions

a. Anticholinergic symptoms

Dosage & Administration

a. **Adult**: 0.5 mg mixed with albuterol in nebulizer
    - Repeat as needed every 15 minutes
b. **Pediatric**: 0.25 mg mixed with albuterol in nebulizer
    - Repeat as needed every 15 minutes

Special Considerations

a. Can combine with albuterol or levalbuterol
b. It is safe to administer to patients with known or suspected peanut allergy

Revised: 5/26/2023

Back Button

IV Solutions

Provider Level	Administration
EMT	NO
EMT-IV	SO
Paramedic	SO

Description

a. Volume Expanders (Lactated Ringer's or Normal Saline)
   - These contain sodium as the major cation and expand the intravascular fluid space
   - LR: Isotonic Solution
   - NS: Isotonic Solution

b. Water Solution (D_5W)
   - Diffuses through three times the body space in comparison to NS and LR; poor volume expander.
   - Hypotonic Solution

Onset & Duration

a. Onset: Immediate
b. Duration: Varies dependent of situation

Contraindications

a. Be cautious in the patient with high suspicion of fluid overload

Indications

a. Volume Expanders: Expand intravascular volume
b. Water Solution: Used in conjunction with other IV medication

Adverse Reactions

a. Fluid overload

Dosage & Administration

a. Hypovolemia
   - **Adult and Pediatric:** 20 mL/kg, repeat as needed until improved perfusion

b. Hemorrhagic Shock
   - **Adult and Pediatric:** 10 mL/kg, repeat as needed until restoration of distal pules, improved mental status and/or permissive hypotension levels reached (80 to 100 systolic)

c. Septic Shock
   - **Adult:** 30 mL/kg for, repeat as needed until improved perfusion
   - **Pediatric:** 30 mL/kg in increments of 10 mL/kg reassessing in-between boluses.

d. Burn Therapy
   - **Adult:** 500 mL/hr
   - **Pediatric:**
     i. Age ≥ 14: 500 mL/hr
     ii. Age 5 to 13: 250 mL/hr
     iii. Age < 5: 125 mL/hr

e. Fluid Challenge: 250 to 500 mL bolus with reassessment after each administration

Special Considerations

a. Watch for pulmonary edema in the cardiac compromised patient
b. Be cautious in any elderly patient history of renal insufficiency, or congestive heart failure
c. To maintain vascular access patency in pediatric patients, give the calculated bolus in smaller increments

Revised: 5/26/2023

Back Button

Ketamine (Ketalar)

Medication Assisted Airway Management (MAAM)

Waivered Medication		
Provider Level	**1ST Dose**	**Repeat Dose**
EMT	**NO**	**NO**
EMT-IV	**NO**	**NO**
Paramedic	**NO**	**NO**
MAAM Paramedic	**SO**	**SO**

Description

a. An anesthetic agent with potent analgesic properties and the ability to produce a cataleptic state often referred to as "dissociative analgesia."

Onset & Duration

a. Onset: 30 seconds IV; 3 to 4 minutes IM
b. Duration: 10 to 15 minutes IV; 15 to 30 minutes IM

Indications

a. Induction agent during Mediaction Assisted Airway Management (MAAM paramedics **ONLY**)
b. Post MAAM sedation (MAAM paramedics **ONLY**)

Contraindications

a. Age < 13 years old in MAAM
b. Known hypersensitivity

Adverse Reactions

a. Involuntary and tonic-clonic like movements (rare)
b. Extreme salivation

Dosage & Administration

a. **Adult > 13:**
   - MAAM Induction
     i. 2 mg/kg IV/IO; **MAX** single dose of 200 mg
   - Post MAAM Sedation
     i. 0.5 mg/kg IV/IO, **MAX** of 3 mg/kg/hr; MAX single dose of 100 mg
     ii. Repeat as needed every 10 minutes
b. **Pediatric < 13:**
   - **NOT ALLOWED**

Special Considerations

a. If extreme salivation after administration, consider administration of ***ATROPINE***

Revised: 5/26/2023

Back Button

Ketamine (Ketalar)

Pain Management

Waivered Medication		
Provider Level	**1ST Dose**	**Repeat Dose**
EMT	**NO**	**NO**
EMT-IV	**NO**	**NO**
Paramedic	**SO**	**SO**

Description

a. Ketamine is a noncompetitive N-methyl D-aspartate (NMDA) receptor antagonist that blocks glutamate. Subanesthetic doses produce analgesia that make it useful in acute and chronic pain management, and pain management in opioid-dependent patients.

Onset & Duration

a. Onset: IV: 30 seconds; IM/IN 10 minutes
b. Duration: 1-4 hours

Indications

a. Analgesic for severe pain

Contraindications

a. Known hypersensitivity
b. ACS related chest pain
c. < 7 years old

Adverse Reactions

a. Involuntary and tonic-clonic like movements (rare)
b. Extreme salivation

Dosage & Administration

a. **ADULT and PEDIATRIC ≥ 20 kg:**
   - IV/IO: 0.25 mg/kg **MAX** single dose of 30 mg
     i. Repeat as needed up to **1 mg/kg/hr**, cumulative dose.
     ii. If time allows, add to a 50 mL NS or D_5W bag, administered over 5 to 10 minutes and titrate to effect to reduce emergence delirium.
   - IM: 0.5 mg/kg **MAX** single dose of 50 mg
     i. Repeat as needed up to **1 mg/kg/hr**, cumulative dose.
   - IN: 0.5 mg/kg **MAX** single dose of 50 mg
     i. Repeat as needed up to **1.5 mg/kg/hr**, cumulative dose.
b. Repeat as needed every 20 minutes
c. **Contact Medical Control** for additional doses.

Special Considerations

a. Rapid administration is associated with respiratory depression, apnea, and or hypoventilation
b. If extreme salivation after administration, consider administration of ***ATROPINE***
c. Consider antiemetic prior to administration, see ***NAUSEA/VOMITING GUIDELINE***
d. This is a state waivered medication and the following are **required** to be monitored/documented.
   - Pain scale, EKG, heart rate, RR, blood pressure, pulse oximetry, and capnography.
e. Special considerations in the following patient demographic
   - Hemodynamically unstable patients
   - Schizophrenia
   - 3rd trimester pregnancy

Revised: 5/26/2023

Back Button

Ketorolac (Toradol)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	NO

Description

a. It is a nonsteroidal anti-inflammatory drugs (NSAIDs). This medication exhibits analgesic, anti-inflammatory, and antipyretic activity. It works by inhibiting the synthesis of prostaglandins. It does not have sedative properties and is a peripherally acting analgesic.

Onset & Duration

a. Onset: Onset: 1-3 minutes IV; 30-60 minutes IM
b. Duration: Varies by age; adult 2-9 hours

Indications

a. Mild to moderate pain

Contraindications

a. Hypersensitivity
b. Allergy to other NSAIDs
c. Do Not Administer if patient had NSAID's in last 4 hours
d. Severe renal disease or kidney transplant
e. Bleeding disorders
f. Pregnancy

Adverse Reactions

a. Nausea, vomiting, bloating, gas, loss of appetite
b. Sweating, dizziness, drowsiness, blurred vision, dry mouth
c. Irritation at the injection site and abnormal tastes may also occur

Dosage & Administration

a. **ADULT**: 15 mg IV/IO or 30 mg IM
   - NOT REPEATED
b. **PEDIATRIC > 2 YEARS:** 0.5 mg/kg IV/IO/IM, MAX dose 15 mg IV/IO or 30 mg IM.
   - NOT REPEATED

Special Considerations

a. Increase risk of bleeding when combined with other NSAIDs

Revised: 5/26/2023

Back Button

Levalbuterol Hydrochloride

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. LEValbuterol is a moderately selective short-acting beta-2 receptor agonist. It is a bronchodilator and positive chronotrope although less so than Albuterol.
b. Because of its ß agonist properties, it causes potassium to move across cell membranes inside cells. This lowers serum potassium concentration and makes LEValbuterol an effective temporary treatment for unstable patients with hyperkalemia.

Onset & Duration

a. Onset: 10 to 17 minutes
b. Duration: 5 to 6 hours

Indications

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

Contraindications

a. Hypersensitivity to LEValbuterol or Albuterol
b. Severe tachycardia (Relative contraindication)

Adverse Reactions

a. Tachycardia, palpitations, tremors, anxiety, dysrhythmias, headaches, vomiting.

Dosage & Administration

a. Bronchospasm
   - **Adult and Pediatric:** Solution 0.042% (1.25 mg in 3 mL) by nebulizer
     i. Repeat as needed every 10 minutes for up to 6 doses **MAX** 7.5 mg **Not continuous**
   - **Pediatric:** Solution 0.042% (1.25 mg in 3 mL) by nebulizer
     i. Repeat as needed every 10 minutes for up to 3 doses **MAX** 3.75 mg **Not continuous**

b. Hyperkalemia
   - **Adult:** 2.5 mg (in 6 mL) via nebulizer, administered back-to-back; **MAX** 7.5 mg
   - **Pediatric: NOT ALLOWED**

Special Considerations

a. Can combine with atrovent
b. ß-blockers may antagonize LEValbuterol
c. Consider in-line nebulized LEValbuterol for patients requiring endotracheal intubation or CPAP due to severe respiratory distress.

Revised: 5/26/2023

Back Button

Magnesium Sulfate

Condition	Cardiac/Respiratory		Eclampsia	
Provider Level	1st Dose	Repeat Dose	1st Dose	Repeat Dose
EMT	NO	NO	NO	NO
EMT-IV	NO	NO	NO	NO
Paramedic	SO	NO	SO	NO

Description

a. Magnesium is a natural element found within the human body that is a cofactor for many enzymatic reactions. Magnesium is essential for the function of the sodium-potassium ATPase pump. It prevents or controls convulsions by blocking neuromuscular transmission. It has a depressant effect on the CNS, acts as a physiological calcium channel blocker, and may reduce the incidence of post infarction ventricular dysrhythmias.

Onset & Duration

a. Onset: Immediate
b. Duration: 30 minutes

Indications

a. Eclampsia
b. Polymorphic V-tach (Torsades)
c. Asthma not responding to albuterol
d. COPD

Contraindications

a. Should not be administered parenterally in patients with heart block

Adverse Reactions

a. May produce heart block and diminish reflexes

Dosage & Administration

a. **Adult**:
   - Torsades de Pointes: 2 grams in 50 mL NS or D_5W over 10 minutes IV/IO (rapid IV push in cardiac arrest)
     i. **NOT** repeated
   - Status Asthmaticus/COPD: 2 grams in 50 mL NS or D_5W IV/IO over 10 minutes
     i. **NOT** repeated
   - Eclampsia: 5 grams in 50 mL NS or D_5W over 5 to 10 minutes (rapid IV push in cardiac arrest)
     i. **NOT** repeated

b. **Pediatric**:
   - Status Asthmaticus: 50 mg/kg in 50 mL NS or D_5W over 10 minutes IV/IO
     i. **NOT** repeated

Special Considerations

a. Pronounced respiratory depression possible so be prepared to intervene
b. Pregnant patients **DO NOT** need to be actively seizing to administer, if there was witnessed or highly presumed seizure activity prior to arrival the patient **SHOULD** receive magnesium.

Revised: 5/26/2023

Back Button

Midazolam (Versed)

Condition	Sedation/Seizure	
Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. It is a shorter-acting benzodiazepine central nervous system depressant that produces sedation and lack of recall

Onset & Duration

a. Onset: 1 to 3 minutes
b. Duration: 2 to 6 hours

Indications

a. Status epilepticus
b. Sedation of the severely anxious, agitated, and/or combative patient
c. Treatment of severe alcohol withdrawal/DTs
d. Post advanced airway sedation

Contraindications

a. Known hypersensitivity
b. Procedural sedation
c. Hypotension < 90 systolic

Adverse Reactions

a. Respiratory depression, including apnea
b. Hypotension and volume-related tachycardia

Dosage & Administration

a. Agitation: PRN every 10 minutes
   - Mild (RASS +1 to +2):
     i. **Adult**: Up to 1.25 mg IV/IO or 2.5 mg IM; **MAX** total of 2.5 mg
     ii. **Pediatric >2:** 0.1 mg/kg IV/IO/IN/IM, **MAX** single dose 2.5 mg
   - Moderate (RASS +2 to +3) or Severe Alcohol Withdrawal/DTs
     i. **Adult**: Up to 2.5 mg IV/IO or 5 mg IM; **MAX** of 5 mg
     ii. **Pediatric >2:** 0.1 mg/kg IV/IO/IN/IM, **MAX** single dose 2.5 mg
   - Severe (RASS +3 to +4)
     i. **Adult**: Up to 5 mg IV/IO/IN/IM; **MAX** total 10 mg
     ii. **Pediatric >2:** 0.1 mg/kg IV/IO/IN/IM, **MAX** single dose 2.5 mg
b. Active Seizures: PRN every 5 minutes
   - **Adult**: 5 mg IV/IO/IN/IM
   - **Pediatric:** 0.1 mg/kg IV/IO or 0.2 mg/kg IN/IM; **MAX** single dose 5 mg
c. Comfort Measures: PRN every 10 minutes
   - **Adult:** Up to 2.5 mg IV/IO/IN/IM; **MAX** dose 5 mg
   - **Pediatric:** Up to 0.1 mg/kg IV/IO/IN/IM; **MAX** single dose 2.5 mg

Special Considerations

a. Strongly consider ½ typical dosing in elderly patients or when combining with opioids

Revised: 5/26/2023

Back Button

Naloxone (Narcan)

Provider Level	1st Dose	Repeat Dose
EMT	SO IN ONLY	SO IN ONLY
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. It is a competitive receptor antagonist

Onset & Duration

a. Onset: Within 5 minutes
b. Duration: 1 to 4 hours

Indications

a. For reversal of suspected opioid or clonidine inducted CNS respiratory depression
b. Coma **WITH** impaired reflexes or respiratory depression

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Tachycardia
b. Nausea and/or vomiting
c. Pulmonary edema

Dosage & Administration

a. **Adult:** Initial dose at 0.5 mg to 1 mg bolus IV/IO/IM/IN
   - 2nd dose PRN: 1 mg to 2 mg
   - 3rd dose PRN: 2 mg to 4 mg
   - If patient symptoms redevelop consider repeating at last therapeutic dose
   - If symptoms do not improve at 4 mg, consider other causes
b. **Pediatric:**
   - **≥20 kg:** 0.5 mg bolus IV/IO/IM/IN and titrate to desired effect up to 2 mg total
   - **<20 kg:** 0.01 mg/kg bolus IV/IO/IM/IN and titrate to desired effect up to 2 mg total
   - **Neonate: NOT ALLOWED**

Special Considerations

a. Not intended for use unless respiratory depression or impaired airway reflexes are present. Reversal of suspected mild to moderate opioid toxicity is **NOT** indicated in the field as it may greatly complicate treatment and transport as narcotic dependent patients may experience violent withdrawal symptoms.
b. Patients who receive naloxone **SHOULD** be transported to the hospital for evaluation.
c. Use with extreme caution in narcotic-dependent patients who may experience withdrawal syndrome

Revised: 5/26/2023

Back Button

Nitroglycerin (Nitrostat)

Route	Pt Assisted		Tablet/Spray	
Provider Level	1st Dose	Repeat Dose	1st Dose	Repeat Dose
EMT	NO	NO	NO	NO
EMT-IV	NO	NO	NO	NO
Paramedic	SO	SO	SO	SO

Description

a. Short-acting peripheral vasodilator decreasing cardiac preload and afterload

Onset & Duration

a. Onset: 1 to 3 minutes
b. Duration: 20 to 30 minutes, variable with paste (up to 12 hours)

Indications

a. Hypertension control in congestive heart failure associated with pulmonary edema

Contraindications

a. Hypotension SBP < 100
b. Recent use of erectile dysfunction (ED) medication within 24 hours of Viagra or Levita and or 48 hours with Cialis

Adverse Reactions

a. Hypotension
b. Syncope
c. Headache
d. Tachycardia

Dosage & Administration

a. **Adult:**
   - Pulmonary Edema:
     i. **SBP 100 to 120:** 0.4 mg sublingual
     ii. **SBP 121 to 200:** 0.8 mg sublingual
     iii. **SBP >200:** 1.2 mg sublingual
     iv. Repeat 0.4 mg sublingual every 5 minutes PRN titrated to symptoms and blood pressure
b. **Pediatric:**
   - **NOT ALLOWED**

Special Considerations

a. Therapeutic effect is enhanced but adverse effects are increased when patient is upright
b. It may be effective even in patients using paste, discs, or oral long-acting nitrate preparations
c. Ideally, IV access and 12-lead should be obtained prior to administration

Revised: 5/26/2023

Back Button

Olanzapine (Zyprexa)

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. An atypical antipsychotic that has dopamine and serotonin 5-HT receptor antagonist that also has anticholinergic, antihistamine, and anti-alpha-adrenergic effects
b. Provides a reduction in anxiety

Onset & Duration

a. Onset: 10 to 15 minutes
b. Duration: Up to 2 to 4 hours

Indications

a. Anxious patient with Mild Agitation (non-combative)
b. To avoid the further escalation of the Mild Agitation

Contraindications

a. Known allergy or hypersensitivity to drug
b. Suspected alcohol intoxication
c. Pregnancy
d. Agitation requiring restraints
e. Dementia related agitation

Adverse Reactions

a. Extrapyramidal symptoms (dystonia)
b. QT prolongation
c. Bradycardia
d. Hypotension

Dosage & Administration

a. **Adult**: 10 mg ODT, NOT repeated.
b. **Pediatric > 10:** 5 mg ODT, **NOT** repeated..

Special Considerations

a. For Extrapyramidal effects treat with ***DIPHENHYRAMINE*** guideline
b. **DO NOT** combine with droperidol

Revised: 5/26/2023

Back Button

Ondansetron (Zofran)

Route	ODT		IM/IV/IO/PO/IN	
Provider Level	1st Dose	Repeat Dose	1st Dose	Repeat Dose
EMT	SO	SO	NO	NO
EMT-IV	SO	SO	SO	SO
Paramedic	SO	SO	SO	SO

Description

a. Serotonin 5-HT3 receptor antagonist
b. Prevents nausea and vomiting by blocking serotonin

Onset & Duration

a. Onset: 10 minutes IV, 40 minutes IM, within 30 minutes ODT
b. Duration: 4 hours

Indications

a. Nausea or vomiting stemming from any medical or traumatic complaint
b. Prophylaxis treatment for opioid ***PAIN MANAGEMENT***, ***CPAP***, ***SPINAL MOTION RESTRICTION***
c. Prophylaxis treatment for any patient with high risk of motion sickness

Contraindications

a. Known allergy

Adverse Reactions

a. Headache, dizziness, drowsiness, fatigue
b. Some patients experience transient blurred vision

Dosage & Administration

a. **Adult:** 4 mg ODT/IM/PO/IV/IO/IN
   - Repeat as needed every 10 minutes up to **2 TOTAL** doses
b. **Pediatric:** ≥ 40 kg; 4 mg ODT/IM/PO/IV/IO/IN
   - Repeat as needed every 10 minutes up to **2 TOTAL** doses
c. **Pediatric:** < 40 kg; 0.1 mg/kg IV/IO/IM/PO/IN
   - Repeat every 10 minutes up to **2 TOTAL** doses

Special Considerations

a. Ondansetron can pass into breast milk and may harm nursing baby

Revised: 5/26/2023

Back Button

Oral Glucose (Instaglucose)

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. Glucose is the body's basic fuel and is required for cellular metabolism
b. After absorption from GI tract, glucose is distributed in the tissues and provides a prompt increase in circulating blood sugar.

Onset & Duration

a. Onset: 1 minute
b. Duration: Varies on degree of hypoglycemia

Indications

a. Known or suspected hypoglycemia and able to swallow and has a patent airway

Contraindications

a. Inability to swallow or protect airway
b. Unable to take oral medications

Adverse Reactions

a. Nausea

Dosage & Administration

a. All ages: 1 to 2 full tubes or 15 to 30 grams buccal, repeat as needed every 10 minutes

Special Considerations

a. Due to gel thickness, there is a potential for airway obstruction or aspiration
b. Other sugar sources are acceptable, i.e., fruit juice, candy bar, soda (not diet), etc.
c. Assure that signs of altered mental status are present and that other causes for the patient's condition have been considered, including hypoxia, stroke, seizure, alcohol intoxication, drug overdose, head injury, etc.

Revised: 5/26/2023

Back Button

Oxygen

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

a. 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_2 levels. It takes relatively large decreases in oxygen concentration to stimulate respiration.

Onset & Duration

a. Onset: Immediate
b. Duration: Variable

Indications

a. Moderate to severe medical illness or traumatic injury with suspected hypoxia

Contraindications

a. None in the emergency setting

Adverse Reactions

a. Hyperoxemia can lead to oxidative injury as well as coronary and cerebral artery constriction.

Dosage & Administration

a. **Adult** and **Pediatric:** Dose is dependent on presentation and baseline O_2 saturation.
    - Increase oxygen concentration and delivery device to maintain minimum recommended levels of 90% to 98%.

Special Considerations

a. Do not withhold oxygen from a COPD patient out of concerns for loss of hypoxic respiratory drive
b. Hyperoxemia can be detrimental in the acutely injured or ill trauma, myocardial infarction, and/or stroke patient, monitor saturations closely.

Revised: 5/26/2023

Back Button

Phenylephrine (Neosynephrine)

Provider Level	1st Dose	Repeat Dose
EMT	SO	SO
EMT-IV	SO	SO
Paramedic	SO	SO

Description

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

Onset & Duration

a. Onset: Rapid
b. Duration: 20 minutes

Indications

a. Nosebleed (epistaxis)

Contraindications

a. Known hypersensitivity
b. If TXA has been administered to treat epistaxis

Precautions

a. Avoid administration into the eyes, which will dilate pupil but not cause any damage

Dosage & Administration

a. For patients with active nosebleed, first have patient blow nose to expel clots. Administer 2 sprays to each nostril with patient gently sniffing (if possible) until patient can taste the Afrin.
b. Apply digital pressure to the soft nasal portion or nose clip for 20 minutes thereafter; repeat as needed

Special Considerations

a. None

Revised: 7/5/2016

Back Button

Rocuronium Bromide (Zemuron)

Waivered Medication		
Provider Level	1ST Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	NO	NO
MAAM Paramedic	SO	SO

Description

a. It is a short-to-intermediate acting skeletal muscle relaxant. It initiates flaccid paralysis by blocking receptors of the motor end plate, rather than binding to them. Effectively, this action blocks neuromuscular transmission of impulses without depolarizing the muscle.
b. Due to the non-depolarizing nature of this drug, it has less adverse effects in relation to hyperkalemia and is also remarkably free of the traditional histaminic side effects that characterize most other non- depolarizing skeletal muscle relaxants.

Onset & Duration

a. Onset: Flaccid paralysis within 2 minutes
b. Duration: Typically 20 minutes but up to 80 minutes

Indications

a. First line paralytic agent for MAAM
b. Maintain paralysis of a patient with an advanced airway

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Patients with severe renal failure and/or hepatic failure may experience prolonged paralysis when given standard doses of the medication.
b. There are few, if any, cardiovascular side effects with the administration of rocuronium.

Dosage & Administration

a. **Adult:** 1 mg/kg mg IV/IO; **MAX** single dose of 100 mg
   - Repeat as needed every 20 minutes (maintenance) up to **2 TOTAL** doses
b. **Pediatric: NOT ALLOWED**

Special Considerations

a. If administering for post MAAM maintenance, assure correctly placed advanced airway before this medication is administered
b. It is important to remember that rocuronium has no ability to sedate or relieve pain, **SEDATION SHOULD BE ADMINISTERED.**

Revised: 5/26/2023

Back Button

Sodium Bicarbonate

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	SO

Description

a. 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.

Onset & Duration

a. Onset: 10 to 15 seconds
b. Duration: 8 to 10 minutes

Indications

a. Tricyclic or other Na+ Channel Blocker or antihistamine with QRS >100 ms with arrhythmias, widened QRS complex or hypotension
b. Significant crush injury requiring prolonged extrication
c. Suspected hyperkalemia or hyperkalemic pulseless arrest: consider in patients with known renal failure/dialysis.
d. Severe salicylate overdose

Contraindications

a. Metabolic and/or respiratory alkalosis
b. Hypocalcemia
c. Hypokalemia

Adverse Reactions

a. Metabolic alkalosis
b. Paradoxical cerebral intracellular acidosis
c. Sodium bolus can lead to volume overload

Dosage & Administration

a. **Adult**:
   - Hyperkalemia: 100 mEq slow bolus IV/IO of an 8.4% solution
     i. Repeat as needed until cessation of seizures or QRS shortens to <100 ms (if applicable)
   - Tricyclic/Antihistamine OD: 100 mEq slow bolus IV/IO of an 8.4% solution
     i. Repeat as needed until cessation of seizures or QRS shortens to <100 ms (if applicable)
   - In severe cases, consider administering via drip: Mix 150 mEq (150 mL) in 1,000 mL NS and administer at 200 mL/hr
b. **Pediatric >2 year old:**
   - Hyperkalemia: **NOT ALLOWED**
   - Tricyclic OD: 1 mEq/kg slow bolus over 2 to 5 minutes IV/IO of an 8.4% solution
     i. Repeat as needed until cessation of seizures or QRS shortens to <100 ms (if applicable)

Special Considerations

a. Avoid combining or administering with epinephrine or calcium within the same vascular access line (incompatible), it will precipitate if mixed with sodium bicarbonate.
   - Multiple vascular access sites preferred, but if not available, flush catheter thoroughly before administering one medication after another.
b. Alkalization of urine may increase half-lives of certain drugs
c. Vasopressors may be deactivated

Revised: 5/26/2023

Back Button

Succinylcholine (Anectine)

Waivered Medication		
Provider Level	1ST Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	NO	NO
MAAM Paramedic	SO	NO

Description

a. It is an ultra short-acting depolarizing-type, skeletal muscle relaxant for intravenous (IV) administration

Onset & Duration

a. Onset: Flaccid paralysis within 1 minute
b. Duration: 6 to 10 minutes

Indications

a. Paralytic agent for MAAM (when Rocuronium is **NOT** available)

Contraindications

a. Patients with personal or familial history of malignant hyperthermia and/or skeletal muscle myopathies (multiple sclerosis)
b. Hypersensitivity

Adverse Reactions

a. Cardiac arrest, malignant hyperthermia, arrhythmias, hypertension, and hyperkalemia
b. Muscle fasciculation, jaw rigidity, rhabdomyolysis, and excessive salivation.

Dosage & Administration

a. **Adult:** 2 mg/kg mg IV/IO; **MAX** single dose of 200 mg
    - **NOT** repeated
b. **Pediatric:** **NOT ALLOWED**

Special Considerations

a. Succinylcholine **SHOULD** be administered with **GREAT CAUTION** to patients suffering from electrolyte abnormalities and/or those who may have massive digitalis toxicity,
    - In these circumstances it may induce serious cardiac arrhythmias or cardiac arrest due to hyperkalemia
b. It is important to remember that succinylcholine has no ability to sedate or relieve pain, **SEDATION SHOULD BE ADMINISTERED.**

Revised: 5/26/2023

Back Button

Topical Ophthalmic Anaesthetics

Provider Level	1st Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	SO	VO

Description

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

Onset & Duration

a. Onset: 15 to 30 seconds
b. Duration: 15 to 20 minutes

Indications

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

Contraindications

a. Known allergy to local anesthetics or to PABA (para-aminobenzoic acid)-containing products
b. Globe lacerations or rupture

Adverse Reactions

a. Transient burning/stinging when initially applied

Dosage & Administration

a. **Adult**: Instill 2 drops into affected eye; repeat as needed every 15 minutes
b. **Pediatric:** Instill 2 drops into affected eye; repeat as needed every 15 minutes

Special Considerations

a. This is single patient use. Unused portions should be discarded and only new bottles may be used.
b. Topical ophthalmic anesthetics should never be given to a patient for self-administration.
c. During the period of anesthesia protect the patient's eyes from further injury. The patient will not be able to feel the introduction of new foreign bodies, chemicals, etc. **DO NOT** allow the patient to rub their eyes. Protect the eye from dust and other hazards.
d. Occasional burning/stinging, lacrimation, and photophobia may occur upon initial instillation of drops. This is usually a transient side effect and occurs less often with proparacaine (must be kept refrigerated).

Revised: 5/26/2023

Back Button

Tranexamic Acid (TXA)

Waivered Medication				
Condition	Epistaxis		Hemorrhage	
Provider Level	1ST Dose	Repeat Dose	1ST Dose	Repeat Dose
EMT	SO	SO	NO	NO
EMT-IV	SO	SO	NO	NO
Paramedic	SO	SO	SO	NO

Description

a. Tranexamic acid competitively inhibits activation of plasminogen (via binding to the kringle domain), thereby reducing conversion of plasminogen to plasmin (fibrinolysin), an enzyme that degrades fibrin clots, fibrinogen, and other plasma proteins, including the procoagulant factors V and VIII.

Onset & Duration

a. Onset: 10 minutes
b. Duration: 3 hours

Indications

a. Uncontrolled epistaxis
b. Hemorrhagic shock less than 3 hours old due to internal/external blood loss (as evidenced by hypotension and signs of poor perfusion) which includes post-partum hemorrhage, post-operative, or non-compressible.

Contraindications

a. Epistaxis
   - Time of hemorrhage >3 hours
b. Hemorrhage (non-epistaxis related)
   - Isolated traumatic head injury
   - Time of injury > 3 hours
   - Active intravascular clotting (known DVT or PE)
   - GI Bleed

Adverse Reactions

a. CNS: Impaired color vision and other visual disturbances
b. Body as a Whole: Allergic reactions, thrombotic events
c. GI: Nausea, vomiting, diarrhea

Dosage & Administration

a. Epistaxis
   - **Adult:** 250 mg (2.5 mL) Topical or IN; Repeat PRN
   - **Pediatric:** 100 mg (1 mL) Topical or 50 mg (0.5 mL) IN; Repeat PRN
     i. Have the patient clear nostrils (blow nose)
     ii. Place TXA onto a 2x2 gauze pad or cotton ball
     iii. Insert TXA soaked pad into affected nostril(s) and apply nose clamp
b. Hemorrhage
   - **Adult:** 2 grams in 50 mL NS or D_5W over 10 minutes, IV/IO; **NOT** repeated
   - **Pediatric**: 30 mg/kg **MAX** dose of 2 grams IV/IO; **NOT** repeated

Special Considerations

a. **Birthing Centers: If 1 Gram was administered by the on-scene facility, a repeat dose of 1 Gram in 50 mL NS or D5W over 10 minutes can be administered**.
b. Use caution in patients with known renal insufficiency
c. Ensure receiving facility has been notified of the administration of TXA and document appropriately
d. This is a state waivered medication, and the following are required to be monitored/documented.
   a. Blood pressure, heart rate, and respiratory rate.

Revised: 5/26/2023

Back Button

Vaccinations

Condition	General Vaccines		Public Health Related	
Provider Level	1ST Dose	Repeat Dose	1ST Dose	Repeat Dose
EMT	NO	NO	NO	NO
EMT-IV	NO	NO	NO	NO
Paramedic	SO	SO	SO	SO

Hepatitis B Vaccine (recombinant)

a. Description
- The vaccines currently in use in the United States are made with recombinant DNA technology, and contain protein portions of HBV (usually parts of the outer protein or the surface antigen of HBV). Thus, the vaccines do not contain any live virus. More than 95% of children and adolescents and more than 90% of young, healthy adults develop adequate immunity following the recommended three doses. Persons who respond to the vaccine are protected from both acute hepatitis B infections as well as chronic infection.

b. Indications
- Pre–employment/employment related.

c. Contraindications
- Known hypersensitivity

d. Dosage & Administration
- **Adult**:
  i. 1 mL mg IM, deltoid is the preferred site
  ii. 3 doses will be required. 1st on the elected date, 2nd 1 month later, and 3rd 6 months from the first dose.
- **Pediatric: NOT ALLOWED**

Influenza Virus Vaccine

a. Description
- Influenza Virus Vaccine is an inoculation of antigens prepared from inactivated influenza virus stimulating the production of specific antibodies. Protection is afforded only against those strains from which the vaccine is prepared or against closely related strains.

b. Indications
- Any person who, because of age, underlying medical condition, or in close contact with high–risk persons, is at increased risk for complications of influenza.
- Persons who wish to reduce their risk of acquiring influenza.

c. Contraindications
- Known hypersensitivity or allergy to eggs or egg products.

d. Dosage & Administration
- **Adult**: 0.5 mg IM
- **Pediatric**: Age <8 is **NOT ALLOWED**

e. Special Considerations
- Pregnant women **MUST** have a note from their Obstetrician.
- Persons 8 to 12 years of age **MUST** have had the vaccine previously.
- **DO NOT** administer influenza vaccine within 3 days of pertussis vaccine or combined diphtheria/tetanus/pertussis (DPT) vaccine.

Revised: 5/26/2023

Back Button

Vaccinations

Tetnus-Diptheria Vaccine

a. Description
   - Td is a tetanus–diphtheria vaccine given to adolescents and adults as a booster shot every 10 years, or after an exposure to tetanus under some circumstances. This vaccine works by exposing you to a small dose of the bacteria or a protein from the bacteria, which causes the body to develop immunity to the disease.

b. Indications
   - Pre–employment/employment related if lack of evidence of having received tetanus vaccine in the previous 10 years.
   - Recent deep and contaminated wound (e.g., contaminated with dirt, feces, saliva) and lack of evidence of having received tetanus toxoid–containing vaccine in the previous 5 years.

c. Contraindications
   - Known hypersensitivity or allergy
   - Pregnancy

d. Dosage & Administration
   - **Adult**: Age 18 and older, 0.5 mL IM, deltoid is the preferred site
   - **Pediatric: NOT ALLOWED**

e. Special Considerations
   - A physician's consultation is required if history of an unstable neurological condition or history of Guillain–Barré syndrome
   - Persons with moderate or severe illness on the day any vaccine is scheduled should probably be delayed until full recovery

General Considerations

a. At a physician's discretion, either vaccine may be administered during the 2nd or 3rd trimester.
b. Administered doses should be documented on a vaccination record and provided to the recipient as well as maintained in agency records. Documentation should include the manufacturer, lot number, expiration date, dose given, and site of injection. Recipient should read an information sheet and sign an authorization and consent form before administration.
c. Vaccine should be refrigerated at 36–40 degrees F.
d. Pain in arm at the injection site, fever, chills, headache, muscle aches and or allergic reaction may occur.
e. In the event of a presumed allergic reaction such as hives, angioedema, allergic asthma, or systemic anaphylaxis contact 911 and follow guideline.

Vecuronium Bromide (Norcuron)

Waivered Medication		
Provider Level	1ST Dose	Repeat Dose
EMT	NO	NO
EMT-IV	NO	NO
Paramedic	NO	NO
MAAM Paramedic	SO	NO

Description

a. It is a short-to-intermediate acting skeletal muscle relaxant. It initiates flaccid paralysis by blocking receptors of the motor end plate, rather than binding to them. Effectively, this action blocks neuromuscular transmission of impulses without depolarizing the muscle.
b. Due to the non-depolarizing nature of this drug, it has less adverse effects in relation to hyperkalemia and is also remarkably free of the traditional histaminic side effects that characterize most other non- depolarizing skeletal muscle relaxants.

Onset & Duration

a. Onset: Flaccid paralysis within 2 to 3 minutes
b. Duration: Up to 60 minutes

Indications

a. Maintain paralysis in a patient with and advanced airway

Contraindications

a. Known hypersensitivity

Adverse Reactions

a. Patients with severe renal failure and/or hepatic failure may experience prolonged paralysis when given standard doses of the medication.
b. There are few, if any, cardiovascular side effects with the administration of vecuronium.

Dosage & Administration

a. **Adult:** 0.1 mg/kg bolus IV/IO; MAX single dose of 10 mg
   - **NOT** repeated
b. **Pediatric: NOT ALLOWED**

Special Considerations

a. If administering for post MAAM maintenance, assure correctly placed advanced airway before this medication is administered
b. It is important to remember that vecuronium has no ability to sedate or relieve pain, **SEDATION SHOULD BE ADMINISTERED.**

Revised: 5/26/2023

Back Button

Approved Abbreviations

Introduction

a. This is a list of approved abbreviations for prehospital provider use.

↓ = decreased or lower
≈ = approximately
≤ = less than or equal to
≥ = greater than or equal to
Δ = change
@ = at
ø = no, none
µ = micro
µg = microgram
1° = primary exam
2° = secondary exam
ā = before
AA0x3 = Awake, Alert, Oriented person, place, time
ABC = airway, breathing, circulation
Abd = abdomen
AC = antecubital fossa
AICD = automated internal cardiac defibrillator
AKA = above knee amputation
ALS = Advanced Life Support
Amb = ambulatory
Ant = anterior
AOB = alcohol on breath
AMR = American Medical Response
A/P = anterior/posterior
APAP = acetaminophen
ASA = aspirin
AV = atrioventricular or arteriovenous
AVPU = alert, verbal, pain, unresponsive?
BKA = below knee amputation
BG = blood glucose
BGL = blood glucose level
Bilat = bilaterally
BLS = Basic Life Support
B/P = blood pressure
bpm = beats per minute
BVM = bag-valve-mask
c = with
C = Centigrade
cc = cubic centimeter
C2 = code 2 (non-emergent)
C3 = code 3 (emergent)
CA = cancer
CABG = coronary artery bypass graft
CaCl = calcium chloride
CAD = coronary artery disease
CAO = conscious, alert and oriented
CC = chief complaint
CCT = critical care transport
CHB = complete heart block
CHF = congestive heart failure
CHI = closed head injury
Clr = clear
cm = centimeter
CMS = circulation, movement, sensation
CNS = central nervous system
c/o = complains of
CO = carbon monoxide
CO2 = carbon dioxide
COPD = chronic obstructive pulmonary disease
C/P = chest pain
CPR = cardiopulmonary resuscitation
CSF = cerebrospinal fluid
CSFD = Colorado Springs Fire Department
CSPD = Colorado Springs Fire Department
CSM = carotid sinus massage
CSP = Colorado State Patrol
C-spine = cervical spine
CT = computerized tomography (CAT scan)
CTL-Spine = cervical, thoracic, lumbar spine
CVA = cerebrovascular accident (stroke)
Cx = chest
D50 = dextrose 50%
D5W = dextrose 5% in water
Defib = defibrillation
Dig = Digoxin, Lanoxin
DKA = diabetic ketoacidosis
DOA = dead on arrival
Dx = diagnosis
ED = Emergency Department
ER = Emergency Room
ECG = electrocardiogram
EKG = electrocardiogram
EMS = Emergency Medical Services
ETT = endotracheal tube
ETA = estimated time of arrival
ETOH = beverage alcohol
ExDs - Excited delirium syndrome
Exp = expiration

Back Button

Approved Abbreviations

F = Fahrenheit
FA = forearm
FBAO = foreign body airway obstruction
Fx = fracture
g = gauge (diameter)
GCS = Glasgow Coma Scale or Score
GERD = gastro-esophageal reflux disease
GI = gastrointestinal
G or Gm = gram
GSW = gunshot wound
gtts = drops
GYN = gynecological
GU = genitourinary
H = hour
HA = headache
HB = heart block (1, 2, 3 HB)
HEENT = head, ears, eyes, nose, throat
HI = head injury
Hosp = Hospital
H/P = history and physical
HR = heart rate
HTN = hypertension
Hx = history
ICP = intracranial pressure
ICS = intercostal space
ICU = Intensive care unit
IM = intramuscular
IO = intraosseous
IV = intravenous
IVP = intravenous push
J = Joule
JVD = jugular venous distention
KCl = potassium chloride
Kg = kilogram
L = left
l = liter
lb = pound
LAD = left axis deviation or left anterior descending
LAH = left anterior hemiblock
LBB = left bundle branch block
LGL = Lown-Ganong-Levine Syndrome
LLQ = left lower quadrant
lpm = liters per minute
LMP = last menstrual period
LR = lactated ringer
LS = lung sounds
LSB = long spine board
LOC = loss of consciousness
LPH = left posterior hemiblock
LUQ = left upper quadrant
mA = milliamps
MOE = movement of extremity
MCA = motorcycle accident
MCL = mid-clavicular line
mcg = microgram
meds = medications
mEq = milli-equivalent
mg = milligram
mg/dL = milligrams per deciliter
MgSO4 = Magnesium Sulfate
MI = myocardial infarction
min = minute
ml = milliliter
mmHG = millimeters of mercury
MOI = mechanism of injury
MRI = magnetic resonance imaging
MVA = motor vehicle accident
NaHCO3 = Sodium Bicarbonate
NAD = no acute distress
NARD = no apparent respiratory distress
NATO = not able to obtain
NC = nasal cannula
NP = nasopharyngeal
NEB = nebulizer
NG tube = nasogastric tube
NKDA = no known drug allergies
NL = non labored
NPA = nasal pharyngeal airway
NPO = nothing by mouth
NRB = non re-breather mask
NS = normal saline
NSR = normal sinus rhythm
NTG = nitroglycerin
N/V = nausea/vomiting
N/V/D = nausea/vomiting/diarrhea
O2 = oxygen
OB = obstetrical
Occ = occipital
OD = overdose
ODT - orally disintegrating tablet
OM = otitis media
OP = oropharyngeal
OPA = oral pharyngeal airway
OPIM = Other Potential Infectious Material
oz = ounce
p = after
PA = physician advisor
PAC = premature atrial contraction

I001: Revised: 5/26/2023

Back Button

Palp = palpation
PE = pulmonary embolus
PEA = pulseless electrical activity
PERRL = pupils equal, round, and reactive to light
PG = pregnant
P#/G# = para # / gravida # (P1G1)
PJC = premature junctional contraction
PMS = pulse, movement, sensation
PN = pneumonia
PO = by mouth
POP = pain on palpation
Post = posterior
PR = per rectum; rectally
PRI = P-R interval relating to ECG
PRN = as needed
PSI = pounds per square inch
PSVT = paroxysmal supraventricular tachycardia
Pt = patient
PTA = Prior to arrival
PTSD = post traumatic stress disorder
PVC = premature ventricular contraction
Px = pain
q = every
R = right
RAD = right axis deviation
Rad = radial pulse
RBB = right bundle branch block
RCA = right circumflex artery
Resp = respiration
RL = ringer's lactate
RLQ = right lower quadrant
RR = respiratory rate
RSI = rapid sequence induction or intubation
RUQ = right upper quadrant
Rx = prescribed for
s/p = status post
s/s = signs and symptoms
SaO2 = oxygen saturation
sec = second
SL = sublingual
SMOE = sensory, movement of extremity
SOB = shortness of breath
SQ = subcutaneous
ST = S-T segment relative to ECG
Sux - Succinylcholine
synch = synchronous (switch on defibrillator)
Sz = seizure
TA = traffic accident
TB = tuberculosis
TCA = tricyclic antidepressant
TCP = transcutaneous pacemaker
Temp = temperature
TIA = transient ischemic attack
TKO = to keep open (minimum IV rate)
Trans = transport
Tx = treatment
U/A = upon arrival
UGI = upper gastrointestinal
URI = upper respiratory infection
UTI = urinary tract infection
V = volt
VF = ventricular fibrillation
V. Fib. = ventricular fibrillation
VT = ventricular tachycardia
V. Tach. = ventricular tachycardia
VS = vital signs
WNL = within normal limits
W/O = without
W/D/G = warm, dry, good skin
WPW = Wolff-Parkinson-White syndrome

I001: Revised: 5/26/2023

Back Button