Southwestern Ohio Rural EMS Collaborative (SOREC)

EMS Clinical Practice Guidelines for 2026

Effective January 1, 2026

Prepared by:
Thomas E. Charlton, MD
Medical Director

Special thanks to Michael Hoh, Paramedic, for many years of creating and editing these guidelines.

These protocols are derived from multiple sources including but not limited to: Academy of Medicine (SWOH protocols); State of Ohio model protocols; NASEMSO guidelines; State of Michigan model protocols.

Special Thanks to William Kossenjans, PA-C, for development of the Superficial TXA protocol.

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Section 1: Introduction

Medical Director Statement

The following document presents the clinical practice guidelines for the provision of out of hospital care by all levels of emergency medical care providers operating within the Southwest Ohio Rural EMS Collaborative. This meant to guide providers in assessing and treating the patients that they will be called on to care for. These have been written with the knowledge that every situation is different; but that certain basic guidelines must be adhered to best standardize the care of our patients. Pre-hospital emergency medicine is an art and not an exact science; hopefully this guide will allow pre-hospital providers and members of the emergency department to work together for the benefit of our patients.

As the current EMS Medical Director, I have reviewed and approved these clinical practice guidelines for use.

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Dr. Thomas Charlton, MD
EMS Medical Director
Southwest Ohio Rural EMS Collaborative

STATE OF OHIO

COUNTY OF Clermont SS:

The undersigned hereby affirms that the statements made in the foregoing affidavit are true, under penalty of perjury.
Subscribed and affirmed to before me this _____ day of, _____2025,
By Notary Public

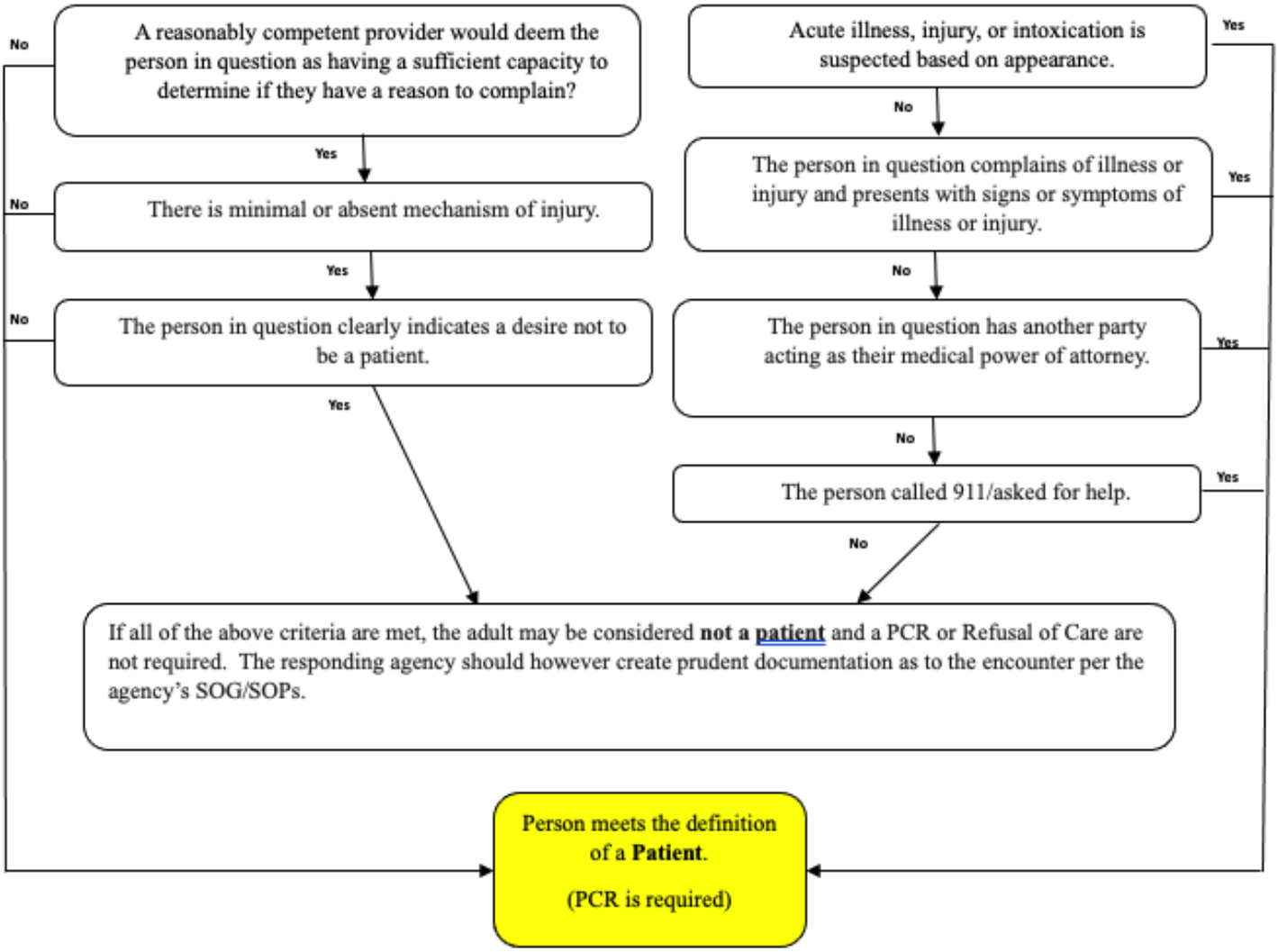
My Commission Expires: _____

Preamble

Summary:
These Clinical Practice Guidelines (CPG) explain the policies, procedures and standing medical orders prescribed for emergency medical personnel for treating the ill and injured in the out-of-hospital setting in their primary coverage area and mutual aid communities.
Updates:
These CPG's are updated on an at least yearly basis. Occasionally in-process updates need to be changed prior to a full CPG update. These in-process updates are rare, and only happen in extreme circumstances. Minor grammatical or typographic changes will only be published in-process if the change affects the overall intent of the CPG.
Authority:
The Medical Director of the department has the authority to ensure that the medical objectives and mission of all department personnel are achieved. Individual patient care processes, procedures and standing orders have been reviewed, approved, and authorized for immediate application by the Medical Director of the department.
Applicability:
These CPG's apply specifically to personnel operating under the Medical Director of the SOREC affiliated department.
Intent:
It is the intent of these CPGs to give all emergency medical personnel written guidelines to manage a wide variety of common medical, trauma and psychiatric emergencies. Personnel must always make thorough situational and patient assessments and specific treatment plans based on those case-by-case findings.

Definition of a Patient

Patient – any person who identifies him/herself as requiring medical assistance or evaluation, or any person who has a physical or medical complaint or condition from an illness or injury. An adult may be considered *not* a patient if **all** of the following criteria are met:



Transfer of Care Responsibility & Delegation:

When receiving a patient from another health care provider, department personnel accepting the patient should obtain complete patient information to include:

1. Past Medical History
2. History of Present Illness or Episode
3. Overview of Patient Assessment, including vital signs
4. Treatment Rendered Prior to Arrival
5. Any Other Pertinent Information

When transferring a patient to another health care provider, whether in the pre-hospital environment to another crew or agency, or to a receiving emergency department, department personnel releasing the patient should provide the receiving health care provider with complete patient information to include:

1. Past Medical History

2. History of Present Illness or Episode
3. Overview of Patient Assessment, including most recent vital signs
4. Treatment Rendered by Personnel
5. Any Other Pertinent Information

Transfer of care should only be made to a healthcare provider, or a healthcare team, whose level of training is equivalent to or greater than that of the personnel transferring the care, i.e., Paramedic, Nurse, or Physician.

Emergency Operations Declaration:

During a major medical incident, including that of a national health crisis, department personnel may be asked to administer medications that are not listed on their drug license, and/or addressed in these PCGs. These medications may also be requested to be administered at locations, which are not an incident location listed on the agency's drug license; however, during an emergency, this shall be authorized. These medications will be administered only after an "Emergency" has been declared by the Health Commissioner or Emergency Management Agency having jurisdiction and, these providers will be working under the direction of that agency until they deem the "Emergency" to be over. Prior to administration, the EMS providers will be given guidance with information related to the medication, such as indications, dosage, and side effects. This operation will only take place upon declaration of an "Emergency"; otherwise, these PCGs will be followed.

Ohio Administrative Code: 4765-6-03 "Additional services in a declared emergency"

(A) In the event of an emergency declared by the governor that affects the public's health, a first responder, EMT, AEMT, or Paramedic, certified in accordance with section 4765.30 of the Revised Code and Chapter 4765-8 of the Administrative Code may perform immunizations and administer drugs or dangerous drugs, in relation to the emergency, provided the first responder or EMT is under physician medic al direction and has received appropriate training regarding the administration of such immunizations and/or drugs.

Effective 07/02/2009

Patient Advocacy:

Patient care and safety shall be the primary focus of all emergency health care providers. Any request for urgent or emergency medical care shall be honored if the request is legal and ethical. Patients deserve to be informed, when possible, of all decisions affecting their care and transport. Competent adults have the legal right to accept or refuse treatment and/or transport recommendations. Immediate family members should be considered an extension of the patient in notification and scene management. Family members should be treated with dignity and respect and should be equally supported in their role as the patient's advocate.

Patient Confidentiality:

All information obtained while treating and transporting a patient is confidential.

Providers have an ethical responsibility to handle all information and documentation regarding a patient with a high degree of confidentiality. Patient information is only to be shared with those individuals who are part of the continuity of patient care. Patient records should not be provided to law enforcement agencies or other non-medical public safety entities that are not part of the patient care continuum.

Once a patient record has been completed, it is considered a medical record and, therefore, is confidential. Every effort should be made to ensure that the patient record will not be left unattended, open for public view, or stored haphazardly in a way, which will compromise the confidentiality of the patient and the record's contents. Similarly, it is our responsibility to not discuss patient care issues with anyone other than those medical professionals involved in that patient's care.

Nondiscrimination Statement:

All department personnel shall serve as the patient's advocate, and will provide prompt urgent or emergency response, treatment, and transport upon request, and shall have no regard to race, color, religion, gender, national origin, age, disability, disease, marital status, sexual orientation, or any other factor.

Documentation:

All patient contacts shall be appropriately documented **within 24 hours** using authorized patient report forms. All patient care documentation shall be done using charting specific to that department. Each patient contact shall also be given an individual "Incident Number," as assigned by the department communications center, which shall be documented on all EMS patient care report forms. Failure to complete patient care reports within 24 hours are subject to suspension of medical control privileges.

Medical Control Privileges – Emergency (911) Services

Requirements for medical control credentialing of personnel primarily providing emergency or 911 services.

Credentialing of the EMS provider is at the sole discretion of the Medical Director.

Minimum Life Support Agency Requirements:

1. Agency shall possess a valid State of Ohio license or be exempted by ORC.
2. Agency shall utilize an approved patient care record.
3. Agency is responsible for ensuring that their personnel meet the requirements of this and other applicable protocols.
4. Agency must comply with protocols.
5. Agency must notify the medical director, in writing, if they are unable to meet or comply with any protocol, statutory or regulatory requirement.
6. Agency must notify the medical director of changes within the roster.
7. Agency shall ensure that new personnel meet the requirements of this protocol within 90 days of their start date.
8. Only persons currently authorized to do so by the Medical Director will provide pre-hospital patient care.

EMT

1. Valid State of Ohio EMT license.
2. Valid Basic Life Support card (AHA, ASHI).
3. HAZMAT awareness level or higher.
4. NIMS 100.b, 200.b, 700.a (Available online through FEMA).
5. Attendance at yearly protocol update meeting.
6. Skills verification by the medical director (yearly).
7. Attendance at mandatory training as requested by the medical director.
8. Completion of a third-party Emergency Vehicle Operators Course or equivalent.
9. Comply with the Scope of Practice as issued by the State of Ohio.

AEMT

Requirement continuation from above

1. Valid State of Ohio Advanced EMT (AEMT) license.
2. Recommended to obtain International Trauma Life Support or Pre-Hospital Trauma Life Support card.

Paramedic

Requirement continuation from above

1. Valid State of Ohio Paramedic license.
2. Valid American Heart Association or ASHI Advanced Cardiac Life Support (ACLS) card.
3. Valid American Heart Association or ASHI Pediatric Advanced Life Support (PALS) or PEARS card.

Medical Control Privileges – Interfacility Services

Requirements for medical control credentialing for personnel primarily involved in interfacility or medical transportation services.

Credentialing of the EMS provider is at the sole discretion of the Medical Director.

Minimum Life Support Agency Requirements:

1. Agency shall possess a valid State of Ohio license or be exempted by ORC.
2. Agency shall utilize an approved patient care record.
3. Agency is responsible for ensuring that their personnel meet the requirements of this and other applicable protocols.
4. Agency must comply with protocols.
5. Agency must notify the medical director, in writing, if they are unable to meet or comply with any protocol, statutory or regulatory requirement.
6. Agency must notify the medical director of changes within the roster.
7. Agency shall ensure that new personnel meet the requirements of this protocol within 90 days of their start date.
8. Only persons currently authorized to do so by the Medical Director will provide pre-hospital patient care.

EMT

9. Valid State of Ohio EMT license.
10. Valid Basic Life Support card (AHA, ASHI).
11. Attendance at yearly protocol update meeting.
12. Skills verification by the medical director (as requested).
13. Attendance at mandatory training as requested by the medical director.
14. Comply with the Scope of Practice as issued by the State of Ohio.

AEMT

Requirement continuation from above

15. Valid State of Ohio Advanced EMT (AEMT) license.

Paramedic

Requirement continuation from above

16. Valid State of Ohio Paramedic license.
17. Valid American Heart Association or ASHI Advanced Cardiac Life Support (ACLS) card.

Non-Emergency Transportation Services

Under Ohio Administrative Code 4766-2-13, licensed Medical Transportation Organizations can establish non-emergency operations. State rule requires that for an ambulance to be used for non-emergency basic life support it is staffed with one EMT, AEMT, or paramedic, plus one qualified driver. The medical director for the agency requesting non-emergency BLS status must receive approval from their medical director prior to beginning this level of service.

To become a qualified driver the person must have received training in:

1. Emergency vehicle operators' course that meets requirements of the national highway traffic safety administration's "1995 Emergency Vehicle Operators Course (Ambulance): National Standard Curriculum".
2. Driving the ambulance
3. Transferring patients to and from an ambulance stretcher
4. Loading and unloading the stretcher to and from the ambulance with a patient
5. Familiarity with the equipment and supplies in the back of the ambulance.
6. Training on the use of a stairchair or other device to transport patients up and down stairs.
7. Training in bloodborne pathogen regulations as set forth by 29 CFR 1910.1030.

When a service is operating as a non-emergency basic life support ambulance, the phrase "Non-Emergency" shall be affixed to the ambulance per OAC 4766-2-08.

No permitted ambulance being operated at the BLS non-emergency only level may respond to emergency calls or use emergency lights and audible warning devices. (OAC 4766-2-1).

A permitted ambulance that is being used as a non-emergency BLS ambulance shall comply with the requirements of roadworthiness and the requirements set forth in the "Ambulance Inspection Basic Life Support (BLS) Emergency and Non-Emergency" form. (OAC 4766-2-08).

When operating as a non-emergency BLS ambulance, should the patient require emergency services unexpectedly, the ambulance shall: divert to the nearest emergency department if doing so will be faster than a 911 ambulance intercept, or activate the 911 system for an emergency ambulance intercept.

The typical patients needing non-emergency BLS ambulance transfers may include but are not limited to:

- Routine office appointments
- Routine imaging or laboratory studies
- Routine dialysis appointments without any recent delays in dialysis
- Routine discharge from a hospital to the patients' home or to an extended care facility
- Routine discharge from an extended care facility to the patients' home
- Routine trips where the only expected intervention needed is vital sign assessment.

Ultimately the decision on whether a patient is stable for a non-emergent BLS ambulance rest with the ordering provider and the ambulance crew. If there is concern about whether the patient needs a higher level of care, clarification should be sought from the ordering provider or medical control.

Highly Infectious Disease Transport

Inclusion

1. Due to the variety of infectious pathogens, essentially any symptom can represent infectious disease (ID). Symptom-based inclusion criteria must be determined on a case-by-case basis during pandemic/epidemic. Among the most common are: malaise, respiratory symptoms, gastrointestinal symptoms, fever (temp >100.4 F), and rash.
2. Multiple patients with similar symptoms may indicate ID (but can also represent toxin exposure).
3. For the purposes of this protocol ID refers to novel pathogens (e.g., COVID, SARS, MERS, Swine Flu, Ebola, etc.) and certain more common situations (e.g., pandemic influenza). While correctly termed "ID", this protocol is not intended to directly address common diseases (e.g., "a cold", "strep throat", UTI, etc.).

Procedure

1. EMS provider safety is paramount. Response urgency should never supersede the use of situationally appropriate personal protective equipment (PPE).
2. Maximize information gathered from the dispatch center.
3. Appropriate PPE must be determined based on the nature of the pathogen.
    i. For unknown pathogens, full skin coverage with a fluid impermeable barrier and N95 or higher respiratory protection is generally advisable.
    ii. At minimum, universal precautions with gloves, splash protections, and mucus membrane protection should be used.
    iii. Aerosol-generating procedures (e.g., intubation, suction, nebulized treatments, CPAP), when performed on ID patients, typically require N95 mask or higher protection.
4. Efforts should be made to minimize the number of providers exposed to potential ID.
    i. Verbal assessment of the patient can often be performed at a distance. Thorough history, including recent travel and contact with sick persons, is essential.
    ii. When necessary, the patient should be approached by the minimum number of providers (in PPE) needed for appropriate care.
    iii. During transportation only the minimum number of providers needed for appropriate care should be in the patient care compartment. If possible, the driver's compartment and patient care compartment should be physically separated.
5. Efforts should be made to minimize spread of infectious material.
    i. Place simple surgical mask on the patient (NOT N95 mask) as tolerated (non-rebreather mask with oxygen flowing may be used under surgical mask).
    ii. Wrap the patient in a clean sheet.
    iii. Administer anti-emetics as appropriate.
6. Depending on the pathogen and patient condition, it may be appropriate to maximize ventilation in the patient care compartment during transport by opening windows and using non-recycling air conditioning.
7. Aeromedical Transport should not be utilized unless necessary and may not be available to certain ID patients.
8. Hospital pre-notification is always necessary with ID patients. In some circumstances, designated receiving facilities may be in place.
9. In some situations, local health department notification may be necessary.
10. PPE should be worn until after transfer of care to the receiving facility.

11. PPE must be doffed, and decontamination of providers must be performed in an appropriate manner to avoid possible contamination during the doffing process.
12. Transport vehicle decontamination:
    i. Some pathogens can remain active on various surfaces for prolonged periods.
    ii. Precisely which chemical is most appropriate will depend on the pathogen. This determination should be made with assistance from the medical director, local infection control specialists, and local health departments.
    iii. PPE like that worn during patient care should be worn during the decontamination process.
13. Appropriate disposal techniques for contaminated items will vary depending on the pathogen.

Notes

1. Universal precautions with all patient interactions are the foundation of infectious disease control.
2. EMS providers are significantly benefited by thorough, up to date vaccinations.
3. Departmental processes should be in place to minimize risk of sharps and bodily fluid exposure.
4. Departmental processes should be in place for post-infectious disease exposure reporting, evaluation, and monitoring.
5. EMS providers should always maintain awareness of the potential for infectious disease, with a heightened level of vigilance during times of pandemic/epidemic.
6. Common concepts of “Time, Distance, and Shielding” can be applied to ID.
7. If tight fitting respirators are to be employed (e.g., N95 masks, APRs, SCBA) appropriate fit testing must be conduct annually on the specific model used.
8. “Contact precautions” refers to gloves and gown/coverall; “droplet precautions” refers to simple surgical mask; “airborne” or “respiratory precautions” refers to N95 or higher protection.
9. EMS personnel should be alert to and report perceived “clusters” of patients with similar symptoms.

Guidelines Pertaining to All Patients

1. All Persons operating under this protocol shall not exceed their scope of practice or level of certification, unless specifically directed otherwise by online Medical Control.
2. Consider appropriate level of universal precautions. Assess the scene for dangers to the rescuers.
3. Consider the number of patients, and mechanism of injury / nature of the illness. Request additional help if necessary.
4. Talk with patient's relatives and/or bystanders and gather additional pertinent information.
5. Place the patient in their position of comfort unless contraindicated by patient condition.
6. All protocol drug doses specified in RED are for an ADULT patient. Specific PEDIATRIC guidelines are provided where necessary and/or appropriate and are printed in BLUE.
7. For purposes of medication doses and other protocol specifics, pediatric patients are defined as patients' ≤ 16 years old, and adults are patients > 16 years old.
8. Preferred routes of medication administration are medication and patient specific. We do not utilize subcutaneous (SQ) or endotracheal routes.
9. For all critically ill or injured patients, notify the anticipated receiving hospital as soon as possible after completing the initial assessment of the patient.

The Algorithm Legend will be located on all page where applicable Patient care guidelines are outlined for quick reference. Anytime something is highlighted in yellow, special attention from all providers should be observed.

B	**EMT**
A	**Advanced EMT**
P	**Paramedic**

Student Rotators

Purpose:
To provide guidance regarding the responsibilities of students and their preceptors.
Procedure:
A student is defined as a person currently enrolled in an accredited and licensed EMS education program. Students are HIGHLY encouraged to rotate outside of their "home agency". Student ride time may only be done with preceptors defined by the EMS chief and/or Medical Director. A student may NOT count time that they are currently scheduled to work. EMS professionals currently working may only practice to their level of licensure. Students may ONLY count time that they are functioning as a student alone and as a supplement to the scheduled crew. Once the student graduates or is no longer enrolled in a program, the student may only practice to their current level of licensure.

School bus accident

PURPOSE:
Provide treatment/transport guidelines for on scene providers when faced with incidents involving school bus.
PROCEDURE:
Check with the school district regarding their specific school bus response polices.
School administrators are responsible for the students.
A school administrator should be requested to the scene as soon as possible.

1. Administrators may take the children back to the school in another bus or school vehicle.
2. They may arrange for transportation back to the home or have the student parents pick them up at school.
3. Children should be cleared from the scene as safely and as quickly as possible.
4. ANY injury should be transported to the nearest most appropriate emergency department and the parents notified.
5. EMS responders must be prepared to enact mass casualty protocols in the event of any serious school bus accident.
6. If school administrators accept responsibility for the non-injured children as per their bus accident protocols/policies, then individual releases are not required.
7. If for whatever reason there is no school administrator on scene, EMS providers must take responsibility for all children until school administrators arrive.
8. If there will be a significant delay in the arrival of school administrators, and the accident is minor, the bus should be directed to return to a safe area out of traffic.
9. Notification of the number and types of injuries should be communicated with the receiving facilities in the event of transportation of injured students to the receiving facilities as early as possible.

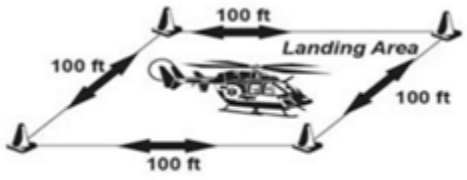
Air-Medical Transport Guidelines

The decision to access an air medical response will generally be made by the first arriving EMS vehicle. The EMS unit should advise Incident Command for the need of the medical helicopter. In general air medical services should be restricted for only special situations:

1. When the speed of transport will make a significant difference in patient outcome
2. When the scene is not accessible by ground vehicle
3. Helicopter can be used only if total patient contact time will be lessened by at least 15 minutes.
4. Hypothermic patients in cardiopulmonary arrest.
5. Carbon monoxide exposures with cardiac dysrhythmias, chest pain or cardiopulmonary arrest with return of spontaneous circulation may be transferred to a specific facility for hyperbaric oxygen therapy.
6. Chest pain with ST segment elevation with ground transport that exceeds 30 minutes.
7. Significant burns over 20% total body surface area or significant airway compromise
8. Adult multiple trauma with extended transport times.
9. Pediatric multiple trauma with extended transport times.
10. In general, stroke patients should NOT be transported by helicopter. These patients should be transported to per the stroke protocol.

AEROMEDICAL LANDING ZONE (LZ) SET UP PROCEDURE

1. LZ area should be free of obstructions. Eliminate these hazards:
    i. Wires (surrounding the landing area and High-Tension power lines within ½ mile) Towers (TV, Radio, Cellular within ½ mile)
    ii. Trees
    iii. Signs and Poles
    iv. Buildings
    v. Vehicles
    vi. People



2. LZ area should be 100' X 100' if possible.
3. LZ should have as little of a slope as possible (less than 5 degrees).
4. LZ area should be a hard surface (concrete, asphalt, gravel, lawns, etc.).
5. LZ corners should be marked with highly visible devices (cones, flairs, strobes).
6. No debris on landing surface and within 100' of landing area.
7. Land the helicopter(s) a safe distance from the scene / patient.
8. Never point bright lights directly at the aircraft!
9. Maintain security of LZ while helicopter is present.
10. Landing Zone Briefing.
11. Type of LZ surface and size
12. How LZ is marked (cones, flairs, strobes, etc.).
13. All noted obstructions (see list above).

NEVER ASSUME FLIGHT CREW WILL SEE A HAZARD
NEVER APPROACH HELICOPTER UNLESS DIRECTED BY FLIGHT CREW

Load and Go Guidelines

1. Airway obstruction uncorrectable in the field.
2. Traumatic penetrating cardiopulmonary arrest.
3. Uncontrolled arterial bleeding.
4. Severe signs of shock.
5. Major chest injury (i.e., tension pneumothorax, pericardial tamponade, massive hemothorax, sucking chest wound, penetrating wounds with shock, flail chest).
6. Bilateral femur fractures and/or unstable pelvis.
7. Head injury with decreasing level of consciousness and/or unilateral dilated pupil.
8. Symptomatic pregnancy.
9. In "Load and Go" situations, the only field treatments to be instituted prior to transport are as follows:
    i. Airway management with C-Spine control (if necessary), 100% O_2. Maintain $ETCO_2$ at 25 to 40 mmHg for intubated patients.
    ii. Chest wound management (i.e., tension pneumothorax, sucking chest wound, flail chest stabilization)
    iii. Basic CPR in cases of traumatic arrest
    iv. Vascular access (if placed during extrication or during transport),
    v. C-Collar and backboard (when appropriate)
    vi. Cardiac monitor.
    vii. Securing Unstable Pelvic and Femur Fractures

Hospital Status / Diversion

The purpose of this protocol is to facilitate the timely communication of a hospital's Emergency Department status and the subsequent request that EMS inform patients another medical facility may be better prepared to administer more timely emergency care.

Definitions:

- Normal: the hospital's ED and supporting resources are operating normally.
- At Capacity: the hospital has determined the ED and supporting resources are fully committed (see routing decisions for exceptions).
- Limited Operations: the hospital has normal capacity, but an area or resource is not available. (No CT/MRI, cath lab shut down, etc.)
- Closed: the hospital has activated its disaster plan due to an internal emergency, bomb threat, or other situation rendering it UNABLE to accept patients.

Protocol:

1. EMS personnel will continue to transport patients to a hospital reporting itself to be At Capacity or Limited Operations under the following circumstances:
    a. The patient is unstable including, but not limited to, having an unmanageable airway, CPR in progress, having uncontrolled internal or external hemorrhaging. (All trauma patients should be transported to an appropriate trauma center per regional trauma triage protocols.)
    b. The hospital At Capacity or Limited Operations has the specific services the patient needs (e.g. stroke, STEMI, OB patient, trauma, major burns).
    c. Clinical judgement of EMS personnel determines increased transport time may place patient safety at risk.
    d. EMS personnel have advised the patient that the patient's preferred hospital is At Capacity and the patient still wishes to be transported.
2. This does not apply during mass casualty events.

Notes:

1. Once notified that a hospital is At Capacity or Limited Operations, EMS personnel should be prepared to counsel patients on how hospital status may affect them.
2. Additional information can be found on The Health Collaborative website: http://healthcollab.org

B	EMT
A	Advanced EMT
P	Paramedic

Section 2: Adult Medical

B	EMT
A	Advanced EMT
P	Paramedic

Pulseless Non-Breather (PNB)

Ventricular Fibrillation, Ventricular Tachycardia, Torsade's de Pointe, Asystole, Pulseless Electrical Activity.
This protocol does NOT apply to traumatic arrests.
Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Initiate CPR following current AHA standard guidelines. (>2 inches but <2.5 inches with a rate of between 100-120)
2. Place an AED on the patient and follow its prompts until ALS assumes care.
3. Establish an airway following Oxygen, Airway, and Ventilation procedure.
4. When able, place the patient on end-tidal capnography.
5. Request ALS intercept.
6. Transport, if ALS is unavailable, to the closest appropriate facility, or if Return of Spontaneous Circulation (ROSC) occurs.
7. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
1. Initiate vascular access. (IV is now preferred over IO).
2. Consider advanced airway placement.
3. Request paramedic response/intercept.
4. Transport, if a paramedic is unavailable, to the closest appropriate facility, or if ROSC occurs.

Paramedic

Treatment continuation from above

1. If appropriate, make early determination of whether resuscitation should continue. Refer to Guidelines for "Terminating or Withholding Resuscitative Efforts."
2. Follow current AHA ACLS algorithm and the relevant protocol.
3. Consider medical control consultation after 25 minutes of active resuscitation.
4. Transport compromises CPR quality, regardless of whether hands-on or mechanical. Transport is in general NOT recommended until ROSC occurs. Consider transport after 25 minutes of active resuscitation in V-fib and V-tach, or ROSC occurs.
5. Reminder that in hypothermic arrests, no change in the resuscitation from normal ACLS guidelines is indicated.
6. Additional reminder that in submersion injuries, no change in the resuscitation is indicated.

***High quality CPR/ defibrillation is what saves lives.**
Not transport, not advanced airways, not medications. *

CPR Induced Consciousness:

1. Treatment continuation as above.
2. Manifests as one or more of the following: movement, sitting up, gag reflex, vocalizing distress.
3. Signs typically disappear during rhythm checks.
4. If this occurs, consider administering midazolam (Versed) 2-5 mg IV/IO every 10 minutes as needed.

B	EMT
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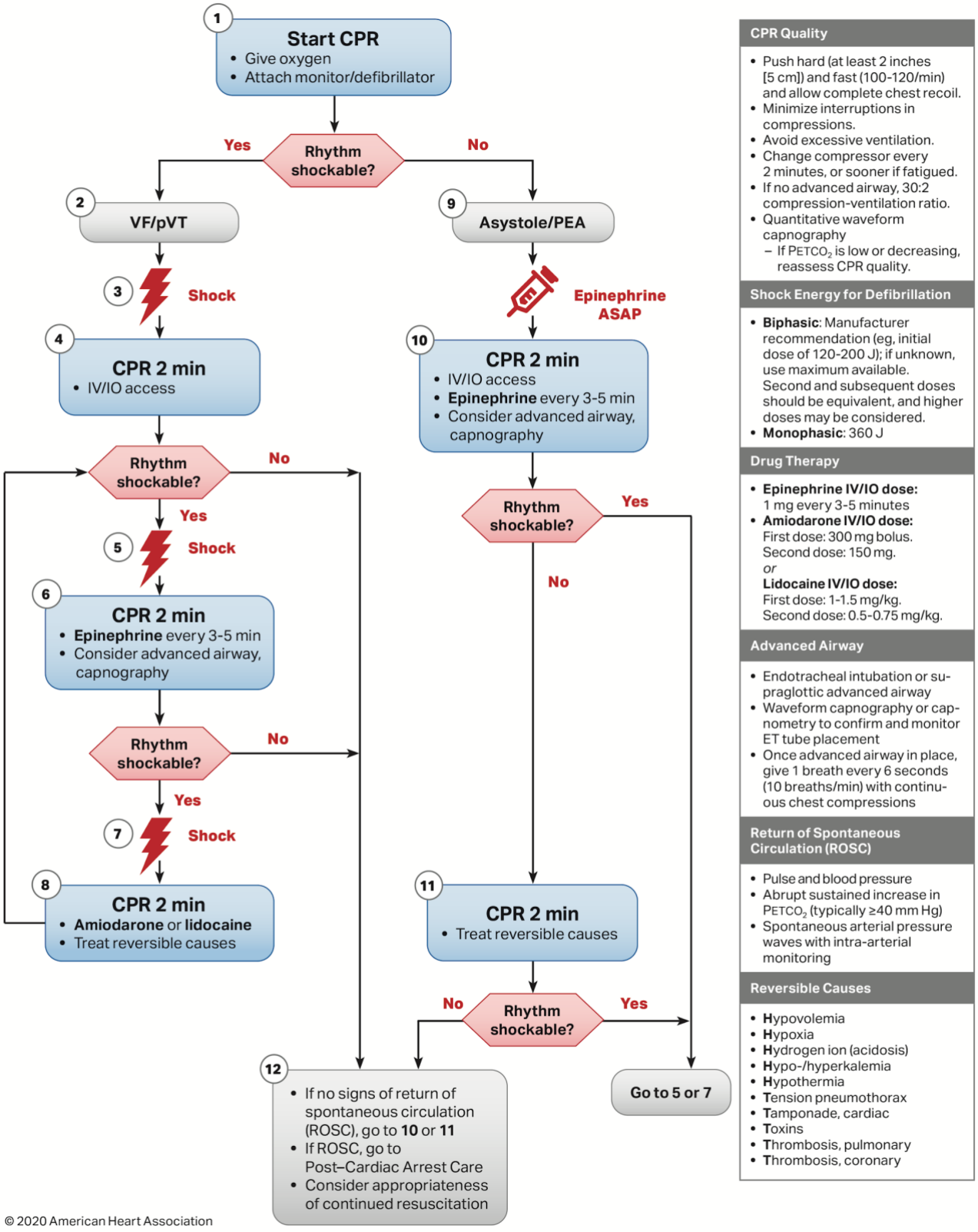

B	EMT
A	Advanced EMT
P	Paramedic

Ventricular Fibrillation/Ventricular Tachycardia without Pulse

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Initiate CPR following current AHA standard guidelines.
    i. Perform 5 cycles (approximately two minutes) of CPR before defibrillation.
        a. If AED is available prior to two minutes, apply. See #2 below.
    ii. Rotate compressor every two minutes or when the compressor is fatigued.
    iii. Avoid excessive ventilations (goal is 10 breaths/minute).
    iv. Push hard (>2 inches but <2.5 inches), and fast (between 100-120 compressions per minute).
    v. Allow for chest recoil with each compression.
    vi. Minimize interruptions of CPR.
2. Place an AED on the patient and follow its prompts until ALS assumes care.
    i. If "Deliver Shock" is advised at any time by the AED, clear all people from the patient and shock the patient.
    ii. Immediately resume CPR for two minutes before another pulse check or rhythm check is performed.
3. Establish an airway following Oxygen, Airway, and Ventilation procedure.
4. Request ALS backup.
5. Transport if ALS unavailable to an appropriate facility following General Transport Guidelines & Principles.
    i. Complete at least 10 cycles of CPR (4 minutes) PRIOR to moving the patient to the ambulance if ALS is unavailable.
7. Notify receiving hospital with patient information as soon as possible.

AEMT

1. Continuation of care above.
2. Request paramedic response if available, otherwise see #6.
3. Apply defibrillation pads if not already in place. Do this IMMEDIATELY if arrest is witnessed by EMS, or bystander CPR is in progress upon arrival.
4. If rhythm is ventricular fibrillation or ventricular tachycardia, DEFIBRILATE IMMEDIATELY AT maximum energy recommended by the manufacturer. Resume CPR immediately.
5. Manage the airway using the Oxygen, Airway and Ventilation protocol.
6. Apply end-tidal CO_2 capnography to the patient. Use the nasal cannula if not using an advanced airway.
7. Initiate IV access. If IV access is not obtained, initiate IO access.
8. Recheck rhythm after each two-minute cycle of CPR is complete, and defibrillate as above.
9. If return of spontaneous circulation (ROSC) is achieved, continue care per the ROSC protocol.
10. After three unsuccessful defibrillation attempts, consider changing pad placement by applying new pads in the alternative manner.

PARAMEDIC

1. Continuation of care above.
2. DO NOT TRANSPORT until at least 25 minutes of quality EMS care has been provided, or in extenuating circumstances.
3. Administer epinephrine 1mg (10mL of 1mg/10mL) IV/IO push after IV/IO access is obtained. Repeat this every three to

B	**EMT**
A	**Advanced EMT**
P	**Paramedic**

five minutes if the arrest continues.

4. Administer amiodarone 300mg IV/IO push. Repeat amiodarone 150mg IV/IO push in 3-5 minutes if still in VF/VTach.
    i. If amiodarone is not available, lidocaine may be substituted.
        a. **Lidocaine 1.5mg/kg IV/IO push**.
        b. **Repeat Lidocaine 0.5-0.75mg/kg IV/IO push in 3-5 minutes if still in VF/VTach.**

    If rhythm changes, refer to the appropriate protocol.
5. After three unsuccessful defibrillation attempts, consider changing pad placement by applying new pads in the alternative manner.

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Asystole/PEA (Pulseless Electrical Activity)

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Initiate CPR following current AHA standard guidelines.
    i. Perform 5 cycles (approximately two minutes) of CPR before defibrillation.
        a If AED is available prior to two minutes, apply. See #2 below.
    ii. Rotate compressor every two minutes.
    iii. Avoid excessive ventilations (goal is 10 breaths/minute).
    iv. Push hard (>2 inches but <2.5 inches), and fast (between 100-120 compressions per minute).
    v. Allow for chest recoil with each compression.
    vi. Minimize interruptions of CPR.
2. Place an AED on the patient and follow its prompts until ALS assumes care.
    i. If "Deliver Shock" is advised at any time by the AED, clear all people from the patient and shock the patient.
    ii. Immediately resume CPR for two minutes before another pulse check or rhythm check is performed.
3. Secure airway following Oxygen, Airway, and Ventilation procedure.
4. Place simple airway adjunct (Oral pharyngeal/Nasal pharyngeal).
5. Request ALS backup.
6. Transport if ALS unavailable to an appropriate facility following General Transport Guidelines & Principles.
    i. Complete at least 10 cycles of CPR (4 minutes) PRIOR to moving the patient to the ambulance if ALS is unavailable.
7. Notify receiving hospital with patient information as soon as possible.

AEMT

1. Continuation of care above.
2. Request paramedic response if available, otherwise see #6.
3. Apply defibrillation pads if not already in place. Do this IMMEDIATELY if arrest is witnessed by EMS, or bystander CPR is in progress upon arrival.
4. Manage the airway using the Oxygen, Airway and Ventilation protocol.
5. Apply end-tidal CO_2 capnography to the patient. Use the nasal cannula if not using an advanced airway.
6. Initiate IV access. If IV access is not obtained, initiate IO access.
7. Recheck rhythm after each two-minute cycle of CPR is complete and defibrillate at 360J (or biphasic equivalent) if indicated.
8. Consider potentially reversible causes of asystole/PEA:

Hypovolemia: Administer 1L NS IV bolus

Hypoxemia: Ensure adequate oxygenation/ventilation

H+/ Acidosis: Request paramedic care.

Hypo/Hyperkalemia: Request paramedic care.

Hypoglycemia: Treat per Hypoglycemia/Hyperglycemia protocol.

Toxins: Treat per the Medication Overdose/Toxin protocol

Tamponade (cardiac): Rapidly transport.

Tension Pneumothorax: Rapidly transport.

Thrombus (cardiac or pulmonary): Rapidly transport.

Trauma: Treat per the Multiple Trauma Transport Guidelines.

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Hypothermia: Treat per Hypothermia protocol.

9. If return of spontaneous circulation (ROSC) is achieved, continue care per the ROSC protocol.

PARAMEDIC

1. Continuation of care above.
2. DO NOT TRANSPORT until at least 25 minutes of quality EMS care has been provided. After 25 minutes of EMS care without change in rhythm, consider calling Medical Control for orders to terminate the resuscitation.
3. Administer epinephrine 1mg (10mL of 0.1mg/mL) IV/IO push as soon as possible after IV/IO access is obtained. Repeat this every three to five minutes if the arrest continues.
4. Consider potentially reversible causes of asystole/PEA:

Hypovolemia: Administer 1L NS IV bolus

Hypoxemia: Ensure adequate oxygenation/ventilation

H+/ Acidosis: Consider sodium bicarb 1 amp IV/IO push.

Hyperkalemia: If a missed dialysis patient, consider administering calcium per the calcium administration protocol.

Hypoglycemia: Treat per Hypoglycemia/Hyperglycemia protocol.

Hypothermia: Treat per Hypothermia protocol.

Toxins: Treat per the Medication Overdose/Toxin protocol

Tamponade (cardiac): Rapidly transport.

Tension Pneumothorax: Perform needle decompression.

Thrombus (cardiac or pulmonary): Rapidly transport.

Trauma: Treat per the Multiple Trauma Transport Guidelines.

5. If rhythm changes, refer to the appropriate protocol.
6. If return of spontaneous circulation (ROSC) is achieved, continue care per the ROSC protocol.

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Wide Complex Tachycardia with Pulse (Unstable)

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EKG Findings

1. Heart rate ≥ 150/min.
2. Wide QRS (greater than 0.12sec or 3 little blocks).
3. Absent P waves.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Consider applying AED pads, BUT DO NOT POWER ON THE AED UNLESS PATIENT ARRESTS.
4. Transport to an appropriate facility following General Transport Guidelines & Principles.
5. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable).
2. Initiate vascular access.

Paramedic

Treatment continuation from above

1. Follow current AHA ACLS algorithm.
2. If rhythm is Torsade's de Pointes, then give magnesium sulfate 1g IV/IO.
3. If the patient is to be cardioverted, and does not have an altered level of consciousness, administer Midazolam (Versed) 2-5mg IV/IO/IM until patient's speech slurs or 8mg is given.
4. If VTach persists, synchronized cardiovert the patient at 100J (or biphasic equivalent).
5. If VTach persists, synchronized cardiovert the patient at 360J (or biphasic equivalent).
6. If VTach reoccurs, repeat synchronized cardioversion at the successful energy level.
7. Obtain Diagnostic EKG following conversion out of Wide Complex Tachycardia/VTach.

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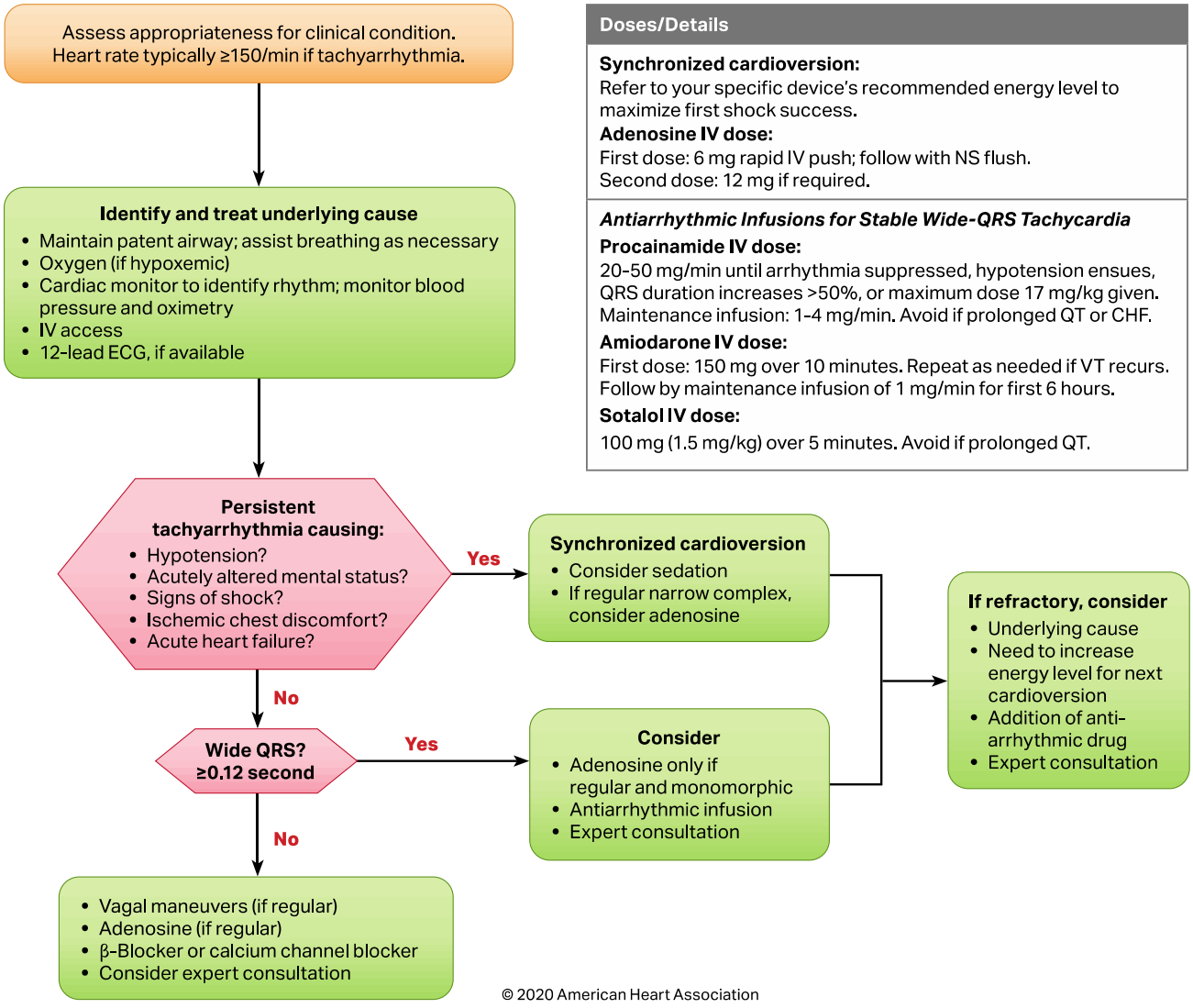
Adult Tachycardia With a Pulse Algorithm



B	EMT
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P	Paramedic

Wide Complex Tachycardia with Pulse (Stable)

Continually reassess ABCDE's and keep reassessing and intervening as needed

EKG Findings

1. Heart rate ≥ 150/min.
2. Wide QRS (greater than 0.12sec or 3 little blocks).
3. Absent P waves.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.
5. DO NOT APPLY AN AED TO A PATIENT UNLESS ARREST OCCURS.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable).
2. Initiate vascular access.

Paramedic

Treatment continuation from above

1. Follow current AHA ACLS algorithm.
2. If rhythm is Torsade's de Pointes, then give magnesium sulfate 1g IV/IO.
3. Administer amiodarone 150mg IV over 10 minutes.
4. If the patient is to be cardioverted, and does not have an altered level of consciousness, administer Midazolam (Versed) 2-5mg IV/IO/IM until patient's speech slurs or 8mg is given.
5. If VTach persists, synchronized cardiovert the patient at 100J (or biphasic equivalent).
6. If VTach persists, synchronized cardiovert the patient at 360J (or biphasic equivalent).
7. If VTach reoccurs, repeat synchronized cardioversion at the successful energy level.
8. Obtain Diagnostic EKG following conversion out of Wide Complex Tachycardia/VTach.

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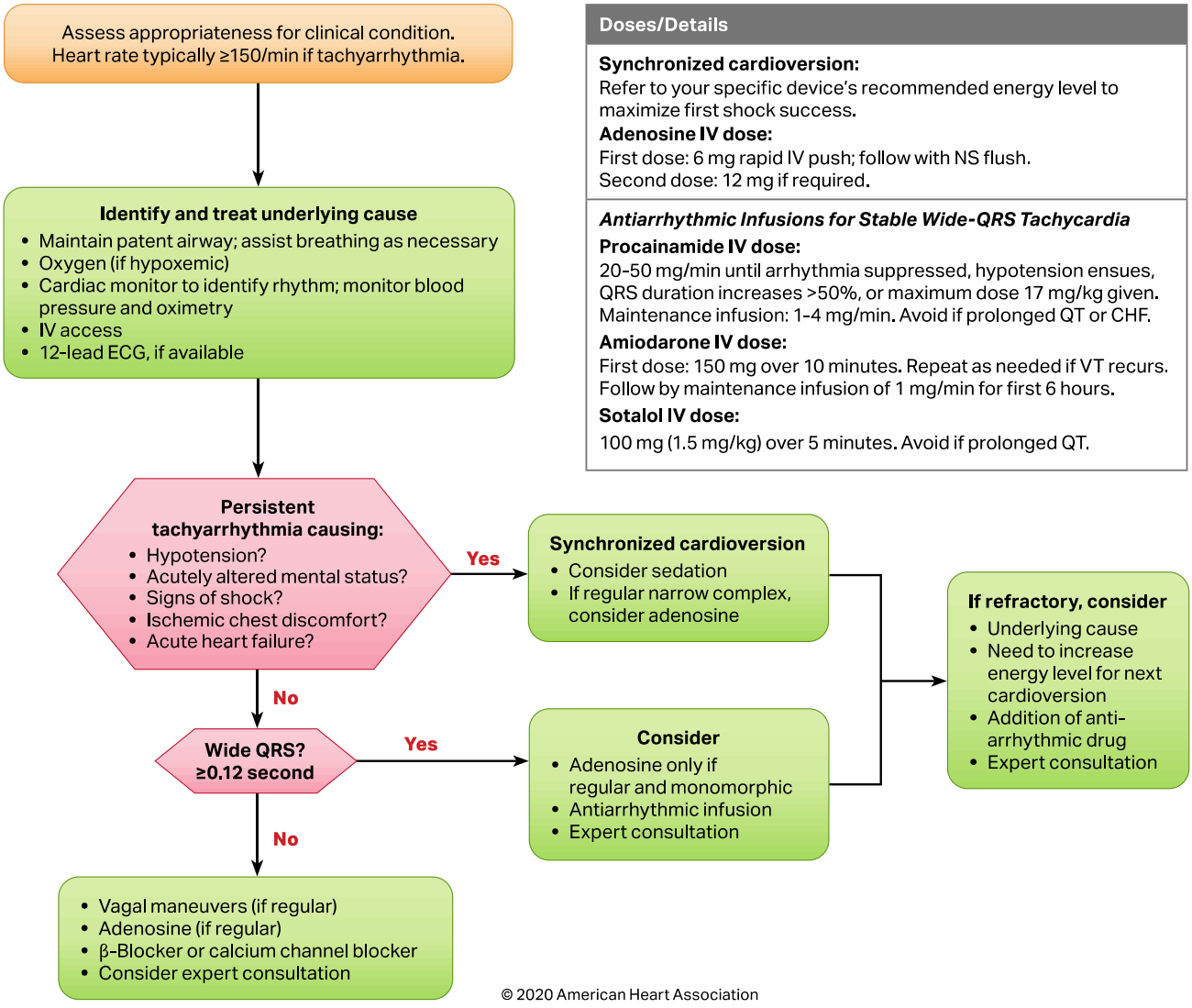

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Narrow Complex Tachycardia with Pulse (Stable)

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EKG Findings

1. Heart rate ≥ 150/min.
2. Regular atrial rate.
3. Normal QRS duration of less than 0.12 seconds.
4. P waves usually absent.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.
5. DO NOT APPLY AN AED TO A PATIENT UNLESS ARREST OCCURS.
6. Have patient perform Valsalva maneuver with passive leg raise and monitor for changes.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable).
2. Initiate vascular access as proximal as possible, with a large bore.

Paramedic

Treatment continuation from above

1. Follow current AHA ACLS algorithm.
2. Administer adenosine 6mg as close as possible to the patient followed by rapid push of normal saline flush.
3. If rhythm persists, administer adenosine 12mg IVP followed by rapid push of normal saline flush.
4. If the rhythm persists, and it is still thoughts to be paroxysmal supraventricular tachycardia, administer another adenosine 12mg IVP followed by rapid push of normal saline flush. (May repeat one more time).
5. Repeat Diagnostic EKG after any rhythm change.
6. If patient becomes unstable, move to the unstable narrow complex tachycardia (with pulse) protocol.

NOTES:

1. Adenosine has a short half-life of about ten seconds. For the drug to be effective, it must be able to reach the heart prior to being metabolized in the bloodstream. To achieve a high concentration of drug at the heart, a large IV, preferably in the antecubital fossa, should be established. Then when the adenosine is given, it should be followed by a bolus of saline that will swiftly empty the intravenous catheter of the drug and push it on its way to the cardiac circulation.
2. If there is a significant AV nodal block after a dose of adenosine and if an underlying atrial rhythm of atrial fibrillation or atrial flutter is observed, then an additional dose of adenosine is NOT indicated.
3. If the initial rhythm is tachycardic and irregular, then an atrial fibrillation rhythm is likely. Do not treat with adenosine.
4. Adenosine side effects include flushing, chest pain, and dizziness, impending doom. These last only a short time because of adenosine's short half-life.
5. AHA now recommends augmenting the Valsalva maneuver with passive leg raise.

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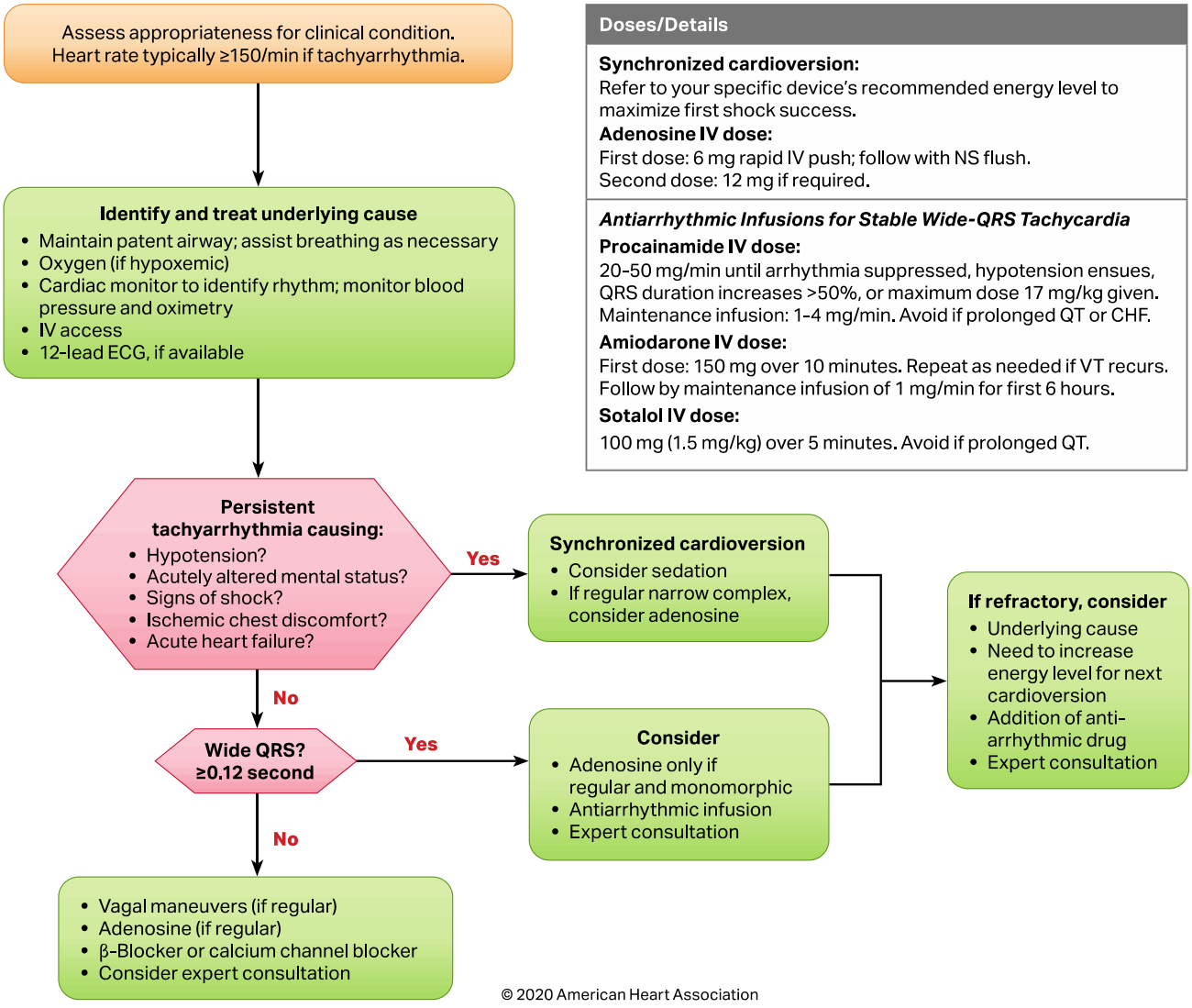
Adult Tachycardia With a Pulse Algorithm



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Narrow Complex Tachycardia with Pulse (Unstable)

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EKG Findings

1. Heart rate ≥ 150/min.
2. Regular atrial rate.
3. Normal QRS duration of less than 0.12 seconds.
4. P waves usually absent.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.
5. DO NOT APPLY AN AED TO A PATIENT UNLESS ARREST OCCURS.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable).
2. Initiate vascular access as proximal as possible, with a large bore.

Paramedic

Treatment continuation from above

1. Follow current AHA ACLS algorithm.
2. If the patient is to be cardioverted and does not have an altered level of consciousness, consider the administration of midazolam (Versed) 2-5 mg IV/IO/IM until patient's speech slurs or a total of 8 mg is given.
3. Synchronized cardioversion for Atrial Fibrillation: initial energy level of 120-200 J biphasic.
4. Synchronized cardioversion for all Atrial Flutter and all other SVTs: initial energy level 50-100 J biphasic.
5. If initial energy level fails, energy should be increased in a stepwise fashion with each subsequent shock: 100, 200, 300, 360.
6. Monophasic waveform cardioversion should always begin at 200 J and increase in a stepwise fashion as above.
7. If still no change, contact medical control for treatment options.
8. If patient converts out of Narrow Complex Tachycardia, perform 12 Lead EKG

NOTES:

1. Do not delay cardioversion to sedate if symptoms are severe.
2. Severe symptoms related to tachycardia are uncommon if heart rate less than 150.

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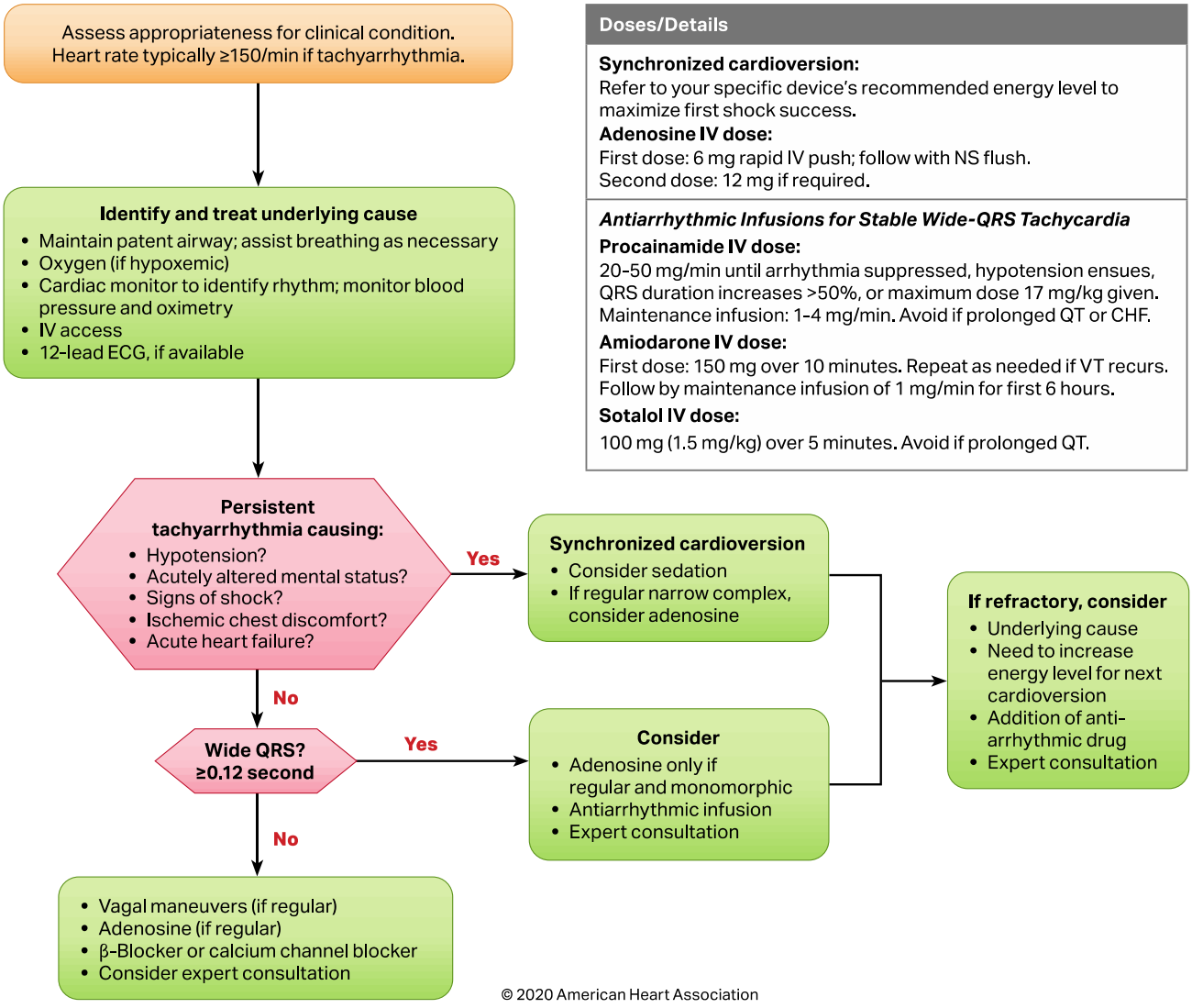
Adult Tachycardia With a Pulse Algorithm



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Symptomatic Bradycardia

Continually reassess ABCDE's and keep reassessing and intervening as needed

Indications:

1. Palpable pulse rate less than 60.
2. Systolic BP less than 80mmHg, cardiogenic shock, pulmonary edema.
3. Signs of inadequate perfusion such as acute heart failure, delayed capillary refill, diaphoresis, altered mental status.
4. Chest pain, shortness of breath, or inability to give history due to alteration in level of consciousness which is thought to be related to the slow heart rate.
5. It is important to treat the patient and not the number. Some athletic patients may have normal asymptomatic resting heart rates of 40-60.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport preferentially to a cath-lab capable facility when if able.
4. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain diagnostic ECG. (Transmit to receiving hospital if capable).
2. Apply defibrillation pads.
3. Initiate vascular access.
4. Consider 3rd degree heart block with chest pain as an MI until proven otherwise. Treat per STEMI protocol.

Paramedic

Treatment continuation from above

1. Administer Atropine 1 mg IV, IO. May repeat dose every 3-5 minutes up to a total of 3mg.
2. If patient become unstable at any time immediately go to transcutaneous pacing.
3. Initiate transcutaneous pacing:
    i. Set rate to 80 bpm and initial 20 milliamp energy.
    ii. Increase Joule setting by 5-10 milliamps every 10 seconds until electrical/mechanical capture is obtained.
    iii. Ensure limb leads are placed when initiating pacing.
5. If time permits pre-medicate patient with one of:
    i. Midazolam (*Versed*) - 2 to 5 mg IV/IO/IN.
    ii. Fentanyl 50-100mcg IV/IO/IN
6. If patient is known to be on Beta-blockers, or calcium channel blockers consider Glucagon (GlucaGen) 2 mg IV, IM, IO.
    i. Consider nausea control Ondansetron (*Zofran*) ODT - 4 mg PO max or
    ii. Ondansetron (*Zofran*) 4 mg IV, IM max, if you administer Glucagon.
7. If the above fail to produce desired response:
    i. Administer Epinephrine push dose pressor per protocol.

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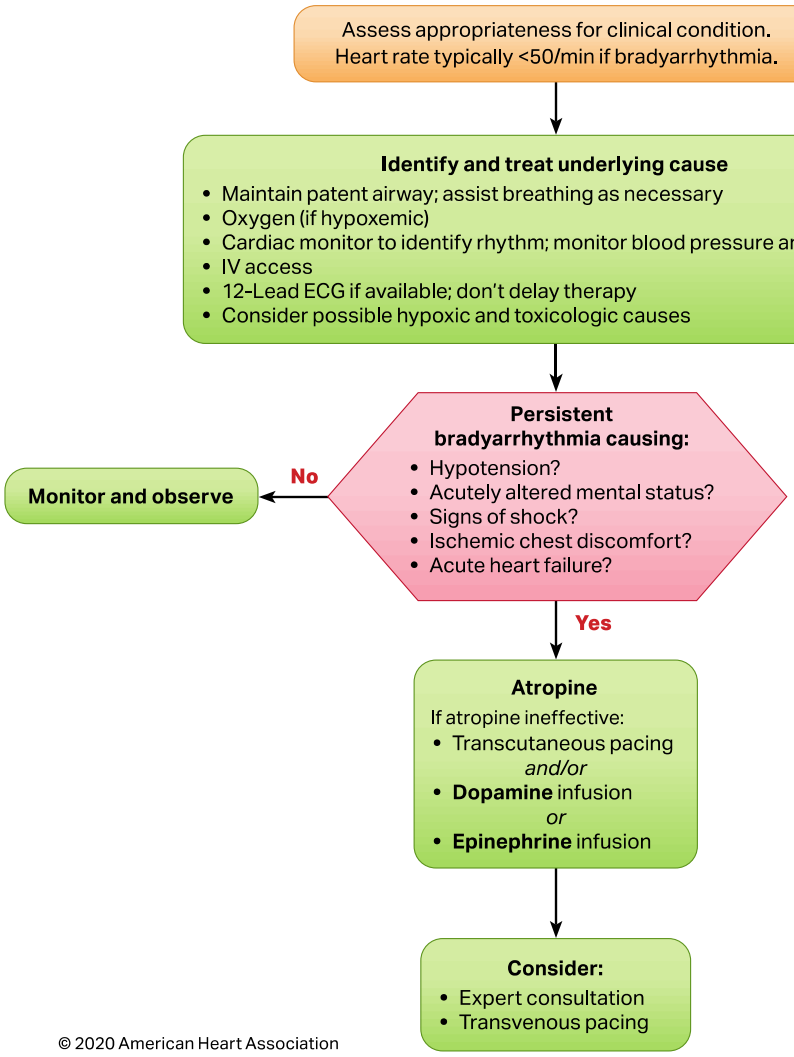
Adult Bradycardia Algorithm



Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion:
Usual infusion rate is
5-20 mcg/kg per minute.
Titrate to patient response;
taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:
- Myocardial ischemia/ infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

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Chest Pain

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Assess ABC's - Support airway as needed
2. Initiate oxygen to maintain SpO_2 between 94% and 99% via pulse oximetry.
3. Complete and record all vital signs - repeat frequently and record new readings
4. If patient condition permits, obtain a severity of chest pain value (1 to 10 scale)
5. Elderly patients, diabetics and women are more likely to experience symptoms, especially their chest pain, in an atypical fashion, presenting as vague weakness, SOB, arm, back or jaw discomfort, etc.
6. If trained, obtain, and transmit a Diagnostic EKG within 10 minutes of arrival. Contact medical control early when transmitting to determine appropriate destination. You may be asked to go to a cath lab facility.
7. Medication
    i. Administer Aspirin - 324 mg (4 tablets baby aspirin) PO. This is to be administered even if they "took their own."
    ii. Assist the patient with administration of their prescribed Nitroglycerine ONLY if systolic BP > 90 mmHg. Administer Nitroglycerine (*Nitrostat*) - 0.4 mg tablet SL, may repeat in 3-5 minutes for a total of 3 tablets. Verify that patient has not taken any PDE5 inhibitors within the past 24 hours (such as *Viagra, Levitra,* or *Cialis*) which are known to potentiate the hypotensive effects of nitrates.
        a Contact medical control for Nitroglycerine (*Nitrostat*) if patient has a prescription and does not have it with them.

AEMT

Treatment continuation from above

1. Obtain and transmit a Diagnostic EKG within 10 minutes of arrival on scene.
2. Non-prescribed Nitroglycerine may be given as above, not exceeding an accumulation dose of 3 tablets.
3. Place the patient on the monitor.
4. Establish IV access.
5. If patient's systolic BP drops < 90 mmHg after administration of Nitroglycerine, AND lungs are clear, administer 250-500 ml IV, IO fluid challenge of NS. May repeat as needed PRN.
6. See pain management protocol
7. Consider Ondansetron per nausea and vomiting protocol.

Paramedic

Treatment continuation from above

1. Obtain and interpret a 12-Lead ECG for all chest pain patients within 10 minutes of arrival on scene. Refer to STEMI protocol if indicated. Nitroglycerin is contraindicated if a posterior or right-sided MI suspected (ST elevation in V4r or V5r, ST elevation greater in Lead II than lead III, or ST elevation in V1.)
2. Consider placing defibrillation/pacing pads in the setting of a STEMI.
3. If no relief after three Nitro, and BP > 90 mmHg, give pain medication per Pain Management protocol.
4. If chest pain persists, or reoccurs, after three Nitro SL and opiate pain medication with systolic BP ≥ 90 mmHg, initiate Nitropaste (*Nitro-Bid*) 1-2 inches topical Left upper chest
5. Consider Ondansetron per nausea and vomiting protocol for nausea, or in cases with positive indication of STEMI, as a precaution. It is prudent to administer Zofran in cases of inferior wall, posterior wall, and right-sided MIs to prevent

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P	Paramedic

vagal stimulation and the resultant bradycardia associated with these MI patterns. OR Promethazine (Phenergan) 12.5 mg IM in large muscle. May repeat once to Max of 25 mg

5. In cases of POSTERIOR or RIGHT SIDED MI (confirmed in lead V4R on 12-Lead ECG), consider:
    i. Withhold nitrates and administer 500 cc NS fluid bolus IV, IO. Repeat every 5 to 8 minutes PRN to maintain systolic BP > 90 mmHg, assuring absence of rales in breath sounds.
    ii. Use caution with low doses of Morphine Sulfate, and watch closely for cardiovascular compromise associated with right sided MI. See medical director notes below.
        a. Refer to Severe Pain Management Protocol.
6. If NS bolus fails to improve patient's BP and/or patient's mental status is waning, with a systolic BP ≤90 consider using Epi Push Dose Pressor per protocol.
7. Treat dysrhythmias as appropriate – see separate protocols.
8. Transport to a PCI capable facility. See list below. CONSIDER HELICOPTER TRANSPORT DIRECT TO CATH LAB.

PCI Centers: (not inclusive)

1. Mercy Anderson
2. Mercy Kings Mills
3. The Jewish Hospital
4. Bethesda North
5. University of Cincinnati
6. The Christ Hospital
7. Good Samaritan Hospital
8. Meadowview Regional Medical Center (Maysville, KY)
9. Clinton Memorial Hospital (Wilmington, OH)

*******Notes from the Medical Director*******

1. Use of Fentanyl may lessen the risk of low blood pressure in a right sided MI when giving narcotics for pain control.
2. There is very little evidence for the use of narcotic pain medication in STEMI and a slight recommendation against its use in non-STEMI. The protocol however includes the use of pain medication for patient comfort and anxiolysis.

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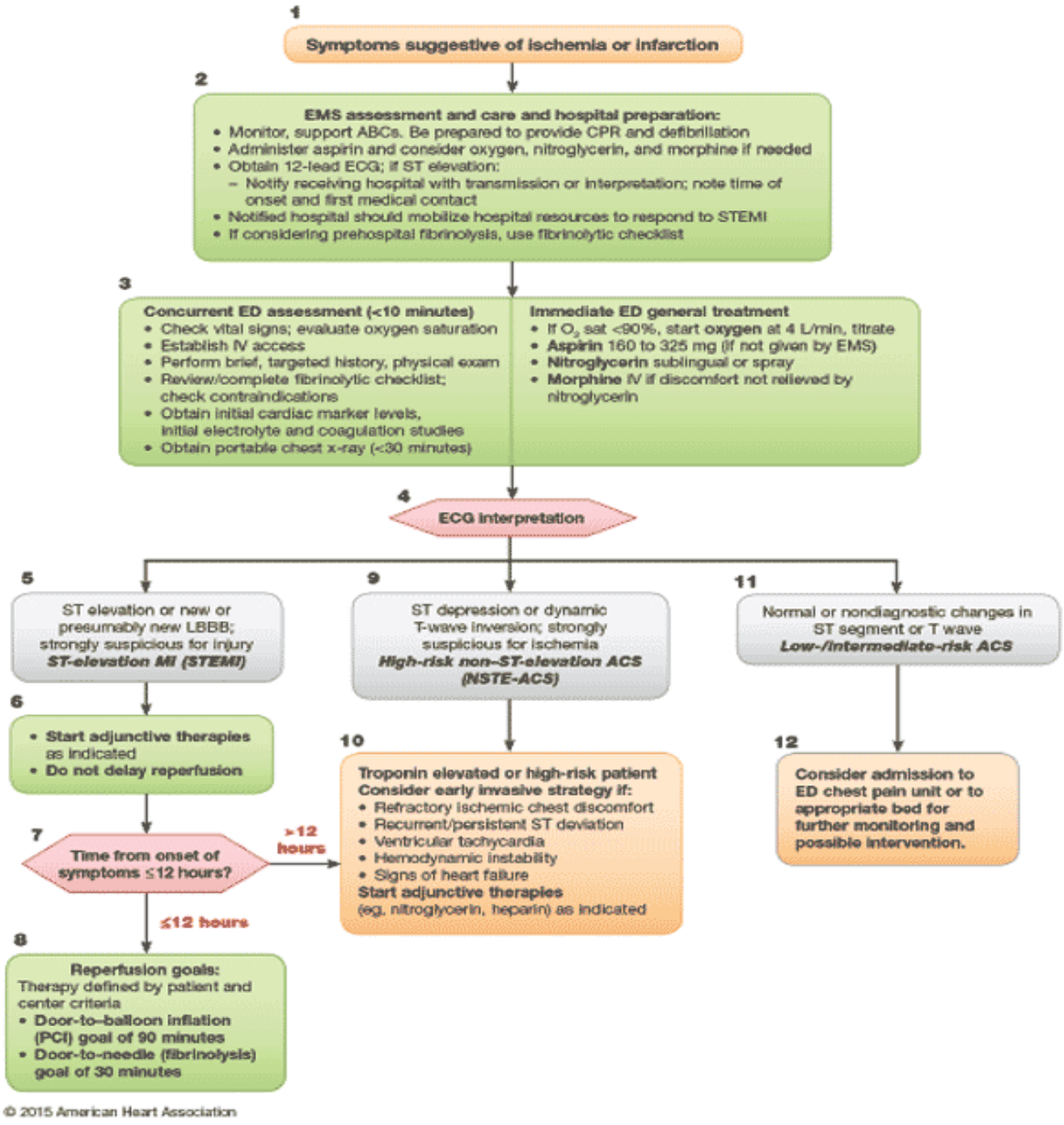
Acute Coronary Syndromes Algorithm—2015 Update



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Respiratory Distress

Asthma, COPD, CHF, & Pulmonary Edema
Continually reassess ABCDE's and keep reassessing and intervening as needed.

Considerations:

1. If the patient is experiencing chest pain this protocol is to be used in conjunction with the Chest Pain protocol.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Determine if the patient has an airway obstruction and treat per Airway protocol.
3. Request ALS intercept.
4. Administer nebulized bronchodilator:
   i. DuoNeb 3mL nebulized.
   ii. Repeat in 10-15 minutes if still in distress.
5. Consider CPAP – see CPAP Procedure Protocol.
6. Transport to an appropriate facility following General Transport Guidelines & Principles.
7. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor. Consider Diagnostic EKG and transmit to receiving facility.
2. Administer via nebulizer Duoneb 3mL Q15 x3.
3. Initiate vascular access.
4. If patient remains in extremis, consider Epinephrine 0.3 mg IM (0.3 ml of 1mg/1mL).

Paramedic

Treatment continuation from above

1. May administer Methylprednisone (*Solu-Medrol*) 60 mg slow IV, IO.
2. In asthmatic patients, if patient remains in extremis, consider Magnesium Sulfate 2 grams IVP over 3-5 minutes.
   i. To create the correct concentration:
      a Draw up magnesium sulfate 5g from the vial.
      b Inject this into a 100mL NS bag.
      c Draw out 40mL and administer the dose over 10-15 minutes.

****Note from the Medical Director*****
Risk factors for decompensation:

1. Recent Steroid
2. Recent Antibiotics
3. Increased use of inhaled meds
4. History of ICU stay
5. Recent hospitalization for same
6. Apply and transmit to the destination hospital a Diagnostic EKG.

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Airway Obstruction or Stridor

Inclusion criteria:

1. Patient's age is 16 years or older.
2. Patient is unable to speak because of an airway obstruction or has a history suggestive of foreign body aspiration, i.e., sudden shortness of breath while eating.
3. The patient exhibits stridor lung sounds.

Protocol

EMT

1. If the patient is alert but obviously choking from a presumed foreign body:
    a. Have the patient cough forcefully, if possible.
    b. Provide supplemental oxygen.
    c. Perform the Heimlich maneuver until successful.
        i. If Heimlich is successful, encourage transport for evaluation.
2. If the patient is found unconscious or becomes unconscious:
    a. Begin CPR and attempt to bag-valve-mask ventilate while preparations are made to intubate.
    b. Visually inspect upper airway prior to delivering all breaths during CPR in case foreign body has been successfully dislodged from airway.
    c. Consider early transport.

AEMT

a. If the patient is apneic, pulseless, and unconscious, using a laryngoscope visualize the posterior pharynx and vocal cords for evidence of a foreign body. Utilize video laryngoscopy when available.
b. Remove any foreign bodies very carefully with suction device or Magill forceps. If available, use large bore suction tubing and tip.
c. If no foreign body is present, or the patient does not begin breathing spontaneously, intubate per the Airway Protocol. If you suspect a foreign body is below the vocal cords, but above the carina, it may be necessary to push the foreign body down the right mainstem bronchus with the ET tube to aerate at least the left lung.
d. If wheezing and no stridor, consider an albuterol nebulizer treatment.

PARAMEDIC

a. Paramedics may perform all items listed under AEMT on any patient, regardless of breathing or pulse status.
b. If unable to pass an orotracheal tube due to obstruction, perform a surgical airway as described in the Surgical Cricothyrotomy Procedure.

B	EMT
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P	Paramedic

Spontaneous Pneumothorax

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable)
2. Initiate vascular access.
3. The patient's status can quickly change into Tension Pneumothorax. Monitor carefully, and if necessary, refer to "Thoracic Trauma" protocol.
4. Reference pain protocol.

B	EMT
A	Advanced EMT
P	Paramedic

Carbon Monoxide Poisoning

Continually reassess ABCDE's and keep reassessing and intervening as needed
Always ensure the safety of you and your crew. If you suspect CO poisoning, remove yourself, your crew, and the patient immediately. Call for Engine response for ventilation or use of SCBA. Do not attempt to enter a home if this is suspected prior to your arrival. Wait for ventilation or have patients come out to you. If there is any doubt have the ENGINE dispatched.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. High flow NRB oxygen is the treatment of choice.
3. Request ALS intercept.
4. Transport to an appropriate facility following General Transport Guidelines & Principles.
5. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.

Paramedic

Treatment continuation from above

1. Strongly consider transportation to a facility with a hospital-based emergency department. Let them determine from there where to transfer if indicated.
    i. Carboxyhemoglobin (COHb) 20 or higher
    ii. CO reading in patient's prolonged environment was > 180 ppm
    iii. Patient unresponsive or history of syncope
    iv. Cardiac dysrhythmias
    v. Chest pain, known CAD, or risk factors for CAD i.e., coronary disease

B	EMT
A	Advanced EMT
P	Paramedic

Stroke / CVA

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Obtain a blood glucose and treat per the Hypoglycemia and Hyperglycemia Protocol.
3. Request ALS intercept.
4. Perform the Cincinnati Prehospital Stroke Screen as per Stroke Assessment Protocol.
5. Transport to an appropriate facility following General Transport Guidelines & Principles.
    i. Preference should be made to a verified Acute Stroke Ready Hospital, Primary Stroke Center, or Comprehensive Stroke Center.
    ii. In general, these patients should NOT be transported via helicopter. These patients are best served by transporting rapidly to the closest appropriate facility.
6. Notify receiving hospital with patient information as soon as possible. USE THE PHRASE "STROKE ALERT".
7. Make sure to obtain the LAST KNOWN WELL time of patients' normal mental status.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable)
2. Initiate vascular access.

Paramedic

Treatment continuation from above

1. If suspected stroke is associated with hypertension, do NOT treat hypertension, even if severe, unless chest pain is also present. In that circumstance only treat according to hypertension guideline.
2. Perform and record the Cincinnati Pre-Hospital Stroke Scale. (refer to appendix)

Medical Director's notes:

1. Whenever possible transport a reliable historian to provide patient information and verify the exact onset of symptoms.
2. The Last Known Well time is the last verified time that the patient was at their baseline.
3. If patient awoke with symptoms, then the onset is when they went to bed.
4. Scene time should be less than 10 minutes.
5. Symptoms that have resolved, improved or are consistent with a Transient Ischemic Attack (TIA) should be treated as a stroke, including appropriate stroke alerting.

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Hypoglycemia / Hyperglycemia

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.
5. Check blood glucose level. If initial blood glucose is < 60mg/dl:
    i. If patient can swallow and easily protect their own airway, give Glucose (Glutose) - 15 grams PO.
    ii. Hypoglycemic patient with altered mentation - with insulin pump in place
        a. Care is directed at treating hypoglycemia first, then stopping administration of insulin.
        b. Turn off insulin pump if able.
        c. If no one familiar with the device is available to assist, disconnect pump from patient by:
            1. Using quick-release where tubing enters dressing on patient's skin, -OR-
            2. Completely removing the dressing, thereby removing the subcutaneous needle and catheter from under patient's skin.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Administer:
    i. Dextrose 10% (D10) 2mL/kg IV/IO bolus (typically 62.5-250mL).
    ii. If D10 is unavailable, administer Dextrose 50% (D50) – 25 grams IV, IO push.
    iii. Recheck blood glucose in 5 minutes. May repeat dextrose treatment once if necessary.
4. If unable gain vascular access:
    i. Administer Glucagon (GlucoGen) – 1 mg deep IM. IF GLUCAGON IS GIVEN TRANSPORT IS HIGHLY ENCOURAGED.
5. Patients may "treat and refuse" if they have a well-documented medical history and have received the treatment outlined above and meet ALL the following criteria:
    i. Blood glucose is now ≥60mg/dl.
    ii. Patient agrees to eat a meal and can do so.
    iii. Patient will be in the company of a responsible adult(s) who will stay with him/her for at least 12 hours or can ensure that somebody else does.
    iv. Patient agrees to contact their primary health care provider within 24 hours.
    v. Patient has the capability of measuring their own blood sugar and adjusting their medications (i.e., insulin) accordingly.
    vi. There are no other acute medical issues involved (i.e., suspected stroke, MI, trauma, drugs, alcohol, serious

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infection, etc.)

vii. Patient otherwise meets the Refusal of Treatment or Transportation Protocol. A signed "non-transport" refusal form MUST still be obtained.

viii. Thoroughly document all the above criteria on your patient care report.

6. In an adrenal insufficiency patient, hypoglycemia can be a sign of adrenal crisis.

7. If hyperglycemic – i.e., blood sugar is > 400 mg/dl – and there are no signs of volume overload, administer Normal Saline 500 ml IV, IO. These patients should be highly encouraged to allow transportation to the hospital.

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Decreased / Altered Level of Consciousness

Continually reassess ABCDE's and keep reassessing and intervening as needed.
Inclusion Criteria:

A. Patient of any age.
B. Patient has one of the following:
    a. Patient describes the feeling of impending loss of consciousness
    b. Patient has a decreased level of consciousness of any length.
        i. Altered level of consciousness is a period where the GCS is less than 15, or lower than their normal baseline.
    c. Patient has an Altered Mental Status
        i. AMS is a state where a person is not alert and oriented to person, place, time, and situation as age appropriate, or baseline functional level.
    d. Syncope:
        i. Syncope is a loss of consciousness that resolved without medical interventions and there was loss of postural tone (typically resolved prior to arrival of EMS).
    e. Pre-Syncope:
        i. Pre-syncope is early signs/symptoms of syncope. It usually lasts for seconds to minutes and may be described by the patient as "nearly blacking out" or "nearly fainted".

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Assess for trauma and treat per relevant protocol.
3. Assess for signs of stroke per protocol.
4. Assess for signs of sepsis.
5. Inquire about possible intoxicant ingestion.
6. Request ALS intercept.
7. Assess blood glucose level. If $\leq$ 60 mg/dl or $\geq$ 400 mg/dl, see Hypo-/Hyperglycemia Protocol.
8. Notify receiving hospital with patient information as soon as possible.
9. If respirations are impaired and there is a high index of suspicion for narcotic overdose, treat per Toxicology Protocol.
10. Transport to an appropriate facility following General Transport Guidelines & Principles.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor.
2. Place 12 lead on and obtain/transmit.
3. Initiate vascular access.
4. Place patient on end tidal CO-oximetry.
5. If respirations are impaired and there is a high index of suspicion of narcotic overdose refer to Toxicology Protocol.

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Symptomatic Hypotension & Non-Traumatic Hypovolemia

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles.
4. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor, obtain 12 lead ECG. (Transmit to receiving hospital if capable)
2. Initiate vascular access.
3. Fluid bolus of 500ml Q15 minutes up to max of 2 liters.

Paramedic

Treatment continuation from above

1. If due to a dysrhythmia, go to appropriate protocol.
2. If hypotension is refractory to intravenous fluids or patient has signs and symptoms of pulmonary edema:
    i. **Administer Epinephrine push dose pressor per protocol.**

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Seizures

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Assess the ABCs - support airway and ventilation PRN. Do not attempt to place an oral airway or orally suction during an active seizure.
2. Initiate O2 and apply pulse oximeter.
3. Complete and record all vital signs-repeat frequently and record new findings.
4. Check blood glucose. If ≤ 70 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol
5. Place the patient on end-tidal capnography and treat as appropriate.

AEMT

Treatment continuation from above

If patient is actively seizing, or seizures are recurrent:

1. Administer Midazolam (Versed) 10mg IM. DO NOT ATTEMPT IV ACCESS UNTIL Midazolam INITIATED.
    a. Initiate .9NS IV and limb lead EKG.
2. If patient seizes AFTER IV is established, but IM dose NOT administered, administer Midazolam (Versed) 5-10mg to a maximum of 10mg until seizure stops.
3. After drug administration, ensure adequate airway and ventilation. Manage per Airway and Ventilation Protocol.
4. If patient continues to seize after your maximum 10mg midazolam dose, contact medical control for orders.

Paramedic

Treatment continuation from above

1. If the patient continues to seize despite above treatments, contact medical control for possible further orders.
2. If the patient is in the second half of pregnancy, or up to 6 weeks postpartum AND is actively seizing, AND has no known seizure history, if available give magnesium sulfate either IV/IO/IM, in addition to the Versed outlined above.
    i. Give up to 4 grams diluted slowly IVP IV/IO over 15 minutes.
    ii. Alternatively give 10 grams deep IM "Z-track" in 2 divided 5-gram injections into each buttock. Gently massage the site after administration.
    iii. Be cautious of hypotension caused by magnesium.
    iv. Magnesium is contraindicated if you know of a history of myasthenia gravis.
    v. If the patient is still seizing after the initial dose of magnesium, Midazolam (Versed) can be considered, but only after consultation with online medical control as the combination can lead to severe respiratory depression.
    vi. Always transport a pregnant patient with concern for seizures to a hospital with obstetrical services.
3. Monitor for hypotension and respiratory depression.
4. Obtain Diagnostic EKG and transmit.

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Animal / Reptile Bites & Insect Stings

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Obtain identifying information of the animal, insect, or reptile. Including size, color, markings, shape of the head, location of the event, how it happened, and if the predator was captured. Notify animal control and law enforcement if appropriate.
4. Mark margins of wounds, swelling, and/or redness with pen.
5. If stinger is present, attempt to remove.
6. If appropriate, watch for signs & symptoms of anaphylaxis, and treat according to anaphylaxis guidelines.
7. Transport to an appropriate facility following General Transport Guidelines & Principles.
8. Notify receiving hospital with patient information as soon as possible.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. When appropriate, refer to Anaphylaxis protocol.
4. If signs of major systemic reaction and patient severely in pain, consider using Severe Pain Management Protocol.

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Allergic Reaction, Anaphylaxis

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. If severe allergic reaction, may administer one of the following:
   (Agency medical director must approve this change. Agency responsible for training prior to implementation.)
   A. Epinephrine auto injector 0.3mg/dose (may repeat every 5-15 minutes as needed for continued symptoms).
   B. Epinephrine 1mg/1mL (1:1000), 0.3mL (0.3mg) intramuscular (may repeat every 5-15 minutes as needed for continued symptoms).
4. Transport to an appropriate facility following General Transport Guidelines & Principles.
5. Remove allergen. (stinger from skin, etc.)
6. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. If reaction is localized, systolic BP is ≥ 90 mmHg, with no respiratory difficulty and no symptoms of airway edema:
   i. Administer Diphenhydramine (*Benadryl*) – 25 to 50 mg IV, IM.
4. If reaction is systemic, respiratory difficulty and /or symptoms of airway edema (anaphylaxis):
   i. Administer Epinephrine (1mg/1mL) – 0.3-0.5 mg IM, SQ.
   ii. If no improvement after 5 minutes – repeat Epinephrine (1mg/1mL) – 0.3-0.5 mg IM,SQ using a different injection site.
   iii. Administer a DuoNeb.
      a. May give DuoNeb continuously if necessary.
5. If signs of major systemic reaction and patient severely in pain. Consider using Severe Pain Management Protocol.

Paramedic

Treatment continuation from above

1. Consider Methylprednisolone (Solu-Medrol) 60 mg IV/IO.
2. Consider Famotidine (Pepcid) 20 mg IV.
3. If systolic BP is ≤ 90 mmHg:
   i. Epinephrine push dose pressor per protocol.

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Medication Overdose, Ingestions and Toxic Exposure

Continually reassess ABCDE's and keep reassessing and intervening as needed.

Considerations:

1. In an event where there is a possible toxic exposure/hazmat, report to incident command and stage until patients are decontaminated.
2. Remove or have removed all patients from contaminated area once appropriate safety standards have been implemented.
3. Park vehicles a safe distance away uphill and upwind of the scene.
4. Decontaminate patient as called for according to hazmat guidelines.
5. MEDICATIONS: Gather type, dose, time, and route of exposure, how consumed, and take bottles with you.
    i. Call poison control 800-222-1222.
    ii. EMS may contact medical control or poison control for toxin information.
    iii. Poison control cannot issue orders to EMS. Contact medical control and discuss poison controls' recommendation.
6. TOXIC EXPOSURE: When possible, determine type of chemical involved first. Obtain the name and if possible, the material safety data sheet (MSDS) or ask that the name of the MSDS be brought to the hospital as soon as possible.
7. SKIN EXPOSURE: Remove clothing, brush dry chemicals, and flood skin with copious amounts of water.
8. FIRE VICTIMS: Evaluate for airway obstructions secondary to thermal injury! Consider carbon monoxide and cyanide exposure.
9. If exposure is an unintentional pediatric patient who is less than 6 years old AND has stable ABC's and vital signs:
    a. Obtain all history of ingestion, including: time, all substances, amounts, strengths, formulations as applicable.
    b. Have the legal guardian or parent contact the National Poison Control Center at 1-800-222-1222 for further assessment and treatment recommendations including referral to the emergency department. Once they obtain the recommendation from the poison center, allow them to make informed decision on treatment and transport.
    c. Up to 90% of all unintentional pediatric exposures do not need immediate referral to the emergency department.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
    i. Request ALS intercept if:
        i. An exposure that will require ALS intervention prior to arrival at the emergency department.
        ii. Patient is unresponsive.
        iii. Has possible airway compromise.
        iv. Is an adult with a pulse rate of less than 50 or greater than 130 beats per minute, or a systolic blood pressure less than 90 or greater than 180 mmHg.
        v. Is a pediatric patient with a respiratory rate greater than 50 or a heart rate less than 60 or greater than 180.
2. Assess blood glucose level. If $\leq$ 60 mg/dl or $\geq$ 400 mg/dl, see Hypo-/Hyperglycemia Protocol.
3. Notify receiving hospital with patient information as soon as possible.

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4. If respirations are impaired and there is a high index of suspicion for narcotic overdose.
    a. Administer Naloxone (Narcan) 0.4-4 mg IN. May repeat dose once.
5. If eye exposure, flush the eyes with normal saline. Law enforcement specific wipes may be utilized if the patient has been sprayed with "pepper spray".
6. If carbon monoxide poisoning suspected, follow the Carbon Monoxide protocol.
7. Encourage the patient not to rub skin or eyes as this will spread the toxin and cause increased irritation.
8. Remember that many inhaled toxins can also be absorbed through the skin and that further decontamination may be necessary depending on toxic agent.
9. Be prepared to manage the airway if ingested poison is corrosive or caustic.
10. Transport to an appropriate facility following General Transport Guidelines & Principles.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. If respirations are impaired and there is a high index of suspicion of narcotic overdose.
    i. Administer Naloxone (Narcan) 0.4-4 mg max dose 8mg IN, IM, IV. May repeat dose until spontaneous return of respirations.

Paramedic

Treatment continuation from above

1. Administer Sodium Bicarbonate (NaHCO3) - 1 amp/50 meq IV, IO over 1-2 minutes if:
    i. Tricyclic antidepressant overdose suspected.
    ii. Wide QRS complex
    iii. Repeat every 3 to 5 minutes as needed for continued widened or widening QRS complexes. (If in question contact medical control)
2. If systolic BP ≤ 90 mmHg and patient's mental status is diminished:
    i. Epinephrine push dose pressor per protocol.

SPECIFIC TOXINS:

3. If organophosphate exposure is suspected, refer to Nerve Agent/Organophosphate protocol.
4. Suspected Beta blocker overdose with Hypotension and Bradycardia.
    a. Administer Glucagon, Glucagon (GlucoGen) –1 -2 mg IV,IM,IO.
5. Suspected Calcium Channel overdose
    b. SBP less than 90 with altered mental status. Administer calcium per the Calcium Administration protocol.
6. Cyanide (suspicion of)
    c. Poisoning can occur through inhalation, ingestion, and absorption.
    d. Treatment should occur when any of the following are present:
        i. CNS depression.
        ii. Hypotension.
        iii. Tachypnea.
        iv. There are no contraindications to treatment.
    e. If patient was exposed to fire/smoke in a confined space and cyanide poisoning is suspected or known, then administer Cyanokit.

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i. Adult: 5g (both 2.5g vials, or one 5g vial) IV/IO over 15 minutes.
ii. Pediatric: Refer to dosing chart:

AGE	< 3 YEARS	3-7 YEARS	>7 YEARS
DOSE (GRAM)	1 gram	2 grams	5 grams
VOLUME (ML)	40 mL	80 mL	200 mL

iii. Administration instructions:
1. The 5g vial must be reconstituted with 200 mLs of 0.9% normal saline using supplied sterile transfer spike. Use the transfer spike to transfer the contents of two (2) 100 mL bags of normal saline into the Cyanokit bottle.
2. Once filled, gently rock or invert the vial to mix until the powder goes into solution. DO NOT SHAKE THE VIAL.
3. If solution does not turn dark red, or particulate is still present after mixing dispose of solution and do not administer.
4. Spike the bottle and run the solution from the bottle over 15 minutes.
5. Due to the potential incompatibility with drugs commonly administered in resuscitation effort and drugs in the cyanide antidote kit, DO NOT administer other drugs through the line supplying the Cyanokit.

iv. Treatment will temporarily turn the victims' skin and bodily secretions (tears, urine etc.) red.
v. If there is more than one pediatric patient requiring Cyanokit, it is appropriate to administer multiple doses out of one kit avoiding cross-contamination.

7. Sodium Channel Blocker Overdose
f. Drugs include (but not limited to): diphenhydramine, amitriptyline, nortriptyline, clomipramine, desipramine, doxepin, imipramine, protriptyline, trimipramine.
g. Initial treatment is supportive.
h. Observe the patient for hypotension and monitor for symptomatic bradycardia or tachycardia with a prolongation of the QRS complex.
i. If patient has prolonged QRS, is hypotensive, or has ventricular tachycardia, administer Sodium Bicarb 1mEq/kg (max 50 mEq) slow IV/IO over 2 minutes.
ii. Repeat sodium bicarb 0.5mEq/kg IV/IO for persistent QRS prolongation.
iii. Consider push dose epinephrine per protocol.

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Cyanokit® (Hydroxocobalamin) PEDIATRIC Dosing and Administration

1. Reconstitute and mix 5-gram Cyanokit® vial with 200mL normal saline as directed on the packaging
2. Connect included tubing to vial. If needed, attach 3-way stop-cock to IV/IO
3. Draw up appropriate volume based on patient age in syringe attached to stop-cock (may require multiple syringes to administer dose)
4. Administer dose via IV/IO* over 15 minutes

*No other medications can be administered through this line

Age-Based Dosing of Cyanokit®

Age	**Less than 3 years**	**3-7 years**	**7 years or older**
Dose (gram)	1 gram	2 grams	5 grams
Volume (mL)	40 mL	80 mL	200 mL

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Opioid Withdrawal

This protocol is only for use by Advanced EMT's and Paramedics.

I. Inclusion Criteria

A. Patient's age is 16 years or older
B. Withdrawal from opioids due to the administration of naloxone
C. Withdrawal from opioids due to 24 hours or greater of no use

Opioid Withdrawal Signs/Symptoms:

- Yawning
- Rhinorrhea
- Lacrimation
- Dilated Pupils
- Tachycardia
- Diaphoresis
- Restlessness
- Agitation
- Vomiting/Diarrhea
- Piloerection
- Nausea
- Stomach Cramps
- Body Aches
- Bone/Joint Aches
- Hot/Cold Temp.
- Nasal Congestion

II. Exclusion Criteria and Differential Diagnosis

A. Patient's age is under 16 years
B. Any methadone uses within 10 days
C. COWS (clinical opioid withdrawal scale) score less than 8
D. Other severe medical illness aside from or in addition to opioid withdrawal
E. Altered mental status or inability to give consent or understand potential risks and benefits

III. Protocol

A. If EMS personnel suspect opioid withdrawal either from administration of naloxone or abstinence from opioids, a COWS score should be performed and documented.
B. If COWS score 8 or greater, discuss buprenorphine initiation with patient.
C. If patient consents, administer 16mg of buprenorphine SL and recommend transport to most appropriate facility.
D. If prolonged transport or scene time, reassess patient after 10 minutes following administration of buprenorphine and perform and document an additional COWS score. If still experiencing nausea, see protocol Nausea/Vomiting. If still restless or agitated, see protocol Restraint.

Notes:

A. Buprenorphine can be purchased in multiple formulations, the most common brand names being Suboxone and Subutex. Suboxone includes both buprenorphine and naloxone where-as Subutex is just buprenorphine. Be sure that the initial dose of buprenorphine administered is 16mg regardless of the formulation.
B. If patient refuses transport, every effort should be made to provide the patient with a leave-behind naloxone kit. This should be attempted regardless of whether the patient receives buprenorphine or not.

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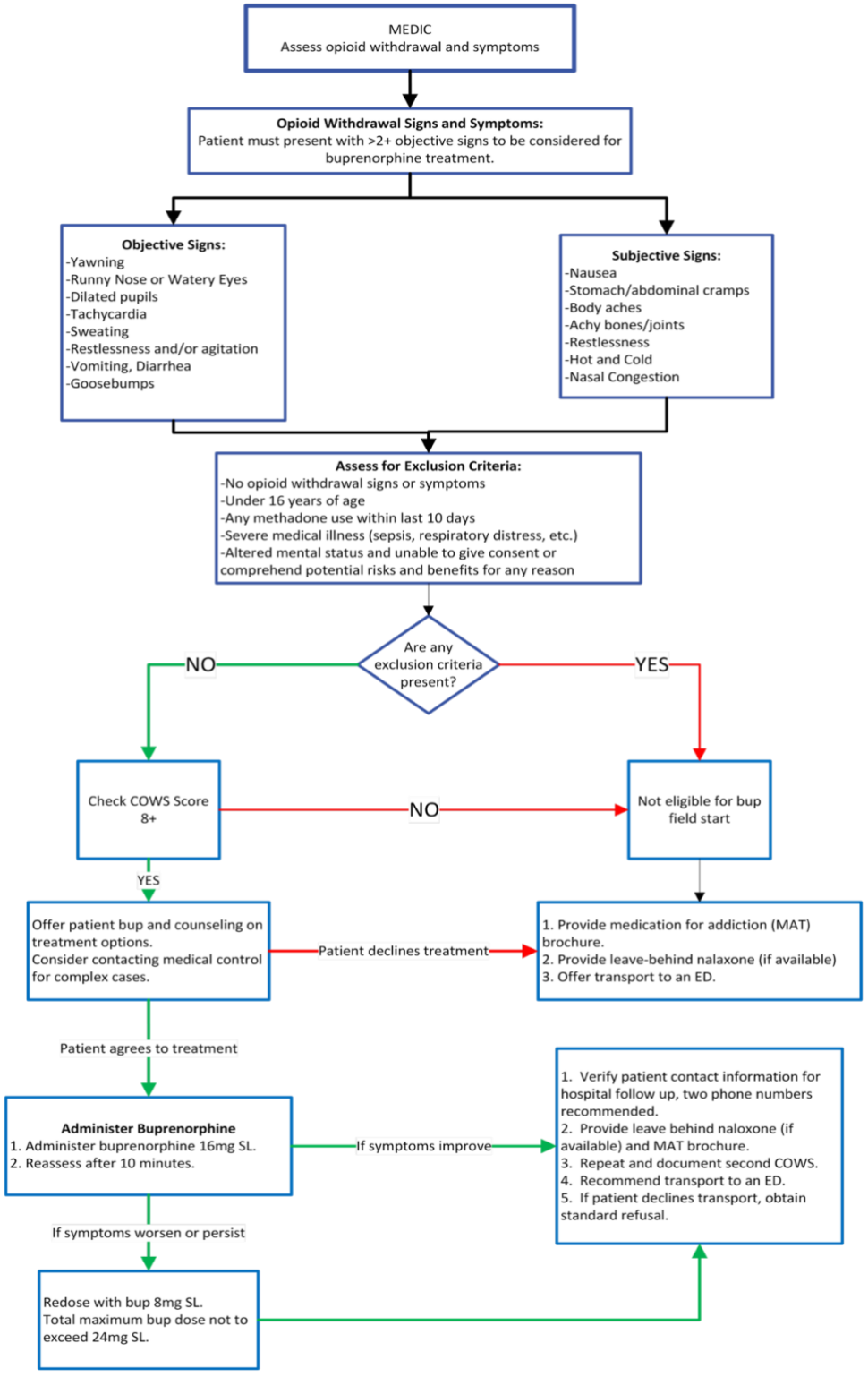

Based on California BRIDGE Program.

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Wesson & Ling, J Psychoactive Drugs. 2003 Apr-Jun;35(2):253-9.

COWS Clinical Opiate Withdrawal Scale

Resting Pulse Rate: _____beats/minute *Measured after patient is sitting or lying for one minute* 0 Pulse rate 80 or below 1 Pulse rate 81-100 2 Pulse rate 101-120 4 Pulse rate greater than 120	GI Upset: *over last 1/2 hour* 0 No GI symptoms 1 Stomach cramps 2 Nausea or loose stool 3 Vomiting or diarrhea 5 Multiple episodes of diarrhea or vomiting
Sweating: *over past 1/2 hour not accounted for by room temperature or patient activity.* 0 No report of chills or flushing 1 Subjective report of chills or flushing 2 Flushed or observable moistness on face 3 Beads of sweat *on* brow or face 4 Sweat streaming off face	Tremor *observation of outstretched hands* 0 No tremor 1 Tremor can be felt, but not observed 2 Slight tremor observable 4 Gross tremor or muscle twitching
Restlessness *Observation during assessment* 0 Able to sit still 1 Reports difficulty sifting still, but is able to do so 3 Frequent shifting or extraneous movements of legs/arms 5 Unable to sit still for more than a few seconds	Yawning *Observation during assessment* 0 No yawning 1 Yawning once or twice during assessment 2 Yawning three or more times during assessment 4 Yawning several times/minute
Pupil size 0 Pupils pinned or normal size for room light 1 Pupils possibly larger than normal for room light 2 Pupils moderately dilated 5 Pupils so dilated that only the rim of the iris is visible	Anxiety or irritability 0 None 1 Patient reports increasing irritability or anxiousness 2 Patient obviously irritable anxious 4 Patient so irritable or anxious that participation in the assessment is difficult
Bone or Joint aches *If patient was having pain previously, only the additional component attributed to opiates withdrawal is scored* 0 Not present 1 Mild diffuse discomfort 2 Patient reports severe diffuse aching of joints/ muscles 4 Patient is rubbing joints or muscles and is unable to sit still because of discomfort	Gooseflesh skin 0 Skin is smooth 3 Piloerrection of skin can be felt or hairs standing up on arms 5 Prominent piloerrection
Runny nose or tearing *Not accounted for by cold symptoms or allergies* 0 Not present 1 Nasal stuffiness or unusually moist eyes 2 Nose running or tearing 4 Nose constantly running or tears streaming down cheeks	Total Score _____ The total score is the sum of all 11 items Initials of person completing Assessment:_____

Score: 5-12 mild; 13-24 moderate; 25-36 moderately severe; more than 36 = severe withdrawal

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Behavioral Emergency and Patient Restraint

Per Ohio Revised Code, an EMT, AEMT or a Paramedic may not "pink slip" an individual (transport a person to the hospital against their will for mental health evaluation) who is alert and oriented even if they are threatening harm to themselves or others. Only a health officer such as a police officer, crisis worker, psychiatrist or licensed physician can "pink slip" a person. It is strongly recommended that each EMS department, in consultation with its medical director and local law enforcement, have a procedure to deal with these types of situations. This does not preclude EMS from acting to prevent imminent harm to the patient or others.

If it is safe to do so:

1. Determine patient competency and consent (refer to Refusal and Special Transport Situations).
2. Obtain medical history:
    i. Suicidal or violent history.
    ii. Previous psychiatric hospitalization, when and where.
    iii. Location where the patient receives mental health care.
    iv. Medications
    v. Recreational drugs/alcohol: amount, names.
    vi. Do not judge, just treat.
3. Transport all patients who do not have capacity to refuse care (refer to Refusal and Special Transport situations).
4. Consider a patient to be incapable to make medical decisions if they are:
    i. Suicidal
    ii. Confused
    iii. Severely developmentally or mentally disabled
    iv. Intoxicated
    v. Injured/ill with an altered mental status
    vi. Physically/verbally hostile
    vii. Unconscious
5. Consider and treat possible medical causes for patient's condition:
    i. Hypoxia
    ii. Hypoglycemia
    iii. Drug intoxication, side effects, drug withdrawal
    iv. Seizures and postictal states
    v. Intracranial hemorrhage
    vi. Stroke
    vii. Infection
6. Consider staging until police have made the scene safe.
7. Search patient for weapons.
8. Apply restraints if applicable per Patient Restraint Procedure.

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Behavioral Emergency cont.

Continually reassess ABCDEs and intervene as needed.

1. Definition of a "Behavioral Emergency:" When the patient acts abnormally in a way that is unacceptable or intolerable to the patient, family, or community.
2. Behavioral changes may be due to psychological, emotional, physical, or medical conditions.
3. Psychological causes include depression, mania, paranoia, suicidal, and environmental changes.
4. Physical causes may include excessive heat or cold, lack of oxygen, lack of blood flow to the brain, head injuries, stroke, alcohol, or drug abuse, high or low blood sugar, metabolic disorders, and neurologic disease.
5. EMS shall not be obligated to transport, without an accompanying police officer, any patient who is currently violent, exhibiting violent tendencies, or has a history indicating a reasonable expectation that the patient will become violent.
6. If the patient is medically stable, then he/she may be transported by the police in the following circumstances:
    i. Patient is oriented x 3.
    ii. Patient does not have evidence of medical illness, significant intoxication, or injury.
    iii. Patients' behavior is consistent with suspected or known mental illness.

EMT/AEMT/PARAMEDIC

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Never turn your back on the patient. Never leave the patient alone.
4. Encourage the patient to talk. Listen carefully.
5. Be confident. Be respectful. Be calm. Be honest. STAY WITH YOUR PARTNER.
6. Explain all movements and procedures.
7. Apply restraints if needed following Patient Restraint procedure.
8. Transport to an appropriate facility following General Transport Guidelines & Principles.
9. Notify receiving hospital with patient information as soon as possible.

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Exposure to Nerve Agents / Organophosphates

Considerations:

1. If the potential exists for exposure to chemical agents that affect the nervous system:
    i. Protect SELF AND CREW above all else, with personal protective equipment
    ii. Protect victim from further exposure
        a. Remove from source and identify agent if possible
        b. Weaponized Nerve Agents included *Sarin* (GB), *Soman* (GD), *Tabun* (GA), and VX.
        c. Remove only outer clothing if exposed to vapors
        d. Remove all clothing and decontaminate if liquid exposure
        e. Follow decontamination procedure per hazmat protocol
2. Identify signs & symptoms that raise your index of suspicion indicating possible exposure to nerve agents or organophosphates

(SLUDGEM):

S – Salivation / L – Lacrimation / U – Urination / D – Defecation / G – Gastrointestinal Upset / E – Emesis / M – Muscle Twitching & Miosis (pinpoint pupils)

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. If patient has a mild to moderate exposure, with symptoms to include: SLUDGEM, agitation and respiratory depression. Administer DuoDote Kit - IM auto injector.
4. If severe symptoms continue in 5 to 8 minutes, administer up to three (3) additional DuoDote Kit - IM Auto injector in rapid succession.
5. If patient exhibits SLUDGEM, but no central nervous system (CNS) findings i.e. A+O*3 administer:
    i. Two atropine auto injectors and one 2-PAM CL auto injector.
    ii. Additional doses of Atropine 1-2 mg IM auto injector every 5 minutes until SLUDGEM signs and symptoms are diminished.
        a. There is no maximum dose.
        a. Call Medical control if this does not work as you may need more doses
6. In addition, administer Versed/Ativan 1-2mg IV/IN/IV,IM or auto injector, repeated once as needed.
7. Transport to an appropriate facility following General Transport Guidelines & Principles.
8. Notify receiving hospital with patient information as soon as possible.

AEMT/PARAMEDIC

Treatment continuation from above

1. May switch to IV/IO route for atropine 1-2 mg IV every 5 minutes until SLUDGEM signs and symptoms are diminished.
    i. There is no maximum dose.

****All levels of providers that have been trained to do so are permitted to administer nerve agent antidotes: per ORC 4765-6-03****

B	EMT
A	Advanced EMT
P	Paramedic

Nausea, Vomiting, and Motion Sickness

Continually reassess ABCDE's and keep reassessing and intervening as needed
This protocol applies to anyone over 3 months of age.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept if symptoms are severe, or vital signs are significantly abnormal.
3. Transport to an appropriate facility.
4. Obtain blood glucose reading and treat as per the Hypoglycemia and Hyperglycemia Protocol.
5. Adults and pediatrics age 12 or older: Ondansetron (*Zofran*) 4mg PO ODT. May repeat in 15 minutes to a max of 8mg.
6. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Adult: Apply cardiac monitor.
2. Adult: Initiate vascular access.
3. Adults and pediatric patients 12 years or older: Ondansetron (*Zofran*) 4mg IVP or 4mg PO ODT . May repeat in 15 minutes to a max of 8mg.
4. Pediatric patients ages 4-12 years old: Ondansetron 0.15 mg/kg IV/IO/IM.

Paramedic

Treatment continuation from above.

1. Adult: Ondansetron 4mg IV/IO/IM may be given as an alternative to PO route. May repeat in 15 minutes to a max of 8mg.
2. Adult: If Zofran is not effective, or the patient has a known allergy consider:
    i. Phenergan (promethazine) 12.5mg IM into a large muscle mass.

NOTES:

- May be used safely in pregnancy.
- Use with caution in patients with impaired liver function.
- Ondansetron (Zofran) can increase the QT interval and should be used with caution in patients who are on other medications that can increase the QT interval.
- If an adrenal insufficiency patient, nausea and vomiting can be signs of adrenal crisis. See Adrenal Insufficiency Protocol.

B	EMT
A	Advanced EMT
P	Paramedic

Crashing Patient

I. PURPOSE

A. EMS frequently encounters patients that are critically ill and quickly deteriorating. Stabilization on scene, prior to loading and transporting, prevents further deterioration and leads to better morbidity and mortality.

B. This protocol serves as a guideline of critical actions that should be considered prior to loading and transporting.

II. CRITERIA

A. Inclusion

1. Patient in whom cardiac or respiratory arrest appears imminent.
2. Patient suspected of having a critical illness such as altered mental status, airway compromise, respiratory distress/failure, signs/symptoms of shock/poor perfusion.

B. Exclusion

1. Life-threatening trauma that has not been corrected.

III. PROCEDURE

A. Critical Actions (ideally accomplished before moving the patient)

1. Airway
   a. Insert nasopharyngeal or oropharyngeal airway as indicated if not following commands or no response to verbal stimulus per (Airway).
2. Breathing
   a. If respiratory failure or distress, sit patient up if tolerated and not contraindicated.
   b. Provide oxygen per (Oxygen Administration Guidelines).
   c. If respirations are below age-appropriate normal, ventilate by BVM. Two-person, two handed technique is most effective.
   d. If adult and tachypneic but respirations inadequate, apply CPAP for respiratory distress/hypoxia per (CPAP Procedure).
   e. Consider PPV via BVM if not following commands or SpO2 <90%.
   f. Consider initiating bronchodilator therapy per (Respiratory Distress)
3. Monitoring
   a. Frequent NIBP
   b. SpO2
   c. Continuous waveform capnography
   d. Monitor

B. Immediate actions (ideally before moving the patient)

1. Circulation
   a. Electrical therapy if dysrhythmia is primary cause of shock per relevant cardiac protocol.
   b. Emergent IV/IO access per IO Procedure as applicable.
   c. Administer IV fluid bolus per Hypotension/Shock protocols.
   d. Consider push-dose epinephrine per Hypotension/Shock protocol.

C. Ongoing Assessments

1. Reassess vital signs frequently.
2. Reassess response to treatments.
3. Circulation
   a. Repeat fluid bolus if indicated.
   b. Consider push-dose epinephrine if indicated.
   c. Contact Medical Control for additional fluids/vasopressors.
4. Airway
   a. Consider advanced airway if indicated per Airway

D. Loading/transporting

B	EMT
A	Advanced EMT
P	Paramedic

1. Once critical and immediate actions have been completed, consider movement to the ambulance for transport. Frequently reassess patient status during movement. Transport may be initiated earlier per provider discretion.

E. Unloading/arrival to hospital
1. Keep the patient on continuous monitoring until care is safely transitioned to hospital equipment.
2. Early notification to the hospital of a critical patient is recommended.
3. If the patient is on CPAP/BiPAP, keep the patient on this intervention until the hospital staff are prepared to switch to their equipment, whenever possible.

IV. NOTES

A. Time lengths are approximate and are intended to create urgency with actions. When unable to meet these goals, note barriers to care in documentation.
B. Actions should be simultaneous and are not in a specific order for a given timeframe.
C. This protocol is a supplement to other protocols and is not intended to supersede others.

Section 3: Trauma

Transport Guidelines

Patients with a significant traumatic mechanism of injury (major trauma) with any of the following associated findings should be transported to the nearest designated trauma center. If the patient's injuries are SO severe that the transport to the trauma facility would be too lengthy for patient survival (i.e.: traumatic arrest, airway obstruction, uncontrollable bleeding), the in charge EMT may elect to transport to the closest Emergency Department for primary stabilization.
Any of these conditions constitute a "Trauma Patient":

AGE 16 TO 64 YEARS

1. **PHYSIOLOGICAL CRITERIA**
    i. Significant signs of shock or evidence of poor perfusion (cold, clammy, decreased mental status, weak pulse, pallor) or:
        a. Pulse greater than 120 or less than 50 or
        b. Systolic blood pressure (SBP) less than 90
        c. Absence of radial pulse when carotid pulse is present or change in pulse character
        d. Geriatric patients (>65 years old) may be in shock with a SBP less than 110
    ii. Airway or Breathing Difficulties or evidence of respiratory distress or failure
        a Respiratory rate of less than10 or greater than 29
        b Need for ventilator support
    iii. Neurologic Considerations
        a Evidence of Head Injury
            1. GCS scale ≤ 13 or AVPU scale that does not respond to Pain or Unresponsive
            2. Alteration in LOC during examination or thereafter; loss of conscious > 5 min.
            3. Failure to localize pain.
        b. Suspected spinal cord injury (paralysis due to an acute injury, sensory loss)
2. **ANATOMIC CRITERIA**
    i. Penetrating trauma (to head, chest or abdomen, neck, and extremities proximal to knee or elbow)
    ii. Injuries to the extremities where the following physical findings are present:
        a Amputations proximal to the wrist or ankle
        b Visible crush injury
        c Fractures of two or more proximal long bones
        d Evidence of neurovascular compromise
    iii. Tension pneumothorax that is relieved (an unrelieved tension pneumothorax would fit the definition of an unstable ABC needing immediate treatment at the closest ER)
    iv. Injuries to the head, neck, or torso where the following physical findings are present:
        a Visible crush injury
        b Abdominal tenderness, distention, or seat belt sign
        c Suspicion of a Pelvic fracture
        d Flail chest
        e Open skull fracture

v. Signs or symptoms of spinal cord injury.

vi. Submersion Injuries, Strangulation & Asphyxia

vii. Second degree or third degree burns greater than ten percent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway.

3. **OTHER CRITERIA/CONSIDERATIONS THAT ALONE DO NOT CONSTITUTE A TRAUMA PATIENT**

i. Significant Mechanisms of Injury Should Prompt a High Index of Suspicion

a. ATV/Motorcycle crashes

b. Significant Falls- 20'

c. High Risk Auto crash

d. MVC Ejection.

e. Death in same compartment.

f. Auto vs. pedestrian/bicycle thrown, ran over, > 20mph

g. Vehicle telemetry data consistent with high risk of injury.

ii. Age greater than 65 Should Prompt a High Index of Suspicion

a See Geriatric Specific Inclusion Criteria listed in Geriatric Trauma Patients

iii. Anticoagulation and head injury with signs of traumatic brain injury.

iv. Pregnancy

a The best initial treatment of the fetus is the provision of optimal resuscitation of the mother (**babies don't do well if mothers don't do well**).

b Because of their increased intravascular volume, pregnant patients can lose a significant amount of blood before tachycardia, hypotension, and other signs of hypovolemia occur.

c The highest incidence of **fetal deaths occurs secondary to severe maternal shock**, which is associated with a fetal mortality rate of 80%.

d The fetus may be in distress and the placenta deprived of vital perfusion while the mother's condition and vital signs appear stable.

e Oxygen supplementation should be given to **maintain maternal oxygen saturation >95%** to ensure adequate fetal oxygenation.

f Because of their adverse effect on utero-placental perfusion, vasopressors in pregnant women should be used only for intractable hypotension that is unresponsive to fluid resuscitation.

g After mid-pregnancy, the gravid uterus should be moved off the inferior vena cava to increase venous return and cardiac output in the acutely injured pregnant woman. This may be achieved by **manual displacement of the uterus or left lateral tilt (30°)**. Care should be taken to secure the spinal cord when using left lateral tilt.

h Fetal loss can occur even when the mother has incurred no abdominal injuries.

i In a case-by-case analysis, severe injuries are MUCH more likely to result in fetal loss. However, because there is a much higher frequency of minor trauma during pregnancy most fetal losses due to trauma result from minor maternal injury mechanisms.

j Intubation is more difficult with failed intubations 8x more likely. **A smaller size ET Tube is recommended**.

k Insertion of **2 large bore IV's is recommended for all seriously injured pregnant trauma patients** to facilitate initial rapid crystalloid infusion, intravascular volume expansion, and possible further blood

transfusion as required.

l **Avoid distractions** and avoid the urge to focus on the fetus.

m Every woman who sustains trauma should be questioned specifically about domestic or intimate partner violence.

n Call medical control if any questions. **Notify receiving hospital**.

4. TRANSPORTATION OF THE ADULT TRAUMA PATIENT

i. Ground Transportation Time Guidelines

a 30 minutes or less from a Trauma Center → TRAUMA CENTER (excluding uncontrolled airway or traumatic CPR)

b Greater than 30 minutes to a trauma center → may consider nearest appropriate facility

ii. Ground Transportation Guidelines

a Patients should be transported to the nearest appropriate facility if any of the following exists:

1. Airway is unstable and cannot be controlled/managed by conventional methods
2. Potential for unstable airway, i.e., (facial/upper torso burn)
3. Blunt trauma arrest (no pulses or respirations) if indicated per Cardiac Arrest protocol.
4. Patient does "NOT" meet criteria for a trauma patient as defined above.

*** PRE-ARRIVAL NOTIFICATION OF THE RECEIVING FACILITY IS ESSENTIAL!!! ***

5. Air Medical Transportation

i. General principles:

a. Prolonged delays at the scene waiting for air medical transport should be avoided.

b. If air medical transportation is unavailable (e.g., weather conditions), patient should be transported by ground guidelines as listed above.

c. Air transport, if dispatched to the scene, should be diverted to the hospital if the patient appeared appropriate for air transport but the decision was made to transport to the nearest facility (non-trauma center) in the interim.

d. Air Medical Programs share the responsibility to educate EMS units and facilities on appropriate triage. They should also institute an active utilization and quality review program that provides feedback to EMS units.

e. Patients with uncontrolled ABCs should be taken to the closest appropriate facility (24-hour emergency department) if that can be achieved prior to the arrival of air medical transport.

f. Traumatic cardiac arrest due to blunt trauma is not appropriate for air transport.

6. Reasons to Consider a Call for Air Transport:

i. Prolonged extrication

ii. Multiple victims/trauma patients

iii. Time/distance factors:

a If the transportation time to a trauma center by ground is greater than 30 minutes AND the transport time by ground to the nearest trauma center is greater than the total transport time** to a trauma center by helicopter.

1. **Total transport time includes any time at scene waiting for helicopter and transport time to trauma center.
2. In the rural environment, immediate transfer with severely traumatized patients by air medical transport may be appropriate and should be encouraged if it does not significantly delay intervention for immediate life-threatening injuries.

NOTES:

Exceptions to these Trauma Triage Guidelines are listed at the end of this guideline. These same exceptions apply to pediatric, adult, and geriatric trauma patients

In cases where the victim must be transported by ground units, because of transport times every effort should be made to limit on-scene time to 10 minutes or less.

1. EVALUATION OF THE PEDIATRIC TRAUMA PATIENT: AGE IS YOUNGER THAN 16 YEARS OLD

i. PHYSIOLOGICAL CRITERIA
   a Significant signs of shock or evidence of poor perfusion (cold, clammy, decreased mental status, weak pulse, pallor) or:
      1. Tachycardia or bradycardia
      2. Hypotension

ii. Airway/Breathing difficulties; Evidence of respiratory distress or failure, including:
   a. Intubated patient
   b. Tachypnea
   c. Stridor
   d. Hoarse voice or difficulty speaking
   e. Significant grunting, retractions
   f. Respiratory rate less than 20 in infants less than 1 year old
   g. Cyanosis or need for supplemental oxygen
   h. Unable to maintain or difficult airway.

iii. Neurologic considerations
   a Evidence of head injury
      1. Glasgow Coma Scale less than or equal to 13 or AVPU scale that does not respond to Pain or Unresponsive
      2. Alteration in LOC during examination or thereafter; loss of conscious greater than 5 minutes
      3. Failure to localize pain
   b Suspected spinal cord injury (paralysis or alteration in sensation)

iv. ANATOMIC CRITERIA
   a Penetrating trauma (to the head, chest or abdomen, neck, including groin and buttocks)
      1. GSW proximal to the knee and elbow.
   b Injuries to the extremities where the following physical findings are present:
      1. Amputations proximal to the wrist or ankle

2. Visible crush injury
3. Fractures of two or more proximal long bones
4. Evidence of neurovascular compromise

c Tension pneumothorax which is relieved (an unrelieved tension pneumothorax would fit the definition of an unstable ABC, needing immediate treatment at the closes ER)

d Injuries to the head, neck, or torso where the following physical findings are present:

1. Visible crush injury
2. Abdominal tenderness, distention, or seat belt sign
3. Suspicion of a pelvic fracture.
4. Flail chest

e Signs or symptoms of spinal cord injury.

f Submersion injury, Strangulation and Asphyxia.

g Full thickness or partial thickness greater than ten percent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway. 1st degree burns are not calculated in TBSA.

v. <u>OTHER CRITERIA/CONSIDERATIONS THAT ALONE DO NOT CONSTITUTE A PEDIATRIC TRAUMA PATIENT:</u>

a Significant mechanism of injury should prompt a high index of suspicion and should be considered in the evaluation. Mechanisms particularly dangerous for pediatric patients include:

1. Improperly restrained child in MVC (airbag injuries included)
2. ATV/Motorcycle crashes
3. Significant Falls- 10' or 2 to 3 times body height
4. High Risk Auto crash
5. MVC with Ejection.
6. Death in same compartment.
7. Auto vs. pedestrian/bicycle thrown, ran over, greater than 20mph
8. Vehicle telemetry data consistent with high risk of injury.

b Special situations that may require the resources of a pediatric trauma center

1. Congenital defects
2. Suspected Child Abuse
3. Chronic respiratory illness
4. Diabetes
5. Bleeding disorder or anticoagulants
6. Immuno-suppressed patients (i.e., patients with cancer, organ transplant patients, HIV/AIDS, long-term use of corticosteroids, etc.)

*****Pre-arrival notification to the receiving facility is essential! *****

TRANSPORTATION OF THE PEDIATRIC TRAUMA PATIENT:

vi. Ground transportation guidelines – time considerations

- a 30 minutes or less from a Pediatric Trauma Center (excluding uncontrolled airway or traumatic arrest): Transport to a Pediatric Trauma Center
- b Greater than 30 minutes to a Pediatric Trauma Center: May consider transport to nearest appropriate facility, however, consider use of Air Medical Transport.

vii. Ground transportation guidelines

- a Patients should be transported to the nearest appropriate facility if any of the following exists:
  1. Airway is unstable and cannot be controlled/managed by conventional methods
  2. Potential for unstable airway, (i.e., facial/upper torso burn)
  3. Blunt trauma arrest (no pulses or respirations)
  4. Patient does NOT meet criteria for a trauma patient as defined above.

vii. Air Medical Transportation

- a General principles
  1. Prolonged delays at the scene waiting for air medical transport should be avoided.
  2. If air medical transportation is unavailable. (e.g., weather conditions), patient should be transported by ground guidelines as listed above.
  3. Air transport, if dispatched to the scene, should be diverted to the hospital if the patient appeared appropriate for air transport but the decision was made to transport to the nearest facility (non-trauma center) in the interim.
  4. Air Transport Programs share the responsibility to educate EMS units and facilities on appropriate triage. They should also institute an active utilization and quality review program that provides feedback to EMS units.
  5. Patients with uncontrolled ABCs should be taken to the closest appropriate facility (24-hour emergency department) if that can be achieved prior to the arrival of air medical transport.
  6. Traumatic cardiac arrest due to blunt trauma is not appropriate for air transport.
- b Reasons to consider a call for air transport:
  1. Prolonged extrication
  2. Multiple victims/trauma patients
  3. Time/distance factors:
  4. If the transportation time to a trauma center by ground is greater than 30 minutes AND the transport time by ground to the nearest trauma center is greater than the total transport time** to a trauma center by helicopter.
     - a **Total transport time includes any time at the scene waiting for a helicopter and transport time to the trauma center.
     - b In the rural environment, immediate transfer with severely traumatized patients by air transport may be appropriate and should be encouraged if it does not significantly delay intervention for immediate life-threatening injuries.

NOTES:

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic BP	Avg. Diastolic BP
Premature	120 – 170	40 – 60	55 – 75	35 – 45
0 – 3 months	100 – 150	35 – 55	65 – 85	45 – 55
3 – 6 months	90 – 120	30 – 45	70 – 90	50 – 65
6 – 12 months	80 – 120	25 – 40	80 – 100	55 – 65
1 – 3 years	70 – 110	20 – 30	90 – 105	55 – 70
3 – 6 years	65 – 110	20 – 25	95 – 110	60 – 75
6 – 12 years	60 – 95	14 – 22	100 – 120	60 – 75
12+ years	55 – 85	12 – 18	110 – 135	65 - 85

1. **TRAUMA PATIENTS GREATER THAN 65 YEARS OF AGE SHOULD BE DEFINED AS GERIATRIC TRAUMA.**
    i. The criteria listed below are in addition to the Adult Trauma Triage Guidelines. Geriatric trauma patients should be triaged for evaluation in a trauma center for:
        a Glasgow Coma Score less than or equal to 14 with known or suspected traumatic brain injury
        b Systolic blood pressure less than 110 mmHg or pulse greater than 90.
        c Falls with from any height, including standing falls, with evidence of traumatic brain injury
        d Pedestrian struck by motor vehicle
        e Known or suspected proximal long bone fracture sustained in a motor vehicle crash
        f Injury sustained in two or more body regions
        g Anticoagulation and head injury with signs of traumatic brain injury.

NOTES:

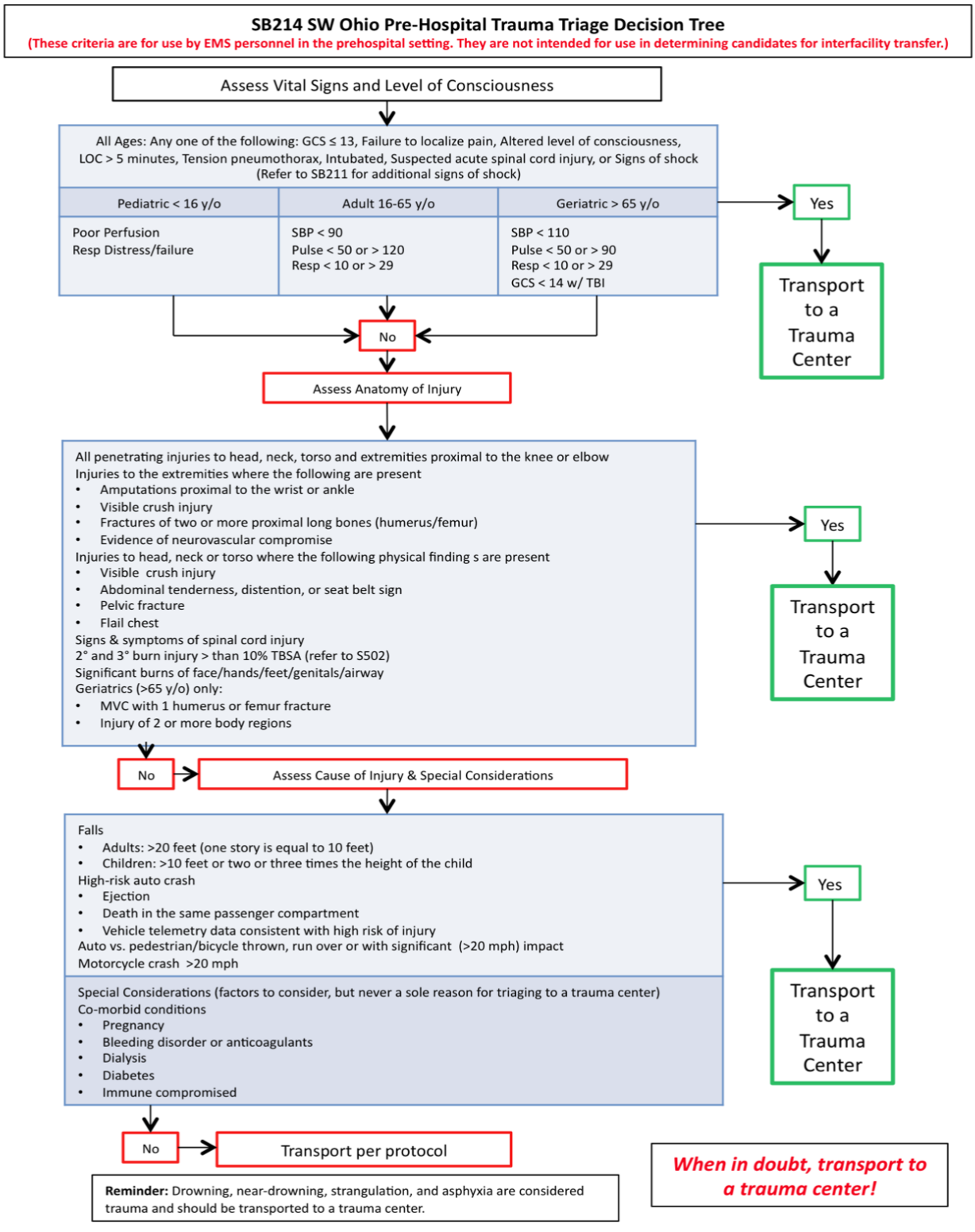
1. Geriatric trauma patients should be given special consideration for evaluation at a trauma center if they have diabetes, cardiac disease, pulmonary disease (COPD), clotting disorder (including anticoagulants), immunosuppressive disorder (i.e., **HIV/AIDS, Organ Transplant, Chemotherapy, Long-term use of corticosteroids, etc.),** or require dialysis.
2. The geriatric trauma recommendations were taken from the Geriatric Trauma Task Force report released in December of 2007 by the State of Ohio Board of Emergency Medical Services, Trauma Committee. The data used to make these recommendations came directly from the Ohio Trauma EMS Registry. Supplemental data from the CDC /MMWR Guidelines for Field Triage of Injured Patients, January 2012.
3. Exceptions to these Trauma Triage Guidelines are listed in the Trauma Patient Assessment and Transport Guidelines Protocol SB210 under Section VI. These same exceptions apply to pediatric, adult, and geriatric trauma patients.

Ohio Administrative Code 4765-14-05 - Exceptions to mandatory transport.

1. Emergency medical service personnel shall transport a trauma victim, as defined in section 4765.01 of the Revised Code and this chapter, directly to an adult or pediatric trauma center that is qualified to provide appropriate adult or pediatric care, unless one or more of the following exceptions apply:
    i. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center.
    ii. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time.
    iii. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources.

iv. No appropriate adult or pediatric trauma center can receive and provide adult or pediatric trauma care to the trauma victim without undue delay.

v. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.


SB214 SW Ohio Pre-Hospital Trauma Triage Decision Tree
(These criteria are for use by EMS personnel in the prehospital setting. They are not intended for use in determining candidates for interfacility transfer.)
Assess Vital Signs and Level of Consciousness
All Ages: Any one of the following: GCS ≤ 13, Failure to localize pain, Altered level of consciousness, LOC > 5 minutes, Tension pneumothorax, Intubated, Suspected acute spinal cord injury, or Signs of shock (Refer to SB211 for additional signs of shock)
Pediatric < 16 y/o
Poor Perfusion
Resp Distress/failure
Adult 16-65 y/o
SBP < 90
Pulse < 50 or > 120
Resp < 10 or > 29
Geriatric > 65 y/o
SBP < 110
Pulse < 50 or > 90
Resp < 10 or > 29
GCS < 14 w/ TBI
Yes
Transport to a Trauma Center
No
Assess Anatomy of Injury
All penetrating injuries to head, neck, torso and extremities proximal to the knee or elbow
Injuries to the extremities where the following are present
• Amputations proximal to the wrist or ankle
• Visible crush injury
• Fractures of two or more proximal long bones (humerus/femur)
• Evidence of neurovascular compromise
Injuries to head, neck or torso where the following physical finding s are present
• Visible crush injury
• Abdominal tenderness, distention, or seat belt sign
• Pelvic fracture
• Flail chest
Signs & symptoms of spinal cord injury
2° and 3° burn injury > than 10% TBSA (refer to S502)
Significant burns of face/hands/feet/genitals/airway
Geriatrics (>65 y/o) only:
• MVC with 1 humerus or femur fracture
• Injury of 2 or more body regions
Yes
Transport to a Trauma Center
No
Assess Cause of Injury & Special Considerations
Falls
• Adults: >20 feet (one story is equal to 10 feet)
• Children: >10 feet or two or three times the height of the child
High-risk auto crash
• Ejection
• Death in the same passenger compartment
• Vehicle telemetry data consistent with high risk of injury
Auto vs. pedestrian/bicycle thrown, run over or with significant (>20 mph) impact
Motorcycle crash >20 mph
Special Considerations (factors to consider, but never a sole reason for triaging to a trauma center)
Co-morbid conditions
• Pregnancy
• Bleeding disorder or anticoagulants
• Dialysis
• Diabetes
• Immune compromised
Yes
Transport to a Trauma Center
No
Transport per protocol
Reminder: Drowning, near-drowning, strangulation, and asphyxia are considered trauma and should be transported to a trauma center.
When in doubt, transport to a trauma center!

Traumatic Arrest (Adult and Pediatric)

Inclusion Criteria:

1. Patients of all ages.
2. Patient is without a palpable pulse.
3. Obvious traumatic mechanism of injury (blunt or penetrating).
4. Trauma as the cause of arrest.

Do not initiate resuscitative efforts if:

1. Patient's body is unable to undergo resuscitation. (Such as decapitation, hemicorpectomy, burned beyond recognition)
2. Obvious signs of prolonged death including rigor mortis (in the absence of hypothermia), decomposition, or significant lividity.
3. Isolated penetrating trauma should rarely be considered incompatible with life.

Transportation/Disposition:

1. Initiate rapid transport (expedite scene time and provide treatment enroute) for the following patients:
    a. Penetrating trauma causing cardiac arrest with arrest witnessed by EMS providers – rapid transport to the nearest emergency department, with preference for a verified trauma center.
    b. Traumatic arrest in a female patient with known pregnancy >24 weeks or with uterine fundus palpable at or above the umbilicus – rapid transport to the nearest emergency department, with preference for a verified trauma center, for potential post-mortem c-section.

EMT:

1. If patient is unresponsive and has no palpable pulse, and has evidence of trauma being most likely cause of cardiac arrest:
2. Apply manual c-spine stabilization or c-collar if situation allows.
3. Start chest compressions at a rate of 100-120 per minute.
4. Control obvious external hemorrhage by application of pressure dressing or tourniquet as needed.
5. Provide oxygenation and ventilation through bag-valve-mask or advanced airway as indicated.
6. Request ALS support.

AEMT:

1. Obtain vascular access through placement of an intravenous or intraosseous line and initiate fluid resuscitation with normal saline (adult: 1 liter; pediatric: 20 mL/kg) with open flow or on pressure bag (IO).
2. Apply cardiac monitor and treat the displayed rhythm per table 1.
3. Request paramedic support.

PARAMEDIC:

1. If the mechanism of injury was blunt trauma or penetrating injury to the torso, perform bilateral needle thoracostomy for decompression of tension pneumothorax.
2. If appropriate, contact medical control for termination of resuscitation.
3. If ROSC is achieved, transport immediately as above.

--NEXT PAGE--

Table 1

Cardiac Rhythm on Monitor		
Asystole or PEA < 40 bpm	**PEA >40 bpm**	**VFib/VTach**
Contact Medical Control regarding Termination of Resuscitation	Fluid Resuscitation, Consider repeat needle decompression (paramedic), Transport to nearest	Defibrillate per protocol C300 or P601, Fluid Resuscitation, Consider repeat needle decompression (paramedic), Transport to nearest ED

Post-Termination Body Movement (a good faith effort to categorize the cause of death is reasonable)

1. Likely homicide or child abuse – avoid body movement unless necessary for life safety.
2. Likely natural causes – body may be relocated as appropriate for the situation and public good.
3. Unclear cause – avoid disturbance unless necessary for life safety. Consider involving law enforcement and/or the coroner's office.

Head and Spinal Trauma

Inclusion Criteria:

1. Age is 16 years or older.
2. History of loss of consciousness following head injury, OR
3. History of motor vehicle accident, diving accident, fall, or other trauma.
4. Head contusions, abrasions, or lacerations, OR
5. Fluid or blood from nose, ears, or mouth, OR
6. Altered mental status.
7. May have loss of sensation or movement.
8. May have pain in back or neck.
9. No signs of shock.

EMT

1. Aggressively manage the airway:
   a. Assess for hypoxia (SpO2 <95%) continuously. Hypoxia should be avoided.
   b. If the patient has a patent airway and is breathing adequately, administer oxygen to maintain a pulse ox of between 92-98%. If hypoxia cannot be corrected with supplemental oxygen, initiate airway procedures and call for ALS.
   c. If the patient does not have a patent airway, is not breathing adequately, or has an altered mental status, initiate airway procedures and call for ALS.
   d. Maintain a respiratory rate of 10 breaths per minute. Goal end-tidal CO2 is 35-45mmHg.
   e. Only if the patient has asymmetric pupils (> 1 mm difference), and is comatose, hyperventilate to an ETCO2 of 3-5 mmHg lower than the current value. Stop if pupils normalize.
2. Frequently monitor vital signs (approximately every 5 minutes) and reassess for signs of shock. If shock becomes present, refer to the Shock protocol.
3. Assess for the need for spinal precautions per protocol.
4. Elevate the head of the bed or backboard whenever possible.
5. Measure GCS initially and after airway management. Measure GCS before any sedative drugs are given.
6. Measure pupil size initially and frequently.
7. Begin transport as soon as possible per destination protocols.
8. If signs and symptoms of altered mental status are present, then check blood glucose and refer to Altered Mental Status protocol.

AEMT

9. Place the patient on a cardiac monitor. Treat dysrhythmias as appropriate.
10. Establish IV/IO access.

Paramedic

11. If the patient has signs of cerebral herniation which include coma and unilateral or bilateral blown pupil, posturing, or decline in GCS during transport of >2 points, consider administration of 500mL 3% saline solution if available.

Notes:

1. Shock is not usually due to head injuries. If the patient is in shock, consider another cause for the hypotension.
2. Restlessness can be due to hypoxia and shock, not just head injury.
3. Patients with traumatic brain injuries have worse outcomes when they are suffering from the “H Bombs.” These are hyperventilation, hypotension, and hypoxia.

b. Unless a patient is actively herniating (AMS with unequal pupils) target their end tidal CO2 to 35-45 mmHg, which avoids hyperventilation. Often this is accomplished with a respiratory rate of 10 breaths per minute.
c. Aggressively treat hypotension with IV fluids. While 100 mmHg is listed as the optimal target, there is some research suggesting the target number may be higher. One hypotensive prehospital blood pressure is related to worse patient outcomes.
d. Aggressively treat hypoxia with high flow oxygen to maintain oxygen saturations greater than 95%.

Pain and Anxiety Management

AEMT must complete medical director approved training prior to administering Fentanyl.

CONSIDERATIONS

1. Normal mental status / level of consciousness.
2. Should be considered for all patients experiencing pain or anxiety.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Transport to an appropriate facility following General Transport Guidelines & Principles, and Multiple Trauma Transportation and Treatment Guidelines.
4. Notify receiving hospital with patient information as soon as possible.

AEMT & PARAMEDIC

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Administer **ONE** of the following pain medications:(Relative systolic BP must remain ≥ 100 mmHg)
    i. MUSCULOSKELETAL INJURIES OR BURNS. Administer one of the following pain medications:
        a Fentanyl (*Sublimaze*) 25-50 mcg IV/IO/IN/IM. Q 15 mins. Max dose 200 mcg. Alternatively, may dose at 1mcg/kg IV/IO/IM to a maximum total dose of 200mcg administered over 3-5 minutes. Pediatric single dose is 1mcg/kg IV/IO/IM (max 50mcg) administered over 3-5 minutes, or 2mcg/kg IN (max 100mcg).
        b Ketorolac (Toradol) 15 mg IV/IO or IM max. (No pediatric dosing.)
        c Morphine Sulfate 5-10mg IV or IM Q15 mins. Max dose 20 mg. Pediatric single dose is 0.1mg/kg IV/IO/IM (max dose of 5mg.)
        d Ketamine 0.2mg/kg IV SLOW PUSH Q10min PRN x 2. (Adult only, no pediatric dosing.)
    ii. ABDOMINAL PAIN and CARDIAC UNRELIEVED BY NITRO:
        a. Administer one of the following:
            a Fentanyl as above.
            b Morphine as above.
            c Ketamine as above.
    iii. For Pediatric Patients only:
        a. Administer acetaminophen (Tylenol) 15mg/kg PO.
            i. Only consider if patient able to swallow and maintain patent airway.
            ii. Do not administer if patient has taken acetaminophen (Tylenol) or acetaminophen-containing products (e.g., Vicodin, Norco, Percocet, or certain cold/flu remedies) within the past six hours or if actively vomiting.
            iii. All pediatric patients receiving opiate medication should also receive a dose of acetaminophen if otherwise appropriate.
            iv. Most children under the age of 10 cannot swallow pills so consider an oral suspension

v. If administering pills, it is permissible to round to the nearest available unit so long as the dose given is no more than 10% greater than the appropriate weight-based dose (e.g., a 60kg child who would normally get a 900mg dose may get 1000mg, a 30kg child who would normally get a 450mg dose may get 500mg).

vi. Acetaminophen (Tylenol) when used in conjunction with opioids can result in more effective pain control and lower total opioid requirements.

4. For anxiety administer one of the following:
   i. Midazolam (Versed) 0.5-2 mg IV, IM. Max dose 2 mg. (No pediatric use approved.)
5. If respiratory depression occurs:
   i. Follow Oxygen, Airway, and Ventilation procedure.
   ii. Administer Naloxone per the Medication Overdose protocol.

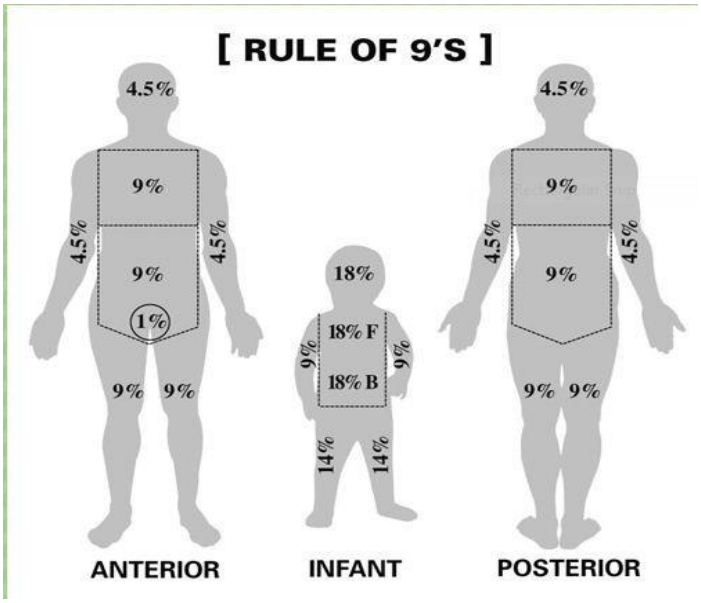
Broselow tape to be consulted for all pediatric doses.

Burns

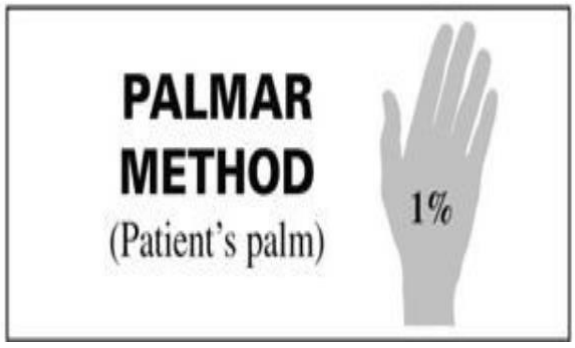
Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. STOP THE BURNING PROCESS:
    i. If heat related, cool the burn using tepid water.
    ii. If chemical, attempt to brush off dry powder, and then copiously irrigate using sterile water.
2. The following "Major Burn" patients should be transported to the University of Cincinnati's Trauma Center or Children's Hospital Trauma Center:
    i. Burns associated with other significant traumatic injuries or significant co-morbidities.
    ii. Burns involving complex body areas (hands, feet, face, genitalia)
    iii. Any patient with electrical injury.
    iv. Patient complains of shortness of breath, cough, or hoarseness.
    v. Evidence of singed nasal or facial hair, soot or erythema of the mouth, or respiratory distress.
    vi. Second- and third-degree burns involving greater than 15% BSA
    vii. All significant chemical or electrical burns
    viii. All significant pediatric burns



3. Assess ABCDE's and intervene as needed. Stop the burning process
4. Refer to General Trauma and Specific Trauma Protocols when applicable.
5. All burn patients should receive high flow oxygen.
6. Cover the burns with a clean dry sheet, and keep injured extremity elevated whenever possible.
    i. Burn gel pads may be used on superficial (1st) degree and partial thickness (2nd) degree burns. They may provide some relief of the burning sensation. Secure the pad appropriately.
7. Prevent hypothermia by keeping the ambulance warm, and blankets on the patient.



Burns (cont.)

AEMT

Treatment continuation from above

1. Initiate vascular access, administer crystalloid fluids.
    i. Patients <5 years old: discuss with medical control.
    ii. Patients 5 years old: 125mL/hr.
    iii. Patients 6-13 years old: 250mL/hr.
    iv. Patients >13 years old: 500mL/hr
2. Apply cardiac monitoring.
3. Even if the patient appears to be breathing well, consider advanced airway if patient has any burn injury to the mouth/nose or potential for airway edema from inhalation injury (carbonaceous sputum, hoarse voice, stridor, etc.)
    a. Simple singeing of the hair is not a hard indication for early airway intervention.
4. If patient is exhibiting any signs of wheezing or inhalation injury, administer DuoNeb 3mL via nebulizer.

Paramedic

Treatment continuation from above

1. If a closed space fire victim, consider cyanide toxicity in anyone who has a decreased level of consciousness and is not responding to O2, consider:
    a. Follow Medication Overdose Protocol for Cyanokit administration.
        i. UC AirCare carries this. Consider early activation of air resources if there are known or suspected trapped victims in a fire.

Thoracic Trauma

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Perform Rapid Assessment
3. Control external bleeding.
4. Do not remove any impaled objects. Stabilize them and transport.
5. Open (Sucking) Chest Wound:
    i. Cover wound with non-porous dressing and seal on 3 sides or equivalent (Asherman/Bolin chest seal).
    ii. Reassess adequacy of ventilation.
    iii. Monitor closely for development of Tension Pneumothorax.
6. Flail Chest:
    i. Consider Sling and Swath for pain control
    ii. Ventilatory support with BVM respirations and PEEP Valve will effectively splint the chest from within.
    iii. Do not bind the chest or apply bulky dressing/sandbags
7. Abdominal Trauma:
    i. If evisceration is present, cover viscera/organs with sterile saline dressing. Do not replace exposed viscera.
    ii. Lay the patient flat and elevate the knees.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Treat pain via Pain and Anxiety Management Protocol.

Paramedic

Treatment continuation from above

1. Suspected Pericardial Tamponade or Myocardial Contusion:
    i. Anticipate hypotension and dysrhythmias. Treat accordingly. Do not delay transport!
1. Tension Pneumothorax: Consider needle decompression per Needle Thoracostomy Procedure.
2. Flail Chest: Consider early intubation and ventilatory support, pain control as needed. Monitor closely for tension pneumothorax.

General/Musculoskeletal/Extremity Trauma/Dental

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Tooth Avulsion:
    i. Handle tooth by chewing surface only. Avoid touching the root.
    ii. Rinse with water. Do not scrub, dry, or wrap tooth in tissue or cloth.
    iii. Place tooth in container of (in order of preference)
        a Patient's Saliva
        b Milk
        c Normal Saline
        d Water
3. If incomplete avulsion/amputation, do not remove. Attempt to clean with gross irrigation and sterile dressing.
4. Complete amputations:
    i. Control external bleeding by the most appropriate method.
    ii. Remember a tourniquet is a last resort. Direct pressure will usually suffice.
    iii. Always take time to find the amputated part, but do not delay patient transport.
    iv. Transport amputated part to hospital; place the part in a cool, dry sterile dressing.
4. Head and Spinal Fractures:
    i. Follow Spinal Immobilization procedure.
5. Extremity Fractures:
    i. Manually immobilize fracture above and below fracture site
    ii. Assess pulse, motor, sensation (PMS). Compare to uninjured limb
    iii. If PMS impaired, reposition. Apply gentle distal aligning traction. If you feel resistance or increase patient discomfort, stop! Only attempt alignment one time.
    iv. Reassess PMS every 5 to 10 minutes and document the findings (including pertinent negatives).
    v. If necessary, call for ALS intercept.
    vi. Determine mode of transport air vs. ground.
    vii. Transport to an appropriate facility per Multiple Trauma Transport Guidelines.
6. Notify receiving hospital with patient information as soon as possible.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Refer to Pain and Anxiety Management Protocol.

Ocular Trauma

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Chemical Injury / Exposure:
    i. Immediately flush with at least 1000 ml of saline.
    ii. Continue irrigation during transport.
    iii. Cover both eyes to prevent ocular movement.
3. Penetrating Injury:
    i. Stabilize impaled object, apply metal eye shield if possible.
    ii. Cover both eyes. Do not press on the eye.
4. Open Eye Injuries or Torn Eyelid:
    i. Cover both eyes, preferably with a metal eye patch. Do not press on the eye.
5. Transport patient supine if possible.
6. If necessary, call for ALS intercept.
7. Determine mode of transport air vs. ground.
8. Transport to an appropriate facility per Multiple Trauma Transport Guidelines.
9. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Reference Pain and Anxiety Management Protocol.

Paramedic

Treatment continuation from above

4. In cases where eyes may need irrigation, and other appropriate situation with significant eye pain, administer Tetracaine (Pontocaine) - 2 drops in the affected eye or eyes prior to irrigation:
    i. Ideally, it should be placed in the eye prior to irrigation, but must not delay the irrigation.
    ii. Tetracaine (Pontocaine) must not be used if there is a possibility of penetrating trauma to the eye, or globe rupture.
5. Chemical Injury / Exposure:
    i. Consider Morgan Lens for irrigation after administration of Tetracaine (Pontocaine) if there is no suspicion of an open globe injury.

Crush Injury & Crush Syndrome

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

PRIOR TO EXTRICATION:

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Coordinate time of release with rescue personnel.
3. Anticipate crush syndrome and cardiac arrest at time of, or immediately after, extrication.
4. Call for ALS intercept.
5. Determine mode of transport air vs. ground.
6. Transport to an appropriate facility per Multiple Trauma Transport Guidelines.
7. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

8. Apply cardiac monitor.
9. Initiate vascular access.
10. Reference Pain and Anxiety Management Protocol.
11. If the patient has been entrapped >3 hours and the entrapped area is proximal to the knee or elbow, consider application of a tourniquet just prior to extrication. Involve medical control to help in this decision-making process. Refer to Tourniquet Procedure.

AFTER EXTRICATION:

12. Continue aggressive fluid resuscitation with normal saline. TRANSPORT IMMEDIATELY!
13. Watch the patient and monitor closely for: (Hyperkalemia)
    i. Widened QRS complexes – 0.12 seconds or greater.
    ii. Presence of PVC's.
    iii. Ventricular Tachycardia/V-Fib/Idioventricular rhythms.
    iv. Cardiovascular compromise and/or cardiac arrest.

Paramedic

Treatment continuation from above

1. For crush injuries with changes on EKG that correlate with hyperkalemia.
    i. Consider Sodium Bicarbonate – 1 amp per liter of normal saline solution IV, IO and infuse wide open up to 1 liter. (monitor for fluid overload closely if noted KVO line) OR
    ii. Consider following the Calcium Administration Protocol.

Heat Related Illness / Hyperthermia

Continually reassess ABCDE's and keep reassessing and intervening as needed.

GENERAL CONSIDERATIONS

1. *Types of heat related illness:*
   - i. Heat Stroke - The most serious type of exposure illness, usually due to prolonged exposure to heat, inadequate fluid replacement and deficient thermoregulatory function. Body temperature usually >104F.
     - a. Physical Exam:
       - i. Syncope
       - ii. Irritability
       - iii. Combativeness
       - iv. Bizarre behavior
       - v. Tachycardia
       - vi. Hyperventilation
       - vii. Hypotension
       - viii. Elevated temperature
       - ix. Hallucinations
       - x. Hemiplegia
       - xi. Seizures
       - xii. Coma
       - xiii. Posturing
   - ii. Heat Exhaustion- A more moderate form of heat exposure associated with dehydration combined with overexertion.
     - a. Physical Exam
       - i. Volume depletion
       - ii. Fatigue
       - iii. Lightheadedness
       - iv. Headache
       - v. Tachycardia
       - vi. Hyperventilation
       - vii. Hypotension
       - viii. Body temperature may be normal
   - iii. Heat Cramps - The mildest form of heat exposure caused by dehydration, overexertion, and electrolyte abnormalities.
     - a. The skin is moist with muscle cramps, usually affecting large muscle groups
     - b. Physical Exam
       - i. Muscle Cramps
       - ii. Hyperventilation

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Move patient to cool environment.
3. Remove any clothing.
4. If possible, obtain baseline temperature. Rectal temperatures are the gold standard for EMS core temperatures. Other sources are not reliable.
5. Promote evaporative cooling by placing fans close to undressed patient and spraying patient with tepid water. Do not cover patient with wetted sheets.
6. Apply cold packs for rapid cooling. (Groin, neck, and axillae)
7. *Determine type of exposure. (see above)*
8. If necessary, call for ALS intercept.
9. **In cases of heat stroke, the patient should be cooled as quickly as possible. Immersion cooling is the most effective method to lower core body temperature. If you have the resources (ice bath, tarp, body bag, swimming pool,**

high flow cold water dousing), and no other emergency intervention is needed (seizure, airway compromise), it is preferable to cool the patient prior to transport.

10. When cooling the patient, discontinue cooling when core temperature reaches 101°F to prevent hypothermia. In the absence of recorded temperature, cool until mental status improves, or 20 minutes of cooling have elapsed. Call medical control if the patient's mental status has not improved after 20 minutes of active cooling.
11. Determine mode of transport air vs. ground.
12. Transport to an appropriate facility.
13. Notify receiving hospital with patient information as soon as possible.

AEMT & Paramedic

Treatment continuation from above

14. Apply cardiac monitor.
15. Initiate vascular access.
16. Provide 0.9% NS 500-1000 mL bolus.
17. Consider Diagnostic EKG and transmit.

Notes:

A. There is no minimum body temperature for heat related illnesses. Patients can be normo-thermic with heat cramps and heat exhaustion but are usually hyperthermic with heat stroke.
B. Many patients with classic heat stroke are not dehydrated, while exertional heat stroke and heat exhaustion patients usually are.
C. Measuring core temperature in the prehospital setting is difficult and does not correlate well to skin/temporal/tympanic temperature.
D. If the conditions for on-site cooling are not met, particularly if the patient has additional problems requiring medical intervention, the patient should be transported immediately to the closest ED. Cooling should be initiated during transport in the most effective manner possible.
E. Dilutional hyponatremia may look like heat stroke in persons drinking free water.

COOL FIRST, TRANSPORT SECOND

Hypothermia

Definitions:

1. Hypothermia: Body temperature < 95 degrees F.
2. Mild hypothermia: Body temperature between 86-93 degrees F.
3. Severe Hypothermia: Body temperature < 86 degrees F.

Risk Factors:

Elderly	Infants
Outdoor Workers	Persons with CNS disorders
Alcohol/drug abusers	Homeless

Causes:

Prolonged exposure	Inadequate clothing
Intoxication	Illness/injury
Malnutrition	Endocrine disorders
Hypoglycemia	Alcohol/drug abuse
Sepsis	CNS disorders

Note: Hypothermia can occur in relatively mild weather conditions and in "warm" water that is below body temperature.

Symptoms:

4. Mild:
    a. Decreased coordination
    b. Decreased reflexes
    c. Decreased alertness
5. Others:
    a. Unresponsive
    b. Pupils fixed/dilated
    c. Severe bradycardia or apparent pulselessness
    d. Stiff extremities resembling rigor mortis.
    e. Cyanosis
    f. Decreased level of consciousness
    g. Bradycardia
    h. Appearance of an "Osborne" J-wave.

EKG IN HYPOTHERMIA

EMT:

1. Obtain vital signs, including temperature. Record method of obtaining temperature.
2. Remove wet clothing and dry the patient if applicable.
3. Move the patient to a warm environment if there is no risk of re-exposure to cold.
4. Obtain a blood glucose and treat per Hypo/Hyperglycemia protocols.
5. If toxin ingestion is considered, treat per Toxicology protocol.
6. If available and appropriate, request ALS response.
7. Treat cardiac arrest per protocol.

8. Treat absent or abnormal breathing per protocol.
9. Do NOT massage extremities.
10. Do NOT use hot packs as they can cause burns and possibly increase mortality.
11. Gently evacuate the patient from the area.
12. Consider re-warming the patient using warm blankets.

AEMT

Treatment continuation from above.

13. When treating cardiac arrest, treat per normal ACLS protocols.
14. Initiate IV/IO access and administer 1 L of normal saline (pediatric 20 mL/kg). May utilize warmed fluids or a fluid warmer.
15. Place the patient on a cardiac monitor and obtain/transmit a Diagnostic EKG.

Paramedic:

Treatment continuation from above.

16. When treating cardiac arrest, treat per normal ACLS protocols.

"A patient isn't dead, until they are WARM and dead…"

Local Hypothermia (frostbite):

EMT

1. Protect the injured areas from pressure, trauma, and friction. Remove all covering from injured parts. Do not rub. Do not break blisters.
2. Do not thaw injured part with local heat.
3. Do not allow limb to thaw if there is a chance that limb may refreeze before evacuation is complete.
4. Maintain core temperature by keeping patient warm with blankets, warm fluids, etc.
5. Transport and contact medical control of situation.

AEMT Paramedic

Treatment continuation from above

6. Apply cardiac monitor.
7. Initiate vascular access.
8. Treat per pain management protocol.

Administration of Tranexamic Acid (TXA)

Continually reassess ABCDE's and keep reassessing and intervening as needed.

Inclusion Criteria:

1. ANY Age.
2. Evidence of Significant blunt or penetrating trauma. (Ejection from automobile, rollover MVC, fall > 20 feet, etc.)
3. Evidence of or concern for severe internal or external hemorrhage or patient will likely be a candidate for a blood transfusion (e.g.: rollover/ejection MVA, fall >20ft., pedestrian struck, external bleeding requiring tourniquet application, unstable pelvic fracture, two or more long-bone fractures, 1 or more amputations, flail chest, penetrating injury to neck, torso, etc.)

-AND-

4. Presence of hemodynamic instability as evidenced by:
    i. Sustained systolic BP < 90mmHg or < 100mmHg for patients > 55 years of age.
    ii. Sustained heart rate > 110 beats per minute.
    iii. Sustained is defined as 2 independent measurements.
    iv. Pediatric SBP <80 mmHg in children <5 years OR if >5 years, sustained tachycardia for age, tachypnea for age, or cool pale skin with cap refill >2 seconds.
5. Time since initial injury is KNOWN to be less than 3 hours.
    i. Greatest benefit to patients is seen when TXA is administered within 1 hour of injury.

Exclusion Criteria:

1. Patients with clear contraindications for anti-fibrinolytic agents (evidence of active intravascular thrombotic disease or disseminated intravascular coagulation, etc.)
2. Isolated closed head injury.
3. Patients who have received or will receive prothrombin complex concentrate (PCC's), factor VIIa, or factor IX complex concentrates as this may increase the risk of thrombotic events.
4. Previous allergic reaction to TXA.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Control all external bleeding and manage hemorrhagic shock.
3. Request ALS intercept.
4. Determine mode of transport air vs. ground.
5. Transport to an appropriate facility per Multiple Trauma Transport Guidelines.
6. Notify receiving hospital with patient information as soon as possible.

AEMT Paramedic

Treatment continuation from above

7. Apply cardiac monitor.
8. Initiate vascular access.
9. Reference Pain and Anxiety Management Protocol.
10. After ensuring patient meets all inclusion criteria:
    i. Mix 1g of TXA in 100ML of 0.9% Normal Saline, infuse over approximately 10 minutes IV or IO.
    ii. Pediatric dosing:
        a. <12 years: 15mg/kg IV over 10 minutes (max 1g)
        b. >12 years: Administer adult dose.

iii. Use dedicated IV/IO line if possible.

Tranexamic acid (TXA) Checklist Administration of TXA is indicated if all of the following criteria are present	
1) Age ≥ 16	
2) Evidence of significant blunt or penetrating traumatic injury (MVC with ejection, rollover MVC, fall > 20 ft., pedestrian struck, penetrating injury to head, neck, torso, etc.)	
3) Evidence of or concern for severe internal or external hemorrhage (bleeding requiring a tourniquet, unstable pelvic fracture, two or more proximal long-bone fractures, flail chest etc.)	
4) Sustained Systolic BP < 90mmHg (or < 100mmHg if older than 55 yo)	
5) Sustained heart rate > 110 bpm	
6) Time since the initial injury is known to be < 3 hours	
To administer TXA: Mix 1g of TXA in 100ml of 0.9% Normal Saline or Lactated Ringers & infuse over 10 minutes IV or IO. *(If given as an IV push, may cause hypotension) Use dedicated IV/IO line if possible and Do NOT administer in the same IV or IO line as blood products, factor VIIa, or Penicillin*	

Age	Pulse (Beats/min)	Respirations (Breaths/min)	Average Systolic BP (mmHg)
Premature	120-170	40-70	55-75
3-6 months	90-120	30-45	70-90
1-3 years	70-110	20-30	90-105
6-12 years	60-95	14-22	100-120

Superficial Tranexamic Acid Administration

Inclusion Criteria:

1. Any age.
2. Superficial bleeding injury without hemostasis from pressure alone, such as:
   a. Anterior epistaxis not hemostatic after pinching the nose while leaning forward for 10 minutes.
   b. Skin injury not hemostatic after 10 minutes of pressure.

Exclusion Criteria:

1. Previous allergic reaction to TXA.
2. Women who are pregnant or may be pregnant
3. Patients with clear contraindications for anti-fibrinolytic agents (active intravascular thrombosis such as PE or DVT or disseminated intravascular coagulation).
4. Deep or penetrating injuries (e.g., GSW, tracking wounds, wounds with pulsatile/arterial bleeding.
   a. For these injuries, follow currently established protocols.
5. Prior administration of IV TXA.
6. Bleeding from a dialysis fistula.

Procedure

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Control all other bleeding sources and manage any hemorrhagic shock.
3. Obtain vitals.
4. Transport to an appropriate facility.
5. Notify the receiving hospital with patient information as soon as possible.

AEMT/ Paramedic

Treatment continuation from above.

6. After ensuring patient meets all inclusion criteria:
   a. For superficial wounds:
      i. Soak gauze in the undiluted contents of a standard ampule of tranexamic acid solution used for injection.
      ii. Place TXA soaked gauze over the wound and apply pressure for 10 minutes.
      iii. After 10 minutes of applied pressure, if not yet at receiving hospital, wrap wound with dressing, leaving soaked gauze in place over the wound.
   b. For Epistaxis refer to the Epistaxis protocol.

Epistaxis

Inclusion Criteria:

A. Age >16
B. Epistaxis of either traumatic or non-traumatic causes.

Exclusion Criteria:

C. Known allergy to TXA, oxymetazoline (Afrin) or neosynephrine.
D. Known or suspected skull fracture.
E. Known or suspected intranasal foreign body.
F. Known or suspected intranasal surgery within the preceding 45 days.

Protocol:

EMT/AEMT:

1. Instruct the patient to blow the nose hard to remove all blood clots. This may take multiple attempts to achieve clot removal. The patient should state that they can now breathe through the nares.
2. EMT's and AEMT's should then:
   A. Apply a standard nose clip to the nares. It should compress the soft tissue of the distal nose to the septum. The nose clip should not compress the bony portion of the nasal bridge.
   B. Avoid the use of nasal clips on patient with severe COPD or those with oxygen dependency.
   C. Have the patient maintain their head tilted forward or in a position of comfort. The patient should avoid swallowing or aspirating blood.
   D. Obtain vital signs.
   E. Establish whether the patient is on any type of blood thinner (aspirin, Plavix, warfarin, Eliquis, Xarelto, Pradaxa).

Paramedic

3. After having the patient blow their nose, paramedics should:
   A. Spray 4 puffs of oxymetazoline or neosynephrine into the bleeding nostril. Attempt to time the puff while the patient is inhaling to facilitate further deeper application of the medication into the nasal passage.
   B. If unclear as to which nostril is bleeding, apply nasal spray treatment to both nostrils.
   C. Instruct the patient to either swallow or spit out any excess medication.
   D. Paramedics should then follow from 2 A above.
   E. If the patient is on a blood thinner, or exhibits abnormal blood pressure or pulse, treat per the Shock protocol.
   F. If bleeding persists after 10 minutes, administer TXA as below.
      i. Open vial of TXA and draw up, undiluted, into a syringe and place intranasal Mucosal Atomization Device (MAD nasal syringe tip or similar brand) on the end of the syringe.
      ii. Place atomization device into nostril and spray 1 mL into each nostril.
   G. Continue to follow from 2 A above.

Notes:

A. It is highly recommended that prior to initiating treatment, the crew don appropriate PPE, including

facial and eye protection.

B. It is department preference on selection of which medication to utilize.

Hemorrhage Control

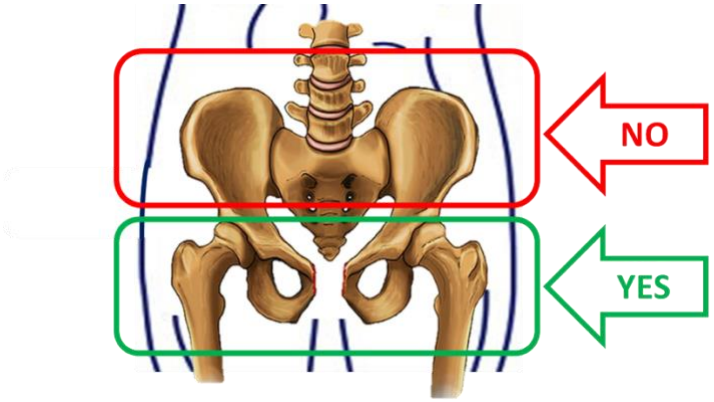
Inclusion Criteria:

1. Patient's age is 16 years or older.
2. Any significant extremity or truncal wound (neck, chest, abdomen, pelvis) with or without obvious blood loss or hypotension, irrespective of blood pressure.
3. The trauma patient with a head injury requires special consideration.
    a. Hypotension (systolic blood pressure less than 90 mmHg) and hypoxia (SpO2 less than 90%) are known to exacerbate secondary brain injury.
    b. The target SBP is 90 mmHg or greater, and improvement of initial altered mental status.
4. Patient's experiencing hemorrhagic shock without a head injury are only volume resuscitated when they have a decreased mental status or absent radial pulses.

Protocol:

EMT:

1. Aggressively manage the airway and administer oxygen to correct hypoxia <95%.
2. If the patient is a victim of trauma, consider spinal immobilization per protocol.
3. Control all external bleeding.
4. Begin transportation as soon as possible to the appropriate policy as directed in Trauma Criteria. Unless the patient is entrapped, scene time should be less than 10 minutes. Hospital notification should be made whenever possible.
5. In patients with penetrating trauma who are mentating normally and/or have a palpable radial pulse, it is acceptable to initiate and continue transport without the administration of IV fluids.
6. Hypothermia prevention measures should be initiated while fluid resuscitation is being accomplished including removal of wet clothing, blankets, or anything that will retain heat and keep patient dry.
7. Patients who are hypovolemic quickly become hypothermic. All patients should be aggressively managed to decrease body-heat loss.
8. Continue secondary assessment throughout transport and continuously reassess mental status, perfusion and vital signs, and breath sounds at least every 5 minutes.
9. In patients with blunt trauma and pelvic pain or who have altered mental status and a mechanism consistent with possible open book pelvic fracture (i.e., high-speed MVC, motorcycle/ATV crashes, pedestrian struck, and falls from significant height), consider the placement of a pelvic binder.
    a. A pelvic binder SHOULD NOT be used in elderly patients with isolated falls from standing height with hip or pelvic pain.
    b. Any commercially available pelvic binder may be used.
    c. If no commercial pelvic binder is available, a properly placed improvised pelvic binder with a bed sheet can be substituted.



AEMT

10. Without delaying transport, initiate 2 large bore IV's of Normal Saline. Begin with a fluid bolus of 500mL NS.

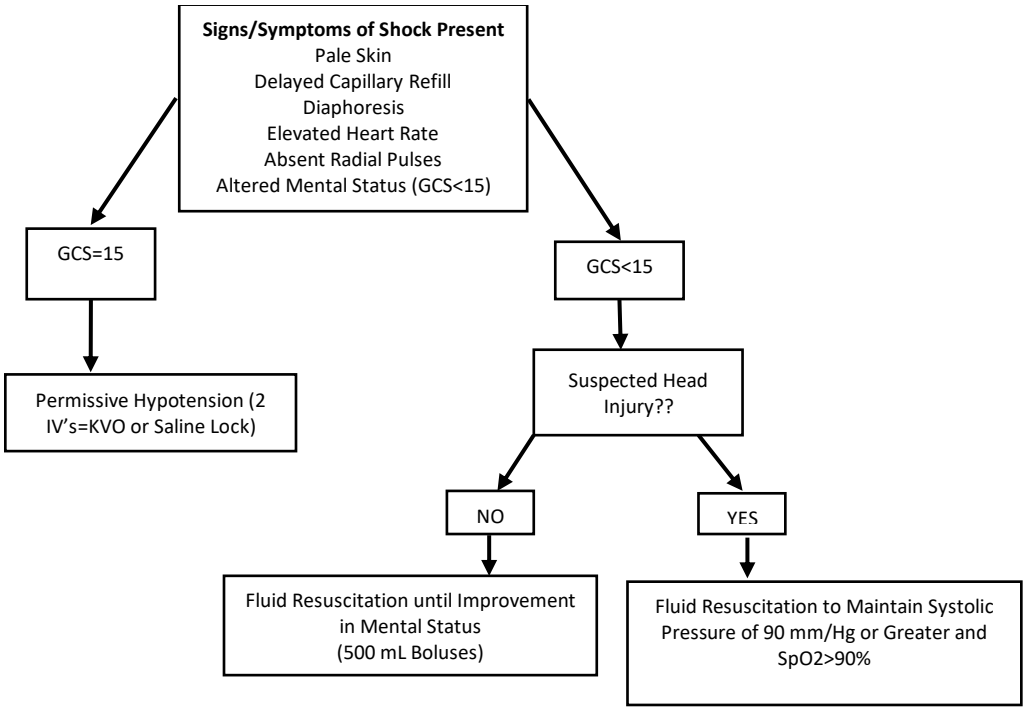
PARAMEDIC

11. If the patient is not maintaining adequate respirations, intubate with C-spine precautions if the patient will tolerate the attempt. No more than one minute should be spent attempting endotracheal intubation in patients with spontaneous breathing.
12. Identify and treat life-threatening respiratory problems (i.e., open chest wounds, flail chest, etc.). For treatment of tension pneumothorax see Needle Decompression protocol.
13. In patients that do not respond to fluid resuscitation, consider untreated tension pneumothorax as possible cause of refractory shock.

NOTES:

A. A reasonable performance goal for an EMS system is that 90% of patients who have traumatic shock and are not entrapped should be delivered to a definitive trauma care facility within 30 minutes from the time of injury.
B. Patients with penetrating chest trauma, abnormal mental status, and absence of a radial pulse are especially in need of immediate transport to definitive care. Early airway management per airway protocol.

Fluid Management for Suspected Hemorrhagic Shock from Trauma



B	EMT
A	Advanced EMT
P	Paramedic

Section 4: Pediatrics

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Altered Level of Consciousness

EMT

1. Assess ABCs. Manually stabilize cervical spine as per Multiple Trauma Protocol if cause of unconsciousness is unknown.
2. Consult Broselow Tape for dosing and equipment recommendations.
3. If not breathing, assist ventilation with bag-valve-mask while administering 100% oxygen or provide mouth to mouth ventilation using barrier device.
4. If breathing, administer 100% oxygen by NRB mask.
5. Evaluate patient's general appearance, relevant history of condition and determine:
    i. Allergies
    ii. Medication
    iii. Past Medical History - especially, diabetic, seizures, stroke, head injury, drug abuse
    iv. Last Meal
    v. Events leading to present illness
6. Obtain and document a pulse oximetry and/or capnography measurement.
7. Determine blood sugar level by available means.
    i. If blood sugar is less than 70 mg/dl, administer oral glucose if alert. May be repeated in 10 minutes if blood sugar remains below 70 mg/dl.
        a. PATIENT MUST HAVE A GAG REFLEX.
    ii. If blood sugar is greater than 400 mg/dl, TRANSPORT.
8. If unable to check blood sugar or blood sugar is between 70 mg/dl and 400 mg/dl, establish communications with Medical Control and advise of patient condition.
9. If respirations are impaired, administer Narcan® 0.1 mg/kg IN. Refer to most current version of length-based drug treatment guide (e.g., BROSELOW® PEDIATRIC EMERGENCY TAPE OR SIMILAR GUIDE) when unsure about patient weight, age and/or drug dosage.
10. Transport IMMEDIATELY unless an advanced life support unit is en-route and has an ETA of less than 5 minutes to the scene.

AEMT

Treatment continuation from above

1. Initiate vascular access and cardiac monitor.
2. If any of the following are present: unresponsiveness, dehydrated or dry appearance, tachycardia, low BP, poor capillary refill and/or blood sugar is above 400 mg/dl, IV fluid bolus 20 ml/kg of normal saline.
3. Determine blood sugar level by available means. Treat accordingly:
    i. Blood sugar less than 70 mg/dl, administer IV bolus:
        a. 2 ml/kg of 50% dextrose (D25)
        b. OR: 2 mL/kg of 10% dextrose (D10)
        c. May be repeated in 10 minutes if blood sugar remains below 70 mg/dl.
5. If blood sugar is normal and signs of hypoperfusion are present treat as per the Pediatric Shock Protocol.
6. If blood sugar is normal, or respirations are impaired, or patient does not respond to dextrose or fluid bolus, administer Narcan® 0.1 mg/kg IV, IO, IM, IN. Refer to most current version of length-based drug treatment guide (e.g., BROSELOW® PEDIATRIC EMERGENCY TAPE OR SIMILAR GUIDE) when unsure about patient weight, age and/or drug dosage.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric Altered Level of Consciousness continued…

7. If no return of adequate spontaneous respirations repeat dose. Continue this care until patient can maintain airway.
8. Re-evaluate patient condition, contact medical control, and transport to the hospital.
9. In some cases, patient may require restraint, and should not be transported until appropriately restrained.

Paramedic

Treatment continuation from above

10. Assess airway adequacy and assist ventilation with bag-valve-mask while administering 100% oxygen. May consider intubation.
11. Re-evaluate patient condition, contact medical control, and transport to the hospital.
12. Apply cardiac monitor.
13. If significant arrhythmia is noted and felt likely to be the cause of altered mentation refer to arrhythmia section.
14. Obtain Diagnostic EKG and transmit.
15. Consider poison ingestion.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Hypoglycemia

General Considerations

1. Age less than 16
2. Neonates (infants less than 30 days) glucose less than 45
3. Children less than 16 years and greater than 30 days with glucose level less than 70

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Obtain blood glucose check via glucometer.
3. Administer oral glucose 5-15g if alert. May be repeated in 10 minutes if blood sugar remains below the levels stated above. May substitute with a high sugar content fluid or food, such as orange juice, if better tolerated by the patient.
4. PATIENT MUST HAVE A GAG REFLEX.
5. If breathing, administer 100% oxygen by NRB mask.

AEMT/ Paramedic

Treatment continuation from above

1. Initiate vascular access and cardiac monitor.
2. If any of the following are present: unresponsiveness, dehydrated or dry appearance, tachycardia, low BP, poor capillary refill: IV fluid bolus 20 ml/kg of normal saline.
3. Determine blood sugar level by available means. Treat accordingly:
    i. Blood sugar less than levels given above.
        a. Administer one of the following:
            1. D10 5mL/kg (D10 is the preferred agent regardless of age.)
            2. D25 2mL/kg
            3. D50 1mL/kg (May not use if <3yrs age).
4. If unable to obtain IV access
    i. Under 6 years old 0.5mg glucagon IM (unlikely to be helpful in newborn)
    ii. Over 6 years old 1mg glucagon IM.
    iii. Glucagon has variable effectiveness in children. Continue to attempt IV/IO access.
    iv. Glucagon can cause nausea and vomiting. Treat appropriately.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Hyperglycemia

General Considerations

1. Glucose level reads greater than 400 or high, OR history of type II diabetes and glucose greater than 200 with signs of diabetic ketoacidosis (DKA)
    i. Signs of DKA:
        a. Tachypnea or Kussmaul breathing
        b. Confusion, altered mentation
        c. Tachycardia
        d. Fruity smell on breath (variable)
        e. Dehydration
        f. H/O Poor compliance with medication
        g. Abdominal pain

EMT

1. Assess ABCs.
2. If breathing, administer 100% oxygen by NRB mask.
3. Consult Broselow Tape for dosing and equipment recommendations.
4. Evaluate patient's general appearance, relevant history of condition and determine:
    i. Allergies
    ii. Medication
    iii. Past Medical History - especially, diabetic, seizures, stroke, head injury, drug abuse
    iv. Last Meal
    v. Events leading to present illness
5. Obtain and document a pulse oximetry and/or capnography measurement.
6. Determine blood sugar level by available means.
7. TRANSPORT.

AEMT

Treatment continuation from above

8. Initiate vascular access and cardiac monitor.
9. If any of the following are present: unresponsiveness, dehydrated or dry appearance, tachycardia, low BP, poor capillary refill: IV fluid bolus 20 ml/kg of normal saline.
10. Determine blood sugar level by available means.

Paramedic

Treatment continuation from above

11. Monitor volume state carefully
    i. Patients with simple hyperglycemia are almost universally dehydrated
    ii. Patients with DKA are also frequently dangerously dehydrated as well but may experience dangerous cerebral edema if they receive rehydration that is too aggressive. This condition is nearly always fatal or devastating.
    iii. Call medical control if you believe patient requires greater than 15ml/kg bolus
12. Monitor for arrhythmias and treat as needed
    i. Patients with DKA may experience dangerous electrolyte abnormalities in addition to acidosis.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Arrhythmias

General Considerations

1. In the treatment of cardiac arrhythmia, current American Heart Association guidelines were referred to for protocol development.
2. Life-threatening cardiac rhythm disturbances in children are more frequently the result rather than the cause of acute cardiovascular emergencies with hypoxia being the primary cause.
3. In infants and children, an arrhythmia should be treated if:
    i. The arrhythmia compromises cardiac output (poor perfusion), or
    ii. The arrhythmia has the potential for degenerating into a rhythm that compromises cardiac output
4. Initial therapy in children will consist of proper ventilation and oxygenation, along with the assessment of cardiac output
5. Quality CPR consists of pushing hard with compression of the chest to ≥ 1/3 of the anteroposterior diameter of the chest, compressions of at least 100 per minute, and allowing complete chest recoil.
6. For two-person CPR, the rate of chest compressions without the presence of an advanced airway is 3:1 in newborns with a suspected primary etiology of respiratory compromise, and 15:2 in children and newborns in arrest with a suspected cardiac etiology. If an advanced airway is in place, 8-10 breaths per minute should be administered with continuous chest compressions.
7. Transport is essential when advanced cardiac life support is not available within ten minutes of receipt of the call
8. Consult Broselow Tape for dosing and equipment recommendations.

EMT

1. Per current American Heart Association Pediatric Basic Life Support guidelines, establish unresponsiveness, activate the emergency response system, get the AED/defibrillator, and check for a pulse.
2. If the patient has a pulse and is not breathing or only gasping, give respirations at 12 a minute or every 5 seconds and recheck the pulse every 2 minutes. Assist ventilation with bag-valve-mask while administering 100% oxygen or provide mouth to mouth ventilation using barrier devices. Consider using airway adjuncts.
3. If the patient does not have a pulse, immediately provide quality CPR for two minutes, apply the AED, Analyze the rhythm and deliver a shock if indicated. If the patient remains unresponsive, resume Quality CPR for two minutes and analyze the rhythm after each two-minute cycle of CPR until the patient starts to Move or ALS providers assume care
4. Immobilize the patient's cervical spine only if clinically indicated.
5. Open and manage the airway and provide 100% oxygen by NRB mask
    i. Assist ventilations if rate is below or above normal limits and signs of hypoxia are present
    ii. Apply pulse oximeter and obtain reading.
6. If a patient shows signs of decreased cardiac output (decreased LOC, poor capillary refill, low blood pressure,) and a heart rate less than 60 bpm that is unimproved with oxygenation, start quality CPR.
7. Evaluate patient's general appearance and determine:
    i. Vital signs
    ii. Level of consciousness
    iii. Cardiac output
    iv. Lung sounds
8. Obtain relevant history of current condition.
9. Establish communications with medical control and advise of patient condition. Transport IMMEDIATELY unless an advanced life support unit is en-route and has an ETA of less than 5 minutes to the scene.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Arrhythmias (continued)

10. If cardiac monitor is available, and patient has an unusual and/or irregular heart rate or pulse, may assist the AEMT or Paramedic with the application of a cardiac monitor and the acquisition of a strip for interpretation by ED physician, during transport only.

AEMT

Treatment continuation from above

1. Initiate vascular access and cardiac monitor.
2. Assess airway adequacy and assist ventilation with bag-valve-mask while administering 100% oxygen.
3. Treat arrhythmias as follows:
    i. Bradycardia. Treat only if:
        a. Infant or child's heart rate < 60 bpm and the patient has poor perfusion.
        b. Airway management and 100% oxygenation does not improve patient condition.
            1. Begin quality CPR
            2. Transport immediately

Paramedic

Treatment continuation from above

1. Consider advanced airway
2. Treat arrhythmias as follows:
    i. Bradycardia. Treat if:
        a. Infant or child's heart rate < 60 bpm and patient has poor perfusion.
        b. Airway management and 100% oxygenation does not improve patient condition.
            1. Begin quality CPR
            2. Administer epinephrine IV, IO, or ET every three to five minutes or until perfusion improves
                i. When IV or IO routes are available, administer 0.01 mg/kg (0.1 mL/kg) of 1mg/10mL.
                ii. When administering through ET tube, use 0.1 mg/kg (0.1 mL/kg) of epinephrine 1mg/1mL ET that must be diluted with 3-5 ml of NS.
        c. If no response, administer atropine
            1. When IV or IO routes are available, 0.02 mg/kg. (minimum dose 0.1 mg, maximum single dose 0.5 mg)
            2. When administering through ET tube, administer 0.04 mg/kg.
            3. Atropine may be repeated once if the patient is not improved in 3-5 minutes
            4. Refer to length-based drug treatment guide (e.g., BROSELOW® PEDIATRIC EMERGENCY TAPE OR SIMILAR GUIDE) when unsure about patient weight, age and/or drug dosage.
        d. Consider Transcutaneous pacing
        e. Transport and contact medical control for possible cardiac pacing

    ii. Narrow Complex Tachycardia:
        a. If patient is asymptomatic, transport immediately.
        b. Consider normal pulse for age of patient
            1. 220- age= maximal "sinus" pulse
            2. normal sinus pulse is narrow with some variability
            3. SVT is typically greater than 150 and has very little variation

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4. MOST WPW with rapid afib will be greater than 180 with a lot of variability

c. Consider hypovolemia and follow Hypovolemic Shock Protocol.
d. Inquire about a history of Wolff Parkinson White syndrome or other arrhythmias.
e. Consider one attempt at vagal maneuver. Success of vagal maneuvers are variable and depend upon the presence of underlying conditions, the patient's level of cooperation, and age. Regardless of what type of vagal maneuver is attempted, obtain a cardiac monitor tracing before and during the attempt. The following vagal maneuvers may be attempted in pediatric patients:
    1. Have child blow through a straw
    2. Bear down like having a bowel movement.
f. Administer adenosine, 0.1 mg/kg (maximum 6mg) RAPID IV bolus over 1 to 3 seconds followed IMMEDIATELY with a 5-10 ml NS bolus IV.
g. If the first dose is ineffective, repeat adenosine in 1-2 minutes, 0.2 mg/kg (maximum 12 mg) RAPID IV bolus followed IMMEDIATELY with a 5-10 ml NS bolus IV.
h. Contact medical control

3. If patient is symptomatic (poor perfusion, shock, hypotension, respiratory difficulty, SOB, signs of CHF, altered LOC) and heart rate is ≥ 220/minute in an infant or ≥ 180/minute in a child, and NO history of Wolff Parkinson White syndrome (this will likely be narrow complex irregular):
    i. Administer adenosine, 0.1 mg/kg (maximum 6mg) RAPID IV bolus over 1 to 3 seconds followed IMMEDIATELY with a 5-10 ml NS bolus IV.
    ii. If the first dose is ineffective, repeat adenosine in 1-2 minutes, 0.2 mg/kg (maximum 12 mg) RAPID IV bolus followed IMMEDIATELY with a 5-10 ml NS bolus IV.
    iii. Contact medical control
    iv. Adenosine can be a fatal mistake in WPW; cardioversion can treat either condition
4. Consider sedation Versed 0.1 mg/kg IV.
    i. Synchronous cardioversion at (preferred in Wolff Parkinson White syndrome)
    ii. 0.5-1 joules (monophasic or biphasic)
    iii. 2 joules/kg (monophasic or biphasic)
        a. If the second synchronized cardioversion is unsuccessful, consider contacting medical control for an antiarrhythmic (amiodarone)
    iv. Wide Complex Tachycardia (With a pulse)
        a. Assess patient's perfusion. Signs/symptoms of poor perfusion include
            1. Hypotension
            2. Acutely altered mental status
            3. Signs of shock
        b. Good perfusion
            1. If the rhythm is regular and the QRS complex is monomorphic, consider the administration of adenosine 0.1 mg/kg (maximum 6 mg) RAPID IV bolus over 1 to 3 seconds followed IMMEDIATELY with a 5-10 ml NS bolus IV.
            2. If the first dose is ineffective, repeat adenosine in 1-2 minutes, 0.2 mg/kg (maximum 12 mg) RAPID IV bolus followed IMMEDIATELY with a 5-10 ml NS bolus IV.
            3. If the rhythm is not regular and/or the QRS complex is not monomorphic or the EMT is unsure about the rhythm, contact medical direction for potential orders for an antiarrhythmic.

B	EMT
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P	Paramedic

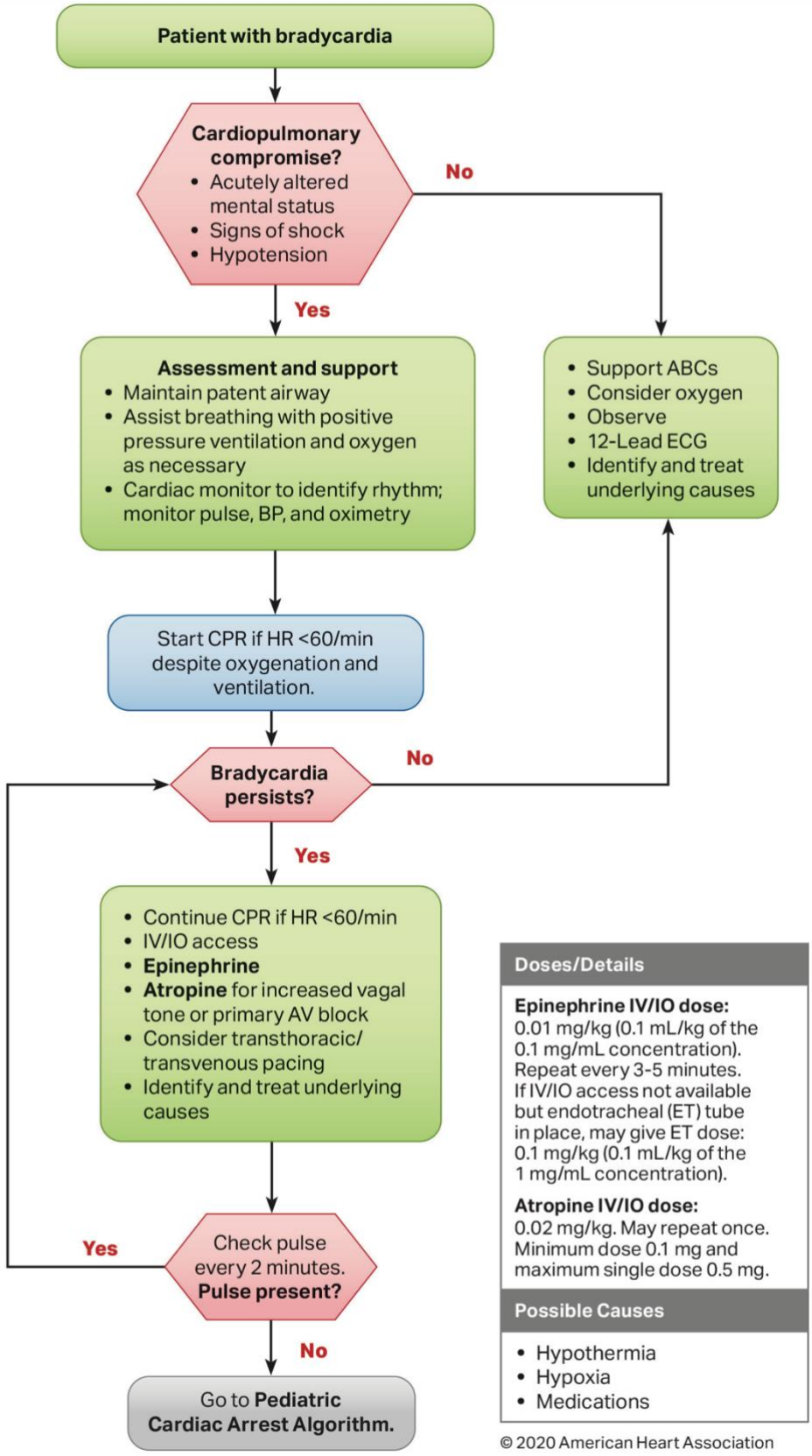
4. If the rhythm is not regular and/or the QRS complex is not monomorphic or the EMT is unsure about the rhythm, contact medical direction for potential orders for an antiarrhythmic.
    i. Amiodarone 5 mg/kg IV over 20-60 minutes
5. Consider sedation Versed 0.2 mg/kg IV
    i. Synchronous cardioversion at:
        a. Initial shock: 0.5-1 joules/kg (monophasic or biphasic)
        b. Subsequent shocks: 2 joules/kg (monophasic or biphasic)

**NOTE: If at any time the patient becomes unstable with poor perfusion, go directly to synchronous cardioversion.

**NOTE: Do not administer more than one antiarrhythmic to a patient. The choice of the antiarrhythmic to be administered should be predetermined by the medical director for your organization.

6. Poor perfusion (with a pulse):
    i. Prepare for immediate cardioversion
    ii. Consider sedation Versed 0.2 mg/kg IV
        a. Synchronous cardioversion at:
            1. Initial shock: 0.5 joules/kg (monophasic or biphasic)
            2. Subsequent shocks: 2 joules/kg (monophasic or biphasic)
        b. Administer an antiarrhythmic
            1. Amiodarone 5mg/kg IV/IO over 5 minutes.

B	EMT
A	Advanced EMT
P	Paramedic



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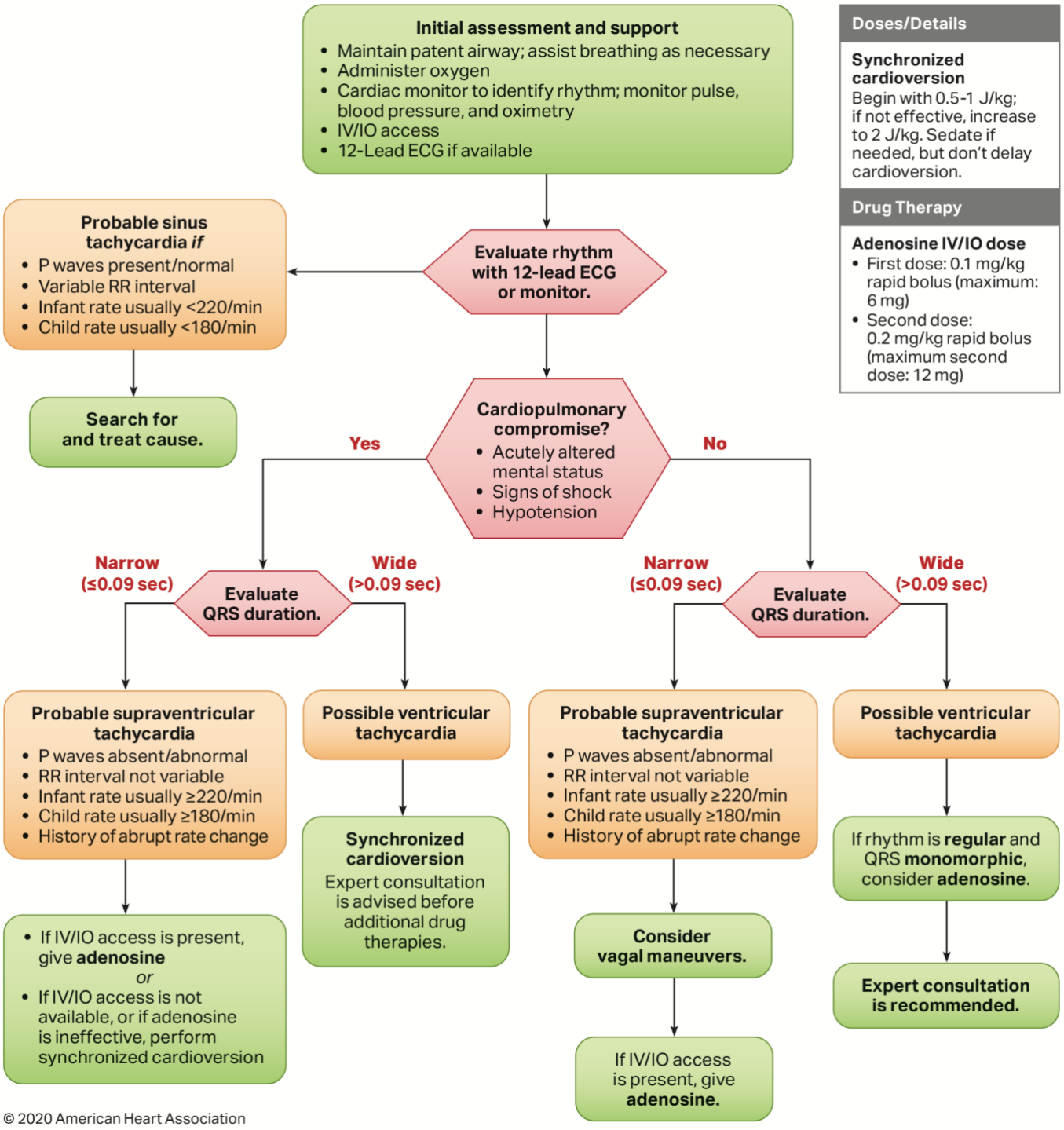

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Cardiac Arrest

General Considerations

1. Cardiac arrest in children is primarily due to lack of an adequate airway resulting in hypoxia
2. All EMS professionals must concentrate on opening and maintaining the airway and providing 100% oxygen
3. Quality CPR consists of pushing hard with compression of the chest to ≥ 1/3 of the anteroposterior diameter of the chest, compressions of at least 100 per minute, and allowing complete chest recoil.
4. For two-person CPR, the rate of chest compressions without the presence of an advanced airway is 3:1 in newborns with a suspected primary etiology of respiratory compromise, and 15:2 in children and newborns in arrest with a suspected cardiac etiology. If an advanced airway is in place, 8-10 breaths per minute should be administered with continuous chest compressions.
    a. When performing CPR in infants and children with an advanced airway, it may be reasonable to target a respiratory rate range of 1 breath every 2–3 s (20–30 breaths/min), accounting for age and clinical condition. Rates exceeding these recommendations may compromise hemodynamics.
        i. This is based on one small, multicenter observational study of intubated pediatric patients found that ventilation rates (at least 30 breaths/min in children less than 1 year of age, at least 25 breaths/min in older children) were associated with improved rates of ROSC and survival.
        ii. However, increasing ventilation rates are associated with decreased systolic blood pressure in children.
        iii. The optimum ventilation rate during continuous chest compressions in children with an advanced airway is based on limited data and requires further study.
5. During BVM ventilation or endotracheal intubation, routine cricoid pressure to prevent aspiration is no longer recommended.
6. Transport IMMEDIATELY when excessive hemorrhage or hypothermia is present. ALS measures should be carried out during transport
7. If peripheral IVs cannot be established, access should be obtained by the intraosseous route
8. If IV or IO access cannot be established, administer appropriate medications through the ET tube
9. NOTE: Adult AEDs can be used on patients under one year of age if no other appropriate device is available. Manual defibrillator is preferred for infants. Pediatric AED pads are preferred for patients between the ages of 1 and 8 years of age. Adult AED pads should be used for patients greater than 8 years of age, but they may be used in patients between the ages of 1 and 8 years of age if pediatric AED pads are unavailable.
10. If Sudden Infant Death Syndrome (SIDS) is suspected:
    i. Initiate basic and advanced life support, unless apparent rigor mortis or signs of lividity are present
    ii. Communicate with and reassure the parents
    iii. Encourage family to have friends or neighbors accompany them to the hospital
    iv. If infant is not resuscitated, refer parents to social services at the nearest appropriate emergency department to initiate counseling
11. Consult Broselow Tape for dosing and equipment recommendations.

EMT

1. Open and maintain airway in sniffing position
2. Ventilate with 100% oxygen via BVM with oxygen reservoir
3. Initiate quality CPR in accordance with American Heart Association guidelines

B	EMT
A	Advanced EMT
P	Paramedic

4. Establish communications with medical control and advise of patient condition. Transport as soon as possible unless ALS unit is en route and has an ETA of less than 5 minutes. Apply AED and shock as needed prior to transport. Do not delay defibrillation, as this is time sensitive and may be a lifesaving intervention.
5. If an Automated External Defibrillator (AED) is available:
    i. Assess patient for respirations and cardiac arrest
    ii. Apply AED and activate the device.
    iii. Start documentation that must include:
        a. EMS unit delivering care and ID of EMS professionals
        b. Initial call information (i.e., accidental ingestion, drowning, etc.)
        c. Initial patient assessment, findings, and impression
        d. Care given to this point
        e. Ongoing outcomes of care delivered to patient
            1. "No Shock Advised"
                i. Continue quality CPR for two minutes
                ii. Continue ventilation with 100% oxygen via BVM with oxygen reservoir
                iii. Contact medical control and transport IMMEDIATELY
6. "Shock Advised"
    i. Deliver a single shock
    ii. Resume quality CPR for two minutes
    iii. Contact medical control, advise of cardiac arrest, and transport IMMEDIATELY
    iv. After each two-minute cycle of quality CPR, activate AED to assess rhythm and deliver a single shock if indicated
    v. Resume quality CPR

TURN AED OFF DURING MOVEMENT OF PATIENT

AEMT

Treatment continuation from above

1. Apply cardiac monitor
2. If monitor shows ventricular fibrillation or pulseless ventricular tachycardia:
    i. Defibrillate at 2 joules/kg
    ii. If no response, Five cycles of quality CPR
    iii. Defibrillate at 4 joules/kg
    iv. If no response, resume quality CPR and TRANSPORT
3. Start IV or IO of saline and give 20 ml/kg NS IV bolus. IV access should be accomplished en-route to hospital.

DO NOT DELAY TRANSPORT

Paramedic

Treatment continuation from above

1. If an AEMT is in a cycle of defibrillation, allow to complete cycle
2. Assess airway and intubate if needed
3. Establish IV or IO, whichever is quickest
4. Apply monitor. If one of the following conditions exists, treat as follows:
    i. Ventricular fibrillation or pulseless ventricular tachycardia
        a. Defibrillate at 2 joules/kg

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b. If no response, quality CPR for two minutes
c. Defibrillate at 4 joules/kg
d. If no response, continue quality CPR for two minutes
e. Administer epinephrine IV, IO, or ET every 3-5 minutes
    1. IV / IO doses – 0.01 mg/kg of 1mg/10mL)
f. If no response, defibrillate at ≥ 4 joules/kg to a maximum of 10 joules/kg or the adult dose
g. If no response, continue quality CPR for two minutes
    1. Administer one antiarrhythmic
        i. Amiodarone 5 mg/kg IV/IO, may repeat dose up to 2 times for refractory ventricular fibrillation or pulseless ventricular tachycardia
h. If no response, continue quality CPR and TRANSPORT
i. Consider the treatment of reversible causes
    a. Hypovolemia: administer 20 ml/kg NS IV fluid boluses
    b. Hypoxia
    c. Hydrogen ion (acidosis)
    d. Hypoglycemia: treat per Pediatric Hypoglycemia protocol.
    e. Hypokalemia/hyperkalemia
    f. Hypothermia
    g. Tension pneumothorax
    h. Tamponade, cardiac
    i. Toxins
    j. Thrombosis

j. Asystole / Pulseless Electrical Activity (PEA)
    a. Begin quality CPR immediately
    b. Obtain IV/IO access
    c. Continue quality CPR for two minutes and administer epinephrine IV, IO every 3-5 minutes
    1. IV/IO doses – 0.01 mg/kg of 1mg/10mL)
    d. Confirm asystole in two different leads
        1. If rhythm is unclear and possibly ventricular fibrillation, follow ventricular fibrillation/pulseless ventricular tachycardia guideline
            i. Consider the treatment of reversible causes
                a. Hypovolemia
                b. Hypoxia
                c. Hydrogen ion (acidosis)
                d. Hypoglycemia
                e. Hypokalemia/hyperkalemia
                f. Hypothermia
                g. Tension pneumothorax
                h. Tamponade, cardiac
                i. Toxins
                j. Thrombosis, pulmonary
                k. Thrombosis, coronary
            ii. If no response, continue quality CPR and TRANSPORT.

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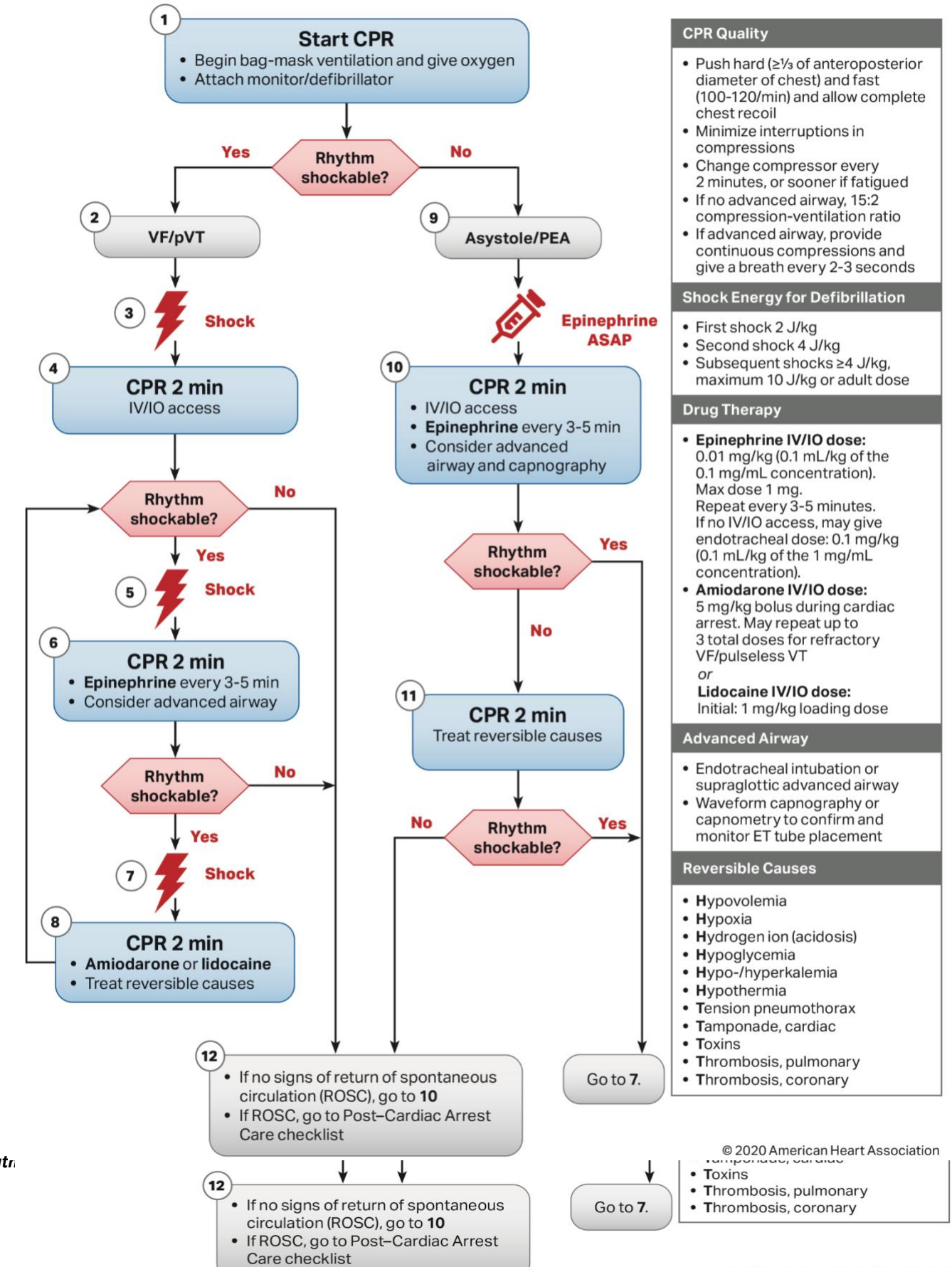

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Pediatric: Child Abuse / Neglect

GENERAL CONSIDERATIONS

1. Child abuse or neglect are widespread enough that nearly all EMS professionals will see these problems at some time. The first step in recognizing abuse or neglect is to accept that they exist and to learn the signs and symptoms.
2. Initiate treatment as necessary for situation using established protocols.
3. If possible, remove child from scene, transporting to hospital even if there is no medical reason for transport.
4. If parents refuse permission to transport, notify law enforcement for appropriate disposition. If patient is in immediate danger, let law enforcement handle scene.
5. Advise parents to go to hospital. AVOID ACCUSATIONS as this may delay transport. Adult with child may not be the abuser.
6. Carefully document findings and report to physicians at the hospital. An EMS professional must also report or assure that actual or suspected child abuse/neglect is reported to the local law enforcement agency or the Children's Services Board.

DOCUMENT THIS NOTIFICATION
DO NOT JEOPARDIZE YOUR SAFETY

SIGNS AND SYMPTOMS

The incidence of child abuse and neglect has no socioeconomic, racial, cultural, or religious boundaries. Child abuse and neglect occurs in all segments of our population. Prehospital personnel are in a unique position in their ability to make the initial identification of these victims. EMS professionals should always believe what the child says, document the exact statements on the prehospital care report, and communicate them clearly to the healthcare providers upon arriving to the receiving facility.

The signs and symptoms of child abuse and neglect may include the following:

Physical Abuse

1. Bruises
    i. Infants rarely bruise accidentally
    ii. Active children normally sustain bruises on the front of the body (knees, shins, elbows, foreheads)
    iii. Bruises in recognizable shape of an object are suspicious
    iv. Multiple bruises in different stages of healing are suspicious
    v. Skin injuries-cuts, scrapes, bruises, burns, bites, redness, swelling
    vi. Burns
    vii. Scald burns are common
    viii. Immersion burns characterized by clear lines of demarcation (accidental burns are more likely to have a splash pattern due to the child's withdrawal from the heat source
    ix. Inflicted contact burn (recognizable by a shape of the object used to produce it)
    x. Burns in less exposed or unexposed areas, deeper or larger burns
2. Bites
    i. Adult human bite marks
    ii. Multiple, random, or well-defined bite marks
    iii. Multiple defined tooth marks (differ from animal bites)
3. Fractures
    i. Suspected fractures discovered "accidentally" by the guardian
    ii. Skeletal injury inconsistent with history

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Pediatric: Child Abuse / Neglect (Cont'd)

iii. Multiple fractures in different stages of healing
iv. Suspected fractures accompanied by other injuries

4. Reported or alleged falls
   i. Falls from a standing position or low object (less than child's height) rarely result in serious injuries
   ii. Falls from greater than child's height is usually required to sustain serious injury
5. Injuries to face and head
   i. Unintentional injuries usually involve the front of body
   ii. Injuries to the side of the face, the cheeks, or the ears are suspicious for abuse
   iii. Direct blows to the mouth usually result in lip injuries, possibly with fractures to the jaw or teeth
   iv. Considerable force is required to cause severe head trauma
6. Hair loss
   i. Can be sign of child abuse from dragging by the hair
   ii. May simply be the result of excessive force during hair brushing or from certain types of hair braiding
   iii. May be self-inflicted to relieve stress
   iv. Blood may be seen at the surface or beneath the scalp
7. Shaken baby syndrome
   i. Most common in children less than 2 years old
   ii. There may be no external evidence of trauma
   iii. Possible signs include decreased consciousness, seizures, vomiting, other signs of head injury, unusual cry
   iv. Altered mental status may be the only sign
   v. Recognition of the possibility of this syndrome should trigger suspicion of abuse

Sexual Abuse

Signs of recent abuse may include pain, bleeding, or discharge from urethra, vagina, or rectum

1. Signs of chronic or concealed abuse occurring over weeks or months may include nonspecific abdominal pain, vaginal inflammation, or painful urination
2. The physical examination is normal in most cases

Emotional Abuse

1. A component of all forms of child abuse
2. Most cases are mild, but early recognition is important
3. Signs
   i. Encouragement of destructive or antisocial behaviors
   ii. Verbal assault of the child or verbal attacks on the child's development of self and social Competence
   iii. Humiliation of the child
   iv. Ignoring the child
   v. Isolation of the child
   vi. Rejection of the child's needs and requests

Neglect

1. Most common form of child abuse, yet it is the most under-recognized and under-reported form of child abuse
2. Signs:
   i. Inadequate care, including of food, clothing, or shelter.
   ii. Inadequate medical attention including delay in seeking care for known illness.

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iii. Poor personal hygiene.
iv. Unsanitary conditions.
v. Inadequate sleeping arrangements.
vi. Lack of supervision.
vii. Evidence of substance abuse.
viii. Structural, fire, or environmental hazards

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Pediatric: Fever

GENERAL CONSIDERATIONS

All Levels:

1. **If febrile, remove excess clothing, but take great care to avoid shivering. Consider environment and temperature of vehicle.**
2. **DO NOT sponge or wet child unless treating for heat exposure. (This includes use of moist towels to "cool" the child).**
3. **Transport all infants < 8 weeks of age with a reported temperature > 100.4° F (38° C) or < 96° F (35.5° C). Fever >100.4 in infants less than 8 weeks old (adjusted for prematurity if needed). This is a critical issue until proven otherwise. Infants and toddlers with disproportionate tachycardia have a serious bacterial infection until proven otherwise. These children have the potential to decompensate quickly even if initially well appearing.**
4. **Consider transport of neonates (LESS THAN 30 DAYS OLD) to a pediatric facility.**

Inclusion Criteria:

1. **Age: 6 months an up.**
2. **Presence of a fever is defined as oral, temporal, tympanic, or non-contact thermometer reading obtained by EMS of > 100.4 degrees F.**
3. **Patient can swallow liquids.**

Exclusion Criteria:

1. **Patient received acetaminophen, or acetaminophen-containing products within the last six hours.**
2. **The patient is allergic to acetaminophen.**

EMT/AEMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Assess the ABCs - support airway and ventilation PRN. Do not attempt to place an oral airway or orally suction during an active seizure.
3. Initiate O2 and apply pulse oximeter.
4. Complete and record all vital signs-repeat frequently and record new findings.
5. Obtain the patient's temperature. Record both the temperature and method used to obtain it.

Paramedic

Treatment continuation from above

1. If the patient's weight is known, utilize that weight for dosing, otherwise refer to the Broselow Tape.
2. Dosing questions should be directed to medical control.
3. Administer acetaminophen orally per the dosing chart below:

Patient Weight (kg)	Children's Acetaminophen Suspension Liquid (160mg/5mL)
6-12 lbs. (3-5 kg)	¼ tsp or 1.25 mL (40 mg)
13-16 lbs. (6-7 kg)	½ tsp or 2.5 mL (80 mg)
17-25 lbs. (8-11 kg)	¾ tsp or 3.75 mL (120 mg)
26-31 lbs. (12-14 kg)	1 tsp or 5 mL (160 mg)
32-51 lbs. (15-23 kg)	1.5 tsp or 7.5 mL (240 mg)
52-64 lbs. (24-29 kg)	2 tsp or 10 mL (320 mg)
65-79 lbs. (30-35 kg)	2.5 tsp or 12.5 mL (400 mg)
80+ lbs. (36+ kg)	3 tsp or 15 mL (480 mg)

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Pediatric: Fluid and Drug Administration

AEMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Peripheral venous access, in the form of an IV or an IO, will be the first route for fluid and drug administration for any life or limb threatening emergency.
3. Unless there are compelling factors, no more than two attempts at peripheral access should be made in the pediatric patient.
4. In a life-threatening situation where venous access appears futile, immediately establish intraosseous access.
5. Intraosseous Infusion
    i. The following are guidelines for the UNSTABLE child requiring alternative vascular access AFTER ensuring that the airway and ventilations are established:
        a. Indications: Intraosseous assess should be established if you cannot rapidly achieve venous access in a patient in decompensated shock or cardiopulmonary arrest.
        b. Contraindications: Recently fractured bone, known bone disorder, and previous unsuccessful attempt of IO placement at site.
        c. Relative contraindications: cellulitis or infected burn at site.
        d. Equipment: Bone marrow aspiration needle, iodine and alcohol preps, 5 ml syringe.
6. Fluid of choice is normal saline or Lactated Ringers, utilizing a macro drip administration set. If child is less than 2 years old a micro drip set should be used if available.

Paramedic

Treatment continuation from above

1. Intranasal (IN) route may be used for fentanyl, Versed or ketamine.
2. Intramuscular (IM) route may be used for fentanyl, Versed, ketamine, morphine, diphenhydramine, Solumedrol, epinephrine.

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Pediatric: Drowning/ Submersion Injury

GENERAL CONSIDERATIONS

1. Drowning is classified as trauma in Ohio. Victims of drowning or near drowning who will likely require admission to a hospital should be transferred to the appropriate trauma center.
2. Dry and warm patient gently.
3. Drowning during warm weather (no ice on water).
    i. See pediatric arrest if warm and pulseless
    ii. Patients who experience drowning during warm weather who do not have return of spontaneous circulation (ROSC) after reasonable attempts at resuscitation are unlikely to survive
    iii. Evaluate for trauma, consider spinal immobilization
4. Drowning during cold weather (ice on water or nearby).
    i. The best available data indicates that patients who lose spontaneous prior to suffocation can withstand prolonged periods (hours) of cardiac arrest and have the potential for very good neurologic outcome.
    ii. Treat as Pediatric Arrest with the following modifications
        a. Do not attempt defibrillation/ cardioversion more than 1 time if body temperature is less than 32 degrees C or 86 degrees F
        b. Do not attempt defibrillation/ cardioversion more than 3 time if body temperature is less than 34 degrees C or 93 degrees F, but greater than above
        c. If resources are not available to check temperature and patient has been in water for 30 minutes or more, do not attempt greater than 3 shocks without success.
        d. If possible, provide warmed IV fluids as the patient is likely to experience third spacing and loss of intravascular volume
        e. You may give standard ACLS drugs but at greater intervals. Consider giving only one dose until warmed greater than 34C/93F
    iii. Evaluate for trauma, consider spinal immobilization
    iv. Strongly consider transferring cold water drowning victims to children's hospital, they may be good candidates for ECMO
    v. Carefully warm patient, any aggressive movement may precipitate arrhythmia
5. Near drowning.
    i. Mange Airway and ventilation per appropriate protocol
        a. Patients with significant aspiration are prone to lung injury and may decompensate, consider transfer to a trauma center
    ii. BP/ Perfusion: see Shock protocol. Warm fluids as appropriate.

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Pediatric: Hyperthermia

GENERAL CONSIDERATIONS

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Hyperthermia can be secondary to environmental causes, loss of thermoregulation (intoxicated, unable to move to cooler area), infection, intoxication (serotonin syndrome, MDMA, ecstasy, Molly, intentional overdose of antidepressant/ antipsychotic). Please see the appropriate protocol as needed if another source other than environmental is likely.
3. Manage airway as appropriate
4. Treat hypoperfusion as appropriate. See shock protocol.
    i. Be wary of volume overload
    ii. Do not administer chilled IV fluids.
5. Cool patient
    i. Perform immersion cooling if neurological changes present.
    ii. Passive cooling is generally sufficient for patients without neurological changes.

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Pediatric: Newborn Resuscitation

GENERAL CONSIDERATIONS

1. The five initial questions to assess in every newborn are as follows:
   i. Is the baby full term and how many babies are expected?
   ii. Is there THICK meconium present?
   iii. Is the baby breathing or crying?
   iv. Does the baby have good muscle tone?
   v. Is the baby's color pink?

These questions will help determine the amount of intervention needed. Most term healthy infants do not require ALS intervention. This initial assessment should be completed within 30 seconds.

1. Body heat must always be maintained. As soon as the baby is born, wipe the baby dry and place in a warm environment. Cover the infant's head, place against mother's skin, and cover both. Use indirect heated, humidified oxygen, if available. Avoid direct application of cold oxygen to infant's face as this may cause respiratory depression. Avoid inducing hyperthermia (elevated body temperature) in babies who may have had a hypoxic-ischemic event.
2. Position infant in sniffing position (with a 1-inch towel under the shoulders). This will provide an optimally opened airway and adequate drainage of secretions.
3. Routine suctioning of the airway is not recommended, even in cases of meconium staining. Only suction using a bulb syringe if there is airway obstruction or is a need for positive pressure ventilation.
4. Open and manage airway. Simple positive pressure ventilation is reasonable.
5. If drying and suctioning has not provided enough stimulation, try rubbing the infant's back or flicking their feet. If the infant still has poor respiratory effort, poor tone, or central cyanosis, consider them to be distressed. Most distressed infants will respond quickly to 100% oxygen via BVM. Continuous positive airway pressure (CPAP) should be considered for persistent labored breathing, cyanosis, or low pulse oximetry.
6. The APGAR score should be used in the initial assessment of normal newborns and is a measure of the effectiveness of interventions for the distressed newborn. Scoring must not delay intervention in the distressed newborn. The score is completed at 1 and 5 minutes after delivery. If the 5-minute score is less than 7, repeat every 5 minutes for the next 20 minutes.

	Signs	- 0 -	- 1 -	- 2 -
A	Appearance	Blue, Pale	Body Pink, Extremities Blue	Completely Pink
P	Pulse	Absent	Slow Or < 100	> 100
G	Grimace (Reflex Irritability)	No Response	Grimace	Cough Or Sneeze
A	Activity (Muscle Tone)	Limp	Some Flexion of Extremities	Active Motion
R	Respiration (Effort)	Absent	Slow, Irregular	Good, Crying

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. If heart rate is < 100 bpm, BVM ventilation is necessary to increase heart rate.
3. If heart rate is < 60 bpm despite adequate ventilation, quality CPR should be initiated.
4. BVM ventilation is also indicated for apnea and persistent central cyanosis.

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Pediatric: Newborn Resuscitation (Cont'd)

5. BVM ventilation rate should be between 40 and 60 breaths per minute. Cardiac compression rate should be at a rate of 120 times per minute with compression to breath ratio of 3:1.
6. Establish communications with medical control and advise of patient condition.
7. Transport IMMEDIATELY unless an advanced life support unit is en-route and has an ETA of less than 5 minutes to the scene.

AEMT

Treatment continuation from above

1. Intubate patient if newborn is non-vigorous (poor respiratory effort, decreased muscle tone, AND heart rate less than 100).
2. Apply monitor and check rhythm.
3. Establish IV or IO.
4. If infant shows signs of hypovolemia, administer normal saline 10 ml/kg IV/IO over 5 minutes.
5. Narcan® administration should not be administered during the initial resuscitation and should be avoided in babies whose mothers are suspected of having had long-term exposure to opiates. Heart rate and oxygenation should be addressed by supporting ventilation.
6. Check blood sugar level and administer 1 ml/kg of dextrose 10% if the blood sugar is < 40.

Paramedic

Treatment continuation from above

1. If asystole or spontaneous heart rate is < 60 bpm despite adequate ventilation:
   i. Administer epinephrine 0.01-0.03 mg/kg (0.1-0.3 ml/kg) of 1mg/10mL via IV/IO or up to 0.1 mg/kg (0.1 mg/kg) of 1mg/1mL ET.
   ii. If no response, repeat epinephrine administration every 3-5 minutes.
2. If infant shows signs of hypovolemia, administer normal saline 10 ml/kg IV/IO over 5 minutes.
3. Transport to hospital.

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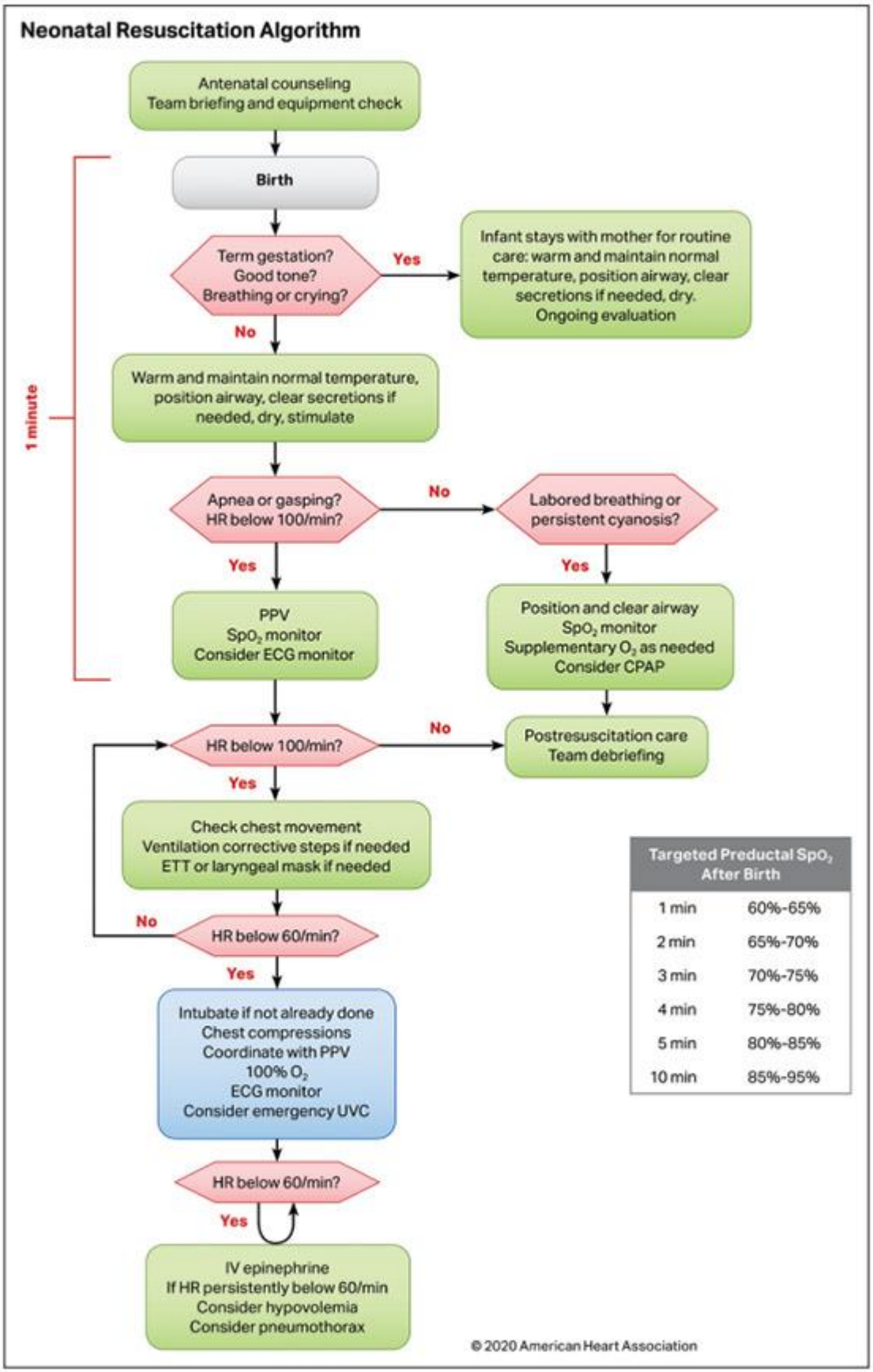

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Pediatric: Respiratory Distress

General Consideration

1. In children, open airway by using the sniffing position.
2. In suspected cases of upper airway obstructions, DO NOT attempt to visualize the airway, unless a foreign body is suspected. Keep patient calm and transport upright.
3. Refer to length-based drug treatment guide (e.g., BROSELOW® PEDIATRIC EMERGENCY TAPE) when unsure about patient weight, age and/or drug dosage.
4. Evaluate patient's general appearance, relevant history of condition and determine:
    i. Allergies
    ii. Medication
    iii. Past Medical History – especially RESPIRATORY
    iv. Last Meal
    v. Events leading to present illness

Stridor, gagging or choking in the breathing patient with respiratory distress may indicate upper airway obstruction.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Quickly obtain history and non-invasive respiratory assessment.
    i. Total Airway Obstruction/History of foreign body in airway.
        a. Manual clearing only if foreign body is visible - NO BLIND FINGER SWEEP
        b. Back blows and chest thrust in children less than 1 year of age.
        c. Abdominal and/or chest thrusts in children over 1 year of age.
        d. If airway cannot be cleared in 60 seconds:
            1. Activate the emergency response system for immediate transport immediately to the nearest hospital.
            2. Do not take history.
            3. Do not make further physical assessment.
        e. Partial Airway Obstruction
            1. DO NOT AGITATE CHILD, DO NOT EXAMINE THROAT.
            2. Administer oxygen by NRB if tolerated or by “blow-by”.
3. Allow the child to assume a position of comfort. The child may assume the tripod position. Encourage parent to hold the child in a secure position. Keep child and parent (or caregiver) CALM. Do not agitate child.
4. Transport the child in a secure upright position immediately to the nearest appropriate hospital.

AEMT

Treatment continuation from above

1. Reassess breath sounds and treat as follows:
    i. Do not establish IV access unless child is in arrest or is lethargic. DO NOT agitate child.
    ii. If foreign body in airway is suspected in unconscious patient with complete obstruction and basic procedures are unsuccessful, try to visualize obstruction with laryngoscope.
    iii. Do not attempt invasive airway unless child has respiratory arrest. Bag-valve-mask ventilation is acceptable.
    iv. If foreign body in airway is suspected in unconscious patients with compete obstruction, and basic procedures are unsuccessful, try to visualize obstruction with laryngoscope and remove with Magill forceps.

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Pediatric Respiratory Distress (Cont'd)

Paramedic

Treatment continuation from above

1. Assume charge of situation and confer with EMS professionals about condition of patient and situation
2. Reassess breath sounds and treat as follows:
    i. If cause of upper airway obstruction is unknown and child is calm, a normal saline aerosol may be administered. DO NOT further agitate child.
    ii. Do not attempt invasive airway unless child has respiratory arrest. Bag-valve mask ventilation is acceptable.
    iii. If foreign body in airway is suspected in unconscious patient with complete obstruction, and basic procedures are unsuccessful, try to visualize obstruction with laryngoscope and remove with Magill forceps.
    iv. If airway is completely obstructed, a needle, quick Trach or jet ventilation may be lifesaving.

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Pediatric: Croup / Stridor

Historical Findings:

1. Age 6 months to 6 years.
2. Barky "seal" sounding cough with hoarse voice and stridor.
3. May have fever and cold symptoms
4. No history suggesting foreign body aspiration.

Physical Findings

1. Inspiratory and expiratory stridor at rest.
2. Chest wall retractions.

Differential Diagnosis:

1. Foreign body aspiration
2. Anaphylaxis
3. Croup
4. Epiglottitis
5. Asthma
6. Bacterial tracheitis

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Keep the patient calm. You may have a parent or other trusted adult administer oxygen by non-rebreather mask or blow-by to keep oxygen saturation above 94%.

AEMT

1. Place the patient on a cardiac monitor.
2. Consider normal saline mist via nebulizer.
3. Contact medical control if considering epinephrine nebulizer.
    i. Medical control may order epinephrine 0.5mL of 1:1000 (1mg/mL) mixed in 2.5mL of normal saline, administered via nebulizer.

Paramedic

Treatment continuation from above

1. If significant increase in labored breathing/ work of breathing:
    i. Administer epinephrine 0.5 mL of 1mg/1mL solution mixed in 2.5 mL of normal saline, administered via nebulizer with oxygen and a facemask. The definitive diagnosis of croup is not necessary; epi nebs may be helpful in temporizing other critical causes of stridor.
2. Reassess patient frequently.
3. Continue normal saline mist via nebulizer when the epinephrine nebulizer is complete.

Notes:

Pediatric patients with fever, drooling, and stridor should be suspected to have epiglottitis or another potential source of airway obstruction. Epiglottitis is a bacterial infection of the epiglottis that sometimes obstructs the tracheal opening. These may worsen from sticking objects such as fingers or tongue depressors in the patient's throat. These patients are best treated by reassurance and immediate transportation to the hospital. Have the patient breath oxygen by mask or blow-by as long as this does not cause the patient to become upset.

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Pediatric Respiratory Distress (Choking)

Inclusion criteria:

1. Patient's age is younger than 16 years.
2. Sudden onset of shortness of breath in a previously well pediatric patient.
3. May have history suggestive of foreign body aspiration such as sudden onset of shortness of breath while eating or playing with a small toy/object.
4. May have on exam:
    i. Unilateral, decreased, or no air movement.
    ii. Retractions and accessory muscle use.
    iii. Drooling
    iv. Cyanosis or unconsciousness secondary to hypoxia.

Differential Diagnosis:

1. Anaphylaxis
2. Croup
3. Epiglottitis
4. Bacterial tracheitis
5. Asthma

Protocol:

EMT

1. If the patient is awake, alert, and still breathing, minimize upsetting procedures:
    a. Perform patient assessment. Do NOT perform a throat exam (may convert partial airway obstruction to full obstruction).
    b. Administer oxygen to correct hypoxia <95%. If patient is a young child, have the parent help administer the oxygen.
    c. Allow the patient to sit up in a position of comfort. If the patient is a young child, keep the patient with the parent and avoid unduly upsetting the child.
    d. Apply cardiac monitor.
    e. Request ALS intercept.
2. If the patient is awake, alert, and obviously choking (complete airway obstruction):
    a. For the infant less than one year, give 5 back slaps and up to 5 chest thrusts. Repeat this until the obstruction is relieved or the patient is unconscious.
    b. For the child older than 1 year old, give abdominal thrusts or Heimlich maneuver until obstruction is relieved or the patient is unconscious.
3. If the patient is unconscious:
    a. Begin CPR and attempt to bag-valve-mask ventilate while preparing for intubation.

AEMT

4. Do not start an IV unless necessary to avoid aggravating the child and worsening the airway obstruction.
5. If wheezing with known FB aspiration, consider albuterol nebulizer treatment.

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6. For diffuse wheezing without known FB aspiration, consider Pediatric Lower Airway Obstruction/Anaphylaxis Protocol.
7. If child is apneic pulseless, and unconscious, using a laryngoscope, visualize the posterior pharynx.
8. Remove any foreign bodies very carefully with a suction device or Magill forceps.
9. If no foreign body is seen, or patient does not begin breathing spontaneously, intubate the trachea. If you suspect foreign body is below the vocal cords but above the carina, it may be necessary to push the foreign body down the right mainstem bronchus with the ET tube to aerate at least the left lung.

PARAMEDIC

10. Paramedics may perform all procedures listed under AEMT on any patient regardless of breathing or pulse status.
11. If you cannot establish an orotracheal airway, consider needle cricothyrotomy.

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Pediatric: Lower Airway Obstruction/Anaphylaxis

Wheezing in the breathing patient with respiratory distress indicates lower airway disease, which may come from a variety of causes. The patient with severe lower airway disease may have altered LOC, be unable to talk, may have absent or markedly decreased breath sounds and severe retractions with accessory muscle use.

EMT

1. Request ALS intercept.
2. Consult Broselow Tape for dosing and equipment recommendations.
3. Place child in position of comfort, encourage parent to hold child secure position. Keep child and parent CALM.
4. Quickly obtain history and non-invasive respiratory assessment.
5. Administer 100% oxygen in the least threatening manner.
6. If respiratory effort is insufficient or patient is becoming unconscious, assist ventilations with bag-valve-mask.
   i. If allergic reaction is suspected:
      a. Secure airway and support with oxygen.
      b. If severe allergic reaction, may administer one of the following and repeat every 5-15 mins as needed:
      (Agency medical director must approve this change. Agency responsible for training prior to implementation.)
         1. For patients 7.5kg-10kg:
            i. Administer Auvi-Q 0.1mg auto injector –OR--
            ii. Administer epinephrine (1mg/1mL) 0.1 mL IM.
         2. For patients >10kg and <25kg:
            i. Administer EpiPen Jr (0.15mg/dose) IM –OR—
            ii. Administer epinephrine (1mg/1mL) 0.15mL IM.
         3. For patients >25kg:
            i. Administer EpiPen (0.3mg/dose) IM –OR—
            ii. Administer epinephrine (1mg/1mL) 0.3mL IM.
7. IF MEDICATION IS NOT AVAILABLE- Transport immediately, unless ALS unit is en-route and has an ETA of less than 5 minutes
8. Administer a DuoNeb 3mL aerosol with 6 l/min oxygen over 10-15 minutes. Observe and document child's response. If no improvement, notify receiving facility or Medical Control.
9. Ask patient or bystanders if an emergency or rescue inhaler has been prescribed for these situations. If they have the medication with them, assist with the administration of medication per protocol, then transport patient.

AEMT

Treatment continuation from above

1. Reassess breath sounds.
2. DO NOT establish IV access unless child is in arrest or lethargic. Do not agitate child.
   i. If allergic reaction is suspected.
      a. Administer epinephrine 1mg/1mL 0.01 mg/kg SQ (maximum dose of 0.3 mg).
      b. -OR- Administer epinephrine auto injector per EMT section above.
   ii. For other causes of wheezing:
      a. Administer a DuoNeb 3mL aerosol with 6 l/min oxygen over 10-15 minutes. Observe and document child's response. If no improvement, notify receiving facility or Medical Control.
      b. DO NOT attempt invasive airway unless child has respiratory arrest.

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Pediatric: Lower Airway Obstruction/Anaphylaxis (cont'd)

Paramedic

Treatment continuation from above

1. Reassess breath sounds and treat as follows
    i. If allergic reaction is suspected:
        a. Administer Benadryl (diphenhydramine) 1 mg/kg IV/IO/IM (maximum dose 50 mg)
        b. Administer Solumedrol 1-2mg/kg IV/IO/IM.
    ii. For other causes of wheezing:
        a. Administer a DuoNeb 3mL aerosol with 6 L/min oxygen over 10-15 minutes. Observe and document child's response. If no improvement, notify receiving facility or Medical Control and consider repeating aerosol up to three times. NOTE: This is especially indicated when drug reactions are suspected.

        b. Administer one of the following:
            i. Decadron 0.3-0.5mg/kg maximum 10 mg IV/IM/PO (parenteral formulation may be given PO)
            ii. Solumedrol 1-2mg/kg IV/IO or:
            iii. Solumedrol (125mg/2mL) IV solution administered PO:
                1. Ages 3-7 years: 0.5mL
                2. Ages 8-16: 1mL
        c. Consider CPAP
        d. If severe asthma is considered, and is not responding to treatment, administer epinephrine 1mg/1mL:
            i. Less than 40kg: 0.15mg IM
            ii. Over 40kg: 0.3mg IM

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Pediatric: Seizure

GENERAL CONSIDERATIONS

1. The seizure may be stopped by the time the EMS professionals arrive. The patient will normally be in the postictal state.
2. The basic rule with seizures is to "protect and support" the patient.
3. Aspiration precautions should include:
   i. Coma position: a left side-lying position with the head lowered 15 to 30 degrees.
   ii. Suction readily available.
   iii. Clear mouth of foreign bodies (food, gum, etc.)
4. Febrile Seizures (seizures with fever) are common in children and should be treated like other seizures.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Assess the ABCs - support airway and ventilation PRN. Do not attempt to place an oral airway or orally suction during an active seizure.
3. Initiate O2 and apply pulse oximeter.
4. Complete and record all vital signs-repeat frequently and record new findings.
5. Check blood glucose. If ≤ 80 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol

AEMT

Treatment continuation from above

If patient is seizing, and IV access has not been established:

1. Administer Midazolam (Versed) IM
   i. ≤12kg: 0.2mg/kg IM. DO NOT ATTEMPT IV/IO ACCESS UNTIL Midazolam IM given.
   ii. 13-40kg: 5mg IM. DO NOT ATTEMPT IV/IO ACCESS UNTIL Midazolam IM given.
   iii. Above 40mg: 10mg IM. DO NOT ATTEMPT IV/IO ACCESS UNTIL Midazolam IM given.
2. Initiate vascular access, cardiac monitoring, end-tidal waveform capnography.
3. If IV established and Midazolam IM has not been administered, administer Midazolam (Versed) 0.1mg/kg IV/IO (max individual dose 5mg).
   i. After Drug administration monitor airway and be prepared assist ventilation with BVM.
   ii. Consider placing the patient on end-tidal capnography to further monitor ventilation.

Paramedic

Treatment continuation from above

4. If the patient continues to seize despite above treatments, contact medical control for possible further orders.
5. Monitor for hypotension and respiratory depression.

B	EMT
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P	Paramedic

Pediatric: Shock

GENERAL CONSIDERATIONS

1. Shock is not only caused by blood loss. The EMS professional must evaluate for fluid loss from other causes such as excessive vomiting and/or diarrhea, heat exposure, severe infection, severe allergic reaction (anaphylaxis), spinal trauma, and heart failure.
2. Do not use only the patient's blood pressure in evaluating shock; also look for lower body temperature, poor capillary refill, decreased level of consciousness, increased heart rate, and/or poor skin color or turgor. Tachycardia is often the first sign of shock.

NOTE: Do NOT depend on blood pressure.

1. Transport should not be delayed. The airway must be secured and then transport immediately. It is preferable IVs and/or IOs be done during transportation.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Open and maintain the airway with sniffing position and the use of an oral airway if needed.
3. Control all external bleeding and evaluate for internal hemorrhage and/or dehydration.
4. Provide 100% oxygen through NRB mask, and if needed assist ventilations with a BVM.
5. Obtain vital signs: pulse and respirations.
6. For anaphylactic shock, the EMT may assist the patient with the administration of an epinephrine auto-injector prescribed for the patient with a written protocol upon request of the patient or the patient's legal guardian. The EMT may assist with the administration of an EMS-provided epinephrine auto-injector with verbal medical direction.
7. Establish communications with Medical Control and advice of patient condition. Transport IMMEDIATELY unless an advanced life support unit is en-route and has an ETA of less than 5 minutes to the scene.

AEMT/Paramedic

Treatment continuation from above

1. Hypovolemic, neurogenic, or septic shock:
   i. Start IV of normal saline and apply cardiac monitor during transport to the hospital.
   ii. **DO NOT DELAY TRANSPORT TO ESTABLISH AN IV.**
2. Administer IV fluid bolus of 20 ml/kg of NS if signs of hypo perfusion or dehydration are present
3. Transport. Repeat bolus during transport if patient does not respond to first bolus.
4. Consider administration of push-dose epinephrine per Push Dose Epinephrine procedure.
5. Check blood sugar and treat as per the Pediatric Hypoglycemia protocol.
6. Anaphylactic shock: refer to Lower Airway Obstruction / Anaphylaxis protocol.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric BRUE (Formerly ALTE)

GENERAL CONSIDERATIONS:

- Applies to patients < 1 year of age.
- Some infants have transient events involving a combination of altered mental status, respiration and muscle tone that are alarming to caregivers. These were formerly called "apparent life-threatening events" (ALTE). The new term is "brief, resolved, unexplained event" (BRUE).
- A BRUE is defined as lasting < 1 minute with one or more of the following:
  - Absent, decreased, or irregular breathing.
  - Cyanosis or pallor.
  - Altered level of responsiveness.
  - Marked change in muscle tone.
- Infants must otherwise appear well and be back at their baseline state of health at the time of presentation. Infants who are febrile, coughing, or showing any signs of illness are not having a BRUE.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Assess the ABCs - support airway and ventilation PRN. Do not attempt to place an oral airway or orally suction during an active seizure.
3. Apply pulse oximeter and administer oxygen if indicated.
4. Complete and record all vital signs-repeat frequently and record new findings.
5. Check blood glucose. If ≤ 80 mg/dl or ≥ 400 mg/dl, see Hypo-/Hyperglycemia Protocol

AEMT/Paramedic

Treatment continuation from above

6. Place the patient on the cardiac monitor.
7. Determine if the event was high risk by one or more of the following:
   A. Age < 60 days.
   B. The patient was born before 32 weeks' gestation or has a corrected gestational age (post-conception age) < 45 weeks.
   C. Gestational weeks at birth plus weeks since birth equals corrected age. Example: Born at 36 weeks' gestation. Now 7 weeks old. Corrected age = 43 weeks.
   D. CPR was performed by a trained medical professional.
   E. Event lasted > 1 minute.
   F. Has had a BRUE/ALTE in the past.
   G. Features of concern in the patient's history such as concern for child abuse, family history of sudden death or SIDS.
8. High risk BRUE should be transported to a pediatric hospital directly as they may be admitted for observation.
9. BRUE not established as high risk should still be transported to the emergency department. Contact Medical Control prior to obtaining a refusal. Consider having the caregiver talk to Medical Control if they insist on refusal. All refusals should be encouraged to follow up with PCP closely.
10. Continually reassess throughout transport.
11. Do not establish IV/IO access unless there is a specific indication or treatment is required.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Children with Special Needs (CSHCN)

SPECIAL CONSIDERATIONS

1. Treat the ABCs first. Treat the child, not the equipment. If the emergency is due to an equipment malfunction, manage the child appropriately using your own equipment.
2. Children formerly cared for in hospitals or chronic care facilities are often cared for in homes by parents or other caretakers. These children may have self-limiting or chronic diseases. There are a multitude of underlying medical conditions that may categorize children as having special needs. Many are often unstable and may frequently involve the EMS system for evaluation, stabilization, and transport. Special needs children include technology-assisted children such as those with tracheostomy tubes with or without assisted ventilation, children with gastrostomy tubes, and children with indwelling central lines. The most serious complications are related to tracheostomy problems due to the high risk of airway compromise and resultant hypoxia.
3. CSHCN have many allergies. Children with spina bifida are often allergic to latex. Before treating a patient, ask the caregivers if the children are allergic to latex or have any other allergies. If possible, keep latex-free equipment. (Some regularly used equipment that contains latex includes gloves, oxygen masks, IV tubing BVM, blood pressure cuff, IV catheters, etc.)
4. Knowing which children in each area have special needs and keeping a logbook is encouraged.
5. Parents and caretakers are usually trained in emergency management and can be of assistance to EMS personnel. Listen carefully to the caregiver and follow his/her guidance regarding the child's treatment.
6. Children with chronic illnesses often have different physical development from well children. Therefore, their baseline vital signs may differ from normal standards. The size and developmental level may be different from age-based norms and length-based tapes used to calculate drug dosages. Ask the caregiver if the child normally has abnormal vital signs. (i.e., a fast heart rate or a low pulse ox meter reading)
7. Some CSHCN may have sensory deficits (i.e., they may be hearing impaired or blind) yet may have age-appropriate cognitive abilities. Follow the caregivers' lead in talking to and comforting a child during treatment and transport. Do not assume that a CSHCN is developmentally delayed.
8. When moving a special needs child, a slow careful transfer with two or more people is preferable. Do not try to straighten or unnecessarily manipulate contracted extremities as it may cause injury or pain to the child. Certain medical conditions will require special care. Again, consult the child's caregiver.
9. Caregivers of CSHCN often carry "go bags" or diaper bags that contain supplies to use with the child's medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. Before leaving the scene, ask the caregivers if they have a "go bag" and carry it with you.
10. Caregivers may also carry a brief medical information form or card. The child may be enrolled in a medical alert program whereby emergency personnel can get quick access to the child's medical history. Ask the caregivers if they have emergency information form or some other form of medical information for their child.
11. Caregivers of CSHCN often prefer that their child be transported to the hospital where the child is regularly followed or the "home" hospital. When making the decision as to where to transport a CSHCN, consider: local protocols, the child's condition, and capabilities of the local hospital, caregivers' request, ability to transport to certain locations and the ability to request helicopter transport for distant home hospitals

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Emergencies in Children with Tracheostomies

General Consideration

The child should be examined for other possible problems. Do not assume the problem is with the tracheostomy tube.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Examine the child quickly for possible causes of distress which may be easily correctable, such as a detached oxygen source.
3. Try to establish the child's baseline: the child may never look normal.
4. If on a ventilator, remove the child from the ventilator and bag the child with a secure oxygen source; there may be a problem with the ventilator or oxygen source.
5. If still no improvement immediately transport to the nearest medical facility; initiate appropriate Resuscitation as needed. Suction the child through the previously established endotracheal airway device or stoma as accumulation of debris is a common cause of obstruction.

AEMT

Treatment continuation from above

1. If suctioning does not relieve the obstruction and the patient has a tracheostomy tube and the tracheostomy is mature (at least 7-14 days), remove the inner cannula. If it is the cause of obstruction, there should be immediate improvement. A tracheostomy tube that has been previously removed may be replaced after ensuring that the lumen has been cleaned and all obstructive debris has been cleared from the lumen.
2. Rarely, a tracheostomy tube can erode through a major artery in the neck, any significant bleeding from the site, can be an ominous finding.

Paramedic

Treatment continuation from above

1. If there is no improvement after suctioning and/or removal of the inner cannula and the child is in severe respiratory distress, an occluded tracheostomy tube should be removed and ventilation via bag valve mask and should be attempted. The removal of endotracheal devices following recent surgical placement should be avoided due to increased potential of airway collapse and resultant respiratory compromise. If an endotracheal or tracheostomy tube is available, insert it into the stoma and resume ventilation (a previously used tracheostomy tube following cleansing and removal of any obstructive debris from the lumen can be inserted.)
2. If there is still no improvement, see the respiratory distress protocol.
3. Endotracheal intubation can safely be performed after removal of the tracheostomy
4. Rarely a tracheostomy tube can erode through the innominate artery contact medical control at once if significant bleeding is encountered. This complication is frequently fatal, the best means to control the bleeding include overinflating the trach cuff or utilizing standard endotracheal intubation with digital pressure to tamponade the bleed.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Emergencies in Children with In-Dwelling Central Lines

GENERAL CONSIDERATION

1. Children may have central lines in several locations and some complications are due to location; some central lines are located under the skin and can be felt but not seen.
2. The most common emergencies with central lines include, blockage of the line, complete or partial accidental removal, complete or partial laceration of the line, or possible infection in the central line which may lead to sepsis.

Paramedic

1. Consult Broselow Tape for dosing and equipment recommendations.
2. If line is blocked, do not attempt to force the catheter open, transport to a facility capable of managing central lines.
3. For complete removal, do not attempt to reinsert, transport to emergency department.
   - Infections are a common complication; don't try to push a line back in, even if it is only slightly out.
4. For complete removal, maintain pressure on site until bleeding has stopped; transport child and catheter to emergency department (part of the catheter may have broken off.)
   Always bring the line with you to the hospital.
5. For partial or complete laceration of the line, clamp proximally to laceration utilizing a padded clamp and transport child and catheter to emergency department.
6. For children with sudden deterioration begin basic resuscitation and transport to emergency facility (child may have pneumothorax or internal bleeding.)
7. If there are fluids infusing through the central line, determine the nature of the fluid and the time that the fluid was started.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Emergencies in Children with Gastrostomy Tubes

GENERAL CONSIDERATIONS

1. Children with gastrostomy tubes may have complications of obstruction or dislodgment; obstruction is usually not an emergency, but the child may require transport; dislodgment is not life threatening but the tube should be replaced as soon as possible. Both conditions are easily recognized.
2. The child should be examined for any other possible problems.

EMT/AEMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Transport the child and the tube to the nearest facility capable of replacing the tube; this is not an emergency transport.
3. Do not attempt to replace the tube; it is not as easy as it seems and there may be other complications.
4. Cover the site with a sterile dressing and control any bleeding with direct pressure.

Paramedic

1. If there are fluids infusing through the feeding tube, determine the nature of the fluids and the time that the fluids were started. If the tube appears damaged, or the site is irritated, stop all infusing fluids, flush the tube with water, and clamp the tube.

Medical Director Note: Once the tube has been removed the site will start to close. Therefore, it should be replaced as soon as reasonably possible. Encourage transport to the Emergency Department to have this replaced.

B	EMT
A	Advanced EMT
P	Paramedic

Pediatric: Emergencies in Children on Ventilators

GENERAL CONSIDERATIONS

1. Children on mechanical ventilation may exhibit sudden or gradual deterioration, cardiac arrest, increased oxygen demand, increased respiratory rate, retractions, or change in mental status.
2. Examine the child quickly for possible causes of distress which may be easily correctable (e.g., detached oxygen source) the caretakers will often have done this but double check.
3. Medications the child is presently taking may be the cause of deterioration.
4. Try to establish the child's baseline; the child may never look normal.

EMT

1. Consult Broselow Tape for dosing and equipment recommendations.
2. Remove the patient from the ventilator and begin bag-valve-mask ventilation.
3. Place the patient on wave-form capnography.
4. Suction the child through a previously established endotracheal device as accumulation of debris is a common cause of obstruction. If there is no improvement, immediately transport to the nearest medical facility; initiate appropriate resuscitation as needed.

AEMT

1. If suctioning does not relieve the obstruction and the patient has a tracheostomy tube and the tracheostomy is mature (at least 7-14 days), remove the inner cannula. If it is the cause of obstruction, there should be immediate improvement. A tracheostomy tube that has been previously removed may be replaced after ensuring that the lumen has been cleaned and all obstructive debris has been cleared from the lumen.

Paramedic

1. If there is no improvement after suctioning and/or removal of the inner cannula and the child is in severe respiratory distress, an occluded endotracheal or tracheostomy tube should be removed and ventilation via bag valve mask and should be attempted. The removal of endotracheal devices following recent surgical placement should be avoided due to increased potential of airway collapse or creation of a false passage and resultant respiratory compromise. If another endotracheal or tracheostomy tube is available, insert into the stoma and resume ventilation (a previously used tracheostomy tube following cleansing and removal of any obstructive debris from the lumen can be inserted.)
2. If there is still no improvement, see the Respiratory Distress protocol.
3. Verify, if using a cuffed tracheostomy, that the cuff is inflated.
4. Consider pneumothorax as a cause of respiratory distress.
5. Endotracheal intubation can safely be performed after removal of the tracheostomy.
6. Rarely a tracheostomy tube can erode through the innominate artery. Any significant bleeding from the site can be an ominous finding. Contact medical control at once if significant bleeding is encountered. This complication is frequently fatal, the best means to control the bleeding include overinflating the trach cuff or utilizing standard endotracheal intubation with digital pressure to tamponade the bleed.

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

Section 5: OB/GYN

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

Obstetrical Emergencies - During Pregnancy

Continually reassess ABCDE's and keep reassessing and intervening as needed

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. TRAUMA
    i. The best initial treatment of the fetus is the provision of optimal resuscitation of the mother.
    ii. Because of their increased intravascular volume, pregnant patients can lose a significant amount of blood before tachycardia, hypotension, or other signs of shock develop.
    iii. The highest incident of fetal deaths occurs secondary to severe maternal shock, which is associated with a fetal mortality rate of 80%.
    iv. The fetus may be in distress and the placenta deprived of vital perfusion while the mother's condition and vital signs appear stable.
    v. Oxygen saturation to maintain SpO_2 >94% to ensure adequate fetal oxygenation.
    vi. Because of their adverse effect on utero-placental perfusion, vasopressors in pregnant women should be used only for intractable hypotension that is unresponsive to fluid resuscitation.
    vii. After mid-pregnancy, the gravid uterus should be moved off the inferior vena cava to increase venous return and cardiac output in the acutely injured pregnant woman. This may be achieved by manual displacement of the uterus or left lateral tilt to 30 degrees. Care should be taken if the patient is in spinal precautions. CPR should be performed in this position. Lying the patient flat significantly inhibits venous return.
    viii. Fetal loss can occur even when the mother has incurred no abdominal injuries.
    ix. Severe injuries are much more likely to result in fetal loss. However, there is a much higher frequency of minor trauma due to minor maternal mechanism of injury.
    x. Intubation is more difficult with failed intubations 8x more likely. A smaller size ET tube is recommended.
    xi. Insertion of two large bore IVs is recommended for all seriously injured pregnant trauma patients to facilitate initial rapid fluid infusion.
    xii. Avoid the urge to focus on the fetus. Babies do not do well if mothers do not do well.
    xiii. Every pregnant woman who sustains trauma should be asked questions specifically about domestic violence.
    xiv. Patients should be transported to a trauma center with obstetrical capabilities when possible.
4. SEIZURES:
    i. Treat per Seizure protocol.
5. VAGINAL BLEEDING DURING PREGNANCY < 20 WEEKS
    i. Determine gestational age is known, or the first day of the last menstrual period.
    ii. Ask about presence of additional symptoms, especially syncope and abdominal pain.
    iii. Apply external vaginal pads; bring any fetal tissues to hospital.
    iv. Delayed post-partum hemorrhage can occur up to 12 weeks after delivery and thus can occur in a patient that has been discharged from the hospital.
6. VAGINAL BLEEDING, PREGNANCY > 20 WEEKS, ABRUPTION OR PLACENTA PREVIA

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

i. Apply external vaginal pads; bring any fetal tissues to hospital.
ii. Transport on left side; assess fetal heart tones every 5 minutes (if doppler device is available).

7. Transport to an appropriate facility following General Transport Guidelines & Principles.
8. Notify receiving hospital with patient information as soon as possible.

AEMT

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.
3. Refer to Seizure Protocol as applicable.

Paramedic

Treatment continuation from above

ECLAMPSIA, SEIZURE DURING PREGNANCY

1. Refer to Seizure Protocol for treatment.
2. If actively seizing, give Versed (midazolam) first line as per the general seizure protocol.
3. For women with eclampsia, administer magnesium sulfate even if the patient is no longer seizing.
4. We suggest using an intravascular magnesium sulfate regimen rather than an intramuscular regimen or IO regimen when IV access is available. Administer a 4-6-gram loading dose over 20 to 25 minutes.
    i. One method of diluting Magnesium Sulfate is to mix 4-6 grams in 100 ml of normal saline and run in over 20-25 minutes.
    ii. Alternatively give 10g deep IM "Z track" in 2 divided 5g injections with a 3" 20-gauge needle in each buttock. Gently massage the site after administration.
    iii. Be cautious of hypotension caused by Magnesium Sulfate.
5. Magnesium Sulfate is contraindicated in a patient with a known history of myasthenia gravis.
6. Beware the combination of Versed and Magnesium Sulfate can lead to severe respiratory depression.
7. The threshold for initiating anti-hypertensive therapy is sustained systolic BP ≥160 and/or diastolic BP ≥110 on two occasions at least 15 minutes apart. Please refer to the next protocol.

If possible, transport patient to hospital where they are planning to deliver or have been getting OB care.

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

Obstetrical Emergencies - Hypertensive Crisis in Pregnancy

Inclusion Criteria:

1. Pregnant females.
2. Post-partum females up to 1 year post-delivery.
3. Sustained systolic blood pressure of ≥160 and/or diastolic BP ≥110 on two occasions at least 15 minutes apart.

Paramedic

1. Place the patient on continuous cardiac monitoring and pulse oximetry.
2. Attempt to establish IV access, but do not delay medication administration because of lack of IV access.
3. Administer nifedipine 10mg by mouth every 15 minutes to a maximum of three doses, checking the BP every 15 minutes.
4. Notify the receiving hospital that the patient met the criteria for Hypertensive Crisis in Pregnancy and that treatment has been initiated with nifedipine.

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

Obstetrical Emergencies - Delivery

Continually reassess ABCDE's and keep reassessing and intervening as needed.

Consideration

1. Attempt to attain sanitary environment.
2. Focused history and physical exam, however, do not perform pelvic exam unless the patient is actively delivering.
3. Develop and implement treatment plan based on assessment findings, resources, and training.

EMT

1. Secure airway following Oxygen, Airway, and Ventilation procedure.
2. Request ALS intercept.
3. Obtain obstetrical history: due date, gestational age in weeks, gravidity (number of pregnancies), parity (number of deliveries), prior complications.
4. Assist with normal delivery.
5. Prepare for neonatal care.
6. As the baby crowns, support the head and perineum with gentle pressure to control the emergence of the head, and minimize perineal trauma.
7. If amniotic membrane is still intact as the head is crowning, rupture with your fingers, forceps, or clamp to allow amniotic fluid to leak out. Note the color and viscosity of the fluid. If, after rupturing the membranes they cover the head and face, wipe them clean with a clean towel.
8. Instruct the mother to push and support the baby's head as it rotates.
9. After the head rotates to the mothers' thigh, guide the head and neck downward to encourage the top shoulder to deliver.
10. When you see the baby's top shoulder deliver, guide the head and neck upward to deliver the bottom shoulder. The rest of the baby should deliver quickly.
11. If the infant is vigorous, delay clamping the umbilical cord for 60 seconds. This helps prevent neonatal anemia, but resuscitation takes priority if the infant has respiratory or circulatory depression. Clamp the umbilical cord by placing the first clamp approximately 4 inches from the baby. Place the second clamp approximately 2 inches further away from the baby. Cut the umbilical cord between the two clamps.
12. Hand the infant to a second provider to establish neonatal care if needed. If the infant is stable, breathing and has good tone, place the infant on the mother's chest, skin to skin, for transport. Encourage breastfeeding.
13. Obtain APGAR score; see chart following.
14. Assist with delivery of the placenta:
    A. DO NOT pull on the umbilical cord to facilitate delivery of the placenta.
    B. DO NOT delay transport waiting for the placenta to deliver.
    C. If the placenta delivers spontaneously, place in a plastic bag and transport to the hospital with the mother and infant.
15. Begin fundal massage by placing a closed fist at the top of the uterus and massaging, without shoving, the uterus until it is firm.
16. Nuchal cord:
    i. Attempt to slip cord over the head.
    ii. Alternatively, it may be possible to slip it back over the shoulders and deliver the body through the loop.

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

iii. If cord is too tight to remove, immediately clamp in two places about 3cm apart and cut between clamps.

17. Prolapsed cord or limb presentation:
    i. With maintaining a pulsatile cord as the objective, two fingers of gloved hand into vagina to raise presenting portion of newborn off the cord.
    ii. If possible, place mother in Trendelenburg position. Otherwise, knee-chest.
    iii. Keep cord moistened with sterile saline.
    iv. Continue to keep pressure off cord throughout transport.
18. Breech presentation:
    i. Position mother with her buttocks at edge of bed, legs flexed.
    ii. Support body as it delivers.
    iii. As the head passes the pubis, apply gentle upward pressure until the mouth appears over the perineum. Immediately suction mouth, then nose.
    iv. If head does not deliver, but newborn is attempting to breath, place gloved hand into the vagina, palm toward newborn's face, forming a "V" with the index and middle finger on either side of the nose. Push the vaginal wall from the face. Attempt to flex the infants head towards the body while elevating the body towards mothers umbilicus while another provider provides fundal pressure. Attempt delivery. If unable to deliver, maintain infants airway which may require elevating the birth canal off of the infants face.
19. Shoulder dystocia:
    i. Position mother with buttocks off the edge of the bed and thighs flexed upward as much as possible.
    ii. Apply firm, open hand pressure above the symphysis pubis.
    iii. Apply high flow oxygen and transport to closest OB capable facility if possible.
    iv. NEVER pull on the head to extract the baby.
20. Stillborn/abortion:
    i. All products of delivery should be carefully collected and transported with the mother to the hospital.
    ii. If patient refuses transport consultation with on-line medical control and law enforcement is required.
21. Post-Partum Hemorrhage:
    i. Rapidly transport to the closest facility.
    ii. Vigorous fundal massage.
    iii. Apply pressure to any bleeding sites if visible such as vaginal tears.
    iv. Treat as hemorrhagic shock. Do not use TXA until consulting online medical control.
22. Uterine inversion:
    i. Make one attempt to put the uterus back into the vaginal vault. Using the palm of the hand, push the fundus of the inverted uterus toward the vagina. If unsuccessful, cover uterus with moistened sterile gauze.
23. APGAR score at 1 minute and again at 5 minutes.
24. After complete delivery, provide routine newborn care with special attention to maintenance of infant body temperature.
25. Place infant on oxygen and suction if needed.
26. Refer to newborn resuscitation protocol if required.

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

27. Assist with delivery of placenta and begin fundal massage.
28. Transport to an appropriate facility following General Transport Guidelines & Principles.
29. Notify receiving hospital with patient information as soon as possible.
30. If neonate <32 weeks, consider helicopter for transport to NICU.

AEMT & Paramedic

Treatment continuation from above

1. Apply cardiac monitor.
2. Initiate vascular access.

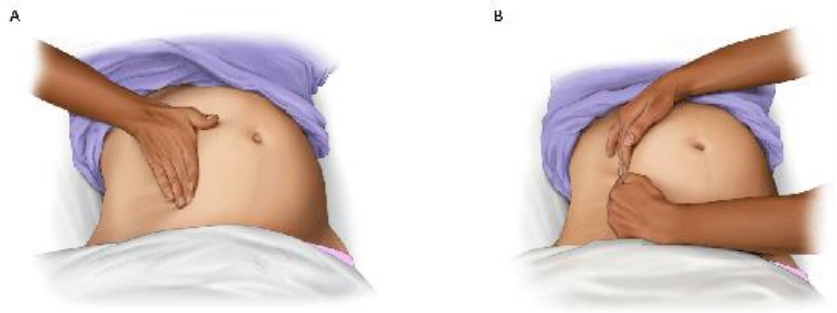
	Signs	- 0 -	- 1 -	- 2 -
A	Appearance	Blue, Pale	Body Pink, Extremities Blue	Completely Pink
P	Pulse	Absent	Slow Or < 100	> 100
G	Grimace (Reflex Irritability)	No Response	Grimace	Cough Or Sneeze
A	Activity (Muscle Tone)	Limp	Some Flexion of Extremities	Active Motion
R	Respiration (Effort)	Absent	Slow, Irregular	Good, Crying

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose

Obstetrical Emergencies: Cardiac Arrest

EMT

1. All pregnant patients greater than 24 weeks (or a fundal height palpated at or above the level of the umbilicus) in cardiac arrest should be transported as soon as possible to the nearest emergency department for a resuscitative hysterotomy (also known as a peri-mortem cesarean section).
2. Management of the pregnant cardiac arrest patient is like the non-pregnant patient; this includes high-quality chest compressions with minimally interrupted CPR, administration of ACLS medications, and defibrillation.
3. If not limited due to body habitus and/or a gravid uterus, chest compressions can be performed with a mechanical device (i.e., LUCAS®).
4. When performing chest compressions, apply manual left uterine displacement to relieve pressure off the inferior vena cava to allow blood flow back to the heart. This can be performed via a one-handed or two-handed technique:
   A. One-handed technique (A): With patient flat on her back and the provider standing on the woman's right side, the provider pushes the women's uterus away (toward the patient's left side)
   B. Two-handed technique (B): With the patient on her back, the provider standing on the woman's left side, the provider uses two hands to pull the women's uterus towards (toward the patient's left side)



5. Airway management in the pregnant patient can be difficult and strong consideration should be for the placement for supraglottic device to reduce the risk of hypoxia to mother and fetus.
6. If the patient is >20 weeks' gestation place in left lateral decubitus position or left lateral tilt to increase venous return.
7. Transport the post-ROSC patient to a hospital with maternity services. If the patient is estimated to be 23 – 31 6/7 weeks gestation and maternal condition allows, proceed to a facility with a level 3 NICU as noted in the imminent delivery protocol.
8. Notify the receiving hospital when in route.

AEMT/ PARAMEDIC

9. If symptomatic hypotension and/or tachycardia, altered mental status, or other signs of shock place 1 or 2 large bore IV's and initiate fluid resuscitation.

Section 6: Procedures

Oxygen Administration Guidelines

Oxygen administration should be based on clinical exam including respiratory effort, oxygen saturation, capnograph and any acute or chronic medical conditions that may be present. In general, any patient with an oxygen saturation of < 95% should be given supplemental oxygen. The following information outlines the appropriate oxygen device, recommended flow, and clinical situation.

1. Nasal cannula: 2-6 LPM for patients in mild distress without signs of hypoxia.
2. Non-rebreather mask: 10-15 LPM for patients in moderate to severe distress with signs of hypoxia.
3. Nebulizer mask or handheld: 6-8 LPM for patients with signs of bronchospasm (wheezing) or poor air movement (tight breath sounds).
4. CPAP: 100 % oxygen through 50 psi DISS for patients with signs of acute pulmonary edema.
5. Bag-Mask Ventilation: 15 LPM for patients requiring ventilatory support.

Airway Procedures:

EMT

1. Basic manual airway opening procedures.
   i. Head tilt/chin lift for unconscious adults in the absence of trauma.
   ii. Modified jaw thrust without head extension for trauma patients.
   iii. Sniffing position without hyperextension for pediatric patient's ≤ 12 years.

2. Basic airway adjunct procedures.
   i. Oral pharyngeal airway (OPA) for patients without a gag reflex.
   ii. Nasal pharyngeal airway (NPA) for patients with a gag reflex and or a clenched jaw.
      a. Do not use in patients with severe maxillofacial trauma or suspected basilar skull fractures.
   iii. Supraglottic and dual lumen devices may be used if: (King Airway/iGel/AirQ)
      a. The patient is apneic/pulseless –AND--
      b. ALS intercept is unavailable, or response is > 10 minutes.

AEMT

Treatment continuation from above

1. Orotracheal intubation: (preferred technique for all the following situations)
   i. Any apneic or pulseless patient. (Cardiac or respiratory arrest)
   ii. Patient's 12 years of age or older.

PARAMEDIC

Treatment continuation from above

1. Intubate as clinically appropriate per Procedure.
2. Cricothyroidotomy or QuickTrach is the surgical airway of choice for patients that urgently need an airway for ventilation when all other methods to facilitate VENTILATION have failed.

Ventilation Guidelines

Ventilations:

Bag-mask positive pressure ventilations should be performed on all patients requiring ventilatory support. The following information outlines the appropriate rates of ventilation:

1. Cardiac arrest
    i. Adult/Pediatric 8-10 breaths per minute.
2. Ventilatory support with a perfusing rhythm.
    i. Adult 10-12 breaths per minute (PCO2 35-45 mm Hg).
    ii. Pediatric 12-20 breaths per minute (PCO2 35-45 mm Hg)

Endotracheal Intubation

NOTE: Endotracheal intubation is outside of the Ohio EMS scope of practice for EMTs effective January 13, 2013.

1. Endotracheal intubation is an Advanced EMT and Paramedic skill. Per the State of Ohio Scope of Practice, Advanced EMTs can use endotracheal intubation for APNEIC and PULSELESS patients only.

AEMT/ PARAMEDIC

Intubation should be attempted on any patient who has no spontaneous respiratory or has significant airway compromise. Paramedic endotracheal intubation may be attempted on patients who are breathing but are unable to protect their own airway. Patients who are in extreme respiratory distress and are decompensating may be electively intubated by a paramedic.

1. All patients should be pre-oxygenated with 100% oxygen prior to any intubation attempt.
2. The intubation attempt should be no longer than 30 seconds. If longer, the attempt should be stopped, and the patient should be re - oxygenated with 100% oxygen.
3. At no point should CPR be discontinued or "held" for intubation.
4. After the trachea is intubated, proper tube placement must be assured by (and documented):
    i. Observing rise and fall of the chest wall.
    ii. Confirming the presence of bilateral breath sounds by direct auscultation with a stethoscope.
    iii. Confirmation via Wave form capnography. (35-45 mmHg)
    iv. Confirmation via End tidal CO2 detector or other secondary confirmation device.
5. Secure endotracheal tube to patient using commercially available device.
6. If there is any doubt as to proper tube placement, resume ventilation with the bag-valve-mask using 100% oxygen before re- attempting.
7. Intubation should be approached with caution in patients with suspected cervical spine injury. A two-rescuer oral intubation maneuver using cervical spine motion limitations should be utilized.
8. In patients with suspected head injury and who need to be electively intubated, consider:
    i. Administering lidocaine 100mg IV before intubation for head injuries
    ii. Do not delay transport to establish ET airway if BVM or supraglottic device acceptable.
9. Waveform capnography is required for all advanced airways. EMS professionals should apply and utilize these capnography devices according to the manufacturer's recommendations.

Bougie Assisted Intubation

To facilitate oral endotracheal intubation in a patient with a restricted or absent view of the glottic opening.
Procedure:

1. Prepare the patient and equipment for intubation.
2. Place a lubricated ET tube over the proximal (straight) end of the bougie.
3. Curve the bougie and ensure the distal tip is formed into its J shape.
4. Perform laryngoscopy, obtaining the best possible view of the glottic opening / epiglottis.
5. Advance the bougie through the oral cavity with the distal tip curved upward.
6. Visualize the tip of the bougie passing posteriorly to the epiglottis and if possible, anterior to the arytenoids.
7. Continue to advance the bougie into the trachea maintaining an anterior direction.
8. Correct tracheal placement is suggested (not confirmed) by feeling" clicks" as the bougie passes over the tracheal rings or by the bougie stopping against the wall of the trachea / bronchus at the carina.

9. Maintain laryngoscopy, bougie position, and proximal control of the bougie while passing the ET tube over the distal portion of the bougie into the trachea.
10. Consider rotating the ET tube 90 degrees counterclockwise and advancing the tube bevel down to enhance passage of the ET into the trachea.
11. Hold the ET tube in place and carefully remove the bougie.
12. Ventilate / confirm placement of the ET tube and secure in place as described above.
13. Utilize alternate airway techniques if unsuccessful.

Sedation after Intubation

I. GOAL OF PROTOCOL

A. There is a clear need for EMS providers to have the capability to sedate patients after intubation. This is an appropriate intervention for the benefit of the patient to treat the discomfort and anxiety that accompanies intubation.

B. Sedation makes it easier to ventilate the patient, can potentially decrease oxygen demand and makes it less likely that the patient will dislodge the endotracheal tube

II. CONSIDERATIONS

A. Inadequate post intubation management leads to increased pain, anxiety and possibly increased oxygen demand.

B. Post intubation medication management should include a pain medication and a sedative.

C. Pain should be assessed early and often.

D. Medications for pain and sedation are often not immediately available on arrival to the emergency department so medics should continue appropriate dosing up to the transition of care.

III. INCLUSION CRITERIA

A. Intubated patient is requiring pain medication and sedation

B. Patient Intubated with Endotracheal Tube and tube appropriately secured

C. ET tube position has been confirmed

D. Patient monitoring has been established and must include – Cardiac Monitor, Continuous Pulse Ox and Continuous ETCO2

IV. EXCLUSION CRITERIA

A. Age – no age exclusions

B. Allergies – to medications in protocol

Patients that are completely unresponsive do not require sedation but patients that have previously been given a paralytic agent should be given appropriate sedation.

EMT

V. ANY INTUBATED PATIENT MUST BE UNDER THE CARE OF AN ALS PROVIDER

A. While sedation can only be administered by paramedics, after an advanced airway is placed and confirmed, basic EMTs may initiate transport and request ALS intercept if an ALS provider is not immediately available on scene.

B. EMTs must ensure appropriate monitoring and documentation are continued during transport until care is transferred to ALS or the receiving facility.

--NEXT PAGE--

Advanced EMT/Paramedic

VI. PROTOCOL

A. Confirm successful placement of ET tube
B. Initiate and continue required monitoring
C. Establish and maintain vascular access (IV or IO)
D. Assess patient's level of alertness and pain before and after medication administration, document any change in patient's condition and/or every 10 minutes
E. Administer Medication(s) per the following table, administer follow up doses as necessary
F. Notify ED of incoming intubated patient and notify ED staff of sedation that was administered at the time of patient transfer of care
G. All doses below are for administration in the time frame outlined, as needed to maintain sedation.

SBP > 150 or at risk for hypertension: Examples: stroke, stimulant overdose		**SBP < 100 or at risk of hypotension:** Examples: trauma, sepsis, shock, asthma
Fentanyl: 1 mcg/kg (max single dose 200mcg) IV or IO every 5 minutes OR **Morphine: 0.1mg/kg** (max single dose 10mg) IV or IO every 10 minutes **PLUS** **Midazolam: 0.05 mg/kg** (max single dose 5mg) IV or IO every 5 minutes	Patients that are normotensive who are not determined to be at risk of complications of hypertension or hypotension may be treated with either medication regiment.	Ketamine: 2mg/kg IV or IO push, then 1mg/kg every 5 minutes **Appropriate resuscitation should be initiated based on patient condition. It is acceptable to use push dose epi to offset the hemodynamic effects of sedation.**

[1]This table was adapted from the Jackson County EMS 2024 Standing Orders for Post Intubation Management

I-Gel Supraglottic Airway

Emergent airway management of pulseless and apneic patients, either as a primary or secondary (salvage) airway for adults or pediatrics.

1. Contraindications-Responsive patient with intact gag reflex, Patients with known esophageal disease. (varices)

EMT/AEMT/ PARAMEDIC

Allowed use:

EMT: Pulseless and apneic.

AEMT: Apneic

Paramedic: All

Procedure-

1. Select proper size:
   - i. **Yellow (Size 3) Small Adult 30-60Kg**
   - ii. **Green (Size 4) Medium Adult 50-90Kg**
   - iii. **Orange (Size 5 Large Adult+ 90+Kg**
2. Open the i-gel package, and on a flat surface take out the protective cradle containing the device.
3. Remove the i-gel and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger.
4. Place a small bolus of a water-based lubricant, such as K-Y Jelly, onto the middle of the smooth surface of the protective cradle in preparation for lubrication.
5. Grasp the i-gel with the opposite (free) hand along the integral bite block and lubricate the back, sides, and front of the cuff with a thin layer of lubricant.
6. Place the i-gel back into the protective cradle in preparation for insertion.
7. Remove the i-gel from the protective cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient. The patient should be in the 'sniffing the morning air' position with head extended and neck flexed. The chin should be gently pressed down before proceeding. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.
8. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
9. The tip of the airway should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite-block.
10. Commercial tube securement devices are the strongly preferred method of securing the airway.
11. If no commercial tube securement device is available, the i-gel should be taped down from 'maxilla to maxilla'.
12. If there is early resistance during insertion a 'jaw thrust' (above) or 'Insertion with Deep Rotation' (right) is recommended.
13. Do not put an endotracheal tube into the iGel as a means of intubating.

Do not give medications down I-Gel tube

Using the i-gel® supraglottic airway

Preparations for use

1

Open the **i-gel** package, and on a flat surface take out the protective cradle containing the device.

2

Remove the **i-gel** and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger.

3

Place a small bolus of a water-based lubricant, such as K-Y Jelly, onto the middle of the smooth surface of the protective cradle in preparation for lubrication.

4

Grasp the **i-gel** with the opposite (free) hand along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant.

Insertion technique

5

Place the **i-gel** back into the protective cradle in preparation for insertion.

6

Remove the i-gel from the protective cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the **i-gel** cuff outlet is facing towards the chin of the patient. The patient should be in the 'sniffing the morning air' position with head extended and neck flexed. The chin should be gently pressed down before proceeding. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.

7

Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a **definitive resistance** is felt.

8

The tip of the airway should be located into the upper oesophageal opening (a) and the cuff should be located against the laryngeal framework (b). The incisors should be resting on the integral bite-block (c).

9

i-gel should be taped down from 'maxilla to maxilla'.

10

If there is early resistance during insertion a 'jaw thrust' (above) or 'Insertion with Deep Rotation' (right) is recommended.

These instructions do NOT constitute a comprehensive guide to the preparation, insertion and use of the i-gel. The user should first familiarise themselves with the complete user guide before attempting to use the i-gel. Copies are available by contacting Intersurgical or by visiting our website www.i-gel.com

The i-gel must always be separated from the protective cradle prior to insertion. The cradle is not an introducer and must never be inserted into the patient's mouth.

K-Y Jelly® is a registered trademark of Johnson and Johnson Inc.

INTERSURGICAL
COMPLETE RESPIRATORY SYSTEMS

i-gel

Natural airway management

i-gel size	Patient size	Patient weight guidance (kg)
3	Small adult	30-60
4	Medium adult	50-90
5	Large adult+	90+

Important notes to the recommended insertion technique

Sometimes a feel of 'give-way' is felt before the end point resistance is met. This is due to the passage of the bowl of the i-gel through the faucial pillars. It is important to continue to insert the device until a **definitive resistance** is felt.

Once definitive resistance is met and the teeth are located on the integral bite block, do not repeatedly push i-gel down or apply excessive force during insertion.

No more than three attempts in one patient should be attempted.

It is not necessary to insert fingers or thumbs into the patients mouth during the process of inserting the device.

visit
www.i-gel.com
T: 0118 9656 300
info@intersurgical.com

@intersurgical /intersurgicaligelairway
davesairways /intersurgical

Airway management has evolved

i-gel_using_poster 05.13

King Airway Device

Emergent airway management of pulseless and apneic patients, either as a primary or secondary (salvage) airway for adults or pediatrics.

1. Contraindications-Responsive patient with intact gag reflex, Patients with known esophageal disease. (varices)

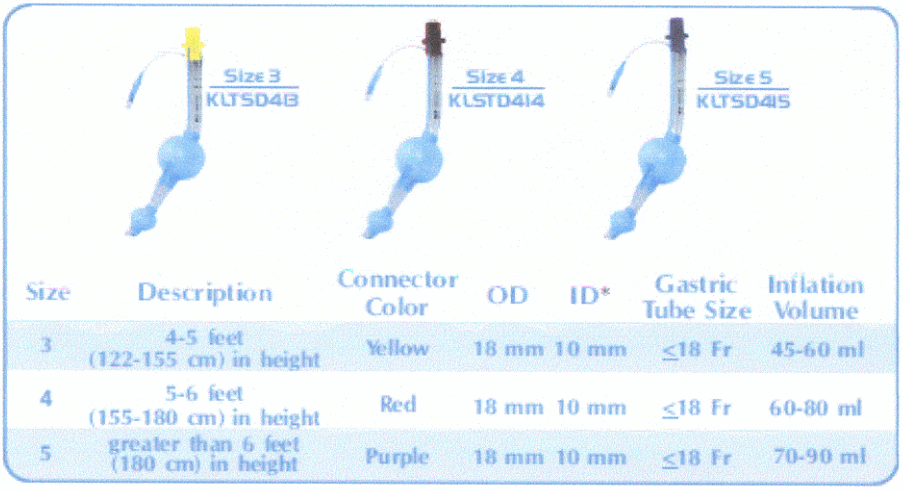
EMT/AEMT/ PARAMEDIC

Allowed use:
EMT: Pulseless and apneic.
AEMT: Apneic.
Paramedic: All.

Procedure-

1. Hold the King Airway at the connector, using the dominant hand.
2. With non-dominant hand, hold mouth open and apply chin lift.
3. Using a lateral approach, introduce device into corner of mouth.
4. Advance tip behind the base of the tongue, while rotating tube back to midline so that the blue orientation line faces the chin of the patient.
5. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
6. Attach the syringe and inflate the cuffs to the appropriate volume:
   i. **SIZE 2 = 25-35 ml** **SIZE 4 = 50-70 ml**
   ii. **SIZE 2.5 = 30-40 ml** **SIZE 5 = 60-80 ml**
   iii. **SIZE 3 = 40-55 ml**
7. Attach a bag-valve device to the connector. While gently bagging the patient to assess ventilation, gently withdraw the tube until ventilation is easy and free flowing (large tidal volume with minimal airway pressure).
8. Adjust cuff inflation, if necessary, to obtain a seal of the airway.
9. After placement, perform standard checks for breath sounds and utilize an appropriate carbon dioxide detection device, as required by protocol.
10. Commercial tube securement devices are the strongly preferred method of securing the airway.

Do not give medications down King tube



Size	Description	Connector Color	OD	ID*	Gastric Tube Size	Inflation Volume
3	4-5 feet (122-155 cm) in height	Yellow	18 mm	10 mm	≤18 Fr	45-60 ml
4	5-6 feet (155-180 cm) in height	Red	18 mm	10 mm	≤18 Fr	60-80 ml
5	greater than 6 feet (180 cm) in height	Purple	18 mm	10 mm	≤18 Fr	70-90 ml

Medical Director's note: Insert with caution failures occur due to balloon rubbing against teeth during insertion.

Cricothyroidotomy Guidelines

When all other airway management measures have failed, and the patient needs an airway immediately consider cricothyrotomy for adults.

PARAMEDIC

Indications – unable to manage airway by other methods.

1. Cervical spine injuries.
2. Maxillofacial trauma.
3. Laryngeal trauma.
4. Oropharyngeal obstruction.
5. All other advanced airway management options are contraindicated.

Complications:

1. Hemorrhage or hematoma formation.
2. Aspiration.
3. Creation of false passage into the tissues.
4. Subglottic stenosis/edema.
5. Laryngeal stenosis.
6. Laceration of esophagus or trachea.
7. Vocal cord paralysis / voice change.

Surgical Cricothyroidotomy – manufactured cricothyroidotomy kits are preferred. Follow manufacturer's recommendations for technique.

For manual surgical cricothyrotomy:

1. Place patient in supine position with neck in neutral position.
2. Palpate thyroid notch, cricothyroid interval, and sternal notch for orientation.
3. Prep area with antiseptic solution.
4. Stabilize thyroid cartilage with one hand and maintain stabilization until trachea is intubated.
5. Make longitudinal skin incision over the cricothyroid membrane, and carefully incise through membrane transversely.
6. Insert scalpel handle into the incision and rotate it 90° to open the airway. A hemostat or tracheal spreader also may be used instead of the scalpel handle. Insert bougie to maintain Lumen. The thread tube over the bougie.
7. Be aware that the tube does not have to go very far
8. Inflate the cuff and ventilate the patient.
9. Observe lung inflation and auscultate the chest for adequate ventilation.
10. Secure the tube.

Cricothyroidotomy Guidelines (cont.)

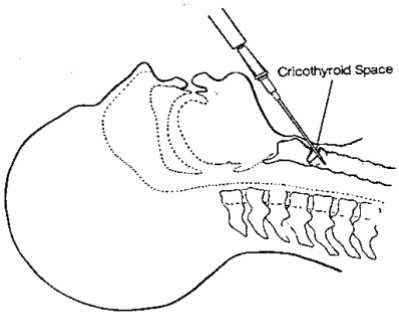
Needle Cricothyroidotomy

A. EQUIPMENT NEEDED:

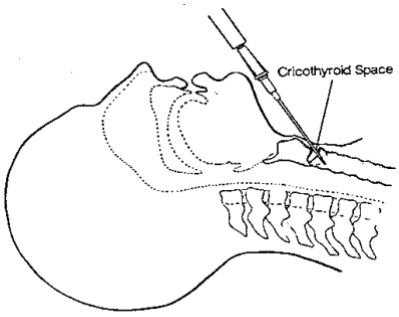
<5 years old	≥5 years old
14g (if >5kg) or 18g (if <5kg) Angiocath type without safety/locking mechanism	14g Angiocath type without safety/locking mechanism
IV tubing attached to 2.5mm ET tube adapter	Jet ventilator device -OR- Oxygen tubing with 3 way stop-cock attached
BVM with pop-off valve safety deactivated	

1. Saline flush
2. Cleaning swab
3. Sterile gloves
4. Clean towel
5. Oxygen source

1. Place patient in supine position
2. Prep area with antiseptic solution
3. Attach a 12-14-gauge, 8.5 cm, over-the-needle catheter to 5-10 ml syringe
4. Palpate cricothyroid membrane, anteriorly, between the thyroid and cricoid cartilages.
5. Stabilize the trachea with the thumb and forefinger of one hand to prevent lateral movement of the trachea.
6. Insert the needle into the cricothyroid membrane at 45° angle caudally, while applying negative pressure with the syringe.

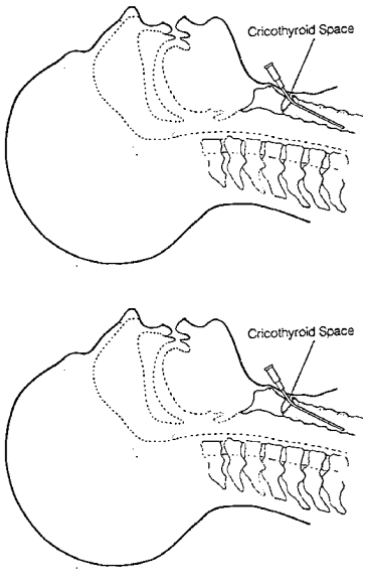


14 Gauge Catheter Insertion



14 Gauge Catheter Insertion

7. Aspiration of air signifies in a syringe partially filled with saline. Look for bubbles.
8. Advance the catheter downward and remove the needle and syringe.



9. <u>If patient is <5 years of age:</u>
    1. Remove 2.5mm endotracheal tube adapter from endotracheal tube
    2. Cut standard IV connection tubing so that the 2.5mm adapter can be connected to the open end and the Luer lock can be connected to the angiocatheter
    3. Attach bag-valve-mask to the endotracheal tube adapter and oxygenate the patient at a rate of at least 20 breaths per minute (1 breath every 3 seconds)
10. <u>If patient is ≥5 years of age:</u>
    1. Remove the needle with the syringe and connect the cannula to either:
        a. Manual jet ventilator device.
        b. If patient <12 yo, use 25 PSI
        c. If patient ≥12 yo, use 50 PSI
    2. Oxygen tubing attached to 3-way stopcock, with all stopcock channels open
        a. Set flow to 1LPM/year-of-life up to 15LPM max
        b. Occlude the open channel to oxygenate.
11. Oxygenate the patient at a rate of at least 20 breaths per minute (1 breath every 3 seconds).

Continuous Positive Airway Pressure (CPAP)

INDICATIONS:

1. Any adult patient (age ≥ 12) who is complaining of shortness of breath.
2. Signs and symptoms of CHF, pulmonary edema, or asthma.
3. Retractions or accessory muscle use.
4. Respiratory rate ≥ 30 per minute.
5. Pulse oximetry ≤ 92% on high flow oxygen.
6. Patient is awake and oriented.
7. Patient can maintain an open airway (GCS >10).

CONTRAINDICATIONS:

1. Absolute contraindications:
   i. Severely depressed level of consciousness.
   ii. Suspicion or indication of pneumothorax.
   iii. Inability to maintain patent airway.
   iv. Major/Facial trauma, especially head trauma with increased intracranial pressure.
   v. Tracheostomy.
   vi. Vomiting or inability to tolerate secretions.
2. Relative contraindications:
   i. History of pulmonary fibrosis.
   ii. Claustrophobia.
   iii. Systolic BP ≤ 90 mmHg.

PROCEDURE: (Follow manufacturer's recommendations for use.)

EMT

1. Explain the procedure to the patient (it will take reassurance for the patient to tolerate procedure) and place them in an upright or sitting position.
2. Ensure adequate oxygen supply to CPAP ventilation device.
3. Place patient on continuous pulse oximetry.
4. Place the delivery device over the mouth and nose.
5. Secure the mask with provided straps and continue to reassure the patient.
6. Monitor vitals every 5 minutes and document response to treatment.
7. Titrate CPAP pressure to effect and never increase above 15 cmH20.
8. If respiratory status deteriorates, remove device, and consider BVM ventilations or placement of an advanced airway.

AEMT/ PARAMEDIC

1. If patient is exhibiting increased anxiety, and anxiolysis is needed during procedure, consider treating per Pain/Anxiety Protocol.

SPECIAL NOTES:

1. Contact receiving emergency department as early as possible so that they can be prepared for the patient
2. Due to changes in preload and afterload of the cardiovascular system during CPAP therapy, a complete set of vital signs needs to be obtained every 5 minutes. If patient deteriorates, either with respiratory worsening, or with circulatory collapse, discontinue CPAP and manage the patient according to the appropriate guidelines.

Pulse Oximetry

Pulse oximetry is used in conjunction with other assessment processes to determine the actual available oxygen in the blood for use by body tissue. Pulse oximetry measures the oxygen saturation of the red blood cells, (SpO_2%).

1. 96% - 100% - Maintain Airway
2. 90% - 95% - Maintain Airway
3. 85% - 89% - Maintain Airway or Assist Ventilation & Increase O2
4. Below 85% - Ventilate, Consider Intubation, Increase O2

PROCEDURE

1. Select sensor and apply: Try to obtain oxygen saturation on room air prior to applying supplemental oxygen.
2. Finger Clip Sensors - These are designed for older pediatric and adult patients and/or continuous monitoring less than 30 minutes where patient movement is not expected. Insert finger (preferably the patient's index finger) completely into sensor, keeping fingernail side facing the sensor top. The thumb should not be used in the finger clip. When possible, remove any fingernail polish.
3. Flex Sensor - This sensor is designed for monitoring pediatric and adult patients in which moderate patient movement is expected. Place the sensor on the top and bottom of the end of the finger or toe. Place the light emitter portion on the finger/toe-nail side and the detector of the side opposite of the nail, making sure to align the emitter and detector through the tissue.

Colorimetric End Tidal CO_2 Monitoring

Indications:
To assure placement of the endotracheal tube into the trachea after intubation or correct placement of other advanced airway devices; end tidal CO_2 monitoring will be done. This procedure will be achieved by using the "Easy Cap" device on adults and the "Pedi-Cap" devices on children under 30 lbs. Use an end tidal $CO_{2\ detector}$ after each intubation attempt.

Procedure:

1. Remove the detector from package (Do not remove until ready to attach device).
2. Remove the detector immediately before use and shake device to introduce room air.
3. Match initial color of the indicator to the purple color labeled "CHECK" on the product dome. If the purple indicator color is not the same or darker, do not use.
4. Insert endotracheal tube (Inflate cuff if tube is equipped with one).
5. Firmly attach the detector between the endotracheal tube and the bag-valve-mask.
6. Ventilate patient with six breaths of moderate tidal volume (may be done quickly). Interpreting result with less than six breaths can yield false results.
7. Compare color of indicator on full end-expiration to color chart on product dome.
8. If initial intubation attempts fail, the detector can be used for re-intubation on the same patient provided the indicator color still matches the "CHECK" color stand on product dome
9. The detector may only be left in place during ventilation to assist in monitoring tube placement for approximately 15 minutes.
10. Generally, Purple means the intubation tube is not properly placed. Yellow means you have placed the intubation tube correctly.

Wave-Form Capnography

Capnography comprises the continuous analysis and recording of carbon dioxide concentrations [CO2] inspiratory gases. Although the terms capnography and capnometry are sometimes considered synonymous, capnometry suggests measurement (i.e., analysis alone) without a continuous written record or waveform.

When to use?

1. Cardiac Arrest / Shock
2. Intubated Patients (required by law)
3. COPD / Asthma
4. Respiratory Failure
5. Sedated Patients
6. Hyper/Hypoventilation/Seizures

PROCEDURE – Capnography (Intubated Patient)

1. Continuous waveform capnography is mandatory on any advanced airway.
2. Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting).
3. Place Co2 Sampling device in between ventilation device (BVM / Ventilator) and the ET/King/LMA.
4. Attach sampling device to recording instrumentation and ventilate to a Co2 of 35-45.

PROCEDURE – Capnography (Non-Intubated, spontaneously breathing patient)

1. Turn on recording instrumentation (usually part of a cardiac monitor in the pre-hospital setting).
2. Place the sampling cannula on the patient.
3. Attach sampling device to recording instrumentation record results and treat per results.
4. Oxygen can typically be provided through the canula via green oxygen tubing.

Vascular Access

AEMT/ PARAMEDIC

1. Vascular access should be initiated if there are any signs or symptoms which indicate the possibility or potential for:
    i. Life-threatening cardiac, respiratory, neurological, or traumatic condition.
    ii. There is an anticipated use for intravenous medications.
2. Large Bore access should be initiated if there are any factors which indicate the potential for hypovolemic shock. Use a large bore catheter (16 gauge or larger) if possible.
3. Use the Bone Injection Gun or EZ IO when immediate vascular access is needed.
4. Look for access sites on hand, upper extremities, jugular veins, and lower extremities including feet.

Central Venous Line Access

Some patients have a Central Venous Line (PICC, Midline) established from an extended illness. Lines can have anywhere from 1 to 3 ports attached (Single, Double, or Triple Lumen). The ports are color coded along with the location marked (proximal, medial, and distal). The "distal" is the preferred port to use. All ports can be accessed with different meds at the same time.

AEMT/ PARAMEDIC

PROCEDURE

1. Prepare the site. Vigorously clean each port with an alcohol prep.
2. Aspirate 10 ml of blood from the desired port.
3. If unable to aspirate blood, attempt to gently flush with saline. If no resistance is met with flush, attempt to aspirate blood again.
    i. If still unsuccessful, do NOT use that port.
4. After successfully aspirating blood, flush port with 10 ml normal saline.
5. If treatment is discontinued in any of the ports, flush with 10 ml normal saline.

EMS SHOULD NOT ACCESS DIALYSIS CATHETERS.

Intraosseous Access (EZ-IO, SAM-IO)

INDICATIONS

1. Fluids or medications are needed, and peripheral vascular access cannot be established in 2 attempts or 90 seconds AND exhibit 1 or more of the following:
    i. Altered mental status
    ii. Respiratory compromise (SpO2 ≤ 80% after supplemental O2 has been applied, respiratory rate ≤ 10 or ≥ 40/min)
    iii. Hemodynamic instability (systolic BP ≤ 90 mmHg)
2. May be considered PRIOR to IV attempts in the following situations
    i. Cardiac arrest. (medical or traumatic)
    ii. Profound hypovolemia with altered mental status.
    iii. Urgent need for vascular access, but veins are not readily accessible.

CONTRAINDICATIONS

1. Fracture of the tibia or femur. (consider alternate tibia or either proximal humerus sites)
2. Previous orthopedic procedure. (knee replacement)
3. IO within past 24 hrs.
4. Pre-existing medical condition. (tumor near site, peripheral vascular disease, cellulitis at the site)
5. Inability to locate landmarks. (significant edema or excessive tissue at insertion site).

AEMT/ PARAMEDIC

PROCEDURE

1. Locate insertion site
    i. Proximal Tibia – 1 finger width medial to the tibial tuberosity.
    ii. Distal Tibia – 2 finger widths proximal to the medial malleolus and positioned midline on the medial shaft.
    iii. Proximal Humerus:
        a. Adduct the humerus and posteriorly locate the elbow, placing the patient's hand on their abdomen near the umbilicus.
        b. Palpate the mid-shaft of the humerus and continue palpating toward the proximal aspect of the humeral head.
        c. As you near the shoulder you will note a protrusion. This is the base of the insertion site.
        d. Cleanse insertion site using aseptic technique
2. Prepare the IO gun according to the manufacturer's recommendations.
3. Stabilize site and insert the IO needle.
    i. EZ-IO should not be PUSHED into the bone, but rather allowed to smoothly enter the bone.
4. Remove stabilizer clamp and stabilize catheter hub.
5. Remove stylet from needle set, place stylet in sharps container.
6. Flush with normal saline 10mL rapid IO push.
7. Confirm placement and connect IV tubing.
8. In conscious adult patients, administer Lidocaine (*Xylocaine*) - 20 to 50 mg IO. Allow Lidocaine to "dwell" in the marrow space prior to flushing.
9. Flush or rapidly bolus the IO catheter with 10 ml of normal saline.

10. Place a pressure bag or BP Cuff on solution being infused where applicable, begin infusion.
11. Dress site, secure tubing, monitor IO catheter site and patient condition.
    i. EZ IO Needle Info:
    ii. Red 15mm- (pedi) 3-39 kg
    iii. Blue 25mm - (adult) 40kg and greater
    iv. Yellow 25mm - (adult large) 40kg and greater with excessive tissue, or proximal humerus usage.

Intranasal (IN) Atomizer

In the absence of vascular access, intranasal is the next quickest route offering the highest level of bioavailability of drug being administered.

INDICATIONS:

Midazolam (*Versed*) - Seizures, cardioversion, sedation
Naloxone (*Narcan*) - Overdoses or decreased LOC
Fentanyl - Pain Control, sedation
TXA- Hemorrhage control

CAUTIONS:

1. Do not exceed 1 ml per nostril. When dose is greater than volume of 1 ml, administer ½ of the dose in each nostril.

PROCEDURE:

1. Using a 1- or 3-ml syringe, draw up the required amount of desired medication.
2. Expel all air from syringe.
3. Affix the Mucosal Atomization Device (MAD) to the syringe.
4. Visually inspect nares, choosing the largest, or the nares with least obstruction.
5. Insert the MAD 1½ cm into the chosen nares.
6. Timing the respirations, depress plunger rapidly upon patient fully exhaling and before inhalation.
7. Observe for anticipated response, further doses may be necessary.
8. MAD is reusable on the same patient, dispose after each patient.

Needle Decompression

The treatment of tension pneumothorax involves decompression of the affected chest cavity to release the pressure that has developed. Needle decompression is indicated when you have signs/symptoms of a tension pneumothorax.

-Diminished or absent lung sounds
-Distended neck veins
-Hypotension, narrow pulse pressure
-Cyanosis and difficulty breathing
-Tachycardia, tachypnea
-Tracheal shift to the unaffected side (May not always be present)

AEMT/PARAMEDIC

PROCEDURE

1. Expose entire chest and clean site vigorously. Prepare equipment: 14- or 16-gauge needle, antiseptic solution (Needle decompression kit is preferred) (16 to 18 gauge for children) with 30cc to 50cc syringe attached.
2. Locate site:
    i. Second or third intercostal space, mid-clavicular.
    ii. Fourth intercostal space between the fourth and fifth rib, mid-axillary.
3. Ensure needle entry is not medial to the nipple line or directed toward the heart and is inserted all the way to the hub.
4. Insert catheter on affected side into intercostal space just superior to the rib into the pleural space.
5. If air is under tension, it will exit under pressure. Leave needle in place for 5-10 seconds, then remove the needle leaving the catheter in place.
6. If no air is obtained, remove needle and catheter, cover site with dressing, and inform receiving facility of attempt.
7. Continuously reassess adequacy of ventilation.

Medical Director's note: This procedure has a high failure rate, strongly consider repeating the procedure up to two times if needed. If you are not sure which side perform on both sides.

Post ROSC Care

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose
	Peds drug dose
	Calculated KG

Continually reassess ABCDE's and keep reassessing and intervening as needed.

EMT

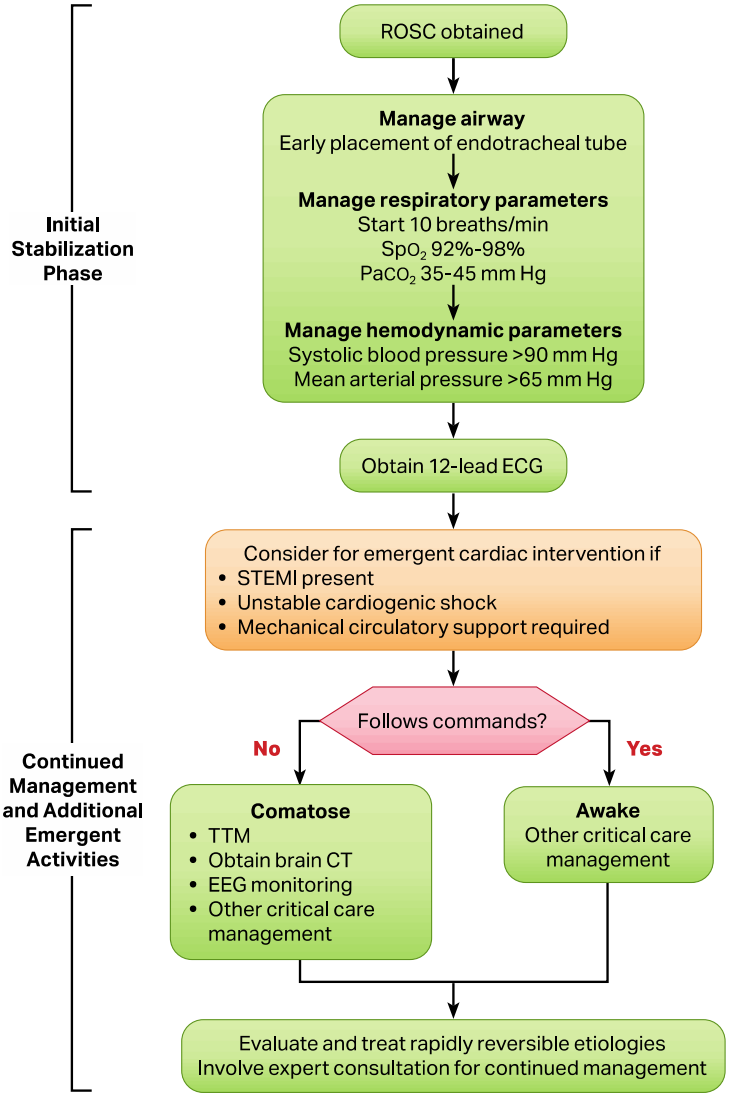
1. Assess ABC's - Support airway as needed.
2. Initiate oxygen to maintain SPO_2 between 94% and 99%, pulse oximetry, monitor, $ETCO_2$.
3. Complete and record all vital signs - repeat frequently and record new readings.
4. Keep all equipment utilized in the resuscitation on the patient if it does not interfere with patient care.
   A. Maintain pad placement and leave automated chest compression device in place.
5. If ALS is not available, transport to the closest Emergency Department.
6. If not already in place, utilize $etCO_2$ to monitor ventilation rate. Ventilation may be titrated with capnography once effective circulation is established and maintained. Goal is to keep $etCO_2$ between 35-45. DO NOT HYPERVENTILATE.
7. If trained, obtain, and transmit a Diagnostic EKG within 10 minutes of ROSC.

AEMT/PARAMEDIC

Treatment continuation from above

1. Obtain and transmit a Diagnostic EKG within 10 minutes of ROSC.
2. If Diagnostic indicates STEMI, refer to Chest Pain Protocol and rapidly transport to a cath lab facility.
3. If cardiac arrest of presumed cardiac origin, transport to a cath lab facility.
4. Other causes of cardiac arrest, except trauma, may be transported to the closest Emergency Department.
5. Aggressively treat hypotension per Shock Protocol.
6. AHA recommends Targeted Temperature Management over Therapeutic Hypothermia. The goal is to not allow the patient to get too warm, rather than chilling them to a goal temperature. In other words, unless hypothermia was the cause of the arrest, do NOT actively rewarm the patient or apply excessive blankets. Let them remain chilled.

ACLS Healthcare Provider
Post–Cardiac Arrest Care Algorithm



Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management: Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters: Titrate FIO_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ of 35-45 mm Hg
- Manage hemodynamic parameters: Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

Continued Management and Additional Emergent Activities

These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

H's and T's

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

Taser Probe Removal

B	EMT
A	Advanced EMT
P	Paramedic
	Adult drug dose
	Peds drug dose
	Calculated KG

AEMT/ PARAMEDIC

INDICATIONS:

1. Scene Safety is the most important indication. EMS must be requested by law enforcement into the scene. Upon entering the scene request a quick debriefing from law enforcement or the tactical medic with the patient. Consider questions regarding the patient's mental status, psychiatric problems, or possible drug/alcohol ingestion. Confirm that the Taser has been shut off and the empty cartridge has been removed from the Taser.

CONTRAINDICATIONS:

1. Patient refuses to allow EMS to remove the probe(s).
2. One or more of the probes has created a puncture wound in any of the following areas: Eye, Ear, Nose, Mouth, Neck, Nipple, Genitals, or suspected vascular structure.
3. In these cases, the police are to be advised that EMS will be transporting the patient to the nearest hospital for removal of the probes. Cutting Taser wire near probes is acceptable for transport.

REMOVAL: Remove and treat one probe at a time! (Use probe removal device when applicable.)

1. Retrieve the spent cartridge from the officer for placement of the removed probes (evidence). Do not cut or pull the wires from the probe barb assembly unless necessary for patient care.
2. Cut away clothing if possible or necessary.
3. Grasp the probe with dominant hand, forceps, or manufacturer provided removal tool.
4. Stretch the surrounding skin with the non-dominant hand using the thumb and index finger in a V-shape.
5. With a quick straight movement in a vertical direction pull the probe out.
6. Inspect the probe carefully to ensure it is completely intact. Police will be able to assist in determining this as length will vary by model.
7. Place the probe tip down into the empty cartridge. (Do not hold the cartridge in your hands while placing the used probes into the cartridge)
8. Cleanse the wound.
9. Apply bandage.

POST-PROBE REMOVAL:

1. Assume all subjects need medical attention until assessment proves otherwise.
2. Assess subject for a minimum of 10 minutes after the removal of the last probe.
3. Assess all vital signs. (minimum of 2 sets)
4. Apply cardiac monitor and collect the primary strip. Collect a second 6 second strip just before disconnecting the monitor from the subject. Record both strips to the report. If abnormal, the patient must be transported for further assessment.

Taser Probe Removal Continued…

5. Consider detailed trauma assessment. (i.e., injuries from the fall after being tased).
6. Document usual documentation requirements. Include probe(s) location, removal, wound, and wound cleaning, first -aid rendered and instructions provided to subject and police. Document officers name or badge number that you passed information regarding subject.
7. Assess tetanus vaccination status. If patient is not transported, have them follow up with Primary Healthcare Provider for DTaP vaccination.
8. Transport:
    i. Unstable Vital Signs.
    ii. GCS ≤ 15.
    iii. If the patient is pregnant.
    iv. Abnormal rhythm strip or Diagnostic EKG.
    v. Any condition that warrants further treatment.

Hemostatic Agents

General Considerations:

1. Hemorrhage always has been and continues to be one of the leading causes of death in trauma. Combat Gauze is impregnated with minerals that help blood to clot. The mechanism of action is dual fold. Its cationic polymers bind strongly to the anionic groups on the surface of the red blood cells. This clumps the red cells together effectively creating a clot. In addition, Combat Gauze absorbs water. The clot itself is malleable and moldable. Because Combat Gauze clots independently of the normal clotting factors it clots heparinized and cold blood. Combat Gauze also does not generate the exothermic (heat) reactions that other hemostatic agents produce.

Indications:

1. Exsanguinating hemorrhage that cannot be controlled by direct pressure or by tourniquet. This is most likely to involve wounds of axilla, groin, neck, face, or scalp also used in deep wounds to control external hemorrhage.

Contraindications:

1. Minor bleeding.
2. Bleeding that can be controlled by direct pressure.
3. Bleeding that can be controlled by application of a tourniquet if applicable.
4. Open abdominal or chest wounds.
5. Head wounds penetrating to the brain.

Initial Management:

1. Patient assessment is Key. (Airway, Breathing, Circulation)
2. Wound care by direct pressure.
3. Continue to assess for life threatening injuries.

Procedures:

1. Stop all life-threatening bleeding by use of proximal pressure point. Continue to hold pressure point throughout the application procedure.
2. Tear open package.
3. Pack the Combat Gauze directly into the wound, getting as close to the suspected bleeding point as possible. You may need to use more than one package to fill the wound.
4. Apply firm pressure directly to the wound for 5 minutes using a gauze pad.
5. Apply a pressure bandage over the wound. Release pressure point.
6. If any bleeding persists, apply direct pressure for an additional 5 minutes.
7. Treat all other injuries according to your PCG's and transport patient immediately.
8. NEVER REMOVE COMBAT GAUZE AFTER APPLICATION.

Spinal Immobilization - Appropriate Omission

Traditionally, EMS has immobilized all patients with potential spinal injury to include backboards and associated adjuncts. However, studies indicate that traditional spinal immobilization has risks and may even cause harm in select cases.

As such, the spinal immobilization protocol is being modified to reflect appropriate indications and methods more accurately for spinal immobilization.

Spinal precautions for at risk patients remain paramount. This protocol DOES NOT indicate that EMS no longer immobilizes the spine; it simply provides a different means of immobilization in selected patients.

Please note that C-Spine immobilization rules are not changed. The below changes are primarily regarding lumbar and thoracic spinal precautions.

Blunt trauma (falls, MVC)

1. All patients with clinical indications of any spinal injury or patients that are unable to communicate with you effectively (such as focal neurologic deficit including paralysis or language barrier) and/or with altered levels of consciousness (including those who are combative, confused, or intoxicated, i.e., patients who are unable to follow commands) must be protected with both a C-collar and a spinal immobilization device (e.g., spine board, KED, vacuum splint). The spinal immobilization device should be removed, and the patient secured to the stretcher mattress if doing so does not impede patient care or transport.
2. Other alert trauma patients, including all those listed below, should have a c-collar placed and moved in-line as a unit to the cot. This is referred to as, "Move patients on hard things; transport on soft things."
    i. Neck pain
    ii. Midline neck or spinal tenderness
    iii. Pain on motion of the neck
    iv. Age > 65
    v. High risk mechanism (high speed MVC, fall > 10 feet, axial loading injury)
    vi. Intoxicated patients.
    vii. Patients with significant distracting injury.
    viii. Patients who are non-ambulatory (sitting, lying on ground) are to be moved in-line as a unit.
    ix. Patients who are ambulatory may ambulate to the cot, and then be assisted onto the cot in-line as a unit.

Penetrating Trauma

1. Patients with penetrating trauma to the torso or neck with focal neurological signs or paralysis should be immobilized in a c-collar and with a spinal immobilization device.
2. Patients without focal neurological signs or paralysis need NOT be immobilized.
3. Delays in transport for immobilization are to be minimized.
4. In general, isolated penetrating wounds to the neck (example gunshot wound) should not be immobilized in a cervical collar.

Airway / Ventilatory Management

Patients who are immobilized and require airway and / or ventilatory intervention (including intubation) may have the collar removed, with in-line stabilization performed during the intervention. The collar should then be reapplied.

Other Patient Conditions

1. Patients who do not tolerate immobilization (e.g., shortness of breath, anxiety, and body habitus) should have immobilization adjusted to the point of removal, if necessary, based on clinical response. They should be maintained in the manner of immobilization that they can tolerate (e.g., *a patient may not tolerate a backboard but may tolerate sitting up with a c-collar*).
2. Spinal immobilization devices may be utilized for movement from a site of injury to the cot.

Patients who do not require immobilization as above should be removed from the device prior to transport and kept in-line during transport.

Morgan Lens

AEMT/ PARAMEDIC

INDICATIONS

1. Chemical burns
2. Thermal burns
3. Non-embedded foreign bodies.

CONTRAINDICATIONS

1. Penetrating trauma to the globe of the eye.
2. Suspected or actual rupture of the globe.
3. Known allergy to anesthetic.

COMPLICATIONS

1. Discomfort when using Normal Saline for lavage.
2. Corneal staining when using Normal Saline for lavage.

EQUIPMENT

1. Morgan Lenses
2. 1000 ml Normal Saline
3. Delivery set
4. "Y" set if irrigating more than one eye at a time.
5. Topical ophthalmic anesthesia

PROCEDURE (insertion)

1. Remove contact lenses, if in place.
2. Instill tetracaine, one to two (1-2) drops in each effected eye.
3. If large particulate material is present irrigate to remove it before placing the Morgan Lens.
4. Attach the delivery set to the Morgan Lens and begin Normal Saline flow.
5. Have patient look down, insert the lens under the upper lid.
6. Have patient look up, retract the lower lid, and drop lens into place.
7. Release the lower lid over the lens and adjust flow to rapid free flow.
8. Tape the tubing to the patient's forehead to prevent accidental lens removal.
9. Absorb outflow
10. DO NOT RUN DRY
11. Flush for at least 15 minutes.

Agent Of Injury	Amount/Rate	Frequency
Acid Burns, Solvents, Gas, Detergents, etc..	**500 cc rapid flow then continue at 50 cc/hr**	**Once, then repeat as needed**
Alkali Burns	**Continuous Rapid Free Flow**	**Continuous**
Non-Embedded Foreign Bodies.	**500 cc rapid free flow then continue at slower rate**	**Once, then repeat as needed**

Epinephrine Push Dose Pressor

AEMT/PARAMEDIC

Procedure:

1. Epinephrine push dose equipment needed:
    i. Epinephrine 1mg/10mL Prefilled syringe.
    ii. 10mL syringe with transfer needle
    iii. 500mL Normal Saline bag
2. Steps to obtain desired concentration:
    i. Draw 1 ml from epinephrine 1mg/10mL prefilled syringe.
    ii. Using same 10 ml syringe with the 1 ml Epinephrine, draw 9 ml from Normal Saline bag.
    iii. The 10 ml syringe will now have a concentration of 10 mcg/ml.
    iv. Label your syringe

Alternative:

1. Steps to obtain desired concentration:
    i. Using a 10 ml saline flush, waste 1 ml.
    ii. Draw 1ml from epinephrine 1mg/10mL prefilled syringe.
    iii. The 10 ml flush will now have a concentration of 10 mcg/ml.
    iv. LABEL YOUR SYRINGE

Procedure:

1. Push 0.5-2mL IV/IO every 3-5 minutes as needed to maintain SBP >90.
2. Pediatric dosing is 1 mcg/kg every 3-5 minutes as needed to maintain perfusion (max 20mcg/dose)
    a. This translates to 0.1mL/mg or 0.1-2mL per dose.

Immunization

I. The medical director for each emergency medical service may authorize EMS professionals within the organization to administer immunizations whose route is within their scope of practice (EMFTS Board Action 8/19/2020). ORC Section 4765.391 requires reporting for each immunization administered under this section. The EMS professional administering the immunization shall, not later than thirty days after the immunization is administered, do either of the following:

A. Provide notice of the immunization administration to the board of health of the city or general health district in which the individual receiving the immunization resides or, if there is no board of health for that district, the authority having the duties of a board of health under section 3709.05 of the Revised Code.

B. Submit the immunization administration information to the state immunization registry maintained by the department of health.

II. PROCEDURE

A. Identify adults with no history of this vaccination, or an influenza vaccination for the current influenza season, or as otherwise indicated by the medical director or public health recommendations.

1. For children, please reference the CDC Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2020. https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html
2. For adults, please reference the CDC Recommended Adult Immunization Schedule for ages 19 years or older, United States, 2020. https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html

B. Screen all patients for contraindications and precautions to vaccinations:

1. Contraindications:
   a. Serious systemic or anaphylactic reaction to a prior dose of the vaccine or to any of its components.
   b. For a list of vaccine components, go to: http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf
   c. Do not give live attenuated influenza vaccine (LAIV; nasal spray) to a person who has a history of either an anaphylactic or non-anaphylactic hypersensitivity to eggs; who is pregnant, is age 50 years or older, or who has chronic pulmonary (including asthma), children receiving salicylate therapy, children ages 2-4 who have asthma or who have had a history of wheezing in the past 12 months, cardiovascular (excluding hypertension), renal, hepatic, neurologic/ neuromuscular, hematologic, or metabolic (including diabetes) disorders; immunosuppression, including that caused by medications or HIV, people caring for severely immunocompromised individuals, persons without a spleen or a non-functional spleen, people with cochlear implants, people with active cerebrospinal fluid (CSF) leaks.
2. Precautions:
   a. Moderate or severe acute illness with or without fever
   b. History of Guillain Barré syndrome within 6 weeks of a previous vaccination
   c. For live attenuated vaccines only, close contact with an immunosuppressed person when the person requires protective isolation.
   d. Receipt of antivirals (e.g., amantadine, rimantadine, zanamivir, or oseltamivir) within the previous 48 hours or possibility of use within 14 days after vaccination.
3. Other considerations:

a. Onset of hives only after ingesting eggs: healthcare providers familiar with the potential manifestations of egg allergy should administer inactivated vaccine and observe patient for 30 minutes after receipt of the vaccine for signs of a reaction.
b. Refer to the CDC or manufacturers website regarding the types of vaccines available, and specifically whether it is egg derived.

C. Provide all patients with a copy of the most current federal Vaccine Information Statement (VIS). Documentation must include the publication date of the VIS and the date it was given to the patient. Non-English-speaking patients must be provided with a copy of the VIS in their native language, if available and preferred; these can be found at www.immunize.org/vis .

D. Administer the vaccine using the appropriate procedure per the manufacturer based on the vaccine supplied: (below are 2 examples)
1. Injectable quadrivalent influenza vaccine:
a. For adults of all ages, give 0.5 mL of intramuscularly (22–25g, 1–1½" needle) in the deltoid muscle. (Note: A 5/8" needle may be used for adults weighing less than 130 lbs. [<60 kg] for injection in the deltoid muscle only if the subcutaneous tissue is not bunched and the injection is made at a 90-degree angle.
2. Intranasal live-attenuated influenza vaccine:
a. For healthy adults younger than age 50 years, 0.1 mL is sprayed into each nostril while the patient is in an upright position. (Total dose of 0.2 ml)

E. Document each patient's vaccine administration information and follow up in the following places:
1. Record the date the vaccine was administered, the manufacturer and lot number, the vaccination site and route, and the name and title of the person administering the vaccine. If vaccine was not given, record the reasons(s) for non-receipt of the vaccine (e.g., medical contraindication, patient refusal).
2. Personal immunization record card: Record the date of vaccination and the name/location of the administering facility.

F. Patients should be observed for ten minutes after immunization for any allergic reaction.
1. Report all adverse reactions to a vaccine to the federal Vaccine Adverse Event Reporting System (VAERS) at www.vaers.hhs.gov or (800) 822-7967. VAERS report forms are available at www.vaers.hhs.gov or http://vaers.hhs.gov/resources/vaersmaterialspublications

III. Notes:

A. Refer to the manufacturer's guidance regarding appropriate storage, transportation, and administration of the vaccine.

B. The Ohio Department of Health Vaccines for Children (VFC) website has multiple resources for temperature logging forms, how to vaccinate, Vaccine Information Statements and other materials. https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/Immunization/Vaccines-for-Children-VFC/

VACCINE ADMINISTRATION FORM

Client Information

Last Name	First Name	M.I.	Date of Birth	Age	Sex ☐ Male ☐ Female

Address	City/Township	State	Zip	County

Phone (if age under 18, phone of parent/guardian)	Parent/Guardian Name (only if client is under age 18)	Race (for statistical use only) ☐ Asian Pacific ☐ White ☐ Other ☐ Black ☐ Native American	Hispanic? ☐ Yes

Answer a few short questions so we can make sure that the vaccine can be given today

☐ Yes ☐ No	Is the client is sick today?
☐ Yes ☐ No	Is the client allergic to latex, medications, food, or any vaccines?
→	IF YES, list the allergies: _____
☐ Yes ☐ No	Does the client have a history of Guillain-Barre syndrome?
☐ Yes ☐ No	Is the person receiving the flu vaccine 8 years old or under?
→	IF YES, how many doses did the child receive the FIRST year they received flu vaccine? ☐ 1 ☐ 2 ☐ Not sure
☐ Yes ☐ No	Has the client had other vaccines or anti-virals in the last 30 days?
→	IF YES, list the vaccines: _____
☐ Yes ☐ No	Does the client have history of wheezing and/or asthma?
☐ Yes ☐ No	Is the client pregnant or could possibly find out that she is pregnant in the next month?
☐ Yes ☐ No	Does the client have a weak immune system (ie, HIV, cancer, steroids) or have a chronic illness (ie, diabetes)?
→	IF YES, list conditions: _____
☐ Yes ☐ No	Is the client taking long-term aspirin therapy or aspirin-containing therapy?

☐ Enrolled in Medicaid ☐ No health insurance ☐ Other private insurance ☐ Under-insured (vaccinations not covered)

Client Consent (or Parent/Guardian Consent for clients age 17 & under) - read and sign/date below.

I was given an explanation about the diseases and vaccines. I had the opportunity to ask questions that were answered to my satisfaction and/or received a Vaccine Information Sheet. I understand the benefits and risks of the vaccine(s) and ask that the vaccine(s) be given to me or the person named above for whom I am authorized to make this request. I hereby consent that the Local Health Department (LHD), or designee, from whom I received the vaccination can bill my insurance, if applicable. I understand I am financially responsible for any fees not covered by my insurance company. I authorize the release of this record to the Ohio Department of Health Immunization Program. I hereby acknowledge receipt of the LHD Notice of Health Information Privacy Practice and give permission to release my immunization record to my doctor or agency/school. If indicated on this form, I authorize the LHD or designee to charge my account. For clients age 17 and under, parent and/or guardian consents to allow client to receive vaccine without parent and/or guardian present.

SIGN Name: X _____ Date: _____

Payment Information (complete insurance OR self-pay area below)

INSURANCE – (complete insurance info below **AND** in box to the left write 1 or 2 to indicate primary/secondary)	SELF-PAY
Medicare (Traditional Part B) ID# _____	☐ Cash
Medicare HMO (ie, Anthem Medicare Advantage, SecureHorizons Medicare Advantage) Name of Plan: _____ ID# _____	☐ Check # _____
Medicaid (ie, Traditional Medicaid, CareSource, Molina, Amerigroup) Name of Plan: _____ ID# _____	☐ Credit Card Type _____ Acct# _____ Exp. Date _____
Private Insurance Company Name: _____ Member ID: _____ Group: _____ Plan: _____ Policy Holder Name & Date of Birth: _____ ___/___/_____ Relationship to Policy Holder: _____	Amount: _____ Receipt # _____ Received By: _____
Other (ie, company voucher, etc) ID# _____	

---------- Office Use Only ----------

Vaccine Administered Information

SC = subcutaneous IM = intramuscular ID = intradermal IN = intranasal

Date	Vaccine Name	Vaccine Lot #	Mfg	RA	LA	RT	LT	Nose	Dose (check box) 0.5 ml	0.25 ml	0.2 ml	0.1 ml	Vaccinator Initials

Clinic site: VIS: ☐ Flu 07/02/2012 ☐ Flu Mist 07/02/2012 ☐ PPSV23 10/06/09

Regional Form Revised: 7/11/2011

Patient Restraint Procedure

I. Inclusion Criteria

A. Patient's age is 16 years or older.

B. This protocol is intended to address the need for medically indicated and necessary restraint. It shall not be used to regulate, or restrict in any way, operational guidelines adopted by a provider agency addressing use of force related to non-medical circumstances (i.e., civil disturbances, legitimate self-defense relative to criminal behavior).

C. Patient restraints are to be used only, when necessary, in situations where the patient is violent or potentially violent and may be a danger to themselves or others. EMS providers must remember that aggressive violent behavior may be a symptom of a medical condition such as but not limited to:

1. Anemia
2. Cerebrovascular accident
3. Drug / Alcohol intoxication
4. Dysrhythmias
5. Electrolyte imbalance
6. Head Trauma
7. Hypertension
8. Hypoglycemia
9. Hypoxia
10. Infection (especially meningitis / encephalitis)
11. Metabolic disorders
12. Myocardial ischemia / infarction
13. Pulmonary Embolism
14. Seizure
15. Shock
16. Toxicological ingestion

II. Protocol

A. Patient health care management remains the responsibility of the EMS provider. The method of restraint shall not restrict the adequate monitoring of vital signs, ability to protect the patient's airway, compromise peripheral neurovascular status or otherwise prevent appropriate and necessary therapeutic measures. It is recognized that the evaluation of many patient parameters requires patient cooperation and thus may be difficult or impossible.

B. It is recommended to have Law Enforcement on scene.

C. Refer to Psychiatric Emergencies Protocol for aid in dealing with the combative patient.

D. **The least restrictive means shall be employed.**

E. Verbal de-escalation

1. Speak in a calm, normal volume voice. Engage the patient by their name.
2. Validate the patient's feelings by verbalizing the behaviors the patient is exhibiting and attempt to help the patient recognize these behaviors as threatening.
3. Openly communicate, explaining everything that has occurred, everything that will occur, and why the imminent actions are required.

4. Respect the patient's personal space (i.e., asking permission to touch the patient, take pulse, examine patient, etc.).

III. Physical Restraints

A. All restraints should be easily removable by EMS personnel without the use of a key.

B. Restraints should be secured to the stretcher and not to the vehicle.

C. EMS should only use purpose-built restraints following manufacturers instructions.

D. Seatbelts and cot straps should not be modified or used as medical restraints.

E. Restraints applied by law enforcement (i.e., handcuffs) require a law enforcement officer to remain available to adjust the restraints as necessary for the patient's safety. The protocol is not intended to negate the ability for law enforcement personnel to use appropriate restraint equipment to establish scene control. Handcuffs should not be applied to the stretcher or other equipment and should only be applied to the patient by law enforcement.

F. Departments are encouraged to work with their respective law enforcement agencies to develop restraint processes that respect patient and provider safety and comfort, while permitting medical care. The goal is to maximize safety to the provider while providing care to the patient.

G. To ensure adequate respiratory and circulatory monitoring and management, patients shall NOT be transported in a face down prone position.

H. Restrained extremities should be monitored for color, nerve, and motor function, pulse quality and capillary refill at the time of application and at least every 5 minutes. Providers should document every 5 minutes a GCS/AVPU score along with vital signs. If vitals are unable to be obtained because of agitation, this should be noted.

IV. Chemical Restraints

A. Chemical restraints may be required before, after, or in place of physical restraints. Any patient who continues to be a danger to themselves or others despite physical restraints, or those who present a danger while attempting physical restraint, may be chemically restrained as follows.

1. Determine and document the patient's level of agitation using the RASS scale.

0 – Alert and Calm
+1 – Restless: Anxious. Apprehensive but movements are not aggressive or vigorous
+2 – Agitated: uncooperative; resists care; frequent non-purposeful movement
+3 – Very agitated: cannot focus, pulls/removes IVs/canula; fights environment
+4 – Combative: violent, immediate danger to staff

2. EMS should plan and prepare for advanced airway management regardless of medication used. In patients receiving ketamine, laryngospasm or hypersalivation necessitating oral suctioning may occur.

3. For RASS +3: Administer midazolam (Versed) 10 mg IM. A lower dose of 5mg IM may be used for smaller adults or the elderly. Exposure and cleaning of skin is highly recommended but may not be feasible; injection through clothing and prior to skin cleaning is allowed if crew safety would be compromised. Repeat dose(s) of midazolam (Versed) may be ordered by on-line medical control. Ensure that the on-line medical control physician understands the level of agitation the patient is experiencing and whether this compromises patient or provider safety.

-OR-

4. For RASS +4: consider administering ketamine 4mg/kg IM ideal body weight or as indicated in the chart below (of at least 50mg/1mL concentration), instead of midazolam (Versed), once into a large muscle when possible. Exposure and cleaning of skin is highly recommended but may not be feasible; injection through clothing and prior to skin cleaning is allowed if crew safety would be compromised.
    - Patients that have ketamine administered should only be taken to a hospital-based Emergency Department, which does not include UC PES.
5. When able and safe, place patient on cardiac monitor, continuous pulse oximetry and ETCO2.
6. When able and safe, administer oxygen to correct hypoxia <95%.
7. When able and safe, check blood glucose level.
8. When chemical restraint is used, vitals, including GCS/AVPU should be assessed and recorded every 5 minutes.
9. At no time shall a patient be left unattended after receiving chemical restraint.
10. Any patient receiving chemical restraint must be attended to and transported by a paramedic.
11. Pre-arrival notification is highly recommended so the receiving Emergency Department can be prepared for the safe transfer of a combative or violent patient

V. Documentation Of Restraints

A. Patient restraint shall be documented on the run sheet and address any or all the following appropriate criteria:

1. That an emergency existed and the need for treatment was explained to the patient.
2. That the patient refused treatment or was unable to consent to treatment (such as unconscious patient).
3. Evidence of the patient's incompetence (or inability to refuse treatment).
4. Failure of less restrictive methods of restraint (e.g., if conscious, failure of verbal attempts to convince the patient to consent to treat).
5. Assistance of law enforcement officials with restraints, or orders from medical control to restrain the patient, or any exigent circumstances requiring immediate action, or adherence to system restraint protocols.
6. That the treatment and/or restraint were for the patient's benefit and safety.
7. The type of restraint employed (soft, mechanical, chemical).
8. Any injuries that occurred during or after the restraint.
9. The limbs restrained ("four points").
10. Position in which the patient was restrained.
11. Circulation checks every 5 minutes or less (document findings and time).
12. The behavior and/or mental status of the patient before and after the restraint

Notes:

1. Intramuscular midazolam is more rapidly absorbed than other benzodiazepines, including diazepam and lorazepam, making it uniquely ideal for treatment of the acutely agitated patient. Onset 5-10 minutes.
2. Midazolam is as effective as haloperidol in acutely agitated and combative patients (Am J Emerg Med 8:97) and has less potential cardiovascular side effects and drug-drug interactions than haloperidol.
3. Respiratory depression is a known side effect of benzodiazepines and ketamine. Monitor and treat respiratory depression as needed. The use of flumazenil is not recommended and is potentially harmful because it may cause uncontrollable seizures. The risk of harm is especially present when the patient history is unknown, unclear, or incomplete.
4. Midazolam may be administered intranasal (IN); however, its efficacy in agitated and combative patients is unknown.
5. Use of benzodiazepines, including intramuscular Midazolam, for acutely agitated and combative patients is supported by American College of Emergency Physicians clinical policy [Ann Emerg Med 47(1): 79, 2006].
6. In rare cases, patients receiving ketamine for chemical restraint may experience an emergence delirium. This is characterized by: hallucinations, flashbacks, unusual thoughts, extreme fear, excitement, and irrational behavior. If this occurs, immediately contact medical control. Treatment typically is a small dose of a benzodiazepine but must be approved by medical control.
7. Positional asphyxia has been implicated in prior restraint-associated deaths. The patient must be given adequate room and positioning to avoid interfering with normal respiration. Patients while restrained or sedated should never be transported prone, hog-tied, compressed, or otherwise prevented from repositioning to ensure adequate normal respiration.
8. Agencies opting to utilize ketamine are suggested to have training on its indications, contraindications, side effects, and dosing. Robust medical director support is recommended.
9. Ketamine use for pre-hospital chemical restraint is supported by ACEP and NAEMSP. [ACEP task force report on hyperactive delirium with severe agitation in emergency settings. (2021)] and [PHEC 21(3): 395-6, (2017)].

Ketamine Dosing Table (Life-Threatening Agitation)

Height	Weight (lb)	Weight (kg)	Dose (IM) 4mg/kg	mLs (50mg/mL)	mLs (100mg/mL)
<4'11"	63-100	28.6-45.5	150mg	3mL	1.5mL
5'-5'5"	101-140	45.5-63.6	220mg	4.4mL*	2.2mL
5'6"-5'11"	141-180	64-82	290mg	5.8mL*	2.9mL
6'-6'5"	181-220	82-100	365mg	7.3mL*	3.65mL*
>6'5"	221-260	100-118	425mg	8.5mL*	4.25mL*
			* Ideally should be given in more than one IM site		

Calcium Administration

Inclusion Criteria:

1. Age >16 -AND-
2. Cardiac Arrest -OR-
3. EKG changes consistent with hyperkalemia with suspicion of hyperkalemia

Contraindications:

- Hypercalcemia
- Digoxin Toxicity

PROTOCOL:

EMT:

1. Consider ALS if required.
2. Consider advanced airway management if required.

AEMT

3. Establish IV access in a large vein. IO access may be considered if IV access is not feasible.
4. Obtain and transmit a Diagnostic EKG.

PARAMEDIC

5. Administer calcium as per instructions below. It is important to know which type of calcium your agency may carry. Calcium chloride is the preferred type in cardiac arrests.

Notes:

A. Different salt forms of calcium exist. Pay close attention to salt form when administering IV calcium.
B. 1g calcium chloride = 3g calcium gluconate
C. Calcium chloride:
   a) 3 times the ionized calcium content as calcium gluconate.
      a) Preferred in emergent situations (i.e., arrest) but has a higher potential for infusion site reactions.
      b) Avoid extravasation. May dilute in NS or D5W to prevent skin necrosis if extravasation occurs. If extravasation occurs, immediately discontinue the IV site. Notify the receiving facility at care handoff of the extravasation as skin monitoring is needed.
      c) If given before or after sodium bicarbonate, flush line with 20 mL of NS between medications (as calcium and bicarbonate may precipitate)
   2. Dosing and administration:
      a) Cardiac arrest - PEA or asystole: administer IV calcium chloride 20mg/kg (max 1g) IVP. May repeat if necessary. See protocol.
      b) Severe hyperkalemia: administer IV calcium chloride 500-1000 mg diluted in 50-100 mL of NS over 2-5 minutes.

May repeat after 5 minutes if EKG changes persist or recur.

b) Crush injuries: administer IV calcium chloride 500-1000 mg diluted in 50-100 mL of NS over 2-5 minutes. See protocol.

D. Calcium gluconate:

1. 1/3 the ionized calcium content as calcium chloride. Lower potential for infusion site reactions.
2. Dosing and administration:

a) Cardiac arrest - PEA or asystole: administer IV calcium gluconate 3 g (30mL of calcium gluconate 100mg/mL) IVP. See protocol. Consider IV calcium chloride first line if available.

b) Hyperkalemia-associated ECG changes: administer IV calcium gluconate 2g IVP. May repeat after 5 min if ECG changes persist or recur.

c) Crush injuries: administer IV calcium gluconate 2g IVP.

Dosing:

Indication	Calcium chloride	Calcium gluconate
Cardiac arrest	20 mg/kg IVP (max 1g)	3g IVP
Severe hyperkalemia	500-1000 mg in 50-100 mL NS	2g IVP or diluted in 50-100 mL NS
Crush injuries	500-1000 mg in 50-100 mL NS	2g IVP or diluted in 50-100 mL NS

Blood and Blood Product Administration

This protocol is only to be used by Paramedics.

I. INCLUSION CRITERIA

A. Clinical suspicion for significant blood loss with signs and/or symptoms of inadequate tissue perfusion concerning suggestive of SHOCK.
   1. Penetrating trauma
   2. Unstable pelvic fracture or multiple long bone fractures
   3. Blunt Trauma
   4. Observed significant external blood loss
   5. Signs and symptoms of massive GI bleed, ruptured abdominal aortic aneurysm, post-partum hemorrhage, or ruptured ectopic pregnancy.

B. AND Presence of hemodynamic instability as evidenced 2 or more physiological criteria:
   1. EtCO2 < 25
   2. Shock index > 1.0
   3. Sustained systolic blood pressure < 90mmHg or map 65 mmHg (sustained is defined as 2 independent blood pressure measurements)
   4. If patient has polytrauma with concurrent TBI with systolic blood pressure < 100
   5. Sustained heart rate > 120 beats per minute
   6. Pediatric hypotension (a sign of uncompensated shock)
      i. Neonates (0-28 days): systolic blood pressure < 60 mmHg
      ii. Infants (1 month – 12 months): systolic blood pressure < 70mmHg
      iii. Children (1 year – 10 years): systolic blood pressure < 70 + (2 x age in years) mmHg
      iv. Children (>10 years): systolic blood pressure ≤ 90 mmHg
   7. Sustained tachycardia for age (see chart below)
   8. Tachypnea for age (see chart below)
   9. Cool pale skin with cap refill >2 seconds

Age	Pulse Beats/min	Respirations Breaths/min	Avg. Systolic Blood Pressure
Infant (1-12 mo)	90-180	30-53	>70
Toddler (1-2 yrs)	80-140	22-37	>70
Preschool (3-5 yrs)	60-120	20-28	>80
School age (6-12 yrs)	58-118	18-25	>85
Adolescent (12+ years)	50-100	12-20	>90

C. OR witnessed traumatic or medical cardiac arrest reasonably suspected have a hemorrhagic component, and blood products are available for administration within 5 minutes of loss of pulses, or a narrow-complex rhythm >40BPM is present

II. CONTRAINDICATIONS

A. Personal or religious objection to receiving blood products.

III. PROTOCOL

A. Ensure applicable hemorrhage control and shock interventions have been performed:
   1. Tourniquet
   2. Wound packing
   3. Pelvic binder
   4. Needle decompression

B. Ensure adequate personnel are on scene to adequately manage all concurrent priorities.

C. Ensure patent IV/IO access preferably 18 gauge or larger (IV is preferred over IO).
D. Document pre-transfusion vital signs, including heart rate, respiratory rate, blood pressure, ETCO2, SPO2, and body temperature.
E. Only remove blood products from cooler immediately before transfusion.
F. Examine unit of blood (looking for discoloration, clots, and sediment) and ensure the temperature indicator on the blood product bag indicates the appropriate temperature.
G. Gently agitate the blood product bag and use only filtered blood tubing for administration.
H. Prime blood tubing and warming unit. (If available commercial warming device).
I. Initiate transfusion
    1. Adult patients: 1 unit
    2. Pediatric patients: 10 mL/kg
J. Reassess for clinical improvement
    1. Patients with non-compressible hemorrhage:
        i. Look for signs of improved perfusion
            A. Presence of radial pulses
            B. Improved mentation
            C. Use the permissive hypotension approach
                a. 90 mmHg for patients < 35kg
                b. 100 mmHg for patients ≥35kg
                c. 110 mmHg for patients >35kg with significant TBI
K. If inadequate clinical improvement, repeat transfusion
    1. Adult patients: 1 unit
    2. Pediatric patients: 10 mL/kg
L. Maintain normal body temperature
    1. Apply thermal cap to the patient
    2. Cover the patient with a sheet and Ready Heat Blanket, if available
M. Administer 30mL of 10% Calcium Gluconate or 10mL of 10% Calcium Chloride through a separate IV/IO line during or immediately after the first unit of blood is administered.
    1. Pediatric patients: < 12 years: 10% Calcium Chloride 20 mg/kg slow IV/IO
N. Administer tranexamic acid through a separate IV/IO line
    1. Adult patients: 1 gram IVPB over 10 minutes
    2. Pediatric patients > 12 years: 1 gram IVPB over 10 minutes
    3. Pediatric patients < 12 years: 15 mg/kg IV/IO IVPB over 10 minutes
O. Continue to reassess and monitor for signs of a blood transfusion reaction
    1. Signs and symptoms of a transfusion reaction may include sudden onset fever (this may be the first sign), wheezing, dyspnea, flushing, chills, sudden worsening of hypotension, tachycardia not consistent with the underlying condition, feeling of impending doom or worsening anxiety, new abdominal, chest, or back pain.
    2. For any suspected transfusion reaction, immediately STOP the transfusion, flush the IV/IO, and contact medical control
    3. Retain the blood product and tubing and report the reaction in accordance with Department SOP.
    4. Treat anaphylaxis per the Allergic Reaction/Anaphylaxis protocol.

IV. Notes: Every agency who will be carrying blood products should develop an operating procedure in concert with the issuing blood bank covering storage requirements, daily quality assurance procedures, reporting requirements with the blood bank, and required hand-off paperwork with the receiving hospital.

Section 7: Appendix

Cincinnati Prehospital Stroke Scale

If any one of these is ABNORMAL, the patient is possibly having a stroke. A CODE STROKE SHOULD BE ACTIVATED.

Facial Droop:

1. Normal: Both sides of face move equally.
2. Abnormal: One side of face does not move at all.

Arm Drift:

1. Normal: Both arms move equally or not at all.
2. Abnormal: One arm drifts compared to the other.

Speech:

1. Normal: Patient uses correct words with no slurring.
2. Abnormal: Slurred or inappropriate words or mute.

Refusal/Special Transport Situations

REFUSAL OF TREATMENT

1. Adult patients with intact mental capacity retain the right to refuse care and/or transport against medical advice.
2. Parents or guardians of minor children may refuse on behalf of a minor child but must meet capacity requirements for informed refusal and allow examination of the minor patient to allow for the informed refusal.
3. If you need assistance in determining capacity or would like to have a physician attempt to convince the patient to permit transport/treatment, contact online medical control.
4. This protocol does NOT apply in mass casualty incidents.
5. Assess the patient for decision making capacity.
    a. A patient, or the parent/legal guardian, who is alert, oriented and can understand the circumstances surrounding his/her illness or impairment, as well as the possible risks associated with refusing treatment and/or transport, typically is considered to have decision making capacity.
    b. The patient's (or parent/legal guardian) judgment must also not be significantly impaired by illness, injury, or drugs/alcohol intoxication. Individuals who have attempted suicide, verbalized suicidal intent, or had other factors that lead EMS to suspect suicidal intent, should not be regarded as having decision-making capacity and may not decline transport to a medical facility. It is highly recommended to discuss the course of action with police.
6. If a patient refuses care or withdraws consent for treatment, EMS personnel shall consider their wishes. Prior to discontinuing or withdrawing treatment, the in charge EMT shall determine if the patient has capacity to withdraw consent. You MUST document the following:
    i. Document all care provided
    ii. Document the patient's capacity to refuse care, and that you performed counseling of the patient regarding the consequences of not receiving care. Document any other family members that may have been present for this counseling.
    iii. The PATIENT must sign the refusal statement when able. If the patient refuses to sign, this should be witnessed by at least two people, preferably at least one being a non-crew member.
    iv. Any minor, developmentally disabled person or persons deemed incompetent by the Company Officer (head injury, intoxication, CVA, hypotension, etc.) shall be treated after consultation with the patient's guardian, parent, spouse, or other responsible care giver. If that person is not immediately available, the patient should be treated per protocol and transported.

EMERGENCY CARE OF MINOR PATIENTS:

1. When minors are injured and require treatment, the parents should be contacted from the scene if possible. If the situation requires immediate transport, transport to the most appropriate medical facility. Parental consent will be obtained by the hospital.
2. INJURED minors cannot refuse treatment or transport, telephone contact with a parent or guardian is only necessary for a refusal, NOT FOR TREATMENT.
3. If a parent or guardian consents to refusal via telephone, exact instructions must be given to the minor, the mental status of the patient must not be impaired, and all instructions must be clearly understood. This must be painstakingly documented on the patient care report. Only minors between the ages of 16 to 18 years of age can be released to his/her own care. All others must be released to another adult of the parent's approval.
4. The only minors who can refuse for them are those who are married (evidenced ONLY by a valid marriage certificate in hand) or who are in ACTIVE military Status (evidenced by a valid military ID in hand). In all cases, documentation

must be produced ON SCENE for them to be excluded.

CONSENT FOR TREATMENT:

1. Patients should be advised by the EMS crew and Supervisor of his/her diagnostic impression and the course of treatment prescribed by this protocol. This should be explained in terminology understood by the patient.
2. All patients who are unconscious or mentally impaired shall be transported per protocol.
3. Minors, patients who are developmentally disabled and persons deemed incompetent by the in charge EMT (head injury, intoxication, CVA, hypotension, etc.) shall be treated after consultation with the patient's guardian, parent, spouse, or other responsible care giver. If that person is not immediately available, the patient should be treated per protocol and transported.

DANGEROUS PERSONS:

1. When faced with a patient that poses potential violence to the EMS crew, the first duty of the crew is to protect themselves and bystanders. The crew has the right to refuse placing themselves in jeopardy of physical harm from violent patients.
2. At no time will any EMS system member place themselves in a situation that they cannot control without the presence of law enforcement.
3. The in charge EMT shall ascertain from law enforcement officials whether the patient is under arrest and a ward of the State.
4. If the patient is under arrest at time of transport, the law enforcement agency will be asked to escort the patient aboard the ambulance.
5. If law enforcement personnel do not escort the patient, EMS personnel are under no obligation to maintain custody outside medical guidelines. (i.e., if the patient is coherent, he or she has the right to refuse treatment and leave)
6. If physical restraint of the patient is warranted for safety of the EMS crew, law enforcement personnel should be asked to assist in restraining the patient before departure.
7. EMS personnel have the right to restrain a patient for the safety of the EMS crew when violent personalities are suspected.
8. Such suspicion can be warranted for reasons including, but not limited to:
    i. Currently under arrest for a violent crime
    ii. History of violence
    iii. Displayed behavior symptomatic of intoxication
    iv. Displayed behavior symptomatic of drug abuse
9. Transportation and/or treatment can be denied by EMS for any violent or suspected violent patient for the following reasons:
    i. The patient is mentally alert, capable of making decisions about his/her care, and refuses restraint.
    ii. The patient cannot be adequately restrained by the EMS crew
    iii. The patient is deemed unsafe to transport while restrained without law enforcement presence, and law enforcement declines to escort aboard vehicle.
    iv. The patient has not been properly searched for weapons
10. If acceptable to the EMS Supervisor, law enforcement escort by following in a separate vehicle may be allowed for maintaining custody. Such decision should be based on the perceived threat of violence to the EMS crew.

11. The patient shall be transported to the most appropriate medical facility according to normal transportation guidelines.
12. EMS crews shall transport prisoners for medical reasons ONLY.

INTERVENING PHYSICIAN – ON EMERGENCY SCENE

1. An intervening Good Samaritan physician is a physician on the scene who has no previous connection with the patient. For the Good Samaritan physician to assume control of the care of the patient he/she must fulfill the terms below. If the Physician is unwilling to comply with these requirements, then his assistance should be respectfully declined.
    i. Submit proof of licensure in Ohio. Ohio physicians must request a wallet card. Without proof, assume the person is NOT a physician.
    ii. Be willing to assume responsibility for the patient at the scene AND ACCOMPANYING THE PATIENT, IN THE BACK OF THE TRUCK, TO THE HOSPITAL (except in multi-casualty situations).
    iii. He/She must perform procedures outside the scope of EMS protocol him/herself.
    iv. The medical director is NOT considered an intervening physician and is direct medical control if needed.

PHYSICIAN – IN THEIR OFFICE:

1. EMS shall perform its duties according to these PCGs
2. The physician may elect to supervise care provided by EMS
3. If the physician directs the EMS providers to perform a procedure or administer a medication which is not covered by these PCGs, the crew should advise him/her of such, and will NOT perform the procedure. However, the EMS provider may assist the physician in performing the procedure. If the physician initiates a medication which is to be continued during patient transportation which is not covered by this protocol, the physician MUST accompany the patient to the hospital.

Legal Situations Involving EMS (Abuse, Neglect, Crime Scene, Sexual Assault)

Purpose: The purpose of this protocol is to provide a reference for EMS when dealing with the legal system. This can include but is not limited to: suspected abuse or neglect, crime scene management, sexual assault.

1. Suspected Child Abuse
    a. The State of Ohio made healthcare professionals "mandatory reporters" when dealing with suspected child abuse.
    b. Abuse is defined by the state in sections 2151.031 as a victim of sexual activity, is endangered, exhibits evidence of physical or mental injury inflicted other than by accidental means, suffers physical or mental injury because of a guardian's acts.
    c. A form of abuse is neglect. The state of Ohio has defined a "neglected child" per 2151.03 as: abandoned, lacks adequate parental care, guardian neglects to provide subsistence, education, medical/surgical care, or other necessary care; guardian refuses to provide special care; guardian has attempted to place the child in permanent custody of an institution or foster agency; because of parental neglect suffers physical or mental injury.
    d. In cases of suspected abuse, one member of the crew must report the suspected abuse to the proper authorities. This may include local law enforcement, a state department tasked with this responsibility, or to an investigator with Child Protective Services.
        i. Ohio Dept. of Job and Family Services: 855-642-4453
        ii. Kentucky Child/Adult Protective Services: 877-597-2331
        iii. Indiana Child Abuse Hotline: 800-800-5556
    e. When documenting physical findings, avoid attempting to document the age of the bruising or injury, and what you suspect caused the injury. Document objectively what you find. You are not required to perform an investigative exam with measurements and photographs.
    f. The EMS crew must report their suspicions of abuse to either the nurse or physician assuming care of the patient in the Emergency Department.
    g. Investigators may request additional information following a verbal report. These disclosures are expressly permitted by HIPAA.
    h. Information that you may be asked to provide include:
        i. The name and address of the child
        ii. Age
        iii. Name and address of the guardian
        iv. Name of the person(s) you suspect are abusing or neglecting the child.
        v. The reason you suspect the child is being abused or neglected.
        vi. Any other information you believe may be helpful to the investigation.
    i. If you have suspicion of child abuse, you believe the patient needs medical care, and the guardian is refusing transport, get local police involved immediately. Medical control can also be engaged to help with decision making.
2. Elder Abuse
    a. The State of Ohio made all firefighters and EMS professionals "mandatory reporters" of suspected elder abuse or neglect.

b. Elder abuse refers to any knowing, intentional or negligent act by a caregiver or any other person that causes harm or a serious risk of harm to a vulnerable adult.
c. **Neglect or isolation occurs when someone's basic needs are not being med, putting them at higher risk for getting sick or hurt. Neglect can result from the patients' own wishes, or the inaction of another.**
d. **Financial abuse and exploitation occurs when one person uses another person's money, information, or belongings for their own personal benefit.**
e. In cases of suspected abuse, exploitation, or neglect, one member of the crew must report the suspected abuse to the proper authorities. This may include local law enforcement, a state department tasked with this responsibility, or to an investigator with Adult Protective Services.
f. The following numbers are for reference but are not for emergency requests. These should still be made with local law enforcement.
    i. Ohio Dept. of Job and Family Services: 855-644-6277
    ii. Kentucky Child/Adult Protective Services: 877-597-2331
    iii. Indiana Child Abuse Hotline: 800-992-6978
g. When documenting physical findings, avoid attempting to document the age of the bruising or injury, and what you suspect caused the injury. Document objectively what you find. You are not required to perform an investigative exam with measurements and photographs.
h. The EMS crew must report their suspicions of abuse to either the nurse or physician assuming care of the patient in the Emergency Department.
i. Investigators may request additional information following a verbal report. These disclosures are expressly permitted by HIPAA.
j. Information that you may be asked to provide include:
    i. The name and address of the person
    ii. Name and address of the person responsible for the victim's care
    iii. Name of the person(s) you suspect are abusing or neglecting the elder
    iv. The reason you suspect the elder is being abused, exploited, or neglected.
    v. Any other information you believe may be helpful to the investigation.
k. If you have suspicion of elder abuse, you believe the patient needs medical care, and a guardian is refusing transport, get local police involved immediately. Medical control can also be engaged to help with decision making.

3. Crime Scene Management
    a. Patient care is prioritized over evidence preservation. However, every attempt should be made to preserve evidence when doing so does not interfere with patient care.
    b. Only enter and exit through one location, trying to keep footsteps within one path.
    c. Do not walk in fluids present on scene when able.
    d. If you must move something (furniture, personal effects), note its location prior to movement.
    e. Avoid touching anything without gloves. Minimize surfaces touched.
    f. Leave the victim undisturbed as able if attempting to determine death.
    g. If clothing must be cut, avoid cutting through any holes, slits, or other damage/contamination to the clothing. Cut along seams if possible.

h. Any removed clothing should be placed into a paper grocery type bag, or onto a clean sheet and presented to law enforcement when able. If unable to hand over to law enforcement, sign the clothing over to the ED RN or hospital security. Note the time and person you handed it over to.
i. Avoid cleaning skin except as needed for patient care.
j. Do not remove garbage generated on scene or attempt to clean the scene in any way. Sharps generated as part of patient care should be placed into a sharps container.

4. Suspected Sexual Assault
    a. Medical or trauma complaints take priority over destination or care modification as below.
    b. Pediatric victims of suspected sexual assault should preferentially be transported to Cincinnati Children's Hospital Main Campus.
    c. Adult victims of suspected sexual assault should be taken to an emergency department. All local emergency departments have Sexual Assault Nurse Examiners on-call.
    d. Have the patient remain in their current clothing. If the patient has changed since the assault, have the patient bring the prior clothes.
    e. Avoid letting the patient use the restroom, wash anything, eat, drink, use chewing gum, brush teeth, or use mouthwash as these actions may contaminate or wash away evidence.
    f. Avoid performing any medical treatment, including invasive procedures (such as FSBG, IV access) unless necessary. Avoid contact with the patient to avoid disturbing possible evidence. You may take vital signs but note which arm you performed a BP and which finger for pulse ox.
    g. Avoid going into detail about the assault. This will be done by the SANE nurse and law enforcement. The patient may omit important information if they tell the story repeatedly. Always document patient statements in quotation marks.
    h. Drug-facilitated sexual assault may occur.
    i. Patients have the right to receive a medical screening examination, prophylaxis for sexually transmitted diseases and pregnancy, and medical evidence collection without filing a police report. Criminal investigations are separate from this process in adults.

Terminating or Withholding Resuscitation Efforts

"Resuscitation may be discontinued, with approval of a physician (medical control) in the pre-hospital setting when the patient is not resuscitated after an adequate trial of ACLS."

In accordance with the Journal of the American Medical Association's guidelines for cardiopulmonary resuscitation and emergency cardiac care, the above statement encourages pre-hospital systems to develop guidelines for the ability to terminate resuscitation efforts when the patient's survivability is unlikely.

A trial of ACLS, according to the guidelines, occurs when:

1. Adequate BLS has been provided for twenty (25) minutes.
2. Endotracheal intubation or a "secure airway" has been successfully accomplished.
3. Intravenous (or Intraosseous) access has been achieved and rhythm-appropriate medications and counter shocks for ventricular fibrillation have been administered, and.
4. Persistent asystole or agonal electrocardiographic patterns are present, and no reversible causes are identified.
5. Provide ETCO2 level when seeking termination orders.
6. If an advanced airway, Intravenous access, and 25 minutes of ACLS care have been completed with persistent asystole still present, all ALS providers must first agree that termination of efforts is warranted. Medical control must then be contacted to discontinue resuscitation efforts. Must document physician's name, and person left in charge of body after resuscitation stopped.

WITH THAT UNDERSTANDING, there are times when terminating or withholding resuscitation is deemed appropriate. Documentation in all cases is ABSOLUTELY ESSENTIAL.

Patients unable to undergo resuscitation should not have resuscitation attempted.
Resuscitation will not be initiated if any of the following are present:

1. Dependent lividity (pooling of blood in lower parts of body).
2. A valid DNR order is received.
3. Rigidity (rigor mortis in a warm environment), or decomposition.
4. Patient's condition prevents resuscitation (e.g., decapitation, decomposition, hemicorpectomy, burned beyond recognition). Isolated penetrating trauma should rarely be considered incompatible with life.
5. During a mass casualty incident (MCI), the patient is designated as deceased or expectant by the locally accepted MCI triage protocols. Such patients should be reevaluated as resources allow.

If the above does not apply, resuscitative measures should be initiated. If resuscitative efforts are later ceased, all IV lines, endotracheal tubes and other interventions must be left in place.
If a physician is present and has pronounced the patient dead, the physicians name and time of death should be documented on the EMS report. Documentation of identification for the physician is recommended by the crew.

Termination of Resuscitation inside an ambulance

A. Termination of resuscitation en-route is acceptable if the patient meets the above criteria.
B. After termination of resuscitation, the ambulance should continue to the destination hospital.
C. Body may be removed from the ambulance after termination, assuming the ambulance is not the site of a homicide.
D. Such instances should be exceedingly rare.

Dead on Arrival

When a DOA is encountered, the squad members should avoid disturbing the scene or the body as much as possible, unless it is necessary to do so to care for and assist other victims.
Once it is determined that the victim is, in fact, dead the squad members should move as rapidly as possible to transfer responsibility or management of the scene to Law Enforcement and/or Coroner's Office.
It is the squad member's responsibility to notify the Coroner's Office directly or to ensure that the Coroner's Office has been notified by a police officer on the scene. Provide Law Enforcement or the coroner's office with a list of names of all Personnel on the scene.
A determination that the victim is dead rests with the squad members. Any of the following may be used as guidelines to support the determination that a victim is deceased:

1. The patient's body is unable to undergo resuscitative measures (i.e., decapitated, hemicorpectomy, or burned beyond recognition). Isolated penetrating trauma should rarely be considered incompatible with life.
2. The victim shows signs of decomposition, rigor mortis (in a warm environment), or extreme dependent lividity.
3. If there are valid DNR (Do Not Resuscitate) orders, see DNR Protocol.
4. If the patient has a history of terminal disease, the family refuses resuscitation and permission to pronounce the patient dead is given by Medical Control.
5. Refer to termination protocol.

CAUTION: IF ANY DOUBT EXISTS THAT THE VICTIM IS DEAD AT THE TIME OF ARRIVAL OF THE SQUAD, RESUSCITATIVE MEASURES SHOULD BE INSTITUTED IMMEDIATELY. WHENEVER RESUSCITATIVE MEASURES ARE INSTITUTED, THEY MUST BE CONTINUED UNTIL ARRIVAL AT A HOSPITAL OR UNTIL A PHYSICIAN HAS PRONOUNCED THE VICTIM DEAD OR A VALID DNR IS PRONOUNCED

Do Not Resuscitate (DNR) Situations

EMS personnel should never make DNR decisions for the patient. That is a private decision made between a patient and their personal physician. A family member cannot decide whether to resuscitate if a DNR exists. If there is a question or disagreement among family members, resuscitation efforts should be initiated. Doing more than necessary is legally safe versus the potentially unsafe legal consequences of doing nothing. Immediately contact medical control for problems or issues that may arise on scene involving a specific case. If indicated, provide immediate and appropriate ALS care if there are no documented (written) orders.
In the State of Ohio, a DNR Comfort Care patient's status is confirmed when the patient has one of the following: A DNR Comfort Care card or form completed for the patient, or a DNR Comfort Care necklace or bracelet bearing the DNR Comfort Care official logo. Copies of these items are sufficient for EMS workers. EMS is not required to search a person to see if they have a DNR order. If EMS discovers one of these items in the possession of a patient, the EMT must make a reasonable effort to identify the DNR patient in appropriate circumstances. (i.e., the patient or family member, caregiver or friend gives the patient's name, driver's license). If you cannot ID the patient, you should still follow the DNR protocol. Verification is not required for patients or residents of extended care facilities when a DNR order is present on the person's chart.

ACTIVATION:

1. DNR-CC is activated when the DNR order is signed.
2. DNR-CC-Arrest is activated when the patient experiences cardiac arrest or respiratory arrest. Cardiac Arrest means absence of a palpable pulse. Respiratory arrest means absence of spontaneous respirations or presence of agonal breathing.

INTERACTION WITH PATIENT, FAMILY OR BYSTANDERS:

1. THE PATIENT MAY ALWAYS REQUEST RESUSCITATION even if he or she is a DNR Comfort Care patient, and this protocol has been activated. The request for resuscitation amounts to a revocation of DNR Comfort Care status.
2. IF FAMILY OR BYSTANDERS REQUEST OR DEMAND RESUSCITATION for a person for whom the DNR Protocol has been activated, DO NOT PROCEED WITH RESUSCITATION. Provide comfort measure as outlines in this guideline (below) and try to help the family understand the dying process and the patient's choice not to be resuscitated. In the State of Ohio, Power-of-Attorney does NOT supersede a valid DNR unless the Durable Power of Attorney signed the DNR form.

DOCUMENTATION:

EMS or other health care personnel who implement the DNR Protocol for a DNR Comfort Care patient should document in their records:

1. The item that identified the person as DNR Comfort Care
2. The method of verifying the person's ID, if any.
3. Whether the person was a DNRCC or DNRCC-Arrest patient
4. The actions taken to implement the DNR Protocol
5. It is recommended that a photograph of the DNR form be taken using the camera of your tablet if using an acceptable ePCR.

ACTIONS:

EMS Will:

1. Place patient in position of comfort, provide emotional support, administer O2, suction the airway, splint, or immobilize, provide pain medication, control bleeding, and contact appropriate health providers, such as hospice, Physician/CNP/CNS.

EMS Will NOT:

1. Provide respiratory assistance, insert artificial airways, administer chest compressions, initiate resuscitative IVs, administer resuscitative drugs, apply cardiac monitor, or defibrillate / cardiovert.

If you have initiated any of the "will not" actions prior to confirming the patient's status, the DNR Protocol must be activated. Discontinue the "will not" actions when you activate the protocol. You may only continue respiratory assistance, IV medication, etc., that have been part of the patient's ongoing course of treatment for any other underlying disease process.

A DNR shall NOT BE HONORED where the patient is pregnant, where withholding CPR would terminate the pregnancy, and where it is probable that the fetus will develop to the point of live birth if treatment is provided.

Left Ventricular Assist Device (LVAD)

For troubleshooting information specific to each device see:
http://mylvad.com/sites/mylvadrp/files/EMS%20Field%20Guides/MCSO%20EMS%20GUIDE%202015%20.pdf

Call the LVAD coordinator early for input and to make them aware your patient is being transported.

LVAD coordinator numbers

1. Cincinnati Children's Hospital Medical Center 513-926-6788
2. The Christ Hospital 859-572-1609
3. University of Cincinnati Medical Center 513-264-3841

Have a low threshold for transport.

The LVAD is an impeller type pump that is placed in the thorax or upper abdomen of a patient with significant heart failure.

The system consists of:

1. An implanted pump
2. A drive line that exits the patient and attaches to a control device
3. And a battery pack

There are three typical reasons for this device

1. Bridge therapy, for patients who are on a waiting list for heart transplant.
2. Temporizing therapy in patients with hearts that are likely to heal with time.
3. Destination therapy, for patients with severe heart failure who are not candidates for transplant. It is done to improve quality for the remainder of life.

Patient Assessment

In some of these patients a pulse will not be palpable.
A blood pressure may not be obtainable using automated equipment (there are differing opinions about what works best). If this happens, and the patient is otherwise well appearing you may attempt to obtain a blood pressure by:

1. Using a Doppler flow device and a manual BP cuff
2. Using pulse oximetry to determine the MAP
3. Using a manual device

The results you obtain may indicate a single measurement or a very narrow pulse pressure. This is because the arterial flow may have very little pulsatile flow. The number you obtain in this case is likely to be the Mean Arterial Pressure (MAP).
Typical MAP is 70-90. MAP beyond this is likely to be higher than the LVAD was meant to tolerate.
Pulse oximetry:
May not be accurate due to the non-pulsatile nature of blood flow.

LVAD (cont'd)

Monitors:

Transport all LVAD patients on a cardiac monitor.

Treat any significant cardiac arrhythmia as you would in any other patient. Ventricular arrhythmias or disproportionate tachycardias (i.e., atrial fibrillation with rapid response) are generally critical and may be clinically masked by the action of the pump.

Clinical Assessment:

1. If the patient is unconscious, unresponsive to stimuli, and pulseless, follow the "Unresponsive VAD Patient" graphic below.
2. Record blood glucose level if any weakness, altered mental status or history of diabetes.
3. Please remember that these patients, along with their families, have been well trained in the care of themselves and their devices.
4. Patients should always carry a "backup bag" which contains extra charged batteries and a second controller. Please make sure to always bring this emergency backup equipment with them to the hospital.

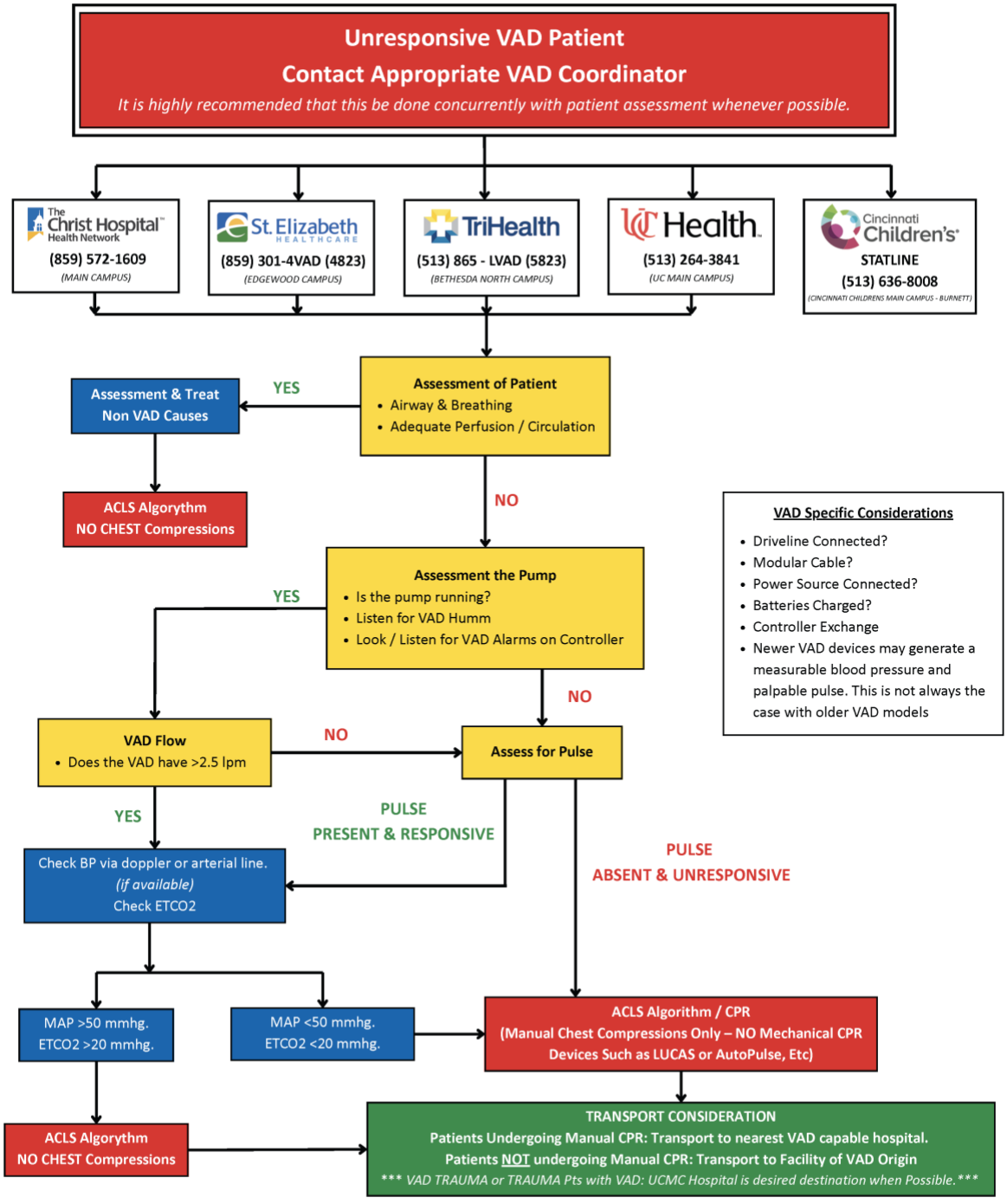
Failure Modes

Patients who require LVAD therapy are complex and very ill, typical things to consider when transporting a patient who has a sudden change in condition are:

1. Battery failure
2. Cardiac arrhythmia
    a. Treat in typical fashion
3. Bleeding
    a. All LVAD patients require anticoagulation, bleeding may be occult
4. Sepsis
    a. May be associated with the line or pump itself
5. Pump thrombus
    a. This may be a critical event, you may be able to assess this by placing your hand over the chest where the pump is, it will be disproportionately warm. The whirr or the pump may no longer be audible
6. Suction event
    a. This is caused when there is not enough volume passing through the heart to feed the pump causing the ventricles to collapse and subsequently cause decreased flow and hypotension (see 3 and 4 above)
    b. Treat with gentle fluid bolus of 250-500ml until improved.

If you notice any significant decline in your patient's status, contact the receiving facility at once.

VAD Emergency Assessment & Interventions



Special Note: VAD patients may not have a palpable pulse, even when clinically stable. When possible, use a Doppler device to obtain blood pressure, or assess perfusion by evaluating skin color and capillary refill. Pulse oximetry is not a reliable indicator of oxygenation in these patients. End-tidal CO_2 monitoring may only be used to assess perfusion if the patient has an endotracheal tube or tracheostomy.

Section 8: Interfacility Transport Protocols

Interfacility General Procedures:

Purpose: The purpose of this policy is to establish a uniform procedure for interfacility transfers.

Please see the Mobile Intensive Care Unit definitions and guidelines. Patient's meeting MICU guidelines should prompt a discussion between the sending facility and the transport team. Patients that require critical care medications or procedures should ONLY be transported by a Mobile Intensive Care Unit (MICU) team.

1) **Responsibility:**
   a) **Patient transfer is a physician-to-physician referral. The transferring physician is responsible for securing the acceptance of the patient by an appropriate physician at the receiving facility prior to the transportation. The name of the accepting physician must be included with the transfer orders.**
   b) **It is the responsibility of the transferring facility to:**
      i) **Perform a screening examination.**
      ii) **Determine if transfer to another facility is in the patients' best interest.**
      iii) **Initiate appropriate stabilization measures prior to transfer.**
   c) **During transport, the transferring physician is responsible for patient care until arrival of the patient at the receiving facility.**
   d) **If unanticipated events occur during patient transport, and contact with the transferring physician is not possible, then on-line Medical Control will serve as a safety net.**
   e) **It is the transferring physician's responsibility to know and understand the training and capabilities of the transporting EMS personnel.**
   f) **In general, Advanced EMT's (AEMT) should only transport patient with and less than: a. crystalloid infusions; b. patients requiring cardiac monitoring for reasons other than cardiac arrhythmias; c. patients requiring medications within their scope of practice and within the SOREC protocols.**
2) **Transportation**
   a) **Pre-transport**
      i) **Care initiated by the transferring facility may need to be continued during transport. The transferring physician will determine the method and level of transport and any additional treatment(s), if any, that will be provided during transport.**
      ii) **Orders for treatment, including medications for ALS transfers, or other orders shall be provided in writing to the EMS personnel prior to initiation of the transport by the transferring Physician. It is acceptable to have orders "per protocol" which then would refer to the applicable Life Medical Response protocol.**
      iii) **For ALS transfers, ordered medications not contained within the EMS System Medication Box/Bag must be supplied by the transferring hospital.**
      iv) **EMS personnel must be trained in all the equipment being used in the patient's care or appropriately trained staff must accompany the patient.**
      v) **Should the patient require care and/or equipment above and beyond the normal scope of practice and training of the EMS personnel, the transferring facility shall provide appropriate staff or consider other appropriate means of medical transportation.**
      vi) **The provider has the right to decline transport if he/she is convinced patient care is outside their scope of practice and training or, alternatively, to insist a hospital staff member accompany them on the transfer.**
      vii) **If additional staff accompanies the patient, the transferring physician is responsible for ensuring their qualifications. This staff will render care to the patient under the orders of the transferring physician. It will be the responsibility of the transferring facility to provide arrangements for the return of staff, equipment, and medications.**
      viii) **The following information should accompany the patient (but not delay the transfer in acute situations):**
         (1) Copies of pertinent hospital records.
         (2) Written orders during transport.
         (3) Any other pertinent information including appropriate transfer documents.

b) During Transport

- **i) If applicable, hospital supplied medications not used during transport must be returned to the originating facility or appropriately wasted and documented in compliance with FDA guidelines at the receiving facility.**
- **ii) If applicable, the concentration and administration rates of all medications being administered will be documented on the patient care record.**
- **iii) Interventions performed en-route, and who performed them, will be documented on the patient care record.**
- **iv) If a patient's condition warrants intervention beyond the written Physician orders provided by the transferring Physician, the EMS personnel will contact the transferring Physician. If that is not possible, the EMS personnel will follow these protocols and initiate contact with the on-line Medical Control Physician from either the sending or receiving facility or, if not able to contact those facilities, the agency medical director.**

Mobile Intensive Care Unit Guidelines

Definition of Critical Care Transport:

The provision of medical care by a critical care transport team to a patient requiring critical care transport by a critical care transport agency such that the failure to initiate on an urgent basis or maintain during transport acute medical interventions, pharmacological interventions, or technologies would likely result in sudden, clinically significant, or life-threatening deterioration in the patient's condition (subject to the corresponding definitions below).

Definition of Patient Requiring Critical Care Transport:

A patient requiring critical care transport has a critical illness or injury that acutely impairs one or more vital organ systems such that there is a high probability of imminent or life-threatening deterioration in the patient's condition during transport. Examples of vital organ system failure that may contribute to morbidity or mortality include but are not limited to: central nervous system failure, circulatory failure, shock, renal, hepatic, metabolic, and/or respiratory failure.

Patient or Procedures that suggest a Mobile Intensive Care Unit:

- Insulin drips requiring titration, or of an expected transport duration of >30 minutes.
- Three or more medication drips or drugs (not including maintenance fluids (less than 150cc/hr).
- Acute ventilator patients (not including home/outpatient chronic vents not requiring adjustments).
- Chest tubes that are still under suction or with significant output.
- Patient's requiring or expected to require initiation of blood products. Paramedics may transport blood products that have been initiated by the sending facility.
- Patients requiring more than one pressor support to maintain their blood pressure.
- Patients requiring administration of medications not typically administered outside of the ICU or outside of the national paramedic educational curriculum.
- Patients requiring invasive hemodynamic monitoring.
- Patients that have or potentially have an unstable airway.
- Patients within 24 hours of receiving tPA for acute stroke.

This protocol does not prohibit the agency from transporting a MICU patient in an ALS unit. The transferring physician has sole responsibility for ensuring the means of transportation is safe for the patient.

Interfacility Heparin Infusion Protocol

1) **Follow the general Interfacility Protocol.**
2) **Maintain the patient on cardiac monitoring and have at least two IVs established.**
3) **Heparin may only be infused on a PUMP.**
4) **Obtain vital signs every 10 minutes.**
5) **EMS personnel may only continue a heparin drip, they may not administer a bolus or initiate a drip.**
6) **Discontinue immediately if the patient begins to develop any of the following:**
   a) **Spontaneous bleeding, including epistaxis, petechiae, bruising.**
   b) **Hemodynamic instability.**
   c) **Sudden tachycardia.**
7) **Continue infusion as per orders from sending facility. Typical rates are:**
   a) **Cardiac: 12 U/hr**
   b) **Other: 16 U/hr**
8) **Utilize caution when the patient has received thrombolytics as well, as this increases the risk of bleeding.**
9) **If needed, contact medical control for further instructions.**

Interfacility Stroke Treatment Protocol

PARAMEDIC

1. Follow your **General Protocols** for your agency.
2. Maintain the patient on cardiac monitoring, oxygen, and two IV lines.
3. Keep the head of the bed >30 degrees.
4. Keep the patient NPO (nothing to eat or drink).
5. Monitor vital signs every 5-10 minutes during the thrombolytic infusion and at least every 10 minutes after the infusion is complete.
6. Avoid unnecessary punctures (blood glucose measurements, IV starts, blood draws) after infusion started.
7. EMS should chart on their existing charting method ensuring that a copy of the report is sent to both the transferring and receiving facilities.
8. Nurse documentation will be accomplished upon return to their department.

PARAMEDIC/REGISTERED NURSE

HYPOTENSION MANAGEMENT

Maintaining perfusing blood pressures to the impaired brain circulation is very important. By maintaining normal to slightly hypertensive pressures, we minimize the extent of brain damage.

If patients SBP <100 mmHg:

1. Stop rtPA (alteplase) infusion.
2. Administer normal saline bolus of 500mL quickly.
3. Stop any anti-hypertensive agent drips if previously started.
4. Notify Medical Control.

SUSPECTED ANGIOEDEMA

While rare, angioedema and allergic reactions are documented risks of rtPA (alteplase). These symptoms include: swelling of the tongue, lips, mouth, throat; difficulty breathing; itching; rash. If the patient exhibits signs or symptoms of angioedema/allergic reaction:

1. Stop rtPA (alteplase) infusion immediately and change the IV tubing to fresh. (This avoids infusing more rtPA (alteplase)). The IV itself may still be used.
2. Alert Medical Control.
3. Administer diphenhydramine (Benadryl) 50mg IVP.
4. Administer methylprednisolone (Solumedrol) 125mg IVP.
5. Administer (if available) famotidine (Pepcid) 20mg IVP.
6. If no improvement, administer 0.1% epinephrine 3mL IM or nebulized 0.5mL.
7. Intubation may be required.

REGISTERED NURSE ONLY

ADMINISTRATION

Thrombolytics will only be continued by EMS+RN and must be STARTED by the sending facility prior to EMS departure. rtPA (alteplase) is only given to ischemic stroke patients when indicated.

- rtPA (alteplase): A total dose not to exceed 90 mg. Initial 10% of total dose given as a bolus with remainder given over 60 minutes. (Refer to specific patient dosing instructions.)
- TNK is given as a single dose in the emergency department.

HYPERTENSION MANAGEMENT DURING rtPA (alteplase) or TNK

Blood pressure must be closely monitored during and after rtPA (alteplase) or TNK administration.
Keep SBP at or below 180mmHg. Keep DBP at or below 105mmHg.

If SBP > 180-230mmHg –or- DBP > 105-120mmHg:

1. Administer labetolol 10mg IV slow push over 1-2 minutes, may repeat x1. –OR—
2. Administer nicardipene 5 mg/hour titrate up by 2.5 mg/hour every 5-15 minutes to a maximum of 15 mg/hour. When desired blood pressure attained, reduce dose to 3mg/h.
3. It is also appropriate to administer other agents as directed by the sending or receiving facility via Medical Control or the interfacility orders.

HYPERTENSION MANAGEMENT (HEMORRHAGIC STROKE)

Blood pressure must be closely monitored following a hemorrhagic stroke. Goal systolic blood pressure is below 140mmHg and is considered safe. Blood pressure management should be initiated immediately when recognized.

For ICH patients presenting with Systolic Blood Pressure (SBP) between 150- and 220-mm Hg and without contraindication to acute BP treatment, lowering of SBP to 140 mm Hg is safe.

For ICH patients presenting with SBP greater than 200 mm Hg. It may be reasonable to consider aggressive reduction of BP with continuous intravenous infusion and frequent BP monitoring.

1. Patient's head of bed should be elevated to >30° unless contraindicated.
2. Administer labetolol 10mg IV slow push over 1-2 minutes, may repeat x1. –OR—
3. Administer nicardipene 5 mg/hour titrate up by 2.5 mg/hour every 5-15 minutes to a maximum of 15 mg/hour. When desired blood pressure attained, reduce dose to 3mg/h.
4. It is also appropriate to administer other agents as directed by the sending or receiving facility via Medical Control or the interfacility orders.
5. It is also appropriate to receive different blood pressure targets from the sending facility via Medical Control or the interfacility orders.

DISCONTINUATION

1. Discontinue thrombolytic infusion if any of the following develop:
    a. Hypotension (SBP <100 mmHg)
    b. Active bleeding
        i. Bleeding gums
        ii. Spontaneous bruising
        iii. Hematemesis
        iv. Melena/hematochezia
        v. Epistaxis
    c. Anaphylaxis/allergic reaction.

Interfacility Fluid Management and Blood Component Therapy

AEMT/PARAMEDIC

1. For patients not requiring fluid resuscitation, IV fluids will be maintained at TKO rate, or at an increased rate as clinically indicated or ordered.
2. Patients who require aggressive fluid therapy:
   a. Adults: 20 mL/kg (trauma), 30 mL/kg (sepsis/medical) crystalloid IV bolus.
   b. Pediatrics: 20ml/kg crystalloid IV bolus, may repeat x 2 if necessary.
   c. Further fluid therapy based on patient response.
3. Parkland formula for burn patients
   a. Consider use of the Parkland formula for burn patients.
      i. 4ml crystalloid x %BSA x kg = ml of crystalloid to be given over the first 24hous post – injury (in addition to maintenance fluids).
      ii. Give half of the amount in the first 8hours and the remainder over the subsequent 16 hours.
      iii. Lactated Ringer's solution is preferable to 0.9NS, to reduce hyperchloremic acidosis

PARAMEDIC

4. Blood replacement therapy:
   a. PRBC'S may be given to patients with a condition and/or history suggesting:
      i. Significant acute blood loss.
      ii. Significant cardiac and cerebrovascular comorbidities and a hemoglobin <10g.
      iii. All other symptomatic patients with a hemoglobin <7g.

a) Replacement therapy for PRBC's:
   i) Replacement therapy must be initiated at the sending facility, but subsequent units may be delivered by EMS.
   ii) Administer PRBC per orders from sending facility, but no faster than 1 U/hr.
   iii) Replacement therapy must be discontinued if a transfusion reaction develops. This must also be documented and reported to the sending institution, the receiving institution, and medical control.
      i. Transfusion reaction signs/symptoms:
         1. Fever
         2. Tachycardia
         3. Pruritis (itching)
         4. Urticaria (hives)
         5. Chills
b) Other blood components provided by referring hospitals may be administered as patient's clinical condition warrants

i) A brief delay may be considered to obtain fresh frozen plasma (FFP) or concentrated factors for treatment of anti-coagulated patients with life-threatening hemorrhage

MICU Procedural Sedation

MICU PARAMEDIC / MICU RN

Procedural sedation may be used to facilitate life-saving procedures (ex. Chest tubes) and to ensure patient comfort.

This is not for use for continuous sedation on a ventilator, nor for sedation in agitated patients.

a. Patients must be monitored continuously (monitor, BP, end-tidal capnography and O2 saturation).
b. If the patient is not already intubated, all necessary equipment (including suction, BVM and basic airway adjuncts) must be prepared and immediately available.
c. An assessment of the patient must reveal that intubation, if necessary, could be accomplished promptly.

Procedure:

1. Provide analgesia with Fentanyl:
   a. Adults and Peds: 1mcg/kg IV slow push (max of 100mcg)
2. Sedate with ketamine:
   a. Adults and Peds: 1mg/kg IV slow push every 5 minutes as needed for sedation/dissociation. Maximum of three doses total.
   b. Consider atropine 0.02mg/kg IVP (max 0.5mg) for excess secretions.

MICU Sedation for Ventilator or Intubated Patients

MICU PARAMEDIC / MICU RN

Indications:

1. Age >16 years
2. Patient is intubated
3. Patient is on a ventilator

Contraindications:

1. Patient has a known allergy or contraindication to administration of the medication(s).
2. Patients' airway is not secure, or their ventilator settings are not yet stable.

Procedure:

1. Determine what medications will be used for sedation. Typically, the sending facility will have medications already running. Ensure you have orders to continue these medications en-route. Some of these medications are not stocked in our drug boxes and must be sent by the sending facility. If there are concerns about what medications to use, contact medical control.
2. In situations where no sedation has been started, in general a combination of fentanyl and midazolam should be used as below. Ketamine can also be substituted or used as an adjunct to fentanyl/midazolam.
3. Additional medications are outlined below as well for reference.
4. Midazolam:
    b. Indications: IV sedation
    c. Contra-indications:
        i. Allergy to midazolam.
        ii. Cautions: Use lower doses for patients >55 years of age, or debilitated. Reduce dose by half for patients with CrCl <10.
    d. Administration:
        i. May be administered either by intermittent boluses or by continuous drip.
        ii. Intermittent bolus: 2.5-5mg IVP every hour as needed for sedation.
        iii. Continuous drip: 0.02-0.1 mg/kg/hour, titrated to effect.
5. Fentanyl:
    a. Indications: IV sedation, pain relief
    b. Contraindications:
        i. Allergy to fentanyl or other synthetic opioids
        ii. SBP <100 mmHg

iii. Caution: do not administer more than 200mcg in any one dose as this increases the risk of chest wall rigidity. Reduce dose by 50% for CrCl <30 or dialysis patients.

c. Administration:
   i. May be administered either by intermittent boluses or by continuous drip.
   ii. Intermittent bolus: 1mcg/kg every 30 minutes as needed for effect.
   iii. Continuous drip: 0.5-3 mcg/kg/hr, titrated to effect.

6. Ketamine:
   d. Indications: IV sedation, pain relief
   e. Contraindications:
      i. Allergy to ketamine
      ii. SBP >200 mmHg
      iii. Use with caution in head injured patients, significant cardiovascular disease, preeclampsia, glaucoma, patients suspected of status epilepticus.
   f. Administration:
      i. May be administered either by intermittent boluses or by continuous drip.
      ii. Intermittent bolus: 1-3 mg/kg every hour as needed for sedation/pain.
      iii. Continuous drip: 1-3 mg/kg/hr, titrate to effect.
7. Propofol:
   g. Indications: IV sedation
   h. Contraindications:
      i. SBP <100 mmHg
   i. Administration:
      i. Continuous drip:
         1. Initial bolus of 0.25-1 mg/kg
         2. Maintenance drip of 25-75 mcg/kg/min
8. Dexmedetomidine:
   a. Indications: IV sedation
   b. Contra-indications:
      i. Allergy to Dexmedetomidine.
      ii. Caution for patients with advanced age, hepatic impairment, bradycardia, 2^{nd} or 3^{rd} degree heart block, hypotension, or hypovolemia.
   c. Administration:
      iii. Dexmedetomidate (Precedex): 0.2 – 1.4 mcg/kg/hr. Start at 0.5 mcg/kg/hr and titrate to affect. Consider lower doses in elderly patients.
      iv. Changes should be made no more frequently than every 20 minutes.
      v. Reduce infusion rate and consider an IV fluid bolus if the patient develops hypotension.

vi. Discontinue if patient develops hypersensitivity (rash) or hemodynamic instability.

9. Lorazepam:
    a. Indication: IV sedation
    b. Contraindications:
        i. Allergy to lorazepam.
        ii. Should not be used long-term for sedation secondary to propylene glycol toxicity.
    c. Administration:
        i. Continuous drip: 0.5-2 mg/hr
        ii. Intermittent bolus: 0.5-2 mg/hr

Interfacility Chest Pain

Indications: MICU patients with active chest pain thought to be cardiac in nature, or anginal equivalent.

PARAMEDIC / MICU PARAMEDIC / MICU RN

1. Place the patient on continuous cardiac monitor, BP, pulse ox.
2. Follow Chest Pain protocol.
3. If patient is experiencing ongoing chest pain, begin nitroglycerin drip.
4. Nitroglycerin Drip:
   a. Obtain vitals every 5 minutes while titrating drip.
   b. Once drip is no longer being titrated, repeat vitals every 15 minutes.
   c. Ensure the patient does not have any nitroglycerin paste on them.
   d. Ensure the patient has not received erectile dysfunction medications in the last three days.
   e. Mix nitroglycerin 50mg in 250mL of normal saline. (May substitute a premix bag of the same concentration.)
   f. Begin infusion via pump at 10-20 mcg/min and increase by 5-10 mcg/min every three minutes, titrating for pain.
   g. Maintain SBP of >90 mmHg.
   h. Maximum rate is 200 mcg/min.

Amount to infuse in ml/hr

Dose Ordered (mcg/min)	50 mg/250 mL 100 mg/500 mL (200 mcg/mL)	100 mg/250 mL 200 mg/500 mL (400 mcg/mL)
10	3	1.5
20	6	3
30	9	5
40	12	6
50	15	8
60	18	9
70	21	10
80	24	12
90	27	14
100	30	15
110	33	17
120	36	18
130	39	19
140	42	21
150	45	23
160	48	24
170	51	26
180	54	27
190	57	29
200	60	30

Interfacility Chest Tubes

EMS will monitor and troubleshoot chest tubes but are not permitted to insert them.

Indications: Pneumothorax, hemothorax, pleural effusion, post-surgical.

PARAMEDIC /MICU PARAMEDIC / MICU RN

1. Follow generalized protocol for MICU transports.
2. Assure that the chest tube(s) is securely fastened to the patient.
3. Check chest tube(s) for patency and proper function prior to transport.
4. Assure that the long flexible tubing is securely fastened to the container that acts as a drainage device, water seal and suction control device. Assure that the tubing is free of kinks.
5. Make note of the fluid and blood levels in the drainage and water seal compartments.
6. Obtain orders as to the water seal level.
7. When suction is used, assure that there is bubbling in the suction control chamber. (If not, check the suction unit).
8. If the water seal fails to stop bubbling after the lung is re-inflated or later begins to bubble:
    a. Momentarily clamp the flexible tubing near the chest. If the bubbles quit emanating from the tube while it is clamped, then the problem is either a persistent air leak in the patient's lung or the chest tube is not sealed at the chest wall.
    b. NEVER LEAVE THE CLAMP ON FOR MORE THAN A FEW SECONDS.
    c. Evaluate the insertion site.
    d. Apply occlusive dressings to the site.
    e. Evaluate the patient for distress.
    f. Consult physician immediately if needed.
9. If the bubbling does not cease during the clamping of the proximal end, then suspect a leak at a connection site in the tubing or in the tubing itself.
    a. Check all connections and secure with tape.
    b. Seal the leak with occlusive dressing and tape or replace the tubing. When replacing the tubing, remember to clamp the distal end of the chest tube to avoid the formation of a pneumothorax.
10. If the water seal device becomes damaged, a temporary water seal can be accomplished by putting flexible tubing into a bottle of sterile saline. Keep this device and tubing below chest level.
11. To clear clots from the tubing, squeeze the proximal end of the tubing with one hand and with the other below, squeeze the tube, stripping the material down the tube toward the drainage container.
12. Consult with the physician/staff for the best patient positioning.
13. If the chest tube is not functioning and a tension pneumothorax is present, perform a needle decompression of the affected side.

Gastric Tubes

MICU PARAMEDIC/MICU RN

MICU may insert a naso/orogastric tube to relieve gastric distention or pressures to reduce the risk of aspiration. All other EMS may monitor a clamped NG/OG tube.

Indications
Intubated patients

Contra-indications

1. History of esophageal varices
2. Esophageal or gastric surgery within the past 6 weeks
3. Anatomical deformity complicating nasal passage of the tube (nasogastric)

Adverse Effects/Complications

1. Tracheal intubation with gastric tube
2. Epistaxis
3. Coiling or knotting of tube in the stomach or esophagus
4. Trauma to the nose, esophagus, or stomach
5. Triggering vomiting

Precautions

1. Have suction available since vomiting may be induced.

Procedure

1. Follow generalized protocol for MICU transports
2. Estimate insertion length by superimposing the tube over the body from the
3. nose, over the ear, to the stomach.
4. Place the head in a neutral position.
5. Liberally lubricate the distal end of the tube and opening of the nares, if NG tube, with Lidocaine jelly.
6. Pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinate bones. This increases the difficulty of the insertion and may cause bleeding.
7. In the setting of an unconscious, intubated patient, or a patient with facial trauma, oral insertion of the tube may be considered or preferred.
8. Continue to advance the tube gently until the appropriate distance is reached.
9. Confirm placement by injecting 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
10. Secure the tube.
11. Decompress the stomach of air and food either by connecting the tube to suction or by manually aspirating with the large catheter tip syringe.

MICU Adult Ventilators

This protocol deals with considerations for the use of mechanical ventilators during interhospital transports. Typically, respiratory care settings will already have been established by physicians and administered by registered respiratory therapists.

MICU PARAMEDIC/MICU RN

1. Always keep a bag-valve mask (BVM) resuscitator close by in case of ventilator failure.
2. Tube placement must be verified via waveform capnography. Patient lung sounds should also be evaluated. Waveform capnography must be monitored continuously during transport.
3. Respiratory status should be established via ABG or VBG in newly intubated patients when available. Continuous waveform capnography monitoring with the pulse oximeter will be used on all patients. If no pulse ox is attainable due to poor circulation, an ABG or VBG will be necessary to insure adequate ventilations.
4. Ventilator and circuit must be set up according to manufacturer's recommendations.
5. Patient should be placed on the ventilator approximately 5 minutes prior to departure (to make sure patient tolerates the ventilator well). Adjustments should be made prior to departure.
6. If the patient is stable on pre-existing ventilator settings, the patient may remain on those settings per the sending facilities' physician orders.
7. Recommended vent settings:

    d. Tidal Volume: 6-10 cc/kg of ideal body weight.
    e. Mode: Assist Control (AC)
        i. Synchronized Intermittent Mandatory Ventilations (SIMV), and the Non-Invasive Positive Pressure Ventilation (NIPPV) techniques - Continuous Positive Airway Pressure (CPAP) and Bilevel Positive Airway Pressure (BiPAP) are acceptable modes of operation if that is what the patient is currently on.
    f. Positive End Expiratory Pressure (PEEP): 8 cm H_2O
    g. FiO_2: 60% (titrating per ABG/SpO_2).

8. Patients not tolerating the ventilator should have airway adequacy rechecked. If the airway is adequate and the ventilator is not functioning properly, the patient may be transported using BVM ventilation. If the problem is with the patient and not the ventilator, consider sedation/paralysis prior to departure (sedation alone is preferred).
9. Once the patient is on the ventilator, expiratory volumes must be checked and documented.
10. Patient's high- and low-pressure alarms can be set by taking the peak inspiratory pressure and adding 15 mmHg for the high value and subtracting 10 mmHg for the low value.
11. If the patient's respiratory status is unstable, contact medical control physician for approval to transport patient (i.e., hospital vent settings with PEEP greater than 20 mmHg).

MICU Pharmaceuticals

This section is for reference and does not necessarily constitute an order. Administration of these medications must be ordered by the sending physician or by medical control.

Acetylcysteine (Mucomyst, Acetadote)

Indication: Acetaminophen poisoning

Contraindications: Hypersensitivity to this medication. Caution if upper GI bleeding risk.

Adverse Effects: Bronchospasm, nausea, vomiting, rash, tachycardia, flushing, itching.

Administration:

1. Initial dose of 150 mg/kg IV x 1 over 60 minutes
2. Second dose of 50 mg/kg IV x 1 over 4 hours
3. Third dose of 100 mg/kg IV x 1 over 16 hours

Amiodarone (Cordarone)

Indication: Sustained ventricular tachycardia, supraventricular tachycardia, atrial fibrillation, ventricular fibrillation.

Contraindications: 2nd or 3rd degree AV block, bradycardia

Adverse Effects: Flushing, edema, sinus arrest, hypotension, bradycardia, CHF, dysrhythmias, SA node dysfunction, nausea/vomiting, headache, dizziness, tremors, abdominal pain.

Administration:

1. IV bolus 150 mg over 10 minutes (15 mg/min)
2. Infusion of 360 mg over 6 hours
3. Then 540 mg over remaining 18 hours

Diltiazem (Cardizem)

Indication: Control of rapid ventricular response with atrial fibrillation, atrial flutter, paroxysmal supraventricular tachycardia.

Contraindications: Allergy, hypotension, 2nd and 3rd degree heart block, ventricular tachycardia

Adverse Effects: Bradycardia, hypotension, AV block, syncope

Administration:

1. Initial dose of 0.25 mg/kg slow IV push over 2 minutes.
2. Second bolus dose of 0.35 mg/kg slow IV push over 2 minutes, 15 minutes after first dose if indicated.
3. Once rate is controlled, initiate drip of 5-15 mg/hr to maintain HR <110 with SBP >100.

Dobutamine (Dobutrex)

Indication: Hypotension, low cardiac output, pulmonary congestion

Contraindications: Allergy to dobutamine; SVT; ventricular dysrhythmias, acute MI

Adverse Effects: Hypertension, tachycardia, PVC's, nausea, hypotension

Administration:

5. Mix 250mg dobutamine in 250 mL of 0.9% normal saline or D5W. (May substitute premixed bag.)
6. Start drip via pump at 2 mcg/kg/min.
7. Titrate to SBP >90 mmHg.
8. Maximum dose is 20 mcg/kg/min.
9. Monitor vital signs every 5-10 minutes.
10. Avoid increases in heart rate greater than 10%.
11. If tachycardia or ventricular ectopy occur, consider decreasing dose.

mcg/kg/min	2.5 kg	5 kg	10 kg	20 kg	30 kg	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
2	---	---	1	2	4	5	6	7	8	10	11	12
5	---	1.5	3	6	9	12	15	18	21	24	27	30
10	1.5	2	6	12	18	24	30	36	42	48	54	60
15	2	5	9	18	27	36	45	54	63	72	81	90
20	3	6	12	24	36	48	60	72	84	96	108	120
mL/hr												

Dopamine (Inotropin)

Indication: Non-hypovolemic shock unresolved by fluid challenge

Contraindications: Allergy to dopamine; SVT; ventricular dysrhythmias; hypovolemia; acute MI.

Adverse Effects: Hypertension, tachycardia, arrhythmias, headache.

Administration:

6. Mix 400mg dopamine in 250mL normal saline or D5W. (May substitute premixed bag.)
7. Start drip via pump at 5 mcg/kg/min.
8. Increase in 5 mcg/kg/min increments every 5 minutes until SBP >90.
9. Maximum dose is 20 mcg/kg/min.
10. Monitor vital signs every 5-10 minutes.
11. If dysrhythmias occur, consider decreasing dose.

mcg/kg/min	**2.5 kg**	**5 kg**	**10 kg**	**20 kg**	**30 kg**	**40 kg**	**50 kg**	**60 kg**	**70 kg**	**80 kg**	**90 kg**	**100 kg**
2	---	---	---	1.5	2	3	4	5	5	6	7	8
5	---	1	2	4	6	8	9	11	13	15	17	19
10	1	2	4	8	11	15	19	23	26	30	34	38
15	1.5	3	6	11	17	23	28	34	39	45	51	56
20	2	4	8	15	23	30	38	45	53	60	68	75
mL/hr												

Esmolol (Brevibloc)

Indications: Rapid control of SVT, atrial fibrillation, or flutter.

Contraindications: Allergy to esmolol. Should not be given in 2nd or 3rd degree heart block, hypotension, bronchospasm. Caution in patients with COPD/asthma.

Adverse Effects: Hypotension, bradycardia, bronchospasm.

Administration:

12. Mix 5g esmolol in 500mL of normal saline or D5W. (May substitute premixed bag.)
13. Administer loading dose via pump of 500 mcg/kg over 1 minute followed by infusion at 50 mcg/kg/min.
14. If no therapeutic effect after 5 minutes, may repeat loading dose and increase infusion to 100 mcg/kg/min.
15. This sequence may be repeated every 5 minutes until therapeutic effect or maximum infusion of 200 mcg/kg/min is reached.
16. Monitor vital signs every 5 minutes.
17. Discontinue use if patient develops hypotension, bradycardia, or bronchospasm.

mcg/kg/min	40kg	50kg	60kg	70kg	80kg	90kg	100kg	110kg	120kg
50	12	15	18	21	24	27	30	33	36
100	24	30	36	42	48	54	60	66	72
150	36	45	54	63	72	81	90	99	108
200	48								