



# Mercyhealth Pre-Hospital & Emergency Services Center Medical Guidelines for Illinois EMS Providers

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# **SECTION 1 MERCY EMS ADMINISTRATIVE GUIDELINES**

# 1.01 INTRODUCTION

- I. Only Mercyhealth EMS providers that have been credentialed by the medical director may utilize these guidelines clinically.
- II. It is the understanding of the Medical Director that care is to be initiated for all patients upon assessment. Care will be provided in accordance with IDPH (210 ILCS 50) rules and regulations, applicable laws, and these medical guidelines for IL EMS providers.
- III. Ambulances will be equipped with a copy of these guidelines (availability of electronic copy is sufficient), all necessary patient care equipment, medications at the appropriate service level, and communications equipment (cellular phone, mobile and portable radios). This is in addition to any state and EMS system equipment and supply requirements.
- IV. The following guidelines are to be used by all EMS Personnel under the Mercyhealth EMS System in the pre-hospital setting any time contact with a patient has been made. When practical the guidelines have been aligned with other regional EMS standing orders and guidelines.
  - A. Find the appropriate Guideline. Carry out instructions as written in the Guideline.
  - B. It is expected that each provider maintains a functional knowledge of the most updated Medical Guidelines.
  - C. These guidelines are in effect until the patient arrives at the hospital and the patient's care has been turned over to appropriate medical and/or nursing staff.
- V. IDPH rules require that a copy of the run form or other documentation approved by the EMS System must be left with the receiving hospital. All reports will be completed in accordance with appropriate state and EMS system requirements.
  - A. Each run report must be signed by the person who wrote it.
  - B. An EMT or paramedic may write BLS run reports.
  - C. A paramedic must write ALS run reports.
  - D. All information obtained during patient care delivery is confidential.
- VI. Medical Control
  - A. The EMS Medical Director, On Call EMS Physician or Online Medical Direction is available for consultation via phone. EMS Providers can be patched to this phone by calling RockCom at (815) 968-0993.
  - B. All actions and treatments not qualified by the statement **Contact Medical Control** may be carried out without specific medical order or contact with Medical Control.
  - C. Actions qualified by the statement **Contact Medical Control** must have a verbal order from the appropriate On-Line Medical Control.
    1. Repeat the orders to Medical Control exactly as you receive them; and once confirmed, carry them out exactly as ordered.
  - D. If in your opinion, the orders you receive are inappropriate and/or dangerous to the patient:
    1. Question the Medical Control up to three (3) times regarding the rationale for those orders.
    2. If you are still in doubt, then verbally state your refusal to act.

3. Document this on your run sheet and include the time, the order(s) and your reason for refusal. A copy of the run sheet documenting refusal of on-line medical direction orders should be directly forwarded to the EMS System within 48 hours. Locking and signing the ePCR does not fulfill this requirement.
- E. If communications cannot be established, are disrupted, or lost between the EMS Provider and the hospital or medical control, document and continue to follow these guidelines including orders which typically require a verbal order. Every effort should be made to contact the hospital or medical control by cell phone, radio, or landline telephone. The EMS Medical Director or On Call EMS Physician must be made aware of these types of occurrences within 48 hours.
  - F. Under no circumstance shall EMS personnel delay patient care while attempting to establish contact with medical control
  - G. In the event that communications cannot be established, EMS personnel shall continue to provide care to the degree authorized by their license, these guidelines, drugs/equipment available, and their scope of practice granted by the EMS System. The EMS Medical Director or On Call EMS Physician must be promptly made aware of these types of occurrences within 48 hours.
  - H. In situations where immediate action to preserve and save lives supersedes the need to communicate directly with the hospital, the requirement for Medical Control orders may be lifted provided guidelines/ recommendations are followed and/or sound medical judgment is used. The EMS Medical Director or On Call EMS Physician must be promptly made aware of these types of occurrences within 48 hours.
  - I. Patient care is by nature unpredictable. In all circumstances, on-line/on-scene medical control has the latitude to deviate from these guidelines if it is believed that deviation is in the best interest of the patient. Such deviations should in no way detract from the high level of patient care expected from EMS personnel.
  - J. If doubt exists as to the best course for patient care, contact medical Online Medical Control
  - K. To request an MD-1 response to an incident, contact RockCom at (815)968-0993. The EMS Medical Director, On Call EMS Physician or other personnel will respond with EMS in the field when available and may respond to any call to provide on-scene assistance and quality assurance.
  - L. When the EMS Medical Director or On Call EMS Physician is providing care in the field, they will provide medical direction.
  - M. The receiving hospital is also authorized to provide on-line medical control for patients being transported to their facility. In the event a patient is being transferred between two healthcare facilities, the sending facility must develop a treatment plan for transport. See interfacility transport guidelines for interfacility purpose, policy, medical control, considerations for transport guidelines.
  - N. If MD-1 responds on-scene, MD-1 will supplement, not replace, regularly assigned field personnel, and in most cases, they will provide oversight and assistance. They will work under the existing ICS.
    1. Care should not be delayed awaiting MD-1 arrival.
    2. Ambulances should initiate transport as soon as able, intercepting with MD-1 where possible.
      - a) If the situation improves and a response is no longer necessary, the incident commander may request the response to be canceled.



3. MD-1 EMS Physicians have the authority to perform all skills and utilize all medications in these guidelines.
  4. In addition, the MD-1 EMS Physicians may utilize additional therapeutics approved by the medical director. Additional MD-1 EMS Physician procedures may also include additional skills such as tube thoracostomy, nerve blocks, use of ultrasound, wound closure, fracture care, dislocation reduction, junctional tourniquets, central venous access, lateral canthotomy, emergency amputation, and peri-mortem c-section.
- O. Examples of incidents (not all inclusive) when an on-scene physician may be beneficial:
1. Mass Casualty Situations
  2. Prolonged entrapments
  3. Structural Collapse
  4. Multiple Alarm Fires
  5. To provide surgical intervention if required
  6. To provide on-scene medical direction at major incidents
  7. To provide operational and logistics support at prolonged incidents
  8. Other complex incidents where the Incident Commander (IC) determines their assistance would be of value
  9. Additional medications not routinely carried by EMS (ex. Antibiotics, Cyanokit, Pitocin for post- partum hemorrhage) would provide benefit to the patient

## VII. Pediatrics

- A. Pediatric patients are addressed within the appropriate clinical care guideline.
- B. Although the medication doses vary, the procedures seldom change. Any specific adjustments are highlighted and identified where needed.
- C. The pediatric patient is identified as having not started physical changes of puberty. Any child who has gone through puberty should receive the adult dose of medication.
- D. Weight based dosing should be used for all patients, particularly pediatric.
  1. If weight is not available, the use of current medical director approved adjuncts such as the Broselow tape and Peditape are acceptable.
  2. If weight is not available, and the child does not fit on Broselow tape, then ½ the adult dose is a suggested guideline for prepubescent patients.
  3. The max pediatric dose should not exceed the standard adult dose.
- E. Pediatric ETT should be cuffed.
- F. Patients <18 years of age should have consent of a parent or guardian obtained prior to treatment unless they qualify as an emancipated minor or for care under implied consent.
- G. Standard sized pace/defib electrodes may be used in children > 10 kg
- H. All patients must be properly restrained during transport using age-appropriate securing devices.

- VIII. All medical devices, IV pumps, ventilators, medications, and instruments must be approved by the EMS Medical Director prior to any patient use. Additional equipment approval may be contingent on IDPH training plan. Reference to specific makes, models, or manufacturers is for illustrative purposes only and is not an endorsement.

- IX. Any guideline guides, references, notes, and patient care forms, whether written or electronic format must be approved by the EMS Medical Director.
- X. All EMS providers at all certification levels will be required to successfully complete a credentialing process established by the medical director prior to providing any patient care. EMS providers will routinely be evaluated by skills evaluation, simulation, written exams, and QA activities. If providers are deemed by the medical director to be operating in an unsafe manner, they will be immediately suspended from patient care activities. Any providers requiring remediation will do so in the manner prescribed by the medical director. Failure to follow the EMS system policies may result in disciplinary action up to suspension of patient care activities
- XI. All EMS providers and students will always adhere to medical director and EMS System minimum qualifications, guidelines, training, and skills requirements. Any provider or student not in compliance may be suspended from patient care activities until they are current with all medical director requirements. Providers may not utilize medications, devices, or perform skills that they are not credentialed, trained, and confident utilizing.
- XII. All EMS providers performing RSA will be required to complete additional RSA training, airway skills, and evaluation per medical director requirements.
- XIII. Medications
  - A. Generic substitution of medications and auto injectors are equivalent and acceptable even if these medications are not specifically named in the guidelines. Alternative substitution during drug shortages or other situations will be addressed in real time by medical director.
  - B. All medications will be administered utilizing the 5 rights of medication administration: right patient, right drug, right dose, right route, and the right time Assess for allergies before continuing/initiating medications.
  - C. All patients will be reassessed after each intervention and medication administration and their response will be documented.
  - D. Agency controlled substance policies are to be reviewed by the EMS system and agency representatives. Controlled substances must be stored securely with the utmost oversight. Audit trail electronic safes should be used when possible. Any discrepancy must be reported immediately to the EMS system coordinator or medical director.
  - E. High risk medications such as Epinephrine, Succinylcholine, and Vecuronium or any mixed medications should be labeled with high visibility markings. Epinephrine 1mg/1ml should be easily identified for IM use only. Placing it with a small volume syringe and IM needle will further reduce risk. Succinylcholine and Vecuronium should be easily identified as a paralytic.
- XIV. Illinois Concealed Carry of a Firearm.
  - A. Overview: Illinois has implemented the Firearm Concealed Carry Act allowing registered individuals to possess a concealed firearm on a daily or routine basis. This policy will be a commonsense guide for the EMS provider in dealing with the firearm during patient care procedures. While it is not an exhaustive list of possible situations, it will give guidance during most situations.
  - B. INFORMATION NEEDED- Consider that the safest place for the firearm in any of these situations is generally in the accompanying holster. EMS providers will need to ask if the patient is armed before making the decision to start an evaluation. It may be necessary to remind the patient that State law prohibits firearms on a hospital campus. When approaching a scene where the patient

may be carrying a concealed handgun, several scenarios are possible and should be handled in one of the following manners:

1. The patient is at their private residence. Have the patient in removing the firearm and holster as one unit and leave it secured at the residence in their previously designated location.
  2. If law enforcement is at the scene during situations such as a traffic accident or public encounter, have the officer secure and take custody of the firearm.
    - a) If the patient is unable to remove the holstered firearm due to illness/injury and a full body assessment is needed, cut the holster straps and remove the holstered firearm with law enforcement assistance.
    - b) If the holster is contaminated with blood or bodily fluid, have the officer don gloves before touching the holstered firearm. Provide a plastic or biohazard bag if necessary.
    - c) If the patient has an altered level of consciousness and is unable to comply with the request to remove the holstered firearm, safely remove the holstered firearm by whatever means necessary (cut holster straps, unbuckle straps, etc.) and give to law enforcement when available, or have the officer assist with safe removal of the firearm. Belligerent, combative, or uncooperative patients that are known to have a firearm should not be approached until law enforcement arrives or the scene is otherwise made safe.
  3. If law enforcement is not on scene to take custody of the firearm, place the holstered firearm in the lockable firearm transport away from patient if available.
  4. If the hospital has a secure location, such as a gun safe currently used by law enforcement, place the firearm, holstered, if possible, in the gun safe and notify law enforcement or a qualified hospital security agent.
  5. Make arrangements for law enforcement to meet the ambulance at the hospital and take custody upon arrival in the ambulance bay or parking area. Ideally law enforcement will take custody of the firearm at the scene.
  6. Firearms may be carried in a purse rather than a holster. The safest approach is to leave the firearm in the purse, turning it and the contents over to law enforcement to secure the firearm. The purse can be returned to the patient once the firearm is removed and secure.
  7. If the patient has the firearm in a pocket without a holster, use extreme caution in retrieving it from the clothing, handling it only by the handle. Never attempt to unload the firearm or handle the trigger area. Avoid trying to manipulate or change the safety on a firearm. Have one crewmember place the gun in a safe or secure location in the home or lockable firearm transport box in the ambulance until law enforcement arrives.
  8. If the patient is to be transported by helicopter from the scene or a rendezvous point, leave the firearm with first arriving law enforcement or notify local law enforcement of the situation. Do not send the firearm in the helicopter.
  9. It may be considered a refusal of care if a patient will not remove or relinquish their firearm. Contact Medical Control for any situation of this type.
- C. If the EMS provider feels threatened or that the scene is unsafe, then follow standard policies and procedures for scene safety.
- D. EMS providers should never attempt to unload a firearm, regardless of their experience with it.

- E. Providers should make arrangements with law enforcement to assist with these situations.
  - F. Relinquish firearm only to law enforcement, security personnel, or other qualified person.
  - G. Treat all weapons as if they are loaded.
  - H. At no time should patient care be compromised due to the presence of a firearm. This includes transporting to the hospital where law enforcement can rendezvous with EMS to take custody of the firearm.
  - I. A chain of custody form may be necessary to reduce the potential of losing the firearm or ammunition while patient care is being administered. Consult local authorities or your hospital for such a form.
- XV. All ambulance units should be dispatched via a dedicated method. The officer or crew should acknowledge the dispatch or as appropriate call en-route, on-scene, and at the initiation of transport to hospital destination. The ambulance should notify the dispatcher when they are available or back in service. Communications must be reliable and redundant, and the dispatch center must know the EMS system resources allocation in real time.
- XVI. Once dispatched, the EMS crew is obligated to respond to the incident barring mechanical failure or safety event. Assuring that someone is responding to the incident is a critical responsibility of both the crew and dispatch center. Departments must have a policy established with their dispatch center of steps to be taken autonomously under protocol in the event of communications failure or a non-response situation.
- XVII. If canceled while enroute due to corrected dispatch information, you should proceed to provide initial care and hand off to the transporting ambulance when they arrive. If the other ambulance will arrive first, then you can end response and return if they do not need further assistance. Once dispatched, downgrading to non-emergent response is reasonable based on updated dispatch information. You should only be canceled by appropriate authority or after an attempt to assess or locate the patient is unsuccessful.
- XVIII. A reasonable search of the scene must be completed to determine if a patient is present. All patients shall have a reasonable assessment to the extent allowed if there is a potential for illness or injury based on the circumstances. If after a reasonable search, no patient is identified, efforts to find the patient shall be documented in accordance with EMS agency policies.
- XIX. SALT Mass Casualty Triage Algorithm (Sort, Assess, Lifesaving Interventions, Treatment/Transport) is the medical director approved triage method. In a disaster situation, EMS providers may be working with other providers that utilize different triage systems.
- XX. Where a skill or medication is mentioned for specific indication in a guideline for Paramedics, the Intermediate EMT (I99) may perform those listed below. An Intermediate EMT (I99) will be required to meet the same (and at times more stringent) system education and skill requirements of the Paramedic prior to acting in this role. Only Intermediate EMT (I99) approved and credentialed by the EMS Medical Director will act in this capacity.
- A. The Intermediate EMT (I99) shall only perform the following skills above EMT Basic level: ECG interpretation and monitoring, Morgan lens eye irrigation, intubation, Magill, stoma suctioning, tracheostomy intubation, starting and maintaining IVs/IOs, drawing blood, needle decompression for thoracic injury, manual defibrillation, and pacing. The Intermediate EMT shall only administer the following medications: adenosine, amiodarone, atropine, benzodiazepines, dextrose, diphenhydramine, epinephrine, lidocaine, ondansetron, fentanyl, and methylprednisolone.

- XXI. Prehospital Registered Nurses (PHRNs), Prehospital Physician Assistants (PHPA) or Pre-Hospital Advanced Practice Registered Nurse (PHAPRN) shall follow the ALS/Paramedic guidelines unless operating and credentialed for a higher-level service provider (Tier 1-3)
- XXII. An Illinois Licensed RN may undergo additional training and credentialing by the EMS Medical Director and may function under the EMT-Basic guidelines on a volunteer agency.
- XXIII. Blood glucose should judiciously be checked with a properly calibrated glucometer when it guides patient care. Routine use of blood glucose meters on alert patients without recent history of signs or symptoms of dizzy, weak, palpitations, falls, diaphoresis, confusion, neurologic deficit, or altered mental status is usually not clinically indicated. Blood glucose evaluation should not be routinely utilized during cardiac arrest, as it is highly inaccurate.
- XXIV. EMS Providers are mandatory reporters of some specific types of abuse. Any suspected abuse which falls into mandatory reporting criteria should be immediately reported to local law enforcement to provide immediate safety for at risk individuals. Ensure mandatory reporting is completed and documented after safety of EMS and individual is accomplished. Treat injuries per medical guidelines and provide psychological support. In addition to completion of mandatory reporting, EMS personnel shall report their suspicions to the receiving emergency department physician and/or charge nurse (if applicable) and/or police and document on the EMS medical record.
- A. Persons protected by the Illinois Domestic Violence Act include:
1. Person abused by a family or household member.
  2. High-risk adult w/ disabilities who is abused, neglected, or exploited by a family or household member.
  3. Minor child or dependent adult in the care of such person
  4. Person residing/employed at a private home/ public shelter which is sheltering an abused family or household member.
- B. Child Abuse/Neglect
1. By Illinois law, (Abuse and Neglected Child Reporting Act) medical personnel are required to report cases of suspected child abuse and neglect. DCFS can be reached at 1-800-25-ABUSE (24-hour phone line).
  2. On the patient care report carefully document history and physical findings, environmental surroundings, child's interaction with parents or guardians, discrepancies in the history obtained from the child, bystanders, parents, or guardians, etc.
  3. Treatment of Suspected Child Abuse/Neglect
    - a) Treat injuries.
    - b) If parent or guardian refuses to let you treat and/or transport the child, remain at the scene. Contact Medical Direction and request police assistance. Request that the officer place the child in protective custody and assist with transport.
    - c) A law enforcement officer, physician or a designated Department of Children and Family Services (DCFS) employee may take or retain temporary protective custody of the child.
    - d) In the instance that a child has a life, limb, or sight threatening illness or injury AND the caregivers are refusing evaluation, the child should be transported to the closest appropriate facility, with simultaneous contact of Law Enforcement and On-Line Medical Control.

- e) Any person acting in good faith in the removal of a child shall be granted immunity from any liability as a result of such removal.
- C. Elder Abuse (60 years and older), Adults with Disabilities Abuse
- 1. All EMS personnel who have reasonable cause to believe an Adult/geriatric patient may be abused or neglected shall report the circumstances to the appropriate authority upon completion of patient care.
  - 2. Reporting number for Adult/Geriatric Abuse:
    - a) Adult Protective Services Hotline, 1-866-800-1409.
    - b) Nursing Home Abuse - Suspected victims of nursing home abuse or neglect are to be reported to the proper authority as mandated by Illinois State Law PA 82-120, "The Abused and Neglected Long Term Care Facility Residents Reporting Act". This authority is the Division of Enforcement, Illinois Department of Public Health: call 1-800-252-4343 or the Ombudsman Program at 815-316-0040.
    - c) Supportive Living Facilities - For residents who live in Supportive Living Facilities call the Illinois Department of Healthcare and Family Services Complaint Hotline at 1-800-226-0768.
  - 3. If there is reason to believe the geriatric patient has been abused/neglected, EMS personnel shall make every reasonable effort to transport the patient. If transport is refused, request police assistance if indicated.
- D. Domestic Abuse
- 1. All EMS personnel who have reasonable cause to believe a patient is the victim of domestic assault and/or violence are required by law to provide immediate and appropriate referral information to the patient. This requirement will be fulfilled by the receiving hospital the patient is transport to.
    - a) Information about shelter and alternatives is available 24 hours per day by calling the Domestic Violence Hotline (1-800-799-7233).
  - 2. If there is a reason to believe a patient is a victim of domestic assault and/or violence, EMS Personnel shall make every reasonable effort to transport the patient. If transport is refused, request police assistance if indicated.
  - 3. Domestic Violence between adults in a home witnessed by a child should be reported to DCFS
- E. For victims of sexual assault see section [1.05 Crime Scene Management](#) p. 22

# 1.02 UNIVERSAL PRECAUTIONS

**Key Considerations:** Assume all patients may be carriers of infectious / contagious disease. If a specific contagion is identified, respond with addition PPE protection. If the specific or suspected disease etiology dictates, provide PPE for patient. Consider potential respiratory contagion in a closed ambulance and ventilate accordingly. Consider contagions from bodily fluids, mucous membranes, non-intact skin, body issues, and medications/drugs/illicit substances when handling blood.

## I. GLOVES

- A. All personnel under the following conditions shall wear gloves.
  - 1. If you may be contact with blood or blood products or other body fluid and secretions.
  - 2. During contact with articles or surfaces potentially contaminated by the patient.
  - 3. During placement of intravenous lines or while drawing blood.
  - 4. While doing any other surgical or invasive procedure.
  - 5. While cleaning re-usable equipment contaminated with body fluids or blood.
  - 6. During all decontamination procedures.
  - 7. Gloves used in the patient care area should not be worn in the drivers' compartment.
- B. Gloves are to be disposed of after single use.

## II. MASKS

- A. Masks should be worn any time there is risk of splash, spray or aerosolization of body fluids.
- B. Masks should be worn during intubation or when suctioning an intubated patient.
- C. Properly fitted N95 masks should be used when caring for patients with respiratory transmissible diseases. Each EMS agency is responsible to ensure all EMS system participants are appropriately fitted with respiratory protection in accordance with OSHA and IDOL guidelines as appropriate.
- D. Masks should be placed on patients or over oxygen delivery devices as source control of respiratory borne illness as indicated.

## I. EYE PROTECTION

- A. Eye protection should be worn any time there is risk of splash, spray or aerosolization of body fluids.
- B. Eye protection should be worn during intubation or when suctioning an intubated patient.
- C. EMS personnel wearing glasses should consider using additional eye shield.

## II. GOWNS

- A. A gown should be worn any time there is risk of splash, spray or aerosolization of body fluids.
- B. Clothing contaminated with blood or body fluids should be appropriately laundered or discarded.

## III. NEEDLE STICK INJURIES and SIGNIFICANT EXPOSURES

- A. All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers. Used needles should in no way be manipulated by hand.

- B. Blunt fill needles, self-blunting needles, safety catheters are to be considered the standard. The use of non-safety style devices is considered hazardous. Use of extension sets to draw blood and start the IV will additionally reduce the amount of contact with blood.
- C. Do not recap needles.
- D. Personnel who may have needle stick or an exposure of their own blood stream, mucous membrane, or eye with bodily secretion from a patient should notify the Emergency Department to which the patient was transported. Here, the receiving hospital Emergency Department Charge Nurse or appropriate designee will implement the hospital specific response procedure. This procedure may include baseline blood test on the EMS provider and host patient, interview and counseling of risks to EMS provider, follow-up information and / or referral which may or may not include prophylaxis.
  - 1. The response action will be documented and forwarded to the EMS provider, receiving facility infection control provider, provider's department officer (if applicable, and the provider's EMS System Resource Hospital.
  - 2. Follow-up notification of test results is the responsibility of the receiving hospital infectious disease provider. The EMS Systems Coordinator will be responsible for follow up to clarify procedure has been accomplished and notification and follow-up has occurred.
- E. NEEDLE STICK INJURIES SHOULD BE REPORTED PER YOUR INTERNAL DEPARTMENT POLICY.

#### IV. MISCELLANEOUS

- A. Thorough hand washing is recommended after every patient encounter.
- B. Non-latex equipment should be used on all patients with latex allergies.
- C. Direct mouth-to-mouth resuscitation is not recommended.
- D. All specimens transported from a patient should be treated as potentially infectious.
- E. While not mandatory, it is highly recommended that all EMTs be vaccinated for Hepatitis B followed by appropriate titer to demonstrate immunity. In some cases, a second series may be warranted. Keep all other recommended vaccinations current and have proper testing as indicated.
- F. HEPA filters should be utilized, when possible, in the respiratory circuit.
- G. Reduce aerosolizing procedures, when possible, in patients with potential respiratory transmitted diseases. If possible, isolate the cab of the ambulance during transport.
- H. Include information regarding aerosol procedures for high-risk patients during inbound report. Aerosol procedures may need to be discontinued while transporting the patient through the Emergency Department.
- I. When appropriate PPE is to be disposed of in accordance with appropriate hazardous waste regulations. Soiled patient clothing and linen should be contained in a Biohazard labeled bag; and transported to the ED with the patient for disposition.
  - 1. Re-usable PPE (i.e., SCBA, protective eyewear) must be cleaned with an appropriate cleaning agent.
  - 2. Soiled clothing should be cleaned per OSHA guidelines.
- J. Disposable equipment is to be used in providing patient care when possible. Re-usable equipment (laryngoscope handles/blades, ECG monitors, BP cuffs, cots, ambulances etc.) must



be cleaned in accordance with manufacturer and CDC/OSHA guidelines, utilizing an appropriate disinfecting agent after each patient use.

**I. Lifting Precautions**

- A. Prevention of injury to personnel and patient is a priority. Proper lifting techniques, having adequate personnel and using appropriate adjuncts such as automatic cots and bariatric resources as available is strongly recommended.

## 1.03 COMMUNICATION AND REPORT NOTIFICATION

Overview: Inbound radio reports are utilized to notify receiving facilities about incoming patients. Information conveyed should be concise to facilitate the ED triage/bed assignment process.

When the patient condition warrants it, an alert notification should be made as soon as possible in order to improve the time to definitive care at the hospital.

- I. When communication with Medical Control and/or receiving facility has been established, briefly advise of the following:
  - A. Unit Designation and Level of Service
  - B. Patient's age
  - C. Chief Complaint
    1. Early notification of STEMI, Stroke, or Trauma followed by a detailed report once enroute.
    2. If requesting orders/interventions, state these first.
  - D. Brief History of Present Illness including mechanism of injury (if appropriate)
  - E. Summary of symptoms, exam findings (including vital signs) and your impressions
  - F. Any medications the patient takes that may impact on the current problem (Blood thinning medications)
  - G. Monitor interpretations (if applicable)
  - H. Treatment you have rendered.
  - I. An approximate ETA
- II. Alert Notification
  - A. STEMI Alert should be called:
    1. When the EMS provider identifies a STEMI
    2. The EMS provider should call in the STEMI Alert and transmit the ECG if possible.
  - B. Stroke Alert should be called:
    1. When Stroke Screening checklist/ GFAST Exam is positive
    2. Give last known well time and follow Stroke Guidelines
  - C. Trauma Alert should be called:
    1. Category I and II Trauma (see In-Field Trauma Triage Criteria)
  - D. Burns Alert should be called:
    1. Full thickness: > 10% of TBS
    2. Partial thickness: > 20% of TBSA.
    3. Burns of airway, face, eyes, hands, feet, or genital area.
    4. Chemical inhalation or electrical burns.

- E. Unstable Pediatric Alert should be called:
  - 1. Altered LOC
  - 2. Airway difficulties
  - 3. Signs of hypoperfusion (shock) ([See Shock Guidelines](#) p. 96)
- F. Sepsis Alert should be called when the sepsis screening tool is positive ([See shock guidelines](#) p. 96)

# 1.04 TRANSFER OF PATIENT CARE

**Overview:** Patients entrust the medical community to care for them to the highest level possible. To that end, these guidelines delineate proper transfer of responsibility of patient care from the prehospital providers to hospital personnel.

**I. Information Needed:**

- A. Level of care patient is currently receiving (BLS/ALS.)
- B. Level of care to which patient is being transferred.

**II. Emergency Department:**

- A. When a patient is transported to an emergency department, the transporting crew shall not leave the patient unattended in the department.
- B. Written or verbal acceptance of responsibility for the patient should be obtained.
- C. All patients must be turned over to a registered nurse or physician.

**III. Other Hospital Departments or Medical Facilities (e.g., Nursing Homes):**

- A. When a patient is transported to a location in a hospital, other than the emergency department, or to a nursing home or other health care facility, the ambulance crew shall remain with the patient until a registered nurse, physician or appropriate healthcare provider accepts responsibility for the patient.
- B. Written or verbal acceptance of responsibility for the patient should be obtained.
- C. An ALS patient must be turned over to a registered nurse or physician.
- D. Care of a BLS patient may be turned over to an appropriate healthcare provider.

**IV. Transfer of patient care to another prehospital care provider (in a situation other than a disaster or triage situation):**

- A. When the care of a patient is going to be transferred to another prehospital care provider, the ambulance crew shall remain with the patient until the second care provider arrives and accepts responsibility for the care of the patient.
- B. Written or verbal acceptance of responsibility for the patient should be obtained.
- C. The second provider shall not accept responsibility for the patient until the report is given. When care of patient is transferred to another prehospital provider, that provider must be of at least an equal, if not higher, degree of training (e.g., BLS crew must transfer to at least another BLS ambulance; care of the patient requiring ALS level services should not be transferred to a BLS crew).

**V. Inter-facility Transfers:**

- A. If a patient is receiving medications or is connected to medical equipment, and these medications and/or equipment are not within the scope of practice for the EMS personnel, a nurse, physician or appropriate healthcare provider must be present on the transfer. A provider is prohibited from transferring such a patient without a nurse, physician or appropriate healthcare provider present during transfer. Please see the Tier I-III inter-facility transfer and critical care transports guidelines.

The MIST mnemonic is an example of how information can be successfully exchanged at patient hand offs.

- M** Age/Sex, **M**echanism of Injury or **M**edical Complaint  
(If known include patient's name)
  
- I** Injuries or Inspections  
(Time of injury/list injuries head to toe or time of onset/brief medical exam findings)
  
- S** Vital Signs  
(First set and significant changes, include glucose)
  
- T** Treatments and response  
(Interventions, medications given, and patient response)

## 1.05 CRIME SCENE MANAGEMENT

It is clearly understood that the first and foremost duty of law enforcement and EMS personnel is to protect and preserve human life. Pre-hospital providers must ensure that patient care is given the highest priority. In addition, and to the extent possible, this care should be given with consideration to the needs of law enforcement with respect to personnel safety, crime scene management and preservation of evidence. Pre-hospital personnel shall follow the direction of law enforcement with respect to crime scene management. The direction should not prevent nor detract from quality patient care. The following guidelines should be followed:

In all cases where a crime, suicide or self-harm, death, or suspicious fatality has occurred:

- A. If police are not on the scene, request their services.
- B. Assess the scene to determine if conditions permit safe performance of professional medical duties.
- C. If the safety of EMS personnel would be placed in jeopardy, treatment and transport may be delayed pending police arrival.
- D. Park EMS vehicles with consideration of the crime scene at direction of law enforcement if possible.
- E. Do not destroy evidence such as tire tracks, footprints, or broken glass.
  1. Consider wearing gloves for all activities at a crime scene including those not directly involved with patient care.
- F. Entry to the crime scene should be made with the minimum number of personnel necessary to access and provide care to the patient(s).
- G. Entry to and exit from the crime scene should be accomplished by the same route.
- H. Do not walk-through fluids (blood) on the floor/ground.
- I. Care should be taken not to disturb any physical evidence (including weapons). Do not move or touch anything unless it is necessary to do so for patient care.
- J. Observe and document any items moved.
- K. Notify law enforcement of, and document, any items removed from the scene (impaled object, bottles, and patient belongings)
- L. Removal of patient clothing should be kept to a minimum. Clothing removal should be done in a manner which will minimize the loss of physical evidence.
- M. Do not cut through suspected bullet or knife holes.
- N. Clothing and all personal articles of the patient are to be left in the possession of law enforcement personnel whenever possible.
- O. If resuscitation was attempted, all EKG electrodes, defibrillation pads, IVs, IOs, invasive catheters (e.g. chest needles), and advanced airway devices should be left in place.
- P. Put wrappers and other disposable "trash", which accumulates as patient care is rendered, in a single site away from the patient and/or potential crime scene evidence. Do not pick up on-scene trash items and discard because evidence may be destroyed. On-scene law enforcement personnel may suggest a site to be used for trash which would be most ideal to maximize preservation of evidence.
- Q. Do not clean or disturb a patient's hands when involved with a firearm. Consider covering the patient's hands with a paper bag during treatment and transport.
- R. Patients who meet the "obvious death" criteria do not require EKG confirmation of asystole, or any manipulation of the body. These include:
  1. rigor mortis

2. dependent lividity
  3. decomposition
  4. decapitation
  5. incineration
  6. transected torso
- S. Patients who meet the criteria for withholding resuscitative efforts should be assessed using the minimum number of EMS personnel. EKG confirmation of asystole should be completed with minimal movement of the body.
  - T. Medical direction should be contacted if a coroner, medical examiner, deputy coroner, deputy medical examiner, licensed physician, or hospice RN (if the patient is enrolled in hospice at the time of death) intend to pronounce death on scene with EMS personnel present. EMS in conjunction with online medical direction physician will determine if resuscitation should be withheld when EMS is presuming death.
  - U. If obvious death has been presumed by a law enforcement officer, and EMS is present, it is recommended that EMS be involved in the presumption of death. It is important to document the name and badge number of the officer presuming death or limiting access to the scene for patient assessment as the liability for such a decision will rest with him/her, and his/her department.
  - V. Every effort to cooperate with law enforcement should be made. In the event of a disagreement with law enforcement, EMS personnel should document the problem and refer the matter to their superior for follow-up and/or action. If the disagreement involves, in the opinion of the pre-hospital provider, an issue that will or could result in patient harm, an immediate request for on scene EMS and Law Enforcement supervisory personnel should be made, including consideration for direct medical oversight advice.
  - W. If EMS personnel discover a crime scene, or are at a crime scene without law enforcement, an immediate request for law enforcement shall be made. Until such time as law enforcement arrives, EMS personnel shall assure their own safety and if possible, attempt to follow the guidelines contained in this document.
  - X. Laundering of the scene at the completion of the investigation is not routinely in the scope of responsibility for the EMS personnel and therefore these requests should be to the appropriate resources for completion of scene management.
  - Y. Patients under police custody or who are under arrest must always have a law enforcement officer present during EMS transport.
  - Z. Sexual Assault
    1. When possible, transport all victims of a sexual assault to a facility with certified Sexual Assault Nurse Examiners (SANE)
    2. EMS Providers who respond to a call for an alleged sexual assault victim should do a medical screening exam to determine any physical trauma that needs immediate attention. Treat per medical guidelines. The EMS personnel should examine the genitalia only if severe injury is present or suspected.
    3. Patient history should be limited to the elements needed to provide emergency care.
    4. Be cognizant of preserving evidence during the process of patient assessment and care. This should include:
      - a) Cover cot with paper chux or sterile burn sheet if possible
      - b) Handle clothing as little as possible

- c) Do not clean wounds unless necessary.
- d) Ask the patient not to drink or brush teeth.
- e) Ask the patient to avoid bathing, urinating, defecating, or douching if possible.
- f) Ask the victim not to change clothes or bathe.
- g) Disturb the crime scene as little as possible.



## 1.06 RESPONDER REHABILITATION

These guidelines were developed using NFPA 1584 and the FEMA Document as a guideline. Each agency is encouraged to add their own expertise regarding on scene and response operations, to develop a full and working document for their respective agency. See references forms: [Rehab Tracking Form](#) p. 32.

### Determining Need for Rehabilitation on Scene

Each incident is unique, and the Incident Commander must assess whether there may be a need for rehabilitation for responders on-site. Rehabilitation shall commence whenever the physical or mental demands of an incident operation or training exercise poses a potential safety or health risk to members as determined by the incident commander (IC). When heat, high humidity, deep standing water, or cold exposure is likely on scene, rehabilitation shall generally be initiated as soon as possible with regards to onset of the incident.

Weather conditions are important with regards to environmental safety. The heat stress index should be calculated in warm conditions, and the wind chill index in cold conditions. As humidity and wind play important factors in cooling, it is not sufficient to make rehab deployment decisions based on temperature alone.

### Indications for immediate rehabilitation at a working fire scene:

- Heat stress index greater than 89 degrees if turnout gear or protective equipment and any exertion is anticipated
- Any heat stress index over 105
- Wind chill under 10 degrees or actual temperature below zero degrees

### Rehabilitation efforts shall endeavor to providing the following:

- Relief from climatic conditions.
- Rest and recovery.
- Active and/or passive cooling or warming as needed for incident type and climate conditions.
- Rehydration (fluid replacement, calorie and electrolyte replacement, as appropriate, for longer duration incidents).
- Medical assessment and treatment when indicated per below.
- Member accountability.
- Member release disposition from rehabilitation (reassignment, EMS evaluation, or post-incident recovery).

### Crew Guidelines for Rehabilitation:

- Once the Incident Command determines that scene rehabilitation is warranted and it is operational, it is then mandatory that all personnel on scene follow rehab guidelines.
- If at any time, a crewmember feels the need for rehab it should be provided as soon as possible.
- Crews should be sent to rehab based on decreased work capability and fatigue, not only when their air tank is empty.

- Crews shall advise their company officers when they believe their level of fatigue or exposure to heat or cold is approaching a level that could negatively affect them, their crew, or the operation in which they are involved.
- Crews shall remain aware of the health and safety of other members of their crew.

These criteria are considered maximum guidelines, and crews should routinely be sent to rehab prior to reaching these maximums.

Members are recommended to undergo rehabilitation following the use of a self-contained breathing apparatus (SCBA) or after 40 minutes of extreme work without SCBA (dependent on nature of work, working environment, and climate conditions). Ballistic and Chemical protective apparel is an extreme operation and frequent rehab is also needed.

#### Rehab Unit Configuration Guidelines

- Distance from working scene enough to allow turn out gear, SCBA or other potentially soiled equipment to be removed.
  - Decontamination strategies should be use prior to personnel entering rehab area.
- Appropriate shelter from conditions.
- Fans and portable heaters as needed.
- Must be free of smoke and apparatus exhaust.
- Size must be large enough for anticipated use.
- A clear entry and exit site must be established.
- Easy and clear access for emergency ambulances must exist.
- Should be staffed with dedicated medical personnel of highest level available.
- The Rehab Manager must have final say as to disposition of individuals in the unit.
- A rehabilitation documentation report may be created and include the following information:
  - Unit number.
  - Member name.
  - Time-in/time-out for members/crews entering or leaving the rehabilitation area.
  - If the member is referred for medical evaluation.
  - Rehabilitation disposition.

#### ON SCENE MEDICAL TREATMENT

- Emergency medical services (EMS) providers assigned to the rehabilitation group shall have the authority, as delegated by the incident commander, to use their professional judgement to keep members in rehabilitation or to transport them for further medical evaluation or treatment.
- EMS personnel shall evaluate members with symptoms suggestive of a health and/or safety concern:
  - Chest pain, dizziness, shortness of breath, weakness, nausea, or headache.
  - General complaints, such as cramps, aches, and pains.
  - Symptoms of heat- or cold-related stress.
  - Changes in gait, balance, coordination, speech, or behavior.
  - Changes in alertness or orientation to person, place, and time of members.

- Minimum list of symptoms shall not replace good judgement, experience, and training.

**Assessment-** It is recommended that personnel rest for a minimum of 20 minutes. Additionally, personnel in rehab area will be assessed for physical stress utilizing the following parameters:

- Blood Pressure
- Pulse
- Respiratory Rate
- Temperature: obtain if symptomatic
- Pulse Oximetry

**Transport to medical facility for any of the following**

- Oral temperature greater than 102°F (38.9°C).
- Oral temperature greater than 101°F (38.3°C) if other symptoms present.
- Irregular pulse
- Resting pulse greater than 120.
- Systolic BP > 200 after rehab
- Diastolic pressure > 130 anytime
- Any signs of dyspnea or hypoxia
- Any signs of mental status change

**Firefighter may return to the incident if appropriate rehydration has occurred and the following vital sign criteria are met.**

- Heart rate < 100
- Systolic BP between 100 and 160
- Diastolic BP < 90
- If temperature elevated and Neurologic Symptoms treat per [Heat emergencies](#) p. 89, consider IV Fluids, Cold Water Immersion, and transport to the hospital.
- If temperature low, treat per [Hypothermia and Frostbite](#) p. 93
- Transportation to Hospital by EMS, Considerations
  - If the patient shows signs or symptoms of:
    - Persistent abnormal vital signs despite adequate rehabilitation times
    - Chest pain
    - Injuries requiring treatment
    - Persistent headache, abdominal pain, dizziness, blurred vision, mental status changes, gait instability, nausea, vomiting, or general illness
    - Any concerning clinical situation of rehab/medical officer
    - Anyone requiring IV fluids is recommended to be transported to hospital.
- Symptomatic members shall be treated and transported in accordance with EMS guidelines.

- Refusal of Care or Transport to the Hospital:
  - If the department member refuses medical care or transportation, they will be required to sign a medical release waiver.
  - The Incident Commander on scene should be made immediately aware of this situation.
  - The department member should be encouraged to seek medical care.
  - Online medical direction can be consulted immediately for any health concerns.
- Fluids orally should be partially water and partially a commercially made sports drink (ideal mix 50/50) for electrolyte replacement.
  - Fluids should be on ice, so they have a temperature close to 40 degrees in warm environments.
  - Members entering rehabilitation shall consume fluids, regardless of thirst, during rehabilitation and be encouraged to continue hydrating after the incident.
  - Members shall avoid over hydration, which can lead to hyponatremia.
- Departments shall ensure that appropriate calorie and electrolyte replacements are available as indicated.
- When emergency medical care is provided, the incident commander or designee shall be notified.

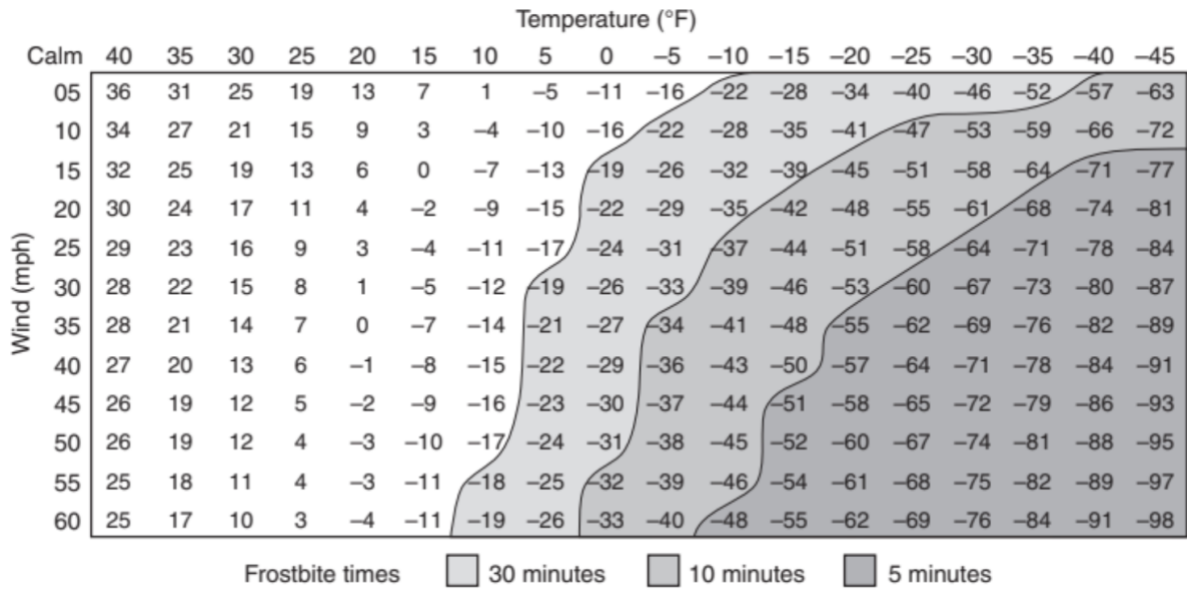
#### Release from Rehab

- The rehabilitation manager or their designee shall determine when a member or company can be as follows:
  - Cleared for further incident assignment or demobilization.
  - Maintained in rehabilitation for further rest and recovery.
  - Transported for more definitive medical evaluation/treatment
- Members being released from rehabilitation shall confirm their accountability with the rehabilitation manager.
- The member shall not return to operations in the following conditions:
  - If the member does not feel adequately recovered.
  - If EMS or supervisory staff identifies evidence of medical, psychological, or emotional distress.
  - If the member appears otherwise unable to perform his or her duties

#### Post-Incident Recovery

- Personnel and crews released from the incident shall follow a demobilization process that includes the following:
  - Communication of post-incident status.
  - Time for post-incident personal hygiene.
  - A plan for station, apparatus, protective clothing, and equipment decontamination.
  - Identification of potentially traumatic events.
  - Completion of exposure reporting as indicated.

| Relative Humidity (Percent) | Air Temperature (°F)      |    |    |    |    |     |     |     |     |     |     |
|-----------------------------|---------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|
|                             | 70                        | 75 | 80 | 85 | 90 | 95  | 100 | 105 | 110 | 115 | 120 |
|                             | Apparent Temperature (°F) |    |    |    |    |     |     |     |     |     |     |
| 0                           | 64                        | 69 | 73 | 78 | 83 | 87  | 91  | 95  | 99  | 103 | 107 |
| 10                          | 65                        | 70 | 75 | 80 | 85 | 90  | 95  | 100 | 105 | 111 | 116 |
| 20                          | 66                        | 72 | 77 | 82 | 87 | 93  | 99  | 105 | 112 | 120 | 130 |
| 30                          | 67                        | 73 | 78 | 84 | 90 | 96  | 104 | 113 | 123 | 135 | 148 |
| 40                          | 68                        | 74 | 79 | 86 | 93 | 101 | 110 | 123 | 137 | 151 |     |
| 50                          | 69                        | 75 | 81 | 88 | 96 | 107 | 120 | 135 | 150 |     |     |



## **1.07 USE OF LIGHTS AND SIREN**

For EMS, the purpose of using lights and sirens is to improve patient outcomes by decreasing the time to care, at the scene, or to arrival at a hospital; however only a small percentage of medical emergencies involve time sensitive conditions in which patients may benefit from lights and siren use.

The use of lights and sirens should be reduced as much as possible and only reserved for emergency response and emergency transportation. Additionally, training and procedures need to be in place, so when this mode of operation is used it will be done as safely as possible to all drivers and the public.

Each organization should develop and regularly review an emergent driving policy that provides for and enforces safe practices by all drivers. This policy should include a system to monitor the use of lights and siren.

Each organization should provide structured, emergent vehicle operation training prior to allowing personnel to drive the emergency vehicle. Before privileges are granted, drivers should be observed by their leadership.

All responders should have the ability to communicate with one another, and after assessing the patient, they have the ability to downgrade the response.

Driving with due regard for public safety is a critical and expected practice for agencies under our medical direction.

## 1.08 ADVANCED LEVEL INTERCEPTS

Advanced response should be requested as soon as possible to ensure the patient receives the maximum benefit from the higher-level provider. Immediate life-threatening calls should have Advanced level response initiated by dispatch. Agencies must work with their dispatch centers to ensure this process occurs prior to the incident. These call types at a minimum include:

- A. Cardiac Arrest with CPR indicated
- B. Trauma with altered mental status
- C. Trauma with severe hemorrhage
- D. Penetrating trauma to head, neck, or torso

The following type of calls may also benefit from rapid Advanced response based on EMD or agency request:

- A. Cardiac Arrest
- B. Airway compromise
- C. Unresponsiveness
- D. Cardiac Chest Pain or STEMI
- E. Difficulty Breathing
- F. Anaphylaxis
- G. Severe Pain
- H. Major Burns
- I. Major Trauma
- J. Drowning or Near Drowning
- K. Drug Overdose
- L. Severe Hypothermia
- M. Multiple or Ongoing Seizures
- N. Abnormal vital signs (severe hyper/hypotension, brady/tachycardia)

If transport time is less than the time anticipated to complete advanced level intercept and interventions, initiate lower level transport.

Once dispatched, the advanced agency should initiate contact with requesting agency and give an ETA. Additional communications should occur to give patient updates, and routes of travel if transport is initiated prior to advanced agency arrival. Direct radio communications may not perform well when using portable radios and sometimes with mobile radios. Utilization of telephones, repeated channels, MARC, IREACH, STARCOM21, WISCOM, or dispatcher relay are all valid options, and the most appropriate and reliable means of communications should be used.

If need for advanced care is questioned, it would be prudent to downgrade the advanced response while further patient assessment is accomplished. If after a thorough assessment, it is determined that Advanced care is not needed or will delay patient care, then advanced can be canceled. It is encouraged for our agencies to utilize the responding Advanced level crew or medical control to assist with assessment questions. All downgrades/cancellations need to be documented and may be reviewed by the medical director. Cancellation of EMD activated ALS/ILS should only be made after an on-scene assessment of the patient by an EMS provider. If a procedure, skill or medication is performed that is outside the scope lower-level provider, the higher-level provider should maintain primary care of the patient throughout transport.

## 1.09 HEMS GUIDELINES

Helicopter Emergency Medical Services (HEMS) utilization is a medical decision requiring appropriate oversight and should be integrated within regional systems of care. HEMS may provide a time savings benefit to patients with time-sensitive emergencies<sup>i</sup> in reaching hospitals that can provide interventions **IF** the patient can be delivered during an interventional window<sup>ii</sup> **AND** Ground Emergency Medical Services (GEMS) are not able to appropriately deliver the patient to definitive care within that interventional window.

- A. HEMS may provide clinical resources to patients needing critical care services if unable to obtain critical care services by GEMS (E.g., inter-facility transfer).
  - B. HEMS may provide a mode of transport for geographically isolated, remote patients independent of medical urgency (E.g. Island) although this mode should be carefully considered.
  - C. HEMS may provide a resource to local GEMS systems during disasters and times of low community resources.
  - D. Hospital destination and mode of transport are two separate and distinct clinical issues.
  - E. Mode of transport decisions pose unique challenges in developing evidence-based transport guidelines.
- 
- I. A time-sensitive emergency can be defined as an acute life-threatening medical or traumatic event that requires a time critical intervention to reduce mortality and/or morbidity. Examples include major systems trauma, ST elevation myocardial infarction, or some strokes.
  - II. An interventional window can be defined as the period of time from which mortality or morbidity is likely to be reduced by the administration of pharmaceutical agents, medical procedures or interventions. An interventional window should be based on available national consensus guidelines such as the American Heart Association's first medical contact or door to balloon time. The "Golden Hour" of trauma refers to the core principle of rapid intervention in trauma cases, rather than the narrow meaning of a critical one-hour time period. There is no evidence to suggest that survival rates routinely drop off after 60 minutes.



# 1.10 DESTINATION DETERMINATION

## **Purpose:**

It is the purpose of this document to provide guidelines for determining the appropriate transport destination for every patient. Generally, patients should be transported to the closest, most appropriate hospital, utilizing the most appropriate level of care. Patients should not be transported to a more distant facility unless the medical benefits to the patient reasonably expected from the provision of appropriate medical treatment at a more distant facility outweigh the increased risks to the patient from transport to the closer facility.

HEMS should only be utilized when ground transport would not provide the same level of care, or timeliness in transporting the patient. With transport times of less than 30 minutes, ground transport is typically a more rapid means of transport.

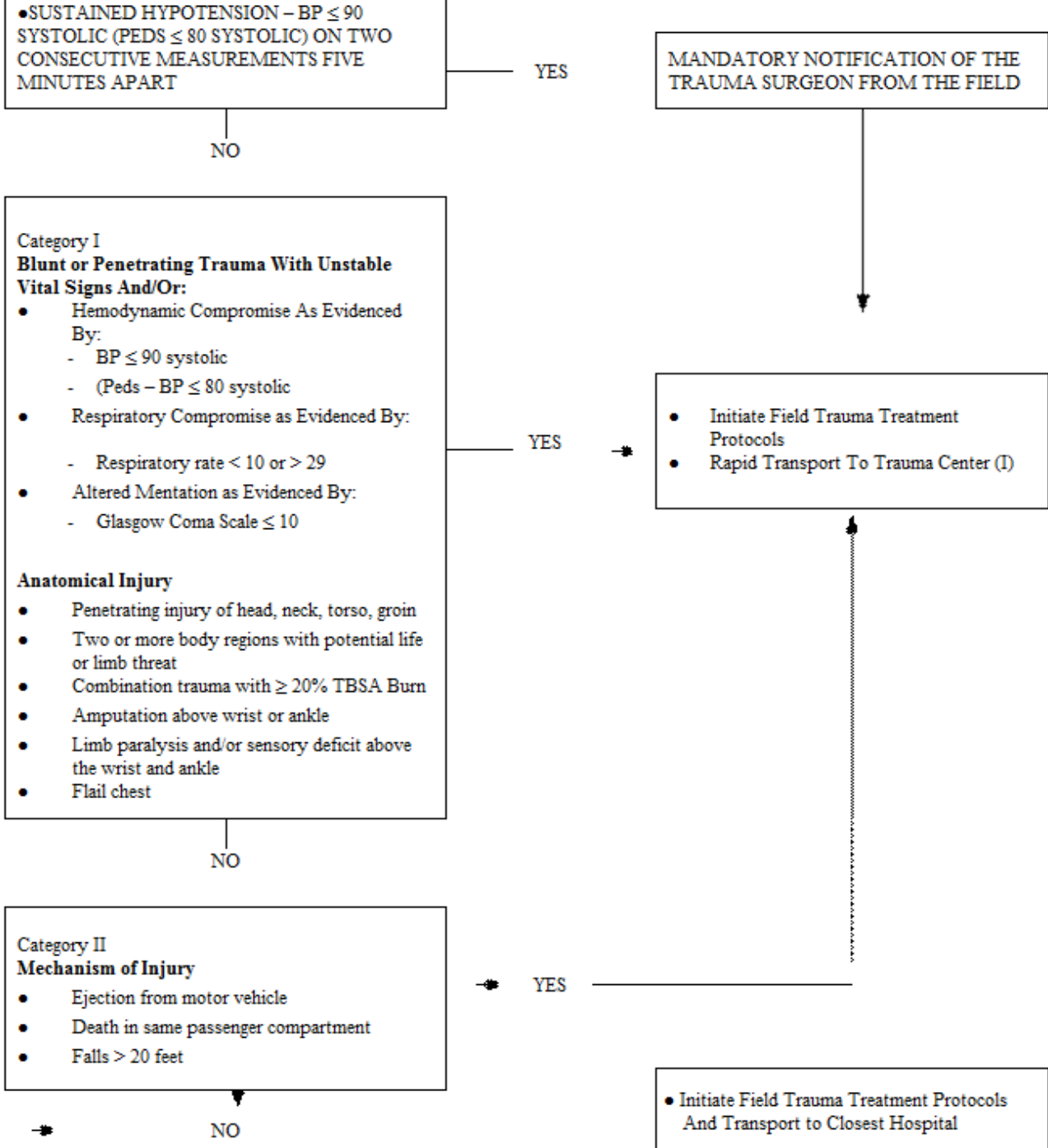
Appropriateness is determined by:

- A. Patient preference<sup>1</sup>
- B. Specialty needs of the patient:
  - 1. Burns (Severe)
  - 2. Pediatrics/Neonatal
  - 3. Return of Spontaneous Circulation following Cardiac arrest (Cath Lab/Therapeutic Hypothermia)
  - 4. STEMI
  - 5. Stroke
  - 6. Trauma
  - 7. Obstetrics
- C. Hospital's capacity to meet patient needs
- D. Infectious Disease Considerations
- E. Medical Direction
- F. Hospital diversion/bypass status
- G. Patients medical home
- H. Weather
- I. Mass Casualty/Disaster Considerations/Resource Limitations
- J. Other system approved destinations

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<sup>1</sup> The patient has the right to make the ultimate decision on hospital destination as long as it is operationally available to the EMS service (a hospital the service would normally be allowed to transport to, that is not on diversion). If patient assessment dictates the patient should go to a different hospital than their original choice, but the patient is able to make decisions and wants to go another facility, attempt to quickly educate the patient regarding the reasons to go to the alternate facility.

**State of Illinois Section 515.APPENDIX C Minimum Trauma Field Triage Criteria**



- (1) > 25 minutes from Trauma Center, transport to nearest participating trauma hospital.
- > 30 minutes from Trauma Center or participating trauma hospital, transport to nearest hospital.
- > 45 minutes from Trauma Center or participating trauma hospital in a rural area where there is no comprehensive emergency department available, transport to the nearest hospital.

## 1.11 CONSENT/REFUSAL OF MEDICAL CARE

- I. **Purpose:** The purpose of this document is to provide guidelines to the use of EMS Personnel on patient consent and refusal of evaluation, treatment, and transportation.
- II. **Definitions:**
  - A. **Decision-Making Capacity (or Decisional Capacity):** The ability to understand and appreciate the nature and consequences of a decision regarding medical treatment and the ability to reach and communicate an informed decision.
    1. **Tests of Decisional Capacity:** Whether a patient understands and appreciates their condition, the nature of the medical advice given, and the consequences of refusing to consent. This generally can be determined by a combination of the following assessments:
      - a) **Alertness and orientation:** Person, place, time, and situation?
      - b) **Affect:** Is the patient's behavior consistent with the environmental stimuli?
      - c) **Behavior:** Is the patient acting in a controlled manner? Body language, agitation, hyperactive, inattentive, repetitive movements?
      - d) **Cognition/judgment:** Does the person understand and appreciate the relative information?
        - (1) Can they draw reasonable conclusions based on facts?
        - (2) Is the patient able to make rational decisions with respect to their need for treatment?
      - e) **Communication:** Patients should be able to communicate a clear choice. This should remain stable over time. Inability to communicate a choice or inability to express the choice consistently may demonstrate lack of Decisional Capacity.
        - (1) Is the patient speaking in full sentences with clear speech and normal speech tempo?
      - f) **Decision Insight:** Can the patient appreciate the implications of the situation and the consequences of their decision?
        - (1) Is the patient able to recognize obvious **danger** of their situation (if applicable)?
  - B. **Intoxicated Person:** a person whose mental or physical functioning is substantially impaired due to the current effects of alcohol and/or other drugs/mind-altering substances within the body. Patients who are intoxicated typically lack Decision-Making Capacity.
    1. Note that the presence of alcohol or drugs in a person's system does not automatically dictate a conclusion that the patient lacks Decisional Capacity.
    2. The patient should be assessed for clinical capacity as above.
  - C. **Abandonment:** The unilateral termination of a health professional/patient relationship by the health professional and/or the unreasonable discontinuation of care by the healthcare provider when there is still a need for continuing medical attention, contrary to the decisional patient's will. EMS abandonment may include executing an inappropriate refusal, releasing a patient to a less qualified individual, or discontinuing needed medical monitoring before patient care is assumed by another medical professional. EMS personnel shall not knowingly abandon a patient.
  - D. **Consent:** A decisional adult's agreement to be treated. An adult with Decision-Making Capacity must consent to treatment before treatment can be provided. Consent may be implied via verbal agreement to the treatment or gestures indicating their desire for treatment.
    1. Consent or refusal for treatment/transport should be **"informed"** by providing the information and explanation of treatment described in D(2) below.
    2. EMS personnel should clearly explain the proposed treatments to the patient and, when appropriate, the family.
    3. The explanation shall include a disclosure of **risk**.
      - a) Nature of the illness/injury

- b) Nature, purpose, and need for the recommended examination/care
  - c) Potential **benefits** and possible risks and complications of recommended treatment; plus, possible results of non-treatment
  - d) Any pertinent **alternative** options if they refuse recommended treatment.
- E. **Implied Consent:** Consent that is assumed by the reasonable belief that if the patient was able to provide consent, they would do so freely. Patients who are **incapacitated**, cannot provide informed consent to treatment, and do not exhibit the ability to make sound judgments, will be treated under the doctrine of implied consent. Patients who are impaired with altered judgment and who are unable to understand their decisions as well as those who pose an imminent risk to self or others or who are unable to care for themselves are to be treated under the doctrine of implied consent. They are not allowed to refuse treatment or transport. (See [Behavioral Emergencies](#) p. 40). Patients being treated under the doctrine of implied consent due to lack of Decisional Capacity should not automatically be assumed to have a mental illness that requires involuntary admission for psychiatric treatment; therefore, a Petition for involuntary admission (Form 5) may not be necessary.
- F. **Adult:** A person who is eighteen (18) years of age or older or an emancipated minor
- G. **Minor:** Any person under the age of eighteen (18) is a minor, but is legally recognized as an adult if the person:
1. Has obtained a court order of emancipation
  2. Is married
  3. Is a parent – Note: Minors who are parents may also consent to the performance of healthcare services for their child
  4. Is pregnant
  5. Is a member of the U.S. Armed Services
  6. Note: Parental or guardian consent is not required for patients over the age of twelve (12) seeking treatment for mental health, sexually transmitted diseases, sexual abuse/assault, alcohol, or drug abuse.

### III. Refusal Procedure: Patient with Decision-Making Capacity

- A. All patients should be offered treatment and transport to a hospital after an attempt to obtain a history of present illness and physical exam as permitted by the patient.
- B. Determine Decision-Making Capacity of the patient and the reason for refusing care. Document assessment and reason for refusal of care if the patient gives a reason.
  1. Fully inform the patient of the **risks** associated with refusal including the possibility of deterioration of medical condition up to and including death (if applicable), **benefits of treatment/transport** and **alternative** of decisions as well as the patient's understanding.
  2. Inform the patient that EMS evaluation and/or treatment is not a substitute for medical evaluation and treatment by a doctor.
  3. If patient's condition was discussed with Medical Control on scene, inform them that this also does not substitute for medical evaluation.
- C. Complete and review the approved Refusal form in its entirety with the patient in the presence of a witness.
  1. Patients should have vital signs obtained if possible; patients should be informed when vital signs are abnormal.
  2. Obtain patient signature and have the patient date the form.
  3. If the patient refuses to sign the refusal form, document this on the patient care report.
- D. Tell the patient to call 911, their primary care provider or present to the nearest Emergency Department if symptoms persist, change or if the patient changes their mind regarding refusal of care.

- E. Obtain a witness signature. This should preferably from someone who witnessed your explanation of risks, benefits, and alternatives of transport/treatment. Witnesses should sign in the following order of preference.
  - a) Police Officer
  - b) Family Member
  - c) Crew Member
- F. **NEVER ADVISE AGAINST SEEKING MEDICAL ATTENTION!**
- G. Consider discussion with Medical Control for high-risk conditions including:
  - 1. Suspected/Questioned impaired Decision-Making Capacity.
  - 2. Suspected high-risk medical condition such as:
    - a) Extremes of age (infants/elderly).
    - b) Minor who is refusing care.
    - c) Serious chief complaint (including but not limited to: chest pain/dysrhythmia, shortness of breath, BRUE, stroke-like symptoms, syncope, first time seizures, poison/overdose, suspected sepsis, suspected cervical spine injury).
    - d) Significant MOI or suspicion of injury.
    - e) You believe a patient requires evaluation.
    - f) Conflict on scene regarding refusal of care.
    - g) Suspected abuse situation involving a minor, elderly, or a person with a disability.
    - h) Any altered mental status (individual or parent/guardian for a minor).
    - i) Abnormal vital signs
- H. With any medical need, make all reasonable efforts to ensure that the patient receives medical care. Enlist family, friends, or law enforcement to help convince patient.
- I. Complete a patient care report.

**IV. Patients without Decision-Making Capacity: A patient without decision-making capacity lacks the ability to consent to or refuse treatment**

- A. Determine Decision Making Capacity of the patient as above
  - 1. Patients who are unconscious or those who lack Decision-Making Capacity for reasons other than mental illness or developmental disability will be treated under the doctrine of implied consent.
  - 2. Patients lacking Decision-Making Capacity are unable to complete a refusal form.
- B. Attempt to determine whether the patient's Decisional Capacity is impaired due to a medical condition such as hypoglycemia, hypoxia, hypoglycemia, delirium, dementia, mental illness, trauma, stroke, or the presence of alcohol or other mind-altering substances. (See [Altered Level of Consciousness](#) p. 60). If the patient's lack of Decisional Capacity is determined to be the result of dementia, mental illness, or developmental disability, see [Behavioral Emergencies, Involuntary Petition](#)
  - 1. Treat medical condition per appropriate medical guideline.
  - 2. Those conditions above alone do not dictate a conclusion that the patient lacks Decisional Capacity. The patient must be assessed to determine whether he or she has the clinical capacity to make decisions.
- C. Examples of patients generally lacking Decision-Making Capacity:
  - 1. The patient has altered thought processes or judgement from illness, injury, or medical condition other than mental health emergencies.
  - 2. Alcohol, drugs, or other mind-altering substance(s) are impairing the patient's judgement as above. This may be noted with slurred speech, ataxia, etc.
  - 3. Any minor (see below)
- D. If EMS personnel determine that the patient lacks Decisional Capacity, they should attempt to treat and transport the patient with the patient's cooperation.

- E. If the patient persists in refusing treatment/transport, or if the patient becomes combative, law enforcement involvement and evaluation should be obtained.
  - 1. Ensuring the safety of EMS personnel is of paramount importance.
  - 2. If, in the opinion of the pre-hospital provider, the decision of law enforcement or other responder, including a Mobile Crisis response team personnel, not to take a patient into custody presents an issue that will or could result in patient harm, immediate request for on-scene EMS and law enforcement supervisory personnel should be made. In these situations, Medical Control must be contacted.
  - 3. Physical restraint and pharmacologic management/sedation when providing EMS care is only indicated to protect a patient, the public and emergency responders from further injury, facilitate emergency assessment, or allow for treatment of life-threatening injury or illness in a patient who lacks Decisional Capacity. (See [\*Agitated, Combative, and Violent Guidelines\*](#) p. 54)
- F. When completing patient care report, document the assessment that led to the determination that the patient lacks Decision-Making Capacity as well as the clinical signs and symptoms on which need for transport/treatment was based.
- G. Patients who lack Decisional Capacity should not automatically be assumed to have a mental illness that requires involuntary admission for psychiatric treatment; therefore, a Petition for involuntary admission (Form 5) may not be necessary.

**V. Minors**

- A. The consent of a parent or guardian is generally required for refusal or treatment for minors.
- B. Minors cannot typically independently refuse care
  - 1. If indicated a parent or guardian should complete the approved refusal form.
  - 2. All reasonable attempts should be made to release a minor to a legal guardian. If a legal guardian cannot be located document your attempts.
    - a) Minors may be released to law enforcement or juvenile authority.
    - b) A person taking protective custody of a minor must immediately make every reasonable effort to notify the person responsible for the child's welfare and notify the Department of Children and Family Services.
    - c) Minors may be released to another adult if guardian is contacted by phone and consent for release is given. Document phone call, name of guardian, and witness. Contact Medical control in these situations if indicated.
- C. If a parent or guardian is not immediately available to consent and, without treatment the minor's health would be adversely affected, EMS personnel should provide appropriate emergency treatment and transport.
- D. If a parent or guardian refuses to consent for treatment without which the minor's health would be endangered contact Medical Control.
- E. Complete the patient care report.

**VI. Patients in Law Enforcement Custody**

- A. If law enforcement has determined via breathalyzer that a person has a blood alcohol level above the legal limit, and requests evaluation by EMS, a clinical assessment should occur.
  - 1. If the patient is refusing treatment/transportation and the EMS assessment reveals no altered mental status/impairment, no hypoglycemia, no hypoxia or suspicion of hypercarbia, no slurred speech, the person answers questions appropriately, has a steady gait, and meets the above criteria for having capacity they may be considered decisional. They should be able to understand any medical concerns or reasons why law enforcement has requests that they be transported to the hospital and the potential consequence of refusing transport, up to and including death and disability.
  - 2. Legal intoxication numbers alone do not necessarily correlate with a lack of Decisional Capacity. If disagreement with Law enforcement occurs, contact Medical Control.

- B. Patients in law enforcement custody who have been assessed and have been determined to have Decision Making Capacity do not automatically lose the right to make decisions regarding their medical treatment. Law enforcement agents cannot compel EMS personnel to act in disregard of the rights of any person, regardless of whether such person is in police custody. If a law enforcement officer denies medical treatment to someone in their custody when treatment appears necessary, EMS personnel should provide the law enforcement officer with full disclosure of risks of potential harm to the patient and attempt to gain their cooperation. If any disagreements occur with Law enforcement, contact Medical Control, and document the conversation with law enforcement.
- C. Follow above procedure for refusals in patients with Decision-Making Capacity.
- D. If a patient in law enforcement custody lacks Decision-Making Capacity, they should be treated per implied consent. Follow appropriate guideline for those patients not having Decision-Making Capacity. Patients being treated under the doctrine of implied consent due to lack of Decisional Capacity should not automatically be assumed to have a mental illness that requires involuntary admission for psychiatric treatment; therefore, a Petition for involuntary admission (Form 5) may not be necessary.

#### **VII. Multiple Patients/Highway Response**

- A. In high-risk interstate highway responses, Mass Casualty Incidents, or similar, a reasonable/common sense approach should be used. Responder and patient safety must be considered.
- B. If adult victims of these incidents are claiming no injuries, have minimal mechanism for injury, refuse transport, and are not obviously injured, the [Multiple Victim Release Form](#) p. 32 may be complete in lieu of individual patient refusal forms to expedite clearing the scene.
  - 1. In this situation, one EMS Run Report should be completed, and a copy of the approved Multiple Victim Release form should be attached to the Run Report.
- C. Potentially Dangerous response should be conducted and coordinated with law enforcement to provide maximum safety to EMS responders, patients, victims, and bystanders.
- D. For School Bus incidents, refer to [School Bus Incidents Guidelines](#) p. 51

## 1.12 BEHAVIORAL EMERGENCIES

I. **Purpose:** The purpose of this document is to provide guidelines to EMS Personnel on patient consent and refusal of evaluation, treatment, and transportation when a patient is having a behavioral or mental health emergency. These guidelines are considered complementary to [Consent/Refusal of Medical Care](#) p. 35 and should be referenced when referring to these guidelines.

II. **Definitions:**

- A. **Decision Making Capacity:** The ability to understand and appreciate the nature and consequences of a decision regarding medical treatment and the ability to reach and communicate an informed decision.
- B. **Mental illness:** a mental or emotional disorder that substantially impairs a person's thought, perception of reality, emotional process, judgment, behavior, or ability to cope with the ordinary demands of life, but does not include a developmental disability, dementia or Alzheimer's disease absent psychosis, a substance use disorder, or an abnormality manifested only by repeated criminal or otherwise antisocial conduct. (405 ILCS 5/1-129)
- C. **Petition for Involuntary/Judicial Admission ("Form 5"):** A document used to request that a Patient be involuntarily admitted as an inpatient for mental health treatment because, **due to their mental illness or developmental disability**, they meet the criteria for involuntary admission set forth in Section III below. The form number for the Petition is *IL 462-2005* and it can be found online at: <https://www.dhs.state.il.us/onenetlibrary/12/documents/Forms/IL462-2005.pdf>.

A Spanish-language version of the Petition can be found online at:

<https://www.dhs.state.il.us/onenetlibrary/12/documents/Forms/IL462-2005s.pdf>.

III. **Assertion Criteria for Initiation of the State of Illinois Department of Human Services - Division of Mental Health Petition for Involuntary/Judicial Admission ("Form 5") (405 ILCS 5/1-119)**

*Note: Mental illness alone is insufficient to involuntarily detain a person. In order to involuntarily admit a person for mental health treatment, they must meet the criteria for involuntary admission as set forth below.*

A person meets the criteria for involuntary admission when:

- 1) A person with a mental illness who because of his or her illness is reasonably expected, **unless treated on an inpatient basis**, to engage in conduct placing such person or another in physical harm or in reasonable expectation of being physically harmed;
- 2) A person with mental illness who: because of his or her illness is unable to provide for his or her basic physical needs so as to guard himself or herself from serious harm without the assistance of family or others, **unless treated on an inpatient basis**; or
- 3) A person with mental illness who:
  - a. refuses treatment or is not adhering adequately to prescribed treatment;
  - b. because of the nature of his or her illness is unable to understand his or her need for treatment; and
  - c. **if not treated on an inpatient basis**, is reasonably expected based on his or her behavioral history, to suffer mental or emotional deterioration and is reasonably expected, after such deterioration, to meet the criteria of either (1) or (2) above.
- 4) An individual who: is developmentally disabled and **unless treated on an in-patient basis** is reasonably expected to inflict serious physical harm upon himself or herself or others in the near future.



#### IV. Guideline Statement and Process:

EMS providers should act in the patient's best interest and consider the mental health needs of a patient who appears emotionally or mentally incapacitated. In these situations, prehospital providers should employ the following guidelines:

- 1) Attempt to determine whether the patient's Decisional Capacity is impaired due to a medical condition (See [Capacity](#) p. 37).
- 2) Assess Decision Making [Capacity](#) (p. 37) and potential for danger to self or others by observation, direct exam and reports from family, bystanders, law enforcement, or verified mental health personnel.
- 3) Identify yourself and always first attempt to treat and transport the patient with the patient's cooperation.
- 4) If the patient persists in refusing treatment/transport, or if the patient becomes combative, law enforcement involvement and evaluation should be obtained.
  - a. Ensuring the safety of EMS personnel is of paramount importance.
  - b. Law Enforcement may take a person into custody and transport them for treatment when the law enforcement officer has reasonable grounds to believe, based on the Assertion Criteria in Section III above, that the person is subject to involuntary admission on an inpatient basis and in need of immediate hospitalization to protect such person or others from physical harm.
  - c. If, in the opinion of the pre-hospital provider, the decision of law enforcement or other responder, including a Mobile Crisis response team personnel, not to take a patient into custody presents an issue that will or could result in patient harm, immediate request for on-scene EMS and law enforcement supervisory personnel should be made. In these situations, Medical Control must be contacted.
  - d. If the Medical Control Physician determines, based on information provided by on-scene EMS personnel, that transportation to the hospital and emergency treatment is required to preserve life or prevent serious impairment to health, the Physician may order the emergency care and transportation to the hospital. This should only be done with law enforcement assistance see 4.c. above.
  - e. Reasonable physical restraint and pharmacologic management/sedation when providing EMS care is only indicated to protect a patient, the public, and emergency responders from further injury, facilitate emergency assessment, or allow for treatment of life-threatening injury or illness in a patient following failure of appropriate de-escalation techniques. (See [Agitated and Combative Guidelines](#) p. 54)
  - f. If it is necessary to transport a patient against their will based upon a reasonable belief that the patient is mentally ill or developmentally disabled and inpatient treatment is the only way to prevent the patient from harming themselves or others as a result of their mental illness or developmental disability, a Petition for Involuntary/Judicial Admission (Form 5) should be completed.
  - g. When completing a patient care report, document the assessment that led to the determination that the patient lacks Decision-Making Capacity (as applicable) as well as the clinical signs and symptoms on which the need for transport/treatment was based.

#### V. Initiation of State of Illinois Department of Human Services - Division of Mental Health Petition for Involuntary/Judicial Admission ("Form 5")

- a) A "Form 5" is the first step in a legal process that protects the patient's rights and is necessary before a physician can determine if an involuntary admission is necessary.
- b) A "Form 5" should be completed when EMS personnel or other adults have first-hand knowledge and reasonably believe that the patient is mentally ill or developmentally disabled

and inpatient treatment is the only way to prevent the patient from harming themselves or others as a result of their mental illness or developmental disability. (See assertion criteria in Section III above).

- c) Instructions for EMS Personnel completing the “Form 5”
  - i. P. 1 Statutory reason for initiation of petition: Leave first page blank except for the patient’s name. Enlist Hospital Personnel for assistance with further completion.
  - ii. Assertions (p. 2): The EMS responder must insert the patient's name and check the assertion that applies; they believe the patient is: (1) (2) (3) (4)
  - iii. P. 2 in the first open text box, write a detailed description of any acts or significant threats supporting the assertion and the time and place of their occurrence. Quote any statements made by the patient that substantiate the determination of risk.
  - iv. P. 2 In the second open text box complete the witness section to the best of your ability.
  - v. P. 2 In the third open text box, list a spouse, parents, close relative, or guardians, or if none, any known friend of the patient who witnessed the behavior supporting the assertion of risk. List their addresses and phone numbers in the designated area. If unable to locate any, indicate that you were unable to do so. Do not leave this section blank.
- d) Prehospital provider should indicate on the EMS Patient Care Report that involuntary transport has been ordered per Medical Control and/or if law enforcement is unable or unwilling to complete the “Form 5”.
- e) The “Form 5” should be attached to the EMS Patient Care Report left at the hospital and shall become a part of the patient's permanent medical record in the ED. If this form is completed appropriately by EMS personnel and a physician determines that an involuntary hospital admission is indicated, the “Form 5” may be added to the physician's certificate and admission orders as part of the statutorily required documents.
- f) EMS Provider should inform the patient that under no circumstances does transport of the patient, whether voluntarily or against his/her will, commit the patient to a hospital admission. It simply enables the EMS providers to transport a person suspected to be in need of inpatient mental health treatment for examination by a healthcare provider who can make the determination of whether inpatient mental health treatment is necessary.
- g) At no time should EMS Providers place themselves in an unsafe situation per their assessment. If EMS is unable to obtain law enforcement assistance to safely facilitate transport of a patient this should be documented and relayed to Medical Control.

## 1.13 ON-SCENE HEALTH CARE PROVIDER

### Introduction:

A physician on the scene does not automatically supersede the EMS providers authority. Once the EMS provider-patient relationship is established, written standing medical guidelines through the Mercyhealth EMS System provide the legal basis for EMS providers to function. Occasionally, a physician will be present on the scene of a call, which may cause confusion, uneasiness, and medical/legal considerations.

### Procedure:

1. EMS personnel should assess and manage the patient upon arrival at the scene regardless of on-scene physician direction. This applies to a physician's private office or clinic.
2. Physician must show proof of current state medical license (wallet card if possible). If any doubt of their identity exists, the physician must provide proof of further identity if they wish to assist with patient care.
3. Should the on-scene physician wish to assume control of patient management, the following **must** be satisfied:
  - A. Communication established between Online Medical Direction and the on-scene physician.
  - B. The on-scene physician agrees to accompany the patient in the transporting vehicle to the hospital.
4. In the event that the on-scene physician agrees to assume control and the above two criteria are satisfied, then the following medical/legal details must be adhered to:
  - a. Orders given by the intervener (on-scene) physician may be carried out by the EMS crew, if they are part of the provider's level of training. Orders that are not part of the provider's level of training must be done by the intervener physician.
  - b. If the EMT feels uncomfortable about any aspect of patient care in the field, he or she should **contact medical control** and communicate those concerns. The medical direction physician has the authority to supersede any or all of the orders given by the intervener physician at any time during the pre-hospital phase.
  - c. The intervener (on-Scene) Physician must accompany the patient to the hospital in the transporting vehicle. An on-scene physician who elects not to accompany the patient to the hospital will immediately and automatically relinquish control to the on-line medical control physician.
  - d. Physician must provide license information for the run report and sign all orders given on the EMS run sheet.
  - e. Physician must assume complete medical/legal responsibility for all patient care activities until such time care is formally transferred to another physician at the receiving hospital.

### Special Situations:

1. In the event of a potential multi-patient incident, an on-scene physician may be best utilized at the scene and not accompany a patient to the hospital.
2. If the on-scene physician wishes to terminate resuscitation measures, he or she may do so provided that this action is communicated to and concurred by on-line medical control.
3. Orders communicated for patients undergoing inter-facility transport should be followed as long as those orders are within the EMTs scope of practice and training. If possible, the transferring physician should sign those orders.

**Non-Physician Medical Personnel on the Scene:**

1. Pre-hospital providers should recognize and acknowledge the expertise of other medical professionals (RN, LPN, Nurse Practitioner, Respiratory Therapist, Physician Assistant, etc.) and utilize them as needed for the best outcome of the patient.
2. If a bystander at an emergency scene identifies himself or herself as a health care provider other than physician, the EMS provider should:
  - a. Inform the individual that he or she may assist the emergency team and/or offer suggestions but may **not** assume medical management for the patient. These individuals should **not** direct patient care.
  - b. An RN or non-agency EMS Provider on scene may assist to the level of First Aid. If additional skills are needed (e.g. IV initiation) Medical Control should be contacted for permission to utilize this person in an expanded role.
  - c. An RN or non-agency EMS Provider on scene must provide proof of State of Illinois licensure and a picture ID. They must agree to follow the directions of the EMSMD or his/her designee.

## 1.14 ADVANCED DIRECTIVES/HOSPICE

The EMS System supports the use of Do-Not Resuscitate (DNR) orders, Practitioner Order for Life-Sustaining Treatment (POLST) forms, Advanced Directives, and other state-approved pre-determined patient care processes to allow patients to express their desire for healthcare professionals to provide or withhold specific treatments. Patient rights regarding these decisions should be respected whenever possible. All persons have a fundamental right to make decisions relating to their own medical treatment, including the right to forgo life-sustaining treatment.

When a patient has an activated DNR, POLST, or other similar type of advance directive that EMS personnel are aware of, the following guidelines should be followed. These guidelines apply to all cardiac arrest/DNR situations, including in long-term care facilities, hospice and home care patients, and patients who arrest during inter-hospital transfers or transportation to or from home. These guidelines also apply to hospice patients not in cardiac or respiratory arrest.

Always make a reasonable attempt to verify the identity of the patient (for example, identification by another person or an identifying bracelet) named in a valid DNR or POLST advance directive.

### DEFINITIONS

- **Advance Directive:** A Living Will, Health Care Power of Attorney, IDPH POLST form, or another similar document.
  - **Do Not Resuscitate (DNR) Order:** an authorized practitioner order that reflects an individual's wishes about receiving cardiopulmonary resuscitation CPR; electrical therapy to include pacing, cardioversion and defibrillation; invasive airway management and manually or mechanically assisted ventilations
  - **Health Care Power of Attorney (HCPOA):** A document through which, pursuant to applicable state law, an adult with decisional capacity delegates to an agent the right to make medical decisions on their behalf in the event decisional capacity is lost. The document must be in writing, in a form similar in substance to the statutory form, and properly executed. HCPOAs are one type of Advance Directive.
- Illinois Department of Public Health (IDPH) Uniform Practitioner Order For Life-Sustaining Treatment (POLST) Form:** A form issued by IDPH that allows an individual, in consultation with an Authorized Practitioner, to make advance decisions about whether they want receive cardiopulmonary resuscitation (CPR) and the type(s) and duration(s) of medical intervention(s) and medically-administered nutrition they want in the event they become unable to communicate their decisions about such care. The document is signed by an Adult (or Authorized Representative) and an Authorized Practitioner. Valid IDPH POLST forms are one type of Advance Directive.

### PATIENT WITH ILLINOIS POLST:

- I. SECTION A Cardiopulmonary Resuscitation: (if patient has no pulse and is not breathing)
  - A. If "YES CPR" box is checked, start full resuscitation per Medical Guidelines.
  - B. If "NO CPR" box is checked, do not begin CPR.
- II. SECTION B explains extent/intensity of treatment for persons found with a pulse and/or breathing.
  - A. **Full Treatment:** Primary goal is attempting to prevent cardiac arrest by using all indicated treatments. Utilize intubation, mechanical ventilation, cardioversion, and all other treatments as indicated.
  - B. **Selective Treatment:** Primary goal is treating medical conditions with limited medical measures. Do not intubate or use invasive mechanical ventilation. May use non-invasive forms of positive airway

pressure, including CPAP and BiPAP. May use IV fluids, antibiotics, vasopressors, and antiarrhythmics as indicated. Transfer to the hospital if indicated.

- C. **Comfort-Focused Treatment:** Primary goal is maximizing comfort through symptom management. Allow natural death. Use medication by any route as needed. Use oxygen, suctioning and manual treatment of airway obstruction. Do not use treatments listed in Full and Selective Treatment unless consistent with comfort goal. Transfer to hospital only if comfort cannot be achieved in current setting.

III. COMPONENTS OF A VALID POLST form: the EMS System recognizes an appropriately executed IDPH POLST form and/or any other written document that has not been revoked, which must contain at least the following elements:

- A. Patient's Printed Name
- B. Resuscitation order (Section A)
- C. Date of patient's signature
  - \*Note: A valid, completed POLST form or previous DNR order does not expire. A new form voids past ones; follow instructions on most recent form.
- D. Appropriate Signatures
  - i. Patient or Legal Representative Signature
  - ii. Relationship of person signing to the patient
  - iii. Authorized Practitioner Name, Signature, and Date of Signature
    - \*Note: No witness is needed for the POLST form to be valid
- E. Original form NOT necessary - all copies of a valid form are also valid; form color does not matter

IV. Procedure

- A. Verify that all required sections of the POLST are completed.
- B. Make a reasonable attempt to verify the identity of the patient named in a valid POLST form.
- C. Contact Medical Control as needed to discuss the situation and advise them of the presence of a POLST form, along with the description of any specific treatments to be withheld that are set forth in the POLST form.
- D. If the order is valid and Medical Control does not order otherwise, follow the terms of the POLST form, and attach a copy of the POLST form to the patient care report if possible.
- E. If there is any doubt as to the validity of the POLST form, treat the patient as soon as possible. Document any concerns in the patient care report.

V. Additional Considerations

- A. Revocation of a written DNR or POLST Advance Directive shall be made only in one or more of the following ways:
  - 1. The advance directive is physically destroyed by the authorized practitioner who signed the advance directive or by the person who gave written consent to the advance directive; or
  - 2. The advance directive is verbally rescinded by the authorized practitioner who signed the advance directive or by the person who gave written consent to the advance directive, the word "VOID" is written in large letters across the front of the advance directive, and the advance directive is signed and dated by the authorized practitioner who signed the advance directive or by the person who gave written consent to the advance directive.
- B. A power of attorney or surrogate decision maker should not overturn decisions made, documented and signed by the patient.
- C. If such documentation is not available, but circumstances or individuals at the scene indicate the patient may not want full treatment (intubation, mechanical ventilation, cardioversion, and other similar treatments):

1. Initiate resuscitative measures and immediately contact Medical Control for clarification and direction.
2. The Medical Control physician **may** give “No Code” order.

**PATIENT WITH POLST FROM OUTSIDE OF ILLINOIS:**

POLST forms from other states are acceptable in Illinois. If a patient or patient’s representative gives you any type of advance directive form from another state, it should be reviewed and honored. If you have questions, contact Medical Control.

**PATIENT WITH DNR ORDER:**

DNR order forms can vary by hospital or provider. If a patient or patient’s representative gives you a DNR order, contact Medical Control.

**PATIENT WITH ILLINOIS HEALTHCARE POWER OF ATTORNEY(HCPOA)/ LIVING WILL:**

- I. Illinois law allows patients to appoint an “agent” to make health care decisions if the patient is unable to make their own medical decisions. An agent is appointed by the patient via a document called a "Power of Attorney for Health Care." The agent can, in some cases, direct you to withdraw or withhold medical care from the patient.
- II. A health care agent generally has no authority to make this decision if the patient has capacity to make their own health care decisions.
  - A. If the patient clinically has capacity, continue to treat the patient, even if thereafter the patient is unable to communicate with you.
- III. If someone represents to you that they have a power of attorney to make medical decisions for the patient, follow these procedures:
  - A. Begin treatment of the patient.
  - B. Contact Medical Control; explain situation and follow orders received.
  - C. Living Wills/HCPOAs alone may not be honored by EMS personnel unless instructed otherwise by Medical Control.
  - D. *The agent named as Power of Attorney for Health Care may generally consent to or refuse any or all care, including resuscitation, on behalf of the patient who lacks decision-making capacity, unless the Power of Attorney form says otherwise. Any requests must be reported to Medical Control.*
  - E. If there is any doubt, continue treatment, contact Medical Control, explain the situation, and follow orders received.
  - F. Bring any documents received to the hospital and document concerns.

**HCPOA/LIVING WILLS FROM OUTSIDE ILLINOIS:**

State laws about HCPOAs and living wills vary from one state to another. Contact Medical Control if you are presented with an HCPOA or living will from a state other than Illinois.

**COURT-APPOINTED GUARDIANS IN ILLINOIS AND FROM ALL OTHER STATES**

Guardians generally have broad authority to make decisions on behalf of the patient, although do not normally have the authority to withdraw or withhold life sustaining treatments. If someone represents to you that they are a patient’s court-appointed guardian, begin treatment of the patient and contact Medical Control. Attempt to obtain a copy of the paperwork.

**HOSPICE PATIENTS NOT IN CARDIAC/RESPIRATORY ARREST:**

- I. If patient is registered in a hospice program and has a POLST form completed, follow patient wishes as specified in Box B (orders for patient not in cardiac arrest).
- II. Consult with hospice representatives if on scene regarding other care options.
- III. Contact Medical Control; communicate patient's status; hospice recommendations; presence of written treatment plans and/or valid advance directive(s) (e.g., POLST, DNR orders). Follow Medical Control orders.
- IV. If hospice enrollment is confirmed but a POLST form is not on scene, contact Medical Control. A DNR order should generally be assumed in these situations; seek Medical Control approval to withhold resuscitation if cardiorespiratory arrest occurs.
- V. Hospice or DNR patients who are not in cardiac/respiratory arrest should receive supportive/comfort care while en route to the hospital. Do not withhold oxygen or medications unless specifically stated in the POLST form.

These guidelines should be used in conjunction with "[Termination/Withholding Of Resuscitation In The Field/Notification of Coroner](#)" guidelines (p. 49) as applicable.



# 1.15 TERMINATION/WITHHOLDING OF RESUSCITATION IN THE FIELD/NOTIFICATION OF CORONER

**Guideline:** Most pulseless non-breathing patients should have full resuscitative efforts, consisting of CPR, defibrillation when applicable and Advanced Life Support response.

EMTs shall not waive (except as listed in **bold** below) or cease resuscitation without a direct order from a Medical Control Physician, the patient's personal physician, or other recognized physician. The ordering physician assumes responsibility for this order and Medical Control should be contacted. All other situations require ALS response and physician medical direction.

EMS personnel may withhold or terminate resuscitative in the following circumstances:

- A. For Patient with valid DNR/POLST (follow [Advanced Directive Guidelines](#) p. 45)
- B. **For Patient with definitive signs of death including at least one of the following:**
  - 1. **Rigor mortis (without hypothermia)**
  - 2. **Dependent lividity**
  - 3. **Decomposition of body tissues**
  - 4. **Frozen State (unable to compress the chest wall/ice in the airway)**
  - 5. **Fatal/un-survivable injury(s)-an injury clearly incompatible with life:**
    - a) **decapitation**
    - b) **incineration**
    - c) **separation of vital internal organs from the body or total destruction of organs**
    - d) **injuries incompatible with life (such as massive crush injury, complete exsanguination, severe displacement of brain matter)**
- C. The patient has an unwitnessed cardiac arrest, is in asystole, and no bystander CPR has been initiated. (This does not apply if exposure hypothermia, trauma, submersion, or drug overdose plays a role in the arrest).
- D. The patient has cardiac arrest due to severe blunt trauma, has no signs of life, is in asystole, and doesn't respond to injury appropriate ALS interventions (ex. advanced airway, needle decompression, pericardiocentesis, fluid bolus, and ACLS medications as indicated) in consultation with Medical Control
- E. There is a risk to the health/safety of EMS personnel (The scene is unable to be made safe)
- F. Resources are inadequate to treat all patients (i.e., mass casualty not including reverse triage situations such as lightning strike)
- G. Death has previously been declared by a physician, medical examiner, or coroner
- H. Other conditions as determined by the Medical Control Physician.

## Other Key Considerations:

- A. If there has been transient ROSC or continued shockable rhythm continue resuscitation per "Cardiac Arrest" guidelines and transport the patient to the most appropriate destination
- B. Shockable rhythms increase the potential of good neurological outcomes and in general should have resuscitation and transportation.
- C. Family requests for termination should be relayed to Medical Control.
- D. Pediatric and neonates of viable gestational age will be resuscitated according to medical guidelines and transport will be completed to the closest appropriate facility whenever possible.
- E. When there is no response to prehospital cardiac arrest treatment, it is acceptable and often preferable to cease futile resuscitation efforts in the field, contact medical control (see procedure below)
  - 1. All EMS personnel involved in the patient's care should agree that discontinuation of the resuscitation is appropriate.
  - 2. When cardiac arrest resuscitation becomes futile, the patient's family should become involved and supported by the EMS clinicians.

- F. Scene conditions should be evaluated prior to termination of resuscitation. If the resuscitation cannot be safely and efficiently performed on scene, transport should be initiated.
  - 1. Scene management and safety of the crew and public may prevent withholding/discontinuation of resuscitation. In general, do not cease resuscitation in public places/establishments.
- G. Visibly gravid patients/those estimated to be >20 week gestation have unique resuscitation considerations and early involvement in medical direction should occur in the setting of cardiac arrest
- H. Patients who are struck by lightning should not have termination of resuscitation in the field without consultation with medical control
- I. In general, once transport has been initiated resuscitative efforts should be continued until patient can be delivered to an emergency department
- J. For submersion events see [Submersion Guidelines](#) (p. 130) for resuscitation guidelines

**Procedure:**

- A. Upon arrival at the scene of a patient in cardiac arrest, the crew should begin treatment per “Cardiac Arrest” guidelines and attach the cardiac monitor. (This is not necessary in the case of definitive signs of death criteria as above).
- B. Determine rhythm in two leads on the cardiac monitor. Obtain history from the family or bystanders.
- C. Contact Medical Control. Describe the facts of the case and the cardiac rhythm. After evaluating the patient’s history and assessment information, the physician may decide to order the resuscitation stopped.
  - 1. Criteria to consider:
    - a) Adult who is not visibly gravid is normothermic and experienced an arrest unwitnessed nontraumatic by bystanders or EMS;
    - b) No bystander CPR was provided;
    - c) The patient has remained in continuous monitored asystole or cardiac arrest with a non-shockable rhythm with no ROSC after full ALS resuscitation in the field following discussion with Medical Control
    - d) There are no reversible causes of cardiac arrest identified.
    - e) Final rhythm is asystole or PEA, confirmed in two leads on a printed/documented rhythm strip.
    - f) A secure airway is confirmed by capnography/capnometry.**
  - 2. If resuscitative efforts are ceased notify the law enforcement and/or the coroner in the county of the patient’s death. Remain at the scene until relieved by a law enforcement officer or the coroner.
    - a) Do not move the body unless directed to do so by Law Enforcement/Coroner
    - b) Record time as given by medical control, at a minimum document no vital signs, no pupillary response and final rhythm
    - c) Document who scene was turned over to
    - d) Do not transport patients who are dead at the scene unless otherwise directed by the coroner.
  - 3. If resuscitation was attempted, all EKG electrodes, defibrillation pads, IV/Ios, invasive catheters (e.g. chest needles) and advanced airway devices should be left in place.
    - a) Follow [Crime Scene Management](#) p. 22
  - 4. Provide support to family members as needed until law enforcement or others can assume this role.

# 1.16 SCHOOL BUS INCIDENTS

## OVERVIEW

This policy was developed to assist in responding to handling of school bus incidents involving the presence of minors. This policy only applies to EMS Systems and their providers that have a pre-arranged agreement with their school district. If there is no pre-arranged agreement, the EMS Provider must discuss with medical direction or transport all patients.

## INFORMATION NEEDED

It is recommended that each EMS agency implement and develop a procedure for releasing uninjured children to a parent, legal guardian, or local school official who is willing and approved to take custody of the children. These procedures should be developed with the joint input of each provider's legal counsel, school officials, and parents. Once medical direction confirms with EMS providers that minor children are not injured, the custody and responsibility for these uninjured children will remain with the responding EMS provider until the children are transferred to parents, legal guardian, school officials or the hospital.

## OBJECTIVE FINDINGS

- Mechanism of injury
- Number of patients
- Damage to the vehicle
- Potential need for additional resources

## CATEGORIES

Category "A" Bus Incident:

Significant injuries present in one or more children, or the existence of an obvious mechanism of injury that can be reasonably expected to cause significant injuries.

Category "B" Bus Incident:

Minor injuries present in one or more children with no obvious existence of a mechanism of injury that could reasonably be expected to cause significant injuries.

Category "C" Bus Incident:

No injuries present in any children and no mechanism of injury present.

Category "D" Bus Incident:

If the patients have special healthcare needs and / or have communication difficulties, they must be transported to the designated hospital for evaluation and disposition.

## **IMPLEMENTATION**

Once the category has been determined, approval to implement this policy must be obtained from medical direction. This procedure will be used ONLY if situation is a category "B" or "C" incident. All children in a Category "A" or "D" incident will be transported to hospital. If Medical Control approves implementation of this policy for a category "B" or "C" incident, names, parents, and contact information must be documented for the children who will not be transported.

The provider agency will then transfer the custody of the minor children, to the parents, legal guardians or school officials. The school officials will follow their established procedure for informing parents and /or legal guardians of the crash / accident / incident.

Once the decision to implement the uninjured children procedure is approved by medical direction, it is the responsibility of the local EMS agency in charge of the scene, to direct and confirm that the children are returned to their parents, legal guardians or appropriate school officials.

All adult patients, 18 years of age or older are evaluated, treated, released, and/ or transported per [Consent/Refusal of Medical Care guidelines](#) p. 35.

Document all attempts to contact legal guardian, all contacts/discussions with medical direction, criteria that designates as a Category A, B, C, D, to whom care of child released (school official, parent, etc.), and any care rendered to a minor patient.

***If EMS providers on the scene feel that any child should be offered medical care, needs evaluation by a physician, or confirmation of custody or responsibility cannot be verified, then the child should be transported by EMS.***

## **SECTION 2 MERCY EMS CLINICAL CARE GUIDELINES**

*Mercyhealth System*  
*Medical Guidelines*

## **2.01 AGITATED, ANXIOUS, COMBATIVE, AND VIOLENT**

**Note:**

- Reasonable physical restraint and pharmacologic management/sedation when providing EMS care are only indicated to protect a non-decisional patient, the public, and emergency responders from substantial probability of immediate injury, facilitate emergency assessment, or allow for treatment of life-threatening injury or illness.
- If concerned for safety at the scene for patients, providers or public summon law enforcement.
- Identify self and attempt to establish rapport with patients for understanding and cooperation.
- EMS practitioners must maintain the patient's dignity to the extent possible, including use of the least restrictive method of restraint that protects the patient, the public and emergency responders from harm.
- The use of appropriate de-escalation techniques should take precedence over physical restraint or pharmacologic management whenever possible.
- EMS practitioners must not administer sedating medications to an individual to facilitate arrest by law enforcement.
- Never apply physical restraints for punitive reasons, or in a manner that restricts breathing and circulation, or restricts access for monitoring the patient. Patients must not be restrained in a position with hands and feet tied together behind their back or restrained with techniques that compromise the airway or constrict the neck or chest. During transport on a stretcher or other transport device, patients must not be restrained in a prone position nor under backboards or mattresses.
- Behavioral disturbances are often the result of underlying medical conditions that require immediate medical attention, including but not limited to head trauma, alcohol or drug intoxication, metabolic disease, and psychiatric disorders. Patients in need of medical attention must be transported in an ambulance, not a police vehicle.
- If a law-enforcement based restraint intervention must be continued during patient care and transport (i.e. handcuffs), but is otherwise not sanctioned for use by EMS providers, a law enforcement officer should either:
  - 1) accompany the patient and EMS provider during transport to definitive care, or
  - 2) the law-enforcement based restraint intervention should, when appropriate, be discontinued in favor of an appropriate and sanctioned EMS-based restraint intervention.
- Patients under police custody or who are under arrest must always have a law enforcement officer available during EMS transport.
- Patients most at-risk of dying in police custody are those who violently resist and struggle against restraints.
- Continued patient struggling can lead to hyperkalemia, rhabdomyolysis, and cardiac arrest.
- Caution with pharmacologic sedation at extremes of age and special populations such as patients with autism and dementia.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Behavioral Disturbance”; “Violent behavior”;  |
| OPQRST                                      | Determine onset, duration and progression, triggering events   |
| Associated Symptoms/<br>Pertinent Negatives | Alcohol or drug intoxication, Head trauma  |
| SAMPLE                                      | Psychiatric medications? Noncompliance? History of schizophrenia, bipolar disorder or other psychiatric disorder? History of drug or alcohol abuse?  |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <p><b>General Appearance:</b> Bizarre behavior, violent, aggressive, combative, loud, obnoxious, agitated; partial or complete undressing? Uncooperative (Does not respond to verbal commands to desist)?</p> <p><b>Skin:</b> Diaphoresis? Cool, moist and pale? Warm, dry and flushed?</p> <p><b>Respiratory Effort:</b> Labored breathing? Heavy breathing?</p> <p><b>Lung Sounds:</b> Wheezes, rales, rhonchi or stridor? Decreased lung sounds?</p> <p><b>Cardiovascular:</b> Hypertensive and tachycardic?</p> <p><b>Extremities:</b> Trauma?</p> <p><b>Neuro:</b> agitated, delirium, increased activity and increased intensity of activity</p> <p><b>Psych:</b> Bizarre thoughts and actions; Paranoia, delusional, confused, clouded consciousness?</p> |
| Data  | SpO <sub>2</sub> in all patients and ETCO <sub>2</sub> when able (continuous or frequent re-checks); 12-Lead EKG as soon as it becomes practical to obtain one.<br>Blood Glucose to rule out hypoglycemia as a cause of the behavioral disturbance.  |
| Goals of Therapy                            | Physically or chemically restrain the patient to reduce the threat to self and others, especially emergency responders   |
| Monitoring                                  | BP, HR, RR, EKG, EtCO <sub>2</sub> (if available), SpO <sub>2</sub> .- All required post sedation  |

## EMERGENCY MEDICAL RESPONDER/EMT

- Scene size-up, do not approach an agitated and combative patient before law enforcement has gained control of the situation
- Verbal De-escalation should be attempted, and its success or failure should be documented, do not persist if it appears to be futile or making the situation
- EMRs are not allowed to apply physical restraints to patient, but they are not prohibited from providing medical care to a patient who has been restrained by law enforcement
- Initiate Routine Medical Care once it is safe and practical
- Consider physical restraints [1] as a last resort when verbal de-escalation or other methods are ineffective
- Ensure you have a minimum of four people, one for each limb. All act at the same time.
- Always keep the patient informed why the restraints are being used
- Soft restraints or padded hard restraints are preferred for use by EMS personnel
- No hog-tying or hobble restraints allowed. No “sandwiching” with long boards or scoop stretchers
- Once restrained, the patient must be brought to a sitting position or the recovery (lateral recumbent) position
- Do not keep the patient in a prone position once restrained, sit patient up if possible
- If spitting, a spit net, or surgical mask may be applied to the patient, ensure no airway compromise
- Any patient who requires restraints requires transport to the hospital
- Closely/Frequently Monitor Airway, Breathing, Circulation and mental status and intervene as necessary, remove restraints if no longer indicated or interferes with any necessary medical intervention
- If unable to assess SpO<sub>2</sub> consider administration of high flow oxygen

## AEMT

- IV 0.9% NS Lock or KVO
  - Attempt IV only after it is safe for the patient and EMS provider.
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg. [Follow Hypovolemia & Shock guideline](#)

## PARAMEDIC

- IV 0.9% NS Lock or KVO
  - Attempt IV only after it is safe for the patient and EMS provider.
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg. [Follow Hypovolemia & Shock guideline](#) p. 96.
- For safety of responders and of patient that is actively violent or dangerously aggressive:
  - Consider disassociating with **Ketamine** 1 mg/kg **SLOW** IV/IO (max dose 100mg) or 4 mg/kg IM (max dose 400mg). Repeat ½ dose at 10 minutes x1 if inadequate response to initial dose.
    - Consultation medical control for additional dosing.
- **OR** (Choose one)
- Consider administration of **Versed** up to 5 mg IM (PEDS 0.1 mg/kg up to max 5mg IM).
  - Reduce medication dose by 50% in elderly or smaller framed patients.
- Consider titrating **Versed** up to 2.5 mg (ped 0.05mg/kg max 2.5 mg per dose) IV/IO/IN/IM per dose to treat other agitation or severe anxiety every 5 minutes as needed, max of 5 mg total.
  - Contact medical control for additional dosing.
  - Versed is preferred when the patient is suffering from agitation in alcohol withdrawal.
  - Avoid if hypotensive or respiratory depressed.
  - Be cautious of paradoxical effect.
- Place on continuous cardiac monitor and obtain a 12-Lead EKG, when safe to perform.
- Monitor vital signs every 5 minutes including continuous etCO<sub>2</sub>, cardiac monitoring and SpO<sub>2</sub>.
- Any patients who require pharmacologic intervention require ALS EMS transport to the hospital.

## FOOTNOTES:

### [1] Mandatory Physical Restraint Documentation

- Document alternative options explored (including verbal de-escalation) and why the restraints were applied (including a description of the threat to self or others)
- The time the restraints were applied, and the time(s) of restraint removal (if done before hospital arrival)
- Who (which agency) applied the restraints
- What kind of restraints
- Vital signs and observations about patient status every five minutes
- Evidence that distal neurovascular function was not impaired by the restraints on initial application and reassessment
- The position of the patient after restraints were applied
- Medication(s) used and their effects, including adverse effects



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## 2.02 ALLERGY & ANAPHYLAXIS

**Note:**

- Allergic reactions span a continuum from minor to life threatening [1]
- Remove offending etiologic agent if possible or remove patient from agent to avoid ongoing exposure
  - If due to a bee sting, remove stinger by scraping horizontally with tongue depressor or plastic card. Do not squeeze the venom sac
- If anaphylactic shock is present, treat for shock and maintain warmth
- Attempt to gather all medications and take them to the ED
- Angioedema with significant swelling of the tongue increases the risk of obstructed airway but also makes RSA more difficult and therefore relatively contraindicated.
  - Institute emergent transport and prepare the ED for emergency intubation procedures.
  - In isolated Angioedema, Benadryl and Epinephrine are not likely to help but may be attempted if patient in extremis
- In patients with underlying coronary artery disease, or those at risk for it, epinephrine should be used with caution, because of the risk of inducing a myocardial infarction. In moderate to severe allergy and anaphylaxis, there is no contraindication to epinephrine

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Allergic Reaction”, “Hives” “Itching Rash”  |
| OPQRST                                      | What provoked the reaction? Did the patient take diphenhydramine (Benadryl) or use an epinephrine auto-injector (Epinephrine auto injector), and how did they respond?   |
| Associated Symptoms/<br>Pertinent Negatives | Subjective swelling of facial, oral or pharyngeal structures, difficulty breathing, wheezing and light-headedness, flushed in face.  |
| SAMPLE                                      | Does the patient have any environmental, medication, food or other allergies? Is the patient taking an antibiotic? If the patient has Angioedema, is he/she taking an ACE inhibitor? Is he/she taking a Beta Blocker? If the patient is taking a Beta Blocker, he/she might not respond to epinephrine.  |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General:</b> Identify degree of severity: mild moderate or severe [1].<br><b>Skin:</b> Urticaria (hives)- Note skin findings may be absent on some cases of anaphylaxis<br><b>HEENT:</b> Swelling of the lips, tongue or pharynx (Angioedema)<br><b>Chest:</b> Use of accessory muscles of respiration, labored breathing<br><b>Lungs:</b> Wheezing<br><b>Cardiovascular:</b> Hypotension, tachycardia (anaphylactic shock)<br><b>Neurological:</b> ALOC, Syncope |
| Data  | EtCO <sub>2</sub> (if available) , SpO <sub>2</sub> , 12-Lead ECG (if available)   |
| Goals of Therapy                            | Reverse the allergic reaction, relieve bronchospasm, correct hypotension/shock   |
| Monitoring                                  | Vital signs and cardiac monitoring. Progressions of symptoms, response to treatment  |

## EMERGENCY MEDICAL RESPONDER

- If altered level of consciousness or signs of shock, position patient supine with legs raised
- Oxygen: Per nasal cannula at 2-4 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity) keep SpO<sub>2</sub> > 94%
- **EPI-Pen(>66lbs/30kg)** IM (0.3mg) or **EPI-Pen Jr(<66lbs/30kg)** IM (0.15mg) to lateral mid-thigh for moderate or severe reactions). Hold in place for 10 seconds and massage area for 10 seconds after injection.
  - Consult Medical Control to repeat in 5-10 minutes one time as needed
  - Alternative medical director approved epinephrine auto injectors may also be used.
- Oxygen and therapies per Routine Medical Care
- For respiratory symptoms with wheezing
  - Albuterol Sulfate MDI 6 Puffs (if available)
  - OR
  - Albuterol Unit Dose (2.5 ml in 3ml) administer per handheld nebulizer or mask. May repeat x 2

## EMT

- **EPI-Pen(>66lbs/30kg)** IM (0.3mg) or **EPI-Pen Jr(<66lbs/30kg)** IM (0.15mg) to lateral mid-thigh for moderate or severe reactions). Hold in place for 10 seconds and massage area for 10 seconds after injection.
  - Consult Medical Control for consideration of additional dose of epinephrine in 5-10 minutes if not improving.
  - Alternative medical director approved epinephrine auto injectors may also be used.
  - Drawn up epinephrine and syringe using Paramedic IM dosing below dosing only for agencies with additional training to do so.
- For Respiratory Symptoms with Wheezing: Administer Nebulizer Therapy: **Albuterol Sulfate** 2.5mg in 3 ml with **Ipratropium Bromide (Atrovent)** 0.5mg in 2 ml administer per handheld nebulizer, mask or in-line nebulizer; May repeat albuterol X 2 additional doses  
\*\* If patient is under 3 years of age, do not use Ipratropium Bromide (Atrovent), use only Albuterol
- Consider **Diphenhydramine (Benadryl)** 50 mg PO if greater than 50kg (PEDS dose liquid or chewable 1mg/kg max 50mg for >1 y/o older) and available for mild reactions.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guideline](#) p. 96.

## PARAMEDIC

- If unconscious, consider non-visualized airway or endotracheal intubation (See [Respiratory Distress Guideline](#) p. 112)
- **Epinephrine 1mg/1ml** 0.5 mg (PEDS 0.01mg/kg max 0.5mg) IM for moderate to severe reactions. Repeat every 5 – 10 minutes X3 if patient is not improving, or as ordered per Medical Control
- **Diphenhydramine (Benadryl)** 50 mg IM/IV/IO (PEDS 1mg/kg) for moderate or severe reactions
- Consider **Glucagon Adult** 2 mg IV/IO if the patient is taking Beta Blockers and is not responding to Epinephrine, repeat every 10 minutes, until glucagon depleted
- **Methylprednisolone (Solu-Medrol)** 125 mg IV/IO/IM (PEDS 2mg/kg) for moderate to severe reactions
- Consider **Push Dose Epinephrine and Drip per section 5.42** for Moderate to Severe Reactions refractory to the above therapies.
- Consider Inhaled **Epinephrine** if stridor Per [Respiratory Distress Guideline](#)

**FOOTNOTES:**

[1] Severity of Allergy/Anaphylaxis

- Mild Allergic reaction: localized or generalized Urticaria, without swelling of oral or pharyngeal structures, difficulty breathing, hypotension or ALOC
- Moderate Allergic Reaction: oral or pharyngeal swelling is present, mild to moderate difficulty breathing and wheezing are present
- Severe Allergic Reaction (Anaphylaxis): moderate to severe difficulty breathing is present, hypotension is present and ALOC may occur

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## 2.03 ALTERED LEVEL OF CONSCIOUSNESS

**Note:**

- Consider causes of ALOC: acidosis, hypoglycemia, hypoxia, toxin exposure/overdose, CO poisoning, Hypovolemia, shock, sepsis, head injury, drug or alcohol intoxication, syncope, seizures, arrhythmias
- Collect and document all medications that the patient is prescribed for administration at home.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Confused” “Unresponsive”, Not acting themselves”  |
| OPQRST                                      | Determine onset and duration. Triggering events (e.g. Trauma)  |
| Associated Symptoms/<br>Pertinent Negatives | Headache, Weakness, Slurred speech, Aphasia, Incontinent   |
| SAMPLE                                      | Medication consistent with possible causes. (E.g. Alzheimer’s, CVA, Diabetes, Seizures)  |
| Initial Exam                                | Check ABC’s and correct any immediate life threats   |
| Detailed Focused Exam                       | <b>Vitals:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Unresponsive, pale, diaphoretic? Signs of trauma?<br><b>HEENT:</b> PERRL? Pupils constricted or dilated?<br><b>Lungs:</b> Wheezes, rales or rhonchi? Signs of respiratory distress or hypoventilation?<br><b>Heart:</b> Rate and rhythm? Signs of hypo-perfusion?<br><b>Neuro:</b> Unresponsive? Focal deficits (CVA)? |
| Data  | Blood Glucose, SpO <sub>2</sub> , EtCO <sub>2</sub> , 12-Lead ECG  |
| Goals of Therapy                            | Restore normal mental status, Maintain ABC’s   |
| Monitoring                                  | Cardiac monitoring, repeat vitals  |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine medical care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Consider assisting ventilations with bag-valve-mask with high-flow oxygen
- Consider oropharyngeal airway or nasopharyngeal airway
- Consider non-visualized airway of appropriate size
- If a narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5mg up to 2mg IN (max 1 ml per nostril) or IM (EMT and above only) per dose (ped dose 0.1mg/kg) up to 2mg per dose to increase the respirations. Using smaller doses of Narcan is recommended, as the goal is only to increase respirations, not fully awaken patient. Repeat dose as necessary based on patient’s respiratory effort. Refer to [Toxic Exposure/Overdose Guidelines](#) p. 135.
- Check glucose level, if < 70, follow [Diabetic Emergencies Guideline](#) p. 82.
- If neuro deficits, suspect stroke, refer to [Suspected Stroke Guidelines](#) p. 132.

### AEMT

- IV 0.9% NS Lock or KVO
  - Attempt IV only after it is safe for the patient and EMS provider.
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, follow [Hypovolemia & Shock guidelines](#) p. 96.
- If a narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5mg up to 2mg IV/ IN/ IO/IM per dose (ped dose 0.1mg/kg) to increase the respirations. Using smaller doses of Narcan is recommended, as the goal is only to increase respirations, not fully awaken patient. Repeat dose as necessary based on patient’s respiratory effort. Refer to [Toxic Exposure/Overdose Guidelines](#) p. 135.

## PARAMEDIC

- If unconscious with no gag reflex, consider non-visualized airway or endotracheal intubation (See [Respiratory Distress Guideline](#) p. 112)
- Consider RSA. See [Respiratory Distress Guideline](#) p. 112.
- Suspected toxic overdose, refer to [Toxic Exposure/Overdose Guidelines](#) p. 135.

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**Medical Guidelines**  
**2.04 ASTHMA/COPD**

(Includes Reactive Airways Disease, Bronchospasm, Emphysema and Chronic Bronchitis)

**Note:**

- All hypoxic patients should be given enough oxygen therapy to reverse their hypoxia (SpO<sub>2</sub> ≥ 94%), even if they have COPD, but all COPD patients must be closely monitored for signs of respiratory depression due to oxygen therapy. Look for: somnolence, lethargy, decreased rate or depth of breaths. If these appear, reduce rate of flow and prepare to assist ventilations.
- Patients with COPD are usually older adults with a long and heavy smoking history. This includes patients with emphysema and chronic bronchitis. Exacerbations are often triggered by infections.
- Asthma is usually a disease of childhood but may occur or re-occur later in life. There is usually an identifiable trigger, like infection, weather changes or exposure to certain allergens (e.g., dogs, pollen, etc.). The so-called classic triad of dyspnea, cough and wheezing may not always be present.
- Patients with a history of near fatal asthma are at increased risk of recurrent severe attacks and asthma-related death.
- Remember: *“All that wheezes is not asthma”* Always consider the possibility of Congestive Heart Failure in older adults with wheezing.
- The absence of wheezing may be indicative of extreme airflow obstruction.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Difficulty breathing or shortness of breath   |
| OPQRST                                      | Determine onset, duration and progression, triggering events, response to treatment at home, and subjective severity  |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain (angina or pleurisy), fever/chills, cough/productive of what, recent changes in sputum color   |
| SAMPLE                                      | Exposure to a known allergen. History of asthma, emphysema, chronic bronchitis, COPD or previous bronchospasm. Current or past medications for these problems (e.g., Albuterol, Atrovent, Advair, Prednisone, Antibiotics). Compliance with these medications recently, Prior ICU Admissions  |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>General Appearance:</b> Tripod positioning, purse-lipped breathing, nasal flaring in peds, age-appropriate verbal response? Severity of distress [1]?<br><b>Skin:</b> Cool, moist and pale? Warm, dry and flushed? Urticaria? Cyanosis?<br><b>Respiratory Effort:</b> Using accessory muscles, signs of fatigue; two-word sentences?<br><b>Lung Sounds:</b> Wheezes, rales, rhonchi or strider? Decreased lung sounds? Prolonged expiratory phase? Absence of wheezing?<br><b>Heart Sounds:</b> Rate, regularity?<br><b>Lower Extremities:</b> Pitting edema, pale and mottled in peds?<br><b>Neuro:</b> ALOC, lethargy, somnolence? |
| Data  | SpO <sub>2</sub> in all patients (continuous or frequent re-checks); 12-Lead EKG if underlying heart condition suspected; Blood Glucose if DKA is suspected or ALOC is present, work of breathing scale, EtCO <sub>2</sub> to check ventilation   |
| Goals of Therapy                            | Improve oxygenation and ventilation; reduce distress and work of breathing.   |
| Monitoring                                  | BP, HR, RR, EKG, SpO <sub>2</sub> , EtCO <sub>2</sub>   |

## EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Allow/assist the patient to assume a position of comfort (usually upright)
- Oxygen: Per nasal cannula at 2-4 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity) keep SpO<sub>2</sub> > 94%
- Assist with **Albuterol Sulfate** MDI with spacer (if available) 6 Puffs, may repeat X 2  
Or
- Administer Nebulizer Therapy: **Albuterol Sulfate** 2.5mg in 3 ml administer with hand held nebulizer, mask or in-line nebulizer; If no improvement, may repeat albuterol X 2 if needed
- Assisted Ventilation: Consider assisting breathing with gentle synchronous ventilations with bag-valve mask (BVM); Support ventilation with BVM if apnea or hypopnea occurs
- Airway Adjuncts: If there is loss of consciousness, insert an oropharyngeal, nasopharyngeal, or advanced airway depending on presence of gag reflex refer to [Respiratory Distress Guidelines](#) p. 112.

## EMT

- Administer Nebulizer Therapy: **Albuterol Sulfate** 2.5mg in 3 ml with **Ipratropium Bromide (Atrovent)** 0.5mg in 2 ml administer per hand held nebulizer, mask or in-line nebulizer; May repeat albuterol X 2 additional doses  
\*\* If patient is under 3 years of age, do not use Ipratropium Bromide (Atrovent), use only Albuterol
- If in severe distress [1] and responsive, consider CPAP, see [CPAP Procedure](#) p. 198.
  - In-line Nebulizer therapy may need to be performed if advanced airway is in place (e.g. i-Gel)
- Status Asthmaticus (unresponsive to nebs, impending respiratory failure) consider **EPI-Pen(>66lbs/30kg)** IM (0.3mg) or **EPI-Pen Jr(<66lbs/30kg)** IM (0.15mg) to lateral mid-thigh for moderate or severe reactions). Hold in place for 10 seconds and massage area for 10 seconds after injection.
  - Consult Medical Control to repeat in 5-10 minutes one time as needed
  - Alternative medical director approved epinephrine auto injectors may also be used.
  - Drawn up epinephrine and syringe using Paramedic IM dosing below dosing only for departments with additional training to do so.
  - Avoid in COPD or patients over the age of 55 or with known cardiac disease.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#) p. 96.

## PARAMEDIC

- Consider **SoluMedrol** 125 mg IV/IO/IM (PEDS dose 2mg/kg)
- Consider **Magnesium Sulfate** 2 gm (PEDS 50mg/kg) IV slowly (over 10 minutes)
- Status Asthmaticus (unresponsive to nebs, impending respiratory failure) give **Epinephrine 1mg/1ml** 0.5 mg (PEDS 0.01mg/kg max 0.5mg) IM
  - Avoid in COPD or patients over the age of 55 or with known cardiac disease
- **For imminent respiratory arrest consider [Push Dose Epinephrine and Drip](#) p. 230.**
  - Avoid in COPD or patients over the age of 55 or with known cardiac disease
- RSA (if credentialed) using **Ketamine** unless hypertensive or strong cardiac concern dictates **Etomidate**
- If patient remains very difficult to mechanically ventilate, consider **Epinephrine** 0.5 mg (Adult) directly into the endotracheal tube. Repeat every 2 minutes until compliance improves

**FOOTNOTES:**

[1] Severity of Adult Respiratory Distress:

- Mild = RR<20 + minimal additional breathing effort + speaking in complete sentences + minimal subjective distress, No ALOC
- Moderate = RR 20 to 25 + moderate additional breathing effort + difficult to complete a sentence + moderate subjective distress + No ALOC
- In asthma patients with severe respiratory distress who progress to cardiac arrest, the paramedic should have suspicion for tension pneumothorax and consider bilateral needle decompression
- Severe = RR> 25 + marked additional breathing effort + 2 or 3 word sentences + marked subjective distress + possible ALOC



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**2.05 BLAST INJURIES**

**Note:**

- An explosion is caused by the rapid chemical conversion of a liquid or solid material into a gas with a resultant energy release.
- **Primary blast injury:** A unique form of barotrauma, which causes damage to air-filled organs. Be aware of auditory compromise.
- **Secondary blast injury:** Trauma caused by the acceleration of shrapnel and other debris.
- **Tertiary blast injury:** Casualty becomes a missile and is propelled through the air, with typical patterns of blunt trauma.
- **Quaternary blast injury:** All other explosion-related injuries, such as thermal burns, and complications from exacerbation of pre-existing medical conditions.
- **Quinary blast injury:** Due to intentional addition of radiological, chemical, or biological compounds to the explosive device with the intent of exposing victims to additional hazards.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | Varies depending on circumstances surrounding the explosion and individual patient experience  |
| OPQRST                                      | Type of explosive device? Timeline of explosion? Known exposures? Known injury pattern(s)?   |
| Associated Symptoms/<br>Pertinent Negatives | Depends on type of explosive device used, extent of explosion, proximity to source of explosion, exposures, and injury patterns.   |
| SAMPLE                                      | Signs and symptoms. Past medical history. Event timeline.  |
| Initial Exam                                | ABC's and correct any initial life threats.  |
| Detailed Focused Exam                       | <p><b>Scene Size-Up:</b> Scene safety and PPE (A,B, or C). Is decontamination required?</p> <p><b>Vital Signs:</b> BP, HR, RR, Temp, SpO2, ETCO2.</p> <p><b>General Appearance:</b> Varies based on proximity, exposure, and injury pattern.</p> <p><b>Skin:</b> Trauma, Burns, Appearance</p> <p><b>HEENT:</b> Hearing, Pupils, EOM, Facial stability</p> <p><b>Lungs:</b> Work of breathing, Lung sounds, Trauma</p> <p><b>Cardiac:</b> Heart sounds</p> <p><b>Circulatory:</b> Pulse presence, rate, and quality</p> <p><b>Musculoskeletal:</b> Amputation, fractures, crush injuries, compartment syndrome</p> <p><b>Neuro:</b> Mental status, GCS, Disability</p> <p><b>Abdomen:</b> Distention, Evisceration</p> |
| Data  | TBSA Burned  |
| Goals of Therapy                            | Evaluation and Stabilization   |
| Monitoring                                  | Cardiac Monitoring, SpO2   |

## EMERGENCY MEDICAL RESPONDER/EMT

- Scene Safety
- Determine appropriate level of PPE required.
- Notify Hazardous Material team as needed.
- Determine if decontamination is necessary.
- Follow appropriate Medical Guideline.
- Notify medical direction.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#)

## PARAMEDIC

- Consider treatment for Crush Injury per routine trauma guidelines.

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**2.06 BRADYCARDIA**

**Note:**

- Unstable bradycardia is defined in an adult patient as a pulse rate <60 bpm with signs and symptoms of inadequate cerebral or cardiac perfusion such as: SBP <90 mmHG and/or signs of hypoperfusion; altered mental status, signs/symptoms of CHF (dyspnea, crackles, pitting edema), and/or ischemic chest pain.
- **Caution Atropine use in STEMI or Cardiac ischemia as tachycardia may increase ischemia**
- Symptomatic implies that an arrhythmia is causing subjective sensations such as palpitations, lightheadedness, or dyspnea
- Asymptomatic, stable bradycardia may be physiologically normal and should not be treated in the prehospital setting
- In trauma with spinal injury consider neurogenic shock
- In children, bradycardia almost always means hypoxia. Treat for hypoxia first. Clinical signs of respiratory distress or failure/hypoxemia include apnea, slowed or absent capillary refill (> 3 seconds), hypotension (for age), retractions (flaring or grunting) and/or signs of decreased perfusion including altered mental status, abnormal appearance, inequality of central and distal pulses, and/or loss of distal pulses [2].
- For neonatal bradycardia see [Neonatal Resuscitation](#) p. 103.
- A single pill can kill a toddler. It is very important that a careful assessment of medications the toddler could have access to is done by EMS (with particular attention to cardiac medications) and all suspect medications should be brought into the ED
- Larger Atropine Doses may be needed for organophosphate poisoning: See [Toxic Exposure/Overdose](#) p. 135.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | Syncope, weakness, diaphoresis, unresponsiveness, chest pain   |
| OPQRST                                      | Identify location and radiation, onset, duration progression and severity, presence of intermittent or fluctuating symptoms, factors that provoke (exertion) or palliate (rest) the pain.  |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain, dyspnea, nausea/vomiting. Pain that is aggravated by breathing and coughing (pleuritic). Cough and fever/chills.   |
| SAMPLE                                      | History of coronary artery disease or risk factors for it. Use of cardiac medications, including aspirin.  |
| Initial Exam                                | Check ABCs and correct any immediate life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Anxious?<br><b>Skin:</b> Cool, pale diaphoretic?<br><b>Neck:</b> JVD?<br><b>Chest:</b> Laboring to breathe?<br><b>Lungs:</b> Wheezes, rales, rhonchi? Decreased breath sounds?<br><b>Heart:</b> Rate, regularity?<br><b>Legs:</b> Pedal Edema?<br><b>Neuro:</b> ALOC? |
| Data  | SpO <sub>2</sub> , 12-Lead EKG, Blood Sugar if Diabetic or ALOC  |
| Goals of Therapy                            | Support adequate perfusion. Increase Heart rate, reduce chest pain, and reduce risk of lethal arrhythmias, early identification of myocardial infarction, and early identification of fibrinolytic therapy candidates.   |
| Monitoring                                  | Cardiac monitoring and SpO <sub>2</sub>  |
|   |  |

## EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Ensure Adequate Oxygenation and Ventilation
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- If the patient is having:
  - Chest pain – Refer to the [Chest Pain of Suspected Cardiac Origin Guidelines](#) p. 78
  - Shortness of breath – Refer to the [Congestive Heart Failure Guidelines](#) p. 80

## EMT

- Acquire 12-Lead ECG, if “\*\*\*ACUTE MI SUSPECTED\*\*\*” refer to [Chest Pain of Suspected Cardiac Origin Guidelines](#) p. 78
- For unstable patients [1] initiate ALS intercept

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & shock guideline](#)

## PARAMEDIC

- If the patient remains hemodynamically and clinically stable [1], observe and monitor. Prepare for transport. Place multifunction pads on patient as needed
- Obtain a rhythm strip and/or 12-Lead EKG if not already done
- For unstable patients [1], in sinus bradycardia, give **Atropine Sulfate** 1 mg IV/IO while setting up TCP.
  - May repeat every 3-5 minutes to a maximum of 3mg for adult/adolescent
- Monitor pulse and blood pressure
- If the patient is or becomes unstable [1], Initiate transcutaneous pacing (TCP)
  - Initiate transcutaneous pacing (TCP) immediately
  - Turn on pacer and ensure R waves are marked
  - Set the HR at 70 – 80 beats/min
  - Set the voltage at 40 mA initially and watch for the pacer spikes on the monitor
  - Increase voltage by 10 mA every 3-5 seconds until there is electrical and mechanical capture:
    - A wide QRS complex appears on the monitor after every pacer spike
    - A pulse can be felt in the femoral or carotid artery after every QRS complex
    - Further validation of mechanical capture can be obtained by ensuring the pulse ox heart rate is consistent with the EKG heart rate then Increase voltage by 10%
- For pain control or sedation while pacing, consider **Fentanyl Citrate** up to 50mcg IV/IO/IN/IM if SBP >90mmHg, or low dose **Midazolam (Versed)** 2mg IV/IO/IN/IM if SBP >100mmHg (reduce dose by 50% for smaller framed and elderly)
- If persistent unstable or impending cardiac arrest, consider **Push Dose Epinephrine and/or drip per section 5.42** until symptoms resolve or SBP >90
- If no improvement, consider:
  - Beta-blocker OD:
    - Glucagon 2mg IV/IO, Pediatric 0.05 mg/kg IV/IO max 2mg**
      - Check blood sugar as Beta-blocker overdoses may result in hypoglycemia
  - Calcium channel blocker OD in extremis:
    - Calcium Chloride 1g SLOW IV/IO (PEDS 20 mg/kg IV/IO)**
    - If no improvement, consider **Glucagon 2mg, Pediatric 0.05 mg/kg IV/IO/IM max 2 mg**
  - Opiate ingestion:
    - Narcan 0.1mg/kg IV/IO/IN/IM (1/2 dose each nostril)** (usual adult dose is 0.5mg-2.0mg per dose max of 4 mg)
    - Using smaller doses of Narcan is recommended, as the goal is only to increase respirations, not fully awaken patient.

## FOOTNOTES:

### [1] Criteria for characterizing a patient as “unstable”

- Hemodynamic Criteria
  - Adults SBP < 90 mmHg AND Heart Rate <60 beats/min
- Clinical Criteria
  - Signs of shock (poor perfusion) are present, including
    - ALOC, including syncope, weakness, lightheadedness, fatigue
    - Absent radial pulses
    - Pallor and diaphoresis
  - Signs of pulmonary edema are present, including
    - Labored breathing
    - Rales (wet lungs)
    - Hypoxia (SpO<sub>2</sub> <94%)
  - The patient complains of angina- Caution Atropine use in STEMI or Cardiac ischemia as tachycardia may increase ischemia

### [2] Pediatric Considerations:

- In children, bradycardia almost always means hypoxia. Treat for hypoxia first. Clinical signs of respiratory distress or failure/hypoxemia include apnea, slowed or absent capillary refill (> 3 seconds), hypotension (for age), retractions (flaring or grunting) and/or signs of decreased perfusion including altered mental status, abnormal appearance, inequality of central and distal pulses, and/or loss of distal pulses.
- If despite adequate oxygenation and ventilation, the heart rate is <60/min in an infant with signs of poor perfusion, begin CPR

### Signs of Unstable Pediatric Patient

- Clinical signs of resp. distress or failure/hypoxemia
  - Apnea
  - Retractions, flaring or grunting
- Signs of decreased perfusion
  - AMS/Abnormal appearance
  - Inequality of central and distal pulses
  - Slowed or absent capillary refill <3 sec
  - Hypotension (See [Pediatric normal vital signs](#) p. 118)
- **Epinephrine** 1mg/10ml, 0.01mg/kg (0.1ml/kg)
- **Atropine Sulfate** PEDS 0.02mg/kg (minimum dose 0.1mg, max single dose 0.5mg child) if increased vagal tone or cholinergic drug toxicity
  - May repeat every 3-5 minutes to a maximum of 3 mg for adolescent
  - May repeat every 3-5 minutes to a maximum of 1 mg for child
- If the pediatric patient is or becomes unstable [3], Initiate transcutaneous pacing (TCP)
  - Initiate transcutaneous pacing (TCP) immediately
  - Turn on pacer and ensure R waves are marked
  - Set the HR at age-appropriate beats/min
  - Set the voltage low initially and watch for the pacer spikes on the monitor
  - Increase voltage by 10 mA every 3-5 seconds until there is electrical and mechanical capture:
    - A wide QRS complex appears on the monitor after every pacer spike
    - A pulse can be felt in the femoral or carotid artery after every QRS complex
    - Then increase the voltage by 10%
  - For Pain Control or sedation during pacing Consider **Fentanyl** Pediatric dose up to 1mcg/kg IV/IO and 2mcg/kg IN max dose 50mcg per bolus or **MIDAZOLAM 0.1 mg/kg slow IVP (0.2 mg/kg IN/IM)** (max single dose 2 mg)

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## 2.07 BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

**Note:**

- A Brief Resolved Unexplained Event, or BRUE, is an event occurring in an infant younger than 1 year old when the observer reports a sudden, brief, and now resolved episode of 1 or more of the following: cyanosis or pallor, absent/decreased/irregular breathing, marked change in tone (hyper- or hypotonia), altered level of responsiveness
  - Formerly called Apparent Life-Threatening Event (ALTE)
- These events are very alarming for parents and caregivers and may cause a great deal of anxiety. EMS must provide a calming presence while providing care for the patient
- By definition, any abnormality identified in history or physical exam would rule out would indicate the presence of another condition, and therefore would rule out BRUE
- Be aware for abuse

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Loss of consciousness, color change (cyanosis/pallor), limp or rigid baby, abnormal or absent breathing   |
| OPQRST                                      | Short duration of symptoms, complete resolution   |
| Associated Symptoms/<br>Pertinent Negatives | No associated symptoms: coughing/gagging suggests other etiology  |
| SAMPLE                                      | Previous history of BRUE (or ALTE) suggests high risk   |
| Initial Exam                                | Check ABCs, correct any immediate life-threatening conditions   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> HR, RR, SpO <sub>2</sub> , Temp, BP<br><b>General Appearance:</b> Tone, color, activity<br><b>Skin:</b> Cyanosis, pallor<br><b>Chest:</b> Respiratory effort, Accessory muscle use<br><b>Lungs:</b> Abnormal lung sounds<br><b>Heart:</b> Rate, rhythm, presence of murmur<br><b>Musculoskeletal:</b> Tone (hypertonic/hypotonic)<br><b>Neuro:</b> Level of consciousness |
| Data  | SpO <sub>2</sub> , Blood Sugar if altered LOC   |
| Goals of Therapy                            | Good history and exam to identify underlying/causative condition  |
| Monitoring                                  | SpO <sub>2</sub> , Cardiac monitoring if indicated  |

## EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical Care
- Remain calm and provide reassurance for parents/caretakers
- Consider 12-lead EKG and transmission (EMT and above) if history or exam raises concern for cardiac arrhythmia
- If respiratory distress identified, follow the [Respiratory Distress Guidelines](#) p. 112.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guidelines](#)

## PARAMEDIC

- Routine Medical Care with Cardiac Monitoring

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## 2.08 BURNS

**Note:**

- This guideline applies to thermal burns, chemical burns and electrical burns
- Scene safety is of utmost concern.
- Patients with burns are at high risk for infection. The use of PPE also helps to protect the patient from potential cross contamination from caregivers.
- Loosen and remove any clothing and jewelry that can become constricting when tissue swells.
- Get the patient away from the heat source, Stop the burning process as needed however burns over 10% should not be additionally cooled due to possibility of causing hypothermia. Avoid application of ice.
- Even if the patient meets criteria for burn center referral, they generally do not need to be airlifted directly to a burn center from the scene.
- In the presence of major trauma (in addition to the burn), stabilizing life-threatening injuries takes precedence over the care of the burn.
- Circumferential full-thickness burns of the trunk and neck may impair ventilation and must be closely monitored.
- Airway burns can rapidly lead to upper airway obstruction and respiratory failure
- If patient in shock remember that carbon monoxide/cyanide poisoning is a common complication of burns suffered in an enclosed space (see [Toxic Exposure/Biologics/Overdose Guidelines](#) p. 135)
- Electrical/Lightning
  - Ensure electricity is off
  - Note entrance and/or exit wounds if electrical or lightning strike and be aware of potential associated internal injuries from explosion, electrical shock, or fall.
  - Apply spinal motion restriction for victims of musculoskeletal trauma associated with the electrocution.
  - In cases of cardiac arrest due to electrical contact or burns (including lightning strikes), aggressive resuscitation should be attempted, as survival rates are good.
- For Chemical burns and decontamination, refer to Material Safety Data Sheets
  - Brush off powder, if present.
  - Some chemicals require aggressive irrigation
  - Remove patient clothing if needed
- Radiation
  - If the patient is contaminated with radioactive material, they will need decontamination by specifically trained personnel.
  - Exposed victims do not present a hazard to responders unless radioactive contamination is present.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Burns, pain, burning sensation; electrical/lightning injury; chemical (caustic) exposure  |
| OPQRST                                      | Identify cause of burn, exposure time and time of burn  |
| Associated Symptoms/<br>Pertinent Negatives | Respiratory distress, ulcerous skin in chemical burns, entrance and/or exit wounds with possible cardiac changes in electrical  |
| SAMPLE                                      | Note previous medical conditions that may affect survival   |
| Initial Exam                                | Scene safety, ABC's support as necessary  |
| Detailed Focused Exam                       | <b>Vitals:</b> Estimate BSA with "rule of nines" or "rule of palms", BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Varies depending on burn; may show signs of extreme pain<br><b>Skin:</b> Depending on the degree on the burn, erythema, blisters, pale leathery appearance, charring, sloughing<br><b>HEENT:</b> Pupils, check nose & mouth for signs of burns (e.g. soot, edema, redness)<br><b>Lungs:</b> Signs of respiratory distress, stridor, diminished or absent lung sounds?<br><b>Heart:</b> Rate and rhythm? Especially in electrical burns<br><b>Neuro:</b> Loss of movement and/or sensation in extremities, focal deficits? |



|                  |   |
|------------------|---|
| Data             | BSA estimate, EKG, EtCO <sub>2</sub> , SpO <sub>2</sub> ,   |
| Goals of Therapy | Stop the burn; airway management; fluid resuscitation; pain control; management of associated injuries; (Decontamination in hazmat incidents) |
| Monitoring       | Monitor for cardiac dysrhythmias, increasing respiratory distress and signs of shock  |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical Care/Routine Trauma Care
- If in cardiac arrest, see [Cardiac Arrest Guidelines](#) p. 74
- Remove burned, hot, warm, and/or contaminated clothing
- Administer oxygen to keep SpO<sub>2</sub> > 94%
  - If inhalation is suspected administer 100% Oxygen
  - Humidify oxygen if possible
- Remove rings, bracelets, and other constricting items as soon as possible
- Keep the patient warm with dry blankets
- Provide comfort and reassurance
- Place patient in Trendelenburg Position in cases of shock
- If less than 10% body surface area (BSA), dress burns with wet saline dressings or approved burn dressings, but be careful not to induce hypothermia
- Cover burns dry dressings or clean sheets, or approved burn dressing, do not break blisters
- Consider Advanced response for advanced airway If airway burns are evident by the following:
  - Carbonaceous sputum
  - Singing of nasal hairs
  - Swelling of the lips, tongue or pharynx due to burns
  - Hoarse voice or stridor
  - There is increasing respiratory distress
  - There is decreased level of consciousness with no gag reflex
- Consider **Albuterol** for bronchospasm per [Asthma/COPD guidelines](#) p. 62

### AEMT

- IV 0.9% LR/NS Lock or KVO
- For hypotension or signs of hypovolemia shock, administer fluid bolus per shock guidelines reassess and repeat as indicated. Consider other injuries or cyanide/carbon monoxide poisoning for hypotension or signs of hypovolemic shock.
- Advanced Burn Life Support initial fluid rates (Lactated Ringers is Preferred) for patients with visibly large burns are based on patientage:
  - 5 years old and younger – 125 ml per hour
  - 6-13 years old – 250 ml per hour
  - 14 years and older – 500 ml per hour
  - Keep track of fluid infused.

### PARAMEDIC

- Continue pain control, refer to [Pain Management Guidelines](#) p.107.
- Consider RSA
  - If the patient remains alert or has an intact gag reflex AND there is carbonaceous sputum, singing of nasal hairs, swelling of the lips, tongue or pharynx due to burns, a hoarse voice or stridor, or other signs of respiratory distress. Refer to [Respiratory Distress Guidelines](#) p. 112
- For Hydrofluoric Acid Burns or Suspected Cyanide Exposure see [Toxic Exposure/Biologics/Overdose Guidelines](#) p. 135

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**2.09 CARDIAC ARREST**

**Note:**

- Unlike adult cardiac arrest, which is usually due to a primary cardiac abnormality, pediatric cardiac arrest most often occurs as a result of hypoxia. The most common reasons for this include progressive respiratory failure and shock.
- Capnography should be used as early as possible to provide feedback of quality of compressions. Capnography may be used with mask ventilations and is required with any advanced airway placement.
- Compression quality is paramount to patient survival. If possible, patients should not be moved if it will compromise quality of compressions. If available, use a mechanical compression device during movement.
- For patients suffering cardiac arrest due to hypothermia see [“Hypothermia & Frostbite”](#) p. 93
- For patients with identifiable Do Not Resuscitate (or equivalent such as POLST) see [“Advanced Directives/Hospice”](#) p. 45
- These guidelines should be used in conjunction with [“Termination/Withholding Of Resuscitation In The Field](#) **Error! Reference source not found.**/[Notification of Coroner](#)” guidelines, p. 49**Error! Bookmark not defined.** as applicable.
- For patients in arrest due to traumatic etiology see [“Routine Trauma Care”](#) p. 121.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Collapsed, unresponsive, not breathing normally   |
| OPQRST                                      | Witnessed or unwitnessed? Estimated time of onset. Circumstances/trauma. Location of patient. Antecedent symptoms/signs (chest pain, difficulty breathing). Environmental factors, medication-related problems or overdose.   |
| Associated Symptoms/<br>Pertinent Negatives | Bystander-initiated CPR. Pre-arrival CPR instructions from dispatch? Public access AED use.   |
| SAMPLE                                      | Does the patient have any allergies to medications? History of heart disease? Current cardiac medications?  |
| Initial Exam                                | Open airway, check for normal breathing, if none, begin chest compressions.   |
| Detailed Focused Exam                       | <b>Vitals Signs:</b> non-breathing (or agonal respirations/gasps)<br><b>General:</b> Look for rigor mortis, dependent lividity, or unsurvivable trauma. Look for valid Do-not-resuscitate.<br><b>Skin:</b> Warm/cold, dependent lividity, rash, ecchymosis?<br><b>HEENT:</b> Airway patent, foreign bodies (e.g., dentures), neck swelling or trauma, trachea in midline, <b>pupil size and response?</b><br><b>Chest:</b> Spontaneous respirations, subcutaneous air or crepitation, or deformity?<br><b>Lungs:</b> Equal breath sounds, difficulty bagging or ventilating?<br><b>Cardiovascular:</b> Absence of heart sounds, carotid or femoral pulses?<br><b>Abdomen:</b> Distended?<br><b>Extremities:</b> Rigor mortis, edema, deformity?<br><b>Neurological:</b> Unresponsive to verbal and painful stimulation? |
| Data  | Initial Cardiac rhythm, EtCO <sub>2</sub> , event data  |
| Goals of Therapy                            | Return of spontaneous circulation (ROSC), provide adequate brain perfusion  |
| Monitoring                                  | Cardiac Monitoring, Vital Signs, and SpO <sub>2</sub> , EtCO <sub>2</sub>   |

## EMERGENCY MEDICAL RESPONDER/EMT

- A CODE COMMANDER should assign duties according to MCMAID prior to arrival, MCMAID duties will occur simultaneously but must be coordinated.
- Establish that the patient is unresponsive, and not breathing normally
- For patients with identifiable Do Not Resuscitate (or equivalent such as POLST) see "[Advanced Directives/Hospice](#)" p. 45.
- **First Priority: M-(metronome) Quality Chest Compressions**
  - Initiate manual continuous chest compressions.
    - Ensure a rate of 100-120/minute
- **Second Priority: C-(compressions) Quality Chest Compressions**
  - Assign at least two compressors switching every other minute, checking each other's quality
  - Depth
    - Adults compress- 2 to 2.4 inches
      - 30:2 Compression to Ventilation Ratio until advanced airway placed
    - Children/Infants
      - Compression depth is approximately 1/3 AP chest depth about 1.5 inches in infants and 2 inches in children
      - For multiple rescuer CPR in children, 15:2 is the recommended compression-to-ventilation ratio
      - Neonates 3:1 is the recommended compression-to-ventilation ratio
  - The heel of the compressor's hand should come off the chest, ensuring full recoil
  - Minimizing any pauses to < 10 seconds.
  - Apply mechanical CPR device if available and indicated.
- **Third Priority: M-(monitor) Defibrillate**
  - Defibrillate as soon as defibrillator is available and ready
  - AED, push analyze Immediately resume 2 more minutes of compressions regardless of the rhythm displayed on the cardiac monitor
  - If refractory to multiple shocks an attempt to change pad location and energy vector may be warranted
  - If refractory to multiple shocks and 2<sup>nd</sup> defibrillator available ALS consider adult sequential defibrillation
  - For Manual Defibrillation by – Maximum Joules should be used for Ventricular Fibrillation/Tachycardia
  - **Pediatric Considerations**
    - It is acceptable to use adult pads if pediatric pads unavailable
    - First Shock 2 J/Kg
    - Second Shock 4 J/kg
    - Subsequent doses greater than or equal to 4 J/kg to a max of 10 J/kg or adult dose.
- **Fourth Priority: A-(airway)**
  - Ventilate with 100% oxygen
    - Intubation by ALS/ILS or Supraglottic Airway by First Responder/EMT and above. Confirm all airways per Routine Medical Care
  - Do not interrupt compressions or defibrillation attempts for airway placement. **For Adults Ventilate at 10/minute only enough volume to just make chest rise** with continuous compressions
  - **Pediatric Consideration:** when advanced airway is in place ventilate at 8-10/min.
    - For neonates, 3:1 is the recommended compression-to-ventilation ratio
  - Deliver enough volume over one second to make chest rise
  - The airway management strategy should not interrupt compressions
  - If ROSC, acquire 12-Lead EKG, if \*\*\*ACUTE MI SUSPECTED\*\*\* see [Chest Pain of Suspected Cardiac Origin Guidelines](#) p. 78.

## AEMT

- IV 0.9% NS Lock or KVO
- IV is preferred route for ACLS medications
- Initiate a Normal saline bolus per shock reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow shock guidelines](#) p. 96.

## PARAMEDIC

- Monitor basic rescuer interventions closely, ensure quality, uninterrupted chest compressions
- **Sixth Priority: D-(drugs) Proceed to ACLS/PALS resuscitation medications after second shock or immediately for non-shockable rhythms**
  - **Epinephrine** 1mg/10ml, 1 mg IV/IO initially and then repeat every 5 minutes
    - Ped dose 0.01mg/kg max 1mg/dose
- If any shocks indicated AED or manual, give **Amiodarone** 300 mg IV/IO, followed by another **Amiodarone** 150 mg if still refractory after 2 more cycles of compressions (4 minutes).
  - PEDS dose 5mg/kg max dose 300mg
- If adult patient regains pulse prior to amiodarone administration but has received defibrillations, initiate **Amiodarone** 300 mg IV/IO infusion and give slowly over 20 minutes to prevent further arrhythmias.
- No maintenance drip is necessary if the patient has received **Amiodarone** 300mg or more bolus during the resuscitation. If arrhythmias develop, follow appropriate guidelines.
- If supraglottic airway in place, consider intubation as soon as practical. Confirm all airways per Routine Medical Care.
- Consider **SoluMedrol** 125mg IV/IO considerations in Adult cardiac arrest immediately after **Epinephrine**.
- If refractory V-Fib or Torsades de pointes, consider **Magnesium Sulfate** 2gm IV/IO
  - PEDS dose 50mg/kg max 2 gm IV/IO
- Hyperkalemia should be treated pre-arrest as soon as it is noticed. Pre-arrest and intra-arrest therapy is similar [2]
  - Give **Calcium Chloride (10%)** 1,000mg IV/IO over **SLOW** over 2-5 minutes. May repeat x1 as indicated
    - PEDS Dose 20mg/kg Max dose 1000mg
  - Give **Sodium Bicarbonate (8.4%)** 50 mEq IV/IO. May repeat as indicated
    - PEDS Dose 1mEq/Kg Max dose 50mEq
  - Give **Albuterol Sulfate** 10 mg via continuous neb if not already given
    - **Pediatrics** less than 1 year old 2.5mg, older than 1 year old 5mg via nebulizer
- Identify and correct reversible causes: “The H’s and the Five T’s”
  - “The Six H’s” (treatment orders are in parentheses)
    - Hypovolemia (Infuse Normal Saline wide open)
    - Hypoxia (Place an advanced airway and administer high-flow oxygen at a ventilation rate of 10/minute with only enough volume to make chest rise. [1])
    - Hydrogen Ion, i.e., acidosis (Perform ventilation [1])
    - Hyperkalemia [2]
    - Hypokalemia (generally not treated in the field.)
    - Hypothermia (See [Hypothermia & Frostbite Guidelines](#) p. 93)
  - “The Five T’s” (treatment orders are in parentheses)
    - Toxins (See [Toxic Exposure/Biologics/Overdose Guidelines](#) p. 135)
    - Tamponade (PARAMEDIC: Consider Pericardiocentesis, administer saline bolus)
    - Tension pneumothorax (PARAMEDIC: Perform needle decompression)
    - Thrombosis, cardiac i.e., myocardial infarction (See [Chest Pain of Suspected Cardiac Origin Guidelines](#) p. 78)
    - Thrombosis, pulmonary i.e., pulmonary embolism (No specific pre-hospital treatment available, consider early transport to appropriate facility)
- If there is ROSC, as seen as a sudden large increase in EtCO<sub>2</sub> and/or patient movement, palpable pulses.
  - Reassess the need for airway devices
    - Maintain advanced airway, if the patient remains unconscious
    - If the patient wakes up and shows cognitive response, the airway may be removed. Use the procedures for removing advanced airway devices in the [Respiratory Distress Guidelines](#) p. 112.
  - Monitor patient’s EtCO<sub>2</sub> and ventilate accordingly (maintain EtCO<sub>2</sub> around 35-45 mmHg SpO<sub>2</sub>>94%)

- Adult Maintain SBP >90 mmHg, consider [Push Dose Epinephrine](#) p. 230
  - Pediatric Patients goal of resuscitation
    - Avoid Hypotension for age (lowest acceptable systolic blood pressure in mmHg)
      - Less than 1 years of age: 60mmhg
      - 1–10 years old: (age in years) (2) + 70mmhg
      - Greater than 10 years old: 90mmhg
    - Cap refill >3 seconds
- If post-resuscitation 12-lead EKG shows STEMI refer to [Chest Pain of Suspected Cardiac Origin Guidelines](#) p. 78.

#### **FOOTNOTES:**

[1] Do not hyperventilate during cardiac arrest, even if hypoxia and acidosis are suspected causes. Strictly follow the ventilation guidelines described above.

[2] Suspect Hyperkalemia when patients with a history of chronic renal failure (dialysis patients) develop cardiac arrest. Pre-arrest history may include weakness, missed dialysis appointment(s), vomiting, concurrent illness, and T waves that are peaked and as large as the R wave or wide QRS.

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## 2.10 CHEST PAIN OF SUSPECTED CARDIAC ORIGIN

**Note:**

- It is important to acquire 12-Lead as soon as possible with good skin prep and in the supine position as much as possible.
- A normal ECG does not rule out myocardial infarction.
- Patients suffering from potential myocardial ischemia should limit exertion including ambulation if possible.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | Heavy, vague, squeezing, pressure like, dull or achy, discomfort or pain   |
| OPQRST                                      | Identify location and radiation, onset, duration progression and severity, presence of intermittent or fluctuating symptoms, factors that provoke (exertion) or palliate (rest) the pain.  |
| Associated Symptoms/<br>Pertinent Negatives | Radiation, dyspnea, nausea/vomiting. Pain that is aggravated by breathing and coughing (pleuritic). Cough and fever/chills.  |
| SAMPLE                                      | History of coronary artery disease or risk factors for it. Use of cardiac medications, including aspirin. Drug use.  |
| Initial Exam                                | Check ABCs and correct any immediate life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Anxious?<br><b>Skin:</b> Cool, pale diaphoretic?<br><b>Neck:</b> JVD?<br><b>Chest:</b> Laboring to breathe?<br><b>Lungs:</b> Wheezes, rales, rhonchi? Decreased breath sounds?<br><b>Heart:</b> Rate, regularity?<br><b>Legs:</b> Pedal Edema?<br><b>Neuro:</b> ALOC? |
| Data  | SpO <sub>2</sub> , 12-Lead ECG, Blood Sugar if Diabetic, EtCO <sub>2</sub> if ALOC   |
| Goals of Therapy                            | Reduce chest pain; reduce risk of lethal arrhythmias; early identification of myocardial infarction, and early identification of PCI therapy candidates.   |
| Monitoring                                  | Cardiac monitoring, SpO <sub>2</sub> and serial 12-Leads   |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Titrate oxygen to a saturation of 94-98%
- If the patient also experiences shortness of breath, follow the [Congestive Heart Failure Guidelines](#) p. 80.
- Administer **Aspirin** 324 mg PO (4) 81 mg chewable tablets for adults unless the patient is truly allergic or has taken prior to calling EMS

### EMT

- Acquire 12-Lead and transmit to receiving facility.
  - If reads “\*\*\*ACUTE MI SUSPECTED\*\*\*”, call for ALS and make arrangements to transport to nearest cardiac cath lab facility if operationally feasible, notify receiving facility.
  - Place defibrillation pads.
  - Activate Code STEMI as rapidly as possible.
- Performance of serial EKGs is encouraged for symptomatic patients with EKGs initially non-diagnostic for STEMI
- All EKGs should be made available to treating personnel at the receiving hospital, whether hand delivered as hard copy or transmitted from the field

- If unable to obtain 12-lead, call for ALS or continue to nearest hospital, whichever is faster to acquire the 12-lead.
- If patient experiences angina, consider assisting the patient in administering the patient's prescribed **Nitroglycerin** sublingually, unless the Systolic BP < 110 mm Hg
  - Note: No NTG if patient has used Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours
  - Repeat BP (before) and Nitroglycerin dose every 5 minutes x 3, or until pain is relieved
  - Discontinue nitroglycerine if the Systolic BP drops below 110 mm Hg

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guidelines](#) p. 96.
- Consider **Nitroglycerin** 0.4 mg SL, repeat every 5 minutes as long as Systolic BP > 110 mmHg is maintained, max of three doses.

## PARAMEDIC

- Monitor EKG and interpret 12-lead
- IV 0.9% NS @ KVO or saline lock
- Consider **Nitroglycerine** paste 1" to left chest for adults unless Systolic BP < 110 mm Hg
  - Note: No NTG if patient has used Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated
- Perform serial 12-Lead EKG and compare with initial. Provide copies to receiving provider
  - Consider V4R, if hypotensive or inferior infarct is suspected.
  - Consider posterior (primarily V8) leads if depression is noted in early V leads, to look for posterior infarct
- Acquire posterior leads, if depression is noted in early V leads, to look for posterior infarct
- Consider **Fentanyl Citrate** 50-100 mcg IV/IO/IM, may repeat with max total dose of 200 mcg for persistent pain (reduce dose by 50% for smaller framed and elderly) or **Dilaudid** 0.5-1 mg IV/IO/IM, may repeat in 20 minutes if indicated-max total dose 3 mg per Pain Management Guidelines

## FOOTNOTES:

### 12 Lead Views

|              |              |             |             |
|--------------|--------------|-------------|-------------|
| I Lateral    | aVR          | V1 Septal   | V4 Anterior |
| II Inferior  | aVL Lateral  | V2 Septal   | V5 Lateral  |
| III Inferior | aVF Inferior | V3 Anterior | V6 Lateral  |

### Reciprocal Locations

| Site          | Facing                 | Reciprocal     |
|---------------|------------------------|----------------|
| Septal        | V1, V2                 | None           |
| Anterior      | V3, V4                 | None           |
| Anteroseptal  | V1, V2, V3, V4         | None           |
| Lateral       | I, aVL, V5, V6         | II, III, aVF   |
| Anterolateral | I, aVL, V3, V4, V5, V6 | II, III, aVF   |
| Inferior      | II, III, aVF           | I, aVL         |
| Posterior     | V7, V8, V9             | V1, V2, V3, V4 |

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## 2.11 CONGESTIVE HEART FAILURE/PULMONARY EDEMA

**Note:**

- Remember that acute myocardial infarction may present with shortness of breath (alone) and new onset acute congestive heart failure.
- Hypertension in the setting of shortness of breath should prompt additional evaluation

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Difficulty breathing”; “Shortness of breath”  |
| OPQRST                                      | Assess onset, duration, progression, subjective severity, possible triggering events, and response to treatments before EMS arrival.   |
| Associated Symptoms/<br>Pertinent Negatives | Cardiac chest pain, frothy sputum, blood-tinged sputum   |
| SAMPLE                                      | Check past history of CHF or heart disease; medications for CHF (e.g., furosemide, digoxin, ACE inhibitors, long-acting nitrates, etc.), and compliance with these medications.  |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <p><b>General Appearance:</b> Tripod positioning; Severity of distress [1]?</p> <p><b>Skin:</b> Cool, moist and pale? Warm, dry and flushed? Cyanotic?</p> <p><b>Neck:</b> JVD?</p> <p><b>Respiratory Effort:</b> Using accessory muscles, signs of fatigue; two-word sentences?</p> <p><b>Lung Sounds:</b> The presence of rales (wet lungs) is a strong indication of CHF. Wheezing is also common in CHF.</p> <p><b>Heart Sounds:</b> Rate, regularity.</p> <p><b>Peripheral Edema:</b> Pitting edema of the ankles is common in CHF, but its absence does not rule out CHF?</p> <p><b>Neuro:</b> ALOC? Lethargy? Somnolence?</p> |
| Data  | SpO <sub>2</sub> , EtCO <sub>2</sub> , 12-Lead EKG acquisition   |
| Goals of Therapy                            | Differentiate CHF from other causes of dyspnea, reduce the work of breathing, improve pump function, and improve oxygenation and ventilation.  |
| Monitoring                                  | Carefully monitor blood pressure, respiratory effort, level of consciousness, SpO <sub>2</sub> , and EtCO <sub>2</sub>   |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Allow/assist the patient to assume a position of comfort (usually upright)
- Oxygen: Per nasal cannula at 2-4 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity) keep SpO<sub>2</sub> > 94%, humidify if possible
- Assisted Ventilation: Consider assisting breathing with gentle synchronous ventilations with bag-valve mask (BVM); Support ventilation with BVM if apnea or hypopnea occurs
- If patient is unresponsive, with no gag reflex, utilize supraglottic airway device
- If the patient is wheezing, consider assist with use of metered dose inhalers if available or give **Albuterol Sulfate** 2.5 mg in 3 ml, administer per handheld nebulizer or mask; May repeat X 2 additional doses
- Consider **Aspirin** per [Chest Pain of Suspected Cardiac Origin Guideline](#) p. 78.
- Suspected pulmonary edema due to other noncardiogenic causes (such as irritant inhalation, abrupt opioid withdrawal, fluid overload). Provide supportive care to promote adequate oxygenation. Follow [Respiratory Distress Guidelines](#) p. 112.



## EMT

- Acquire 12-Lead EKG, if not supine mark as such
- If the patient complains of chest pain (angina):
  - Consider **Aspirin** per [Chest Pain of Suspected Cardiac Origin guideline](#) p. 78
  - If the patient is prescribed nitroglycerine consider assisting them in taking, providing systolic blood pressure >100mmHg
    - Note: No NTG if patient has used Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours
    - Repeat BP (before) and Nitroglycerin dose every 5 minutes x 3, or until pain is relieved
    - Discontinue nitroglycerine if the Systolic BP drops below 100 mm Hg
- Initiate CPAP, refer to [CPAP Procedure](#) p. 198, ensure nitro tablets have dissolved prior to initiating CPAP

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#) p. 96
- Consider **Nitroglycerin** 0.4 mg SL, repeat every 5 minutes as long as SBP > 110 mmHg is maintained, no maximum dose.
  - If SBP > 160 mmHg may use **Nitroglycerin** 0.8mg (2 sublingual spray or tablets) every 3-5 minutes. If SBP < 160 mmHg after initial 0.8mg dose, use 0.4mg dose for subsequent doses
  - Note: No NTG if patient has used Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours

## PARAMEDIC

- IV 0.9% NS saline lock
- Note: No NTG if patient has used Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours
- For CHF Give **Nitroglycerin** 0.4 mg (1 sublingual spray or tablet) every 3-5 minutes. No maximum dose as long as a SBP >110 is maintained
  - If SBP>160 may use **Nitroglycerin** 0.8mg (2 sublingual spray or tablets) every 3-5 minutes. If SBP<160 after initial 0.8mg dose, use 0.4mg dose for subsequent doses
  - Apply 1" of Nitroglycerine **Paste** for patients on CPAP after initial sublingual dose, hold if SBP ≤ 110 mmHg
  - If SBP <100 mmHg withhold NTG and consider [Push Dose Epinephrine](#) p. 230, to maintain SBP >90
- Consider RSA if any of the following indications are met: refer to [Respiratory Distress Guidelines](#) p. 112.
  - A trial of CPAP fails to improve the work of breathing or oxygenation
  - There is ALOC and the gag reflex is intact
  - Respiratory failure is imminent (e.g., severe fatigue)

## FOOTNOTES:

[1] Severity of Respiratory Distress:

- Mild = RR<20 + minimal additional breathing effort + speaking in complete sentences + minimal subjective distress, No ALOC
- Moderate = RR 20 to 25 + moderate additional breathing effort + difficult to complete a sentence + moderate subjective distress + No ALOC
- Severe = RR> 25 + marked additional breathing effort (retractions/accessory muscle use) + 2 or 3 word sentences + SPO<sub>2</sub> is <94% + possible ALOC

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## 2.12 DIABETIC EMERGENCIES

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | "Low blood sugar" "Altered Level of Consciousness"   |
| OPQRST                                      | Check onset/duration. Identify possible contributing factors [1]. Recent history of frequent episodes.   |
| Associated Symptoms/<br>Pertinent Negatives | Fever/Chills. Signs/Symptoms of infection.   |
| SAMPLE                                      | Medications for diabetes. Insulin Pump [3]   |
| Initial Exam                                | ABCs and correct any immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Unresponsive? Agitated and combative?<br><b>Skin:</b> Cool, pale, diaphoretic?<br><b>Neuro:</b> ALOC? Focal deficits (CVA)? |
| Data  | Blood Glucose  |
| Goals of Therapy                            | Restore normal mental status   |
| Monitoring                                  | Repeat blood glucose, ensure patient safety prior to obtaining waiver [2].   |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Monitor vital signs
- Check blood sugar level:
  - Blood Sugar > 70 mg/dl, monitor
  - Blood Sugar < 70 mg/dl, conscious with intact gag reflex, give **Glucose Oral Gel** PO
    - Adult Dosing 25 g
    - **Pediatric** Dosing: 0.5–1 g/kg
  - Blood Sugar < 70 mg/dl, altered mental status, If available encourage patient or family to use their **Glucagon kit** or use **Glucagon auto injector**, may repeat x1 in 15min
  - If unable to check blood sugar, assume hypoglycemia and treat as above

### EMT

- Check blood sugar level:
  - Blood Sugar > 70 mg/dl, monitor
  - Blood Sugar < 70 mg/dl, conscious, give **Glucose Oral Gel** PO
    - Adult Dosing 25 g
    - **Pediatric** Dosing: 0.5–1 g/kg
  - Blood Sugar < 70 mg/dl, unconscious, give **Glucagon** 1 mg IM, may repeat x1 in 15min
    - Pediatric patient under 20kg give ½ dose, may repeat x1 in 15min

### AEMT

- IV 0.9% NS Lock or KVO
- Blood sugar < 70 mg/dl and patient with altered mental status:
  - Adults: administer **Dextrose 10%** infuse 125ml, recheck blood sugar
  - PEDS dose: **Dextrose 10%** 5ml/kg to max of 125ml, recheck blood sugar
  - Administer additional dose as above if blood sugar remains below 70mg/dl
  - Reassess BGM and mental status 5 minutes after completion of infusion

- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, abdominal pain, or shock. Reassess and repeat as indicated
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#) p. 96
  - In adults, volume expansion of up to 20ml/kg total early infusion may also be needed for hyperglycemia
- Pediatric patients if symptoms of hypovolemic shock follow shock guidelines

## PARAMEDIC

- Evaluate for and treat for hyperkalemia as indicated

### FOOTNOTES:

#### [1] Contributing factors

- Too much or too little insulin?
- Decreased PO intake?
- Overexertion
- Dehydration
- MI
- Illness

#### [2] Ensuring Patient Safety/Refusal

- IF symptoms of hypoglycemia resolved after treatment, still advise of transport, release without transport should only be considered if **all** of the following are true:
  - Patient returns to normal mental state, clinically has capacity and has with no focal neurologic signs/symptoms after receiving glucose/dextrose and is refusing transport
  - Repeat glucose is greater than 80mg/dL
  - Patient takes only insulin or metformin to control diabetes and does not take oral agents such as glipizide or glyburide.
  - A clear cause of the hypoglycemia is identified.
  - Adequate social support is available
  - The patient has access to food and has ability to eat with EMS personnel on scene.
  - Adult caregiver must be present with pediatric patient.
  - The patient is not ill or in need of immediate medical attention
  - Document proper IV removal and site inspection
  - Hypoglycemic patients who have had a seizure should be transported to the hospital regardless of their mental status and response to therapy.

#### [3] For patients with insulin pump who are hypoglycemic with associated altered mental status (GCS less than 15)

- Stop the pump, disconnect, or remove at insertion site if patient cannot ingest oral glucose or ALS is not available
- Leave the pump connected and running if able to ingest oral glucose or receive successful ALS interventions

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**2.13 ECLAMPSIA**

**Note:**

- Eclampsia occurs in pregnant patients with “preeclampsia”. Preeclampsia is a syndrome that involves hypertension [1] and output of protein in the urine.
  - Preeclampsia occurs most often (but not exclusively) in non-white first-time mothers in their teens or early twenties from low socioeconomic backgrounds, or in mothers over the age of 35. Other risk factors include previous pregnancy with preeclampsia, multiple fetuses, a family history of preeclampsia and obesity.
  - Eclampsia occurs when seizures and/or coma develop between the 20<sup>th</sup> week of pregnancy and the 6<sup>th</sup> week after delivery
- There is a significant associated risk of death for the mother and the baby. Maternal complications of Eclampsia include: placental abruption, hemorrhagic stroke, pulmonary edema, cardiac arrest, and postpartum hemorrhage.
- Versed can be given more rapidly to break seizure, but should be followed with Magnesium sulfate, as it is the drug of choice for treating seizures in Eclampsia.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Seizure/coma in mid to late pregnancy or within a month after delivery  |
| OPQRST                                      | Generalized, tonic-clonic type seizures (usually), lasting (3-4 minutes) that resolve spontaneously   |
| Associated Symptoms/<br>Pertinent Negatives | Has the doctor told her that she has developed high blood pressure during this pregnancy with protein in the urine and swelling of the ankles? Has she had adequate prenatal care? Other symptoms of preeclampsia may be present [2].   |
| SAMPLE                                      | If the mother has had adequate prenatal care, she may already know that she has a diagnosis of “preeclampsia”, or “pregnancy-induced hypertension”, but not always.   |
| Initial Exam                                | ABCs and correct and immediately life-threatening problems  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP [2], HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Seizing or postictal? Incontinent (bowel, bladder)?<br><b>Abdomen:</b> Appears pregnant?<br><b>Skin:</b> Pale, cool, moist? Cyanotic?<br><b>Mouth:</b> Frothy salivation? Tongue biting?<br><b>Legs:</b> Pedal edema?<br><b>Neuro:</b> Focal deficits? ALOC?, Reflexes-if able to assess, Hyperreflexia? |
| Data  | SpO <sub>2</sub> , Blood Sugar (to rule out hypoglycemia as a cause of the seizure)   |
| Goals of Therapy                            | Protect the mother from injury during seizures, cessation of seizures, minimize recurrence of seizures  |
| Monitoring                                  | Blood pressure, HR, SpO <sub>2</sub> , Neuro Status; Cardiac Monitor for possible rhythm disturbances   |

## EMERGENCY MEDICAL RESPONDER

- Routine Medical Care, Emergency Obstetrics and Childbirth Guidelines, Provide comfort and reassurance
- If unconscious with a stable airway, pregnant patients should be placed in the recovery position on their left side
- Administer oxygen to keep SpO<sub>2</sub> > 94%

## EMT

- If the airway is not stable, insert a nasopharyngeal airway, an oropharyngeal airway or a supraglottic airway
- If blood sugar is <70mg/dl, treat per Diabetic Emergencies
- Obtain 12-Lead EKG

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - Be cautious of bolus administration
- Blood sugar < 70 and patient with altered mental status: treat per [Diabetic Emergencies Guideline](#) p. 82.

## PARAMEDIC

- For seizures administer **Midazolam (Versed)** up to 5mg IV/IO/IN or up to 10mg IM may repeat x 1 (max 20mg)
  - Monitor patient closely and correct for hypotension, sedation and respiratory depression
  - If the fetus delivers after a Benzodiazepine is given to the mother, monitor the newborn for signs of respiratory depression. Be prepared to assist ventilations and provide oxygen
- After initial dose of Versed, **Magnesium Sulfate** 4 grams in 100ml NS IVPB/IOPB over 20 min with primary IV running wide open while administering drug. Be aware of side effects [3]
  - Monitor patient closely for hypotension, muscle weakness (including respiratory muscle paralysis), and heart rhythm disturbances
- Attempt to maintain SBP between 140-160 mmHg and DPB between 90-110 mmHG
  - Consider **Labetalol** 10mg IVP over 2 min, if no effect, may repeat 20mg IVP in 10 min to a max of 100mg.
  - If Labetalol not available, **Metoprolol** 5mg IVP, repeat every 5 min to max of 15mg.
    - For either medication hold if SBP<140 or DBP<80 or HR<60.

## FOOTNOTES:

[1] Hypertension during pregnancy is defined by a systolic pressure over 140 mmHg and a diastolic pressure over 90 mmHg. Pregnancy usually lowers the blood pressure. A rise in the blood pressure after the 20<sup>th</sup> week of gestation is worrisome for preeclampsia. Eclampsia sometimes occurs even in pregnant people with blood pressures below 140/90 mmHg

[2] Other symptoms of preeclampsia include: headache, blurred vision, epigastric abdominal pain, nausea and swelling of the hands, feet and face (generalized edema)

[3] Side effects include: flushing, sweating, warm sensation. Early signs of toxicity: reduced reflexes and hypotension, for magnesium toxicity including cardiac conduction abnormalities or respiratory failure give 500mg of Calcium Chloride

**SLOWLY** over 5-10 minutes

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## 2.14 EMERGENCY OBSTETRICS AND CHILDBIRTH

**Note:**

- EMS services should be familiar with local hospital resources and local destinations for obstetric patients or patients suffering gynecologic emergencies.
- Stable pregnant patients, of greater than 20 weeks gestations, with a pregnancy related complaint should be transported to the closest appropriate birthing hospital. This would include labor without signs of imminent delivery.
  - Signs of Imminent delivery may include:
    - Contractions < 5 minutes apart
    - Crowning
    - Urge to push/move bowels
- Unstable pregnant patients, including when delivery is imminent, should be transported to the closest appropriate hospital.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Uterine contractions, “in labor”  |
| OPQRST                                      | Location of pain, radiation of pain, time of onset of contractions, interval between contractions, quality of contractions, severity of contractions, events surrounding onset of contractions, due date  |
| Associated Symptoms/<br>Pertinent Negatives | Vaginal bleeding (presence, quantity, and character), “bloody show,” leakage of fluid or discharge, need to “push,” “bear down,” or have a bowel movement, presence of fetal movement, RUQ pain, vomiting, visual changes   |
| SAMPLE                                      | <ul style="list-style-type: none"> <li>• Allergies</li> <li>• Medications</li> <li>• Past medical history, past surgical history, , prenatal care, number of previous pregnancies, previous Cesarean delivery, prenatal care</li> <li>• Previous pregnancy or delivery complications (eclampsia, precipitous delivery, etc.)</li> <li>• Last menstrual period</li> <li>• Fetal movement?</li> <li>• Recent infectious diseases</li> <li>• Complications of current pregnancy (i.e., preeclampsia, placenta previa, gestational diabetes, premature labor, ultrasound showing abnormal fetal position etc.)</li> </ul> |
| Initial Exam                                | ABCs  |
| Detailed Focused Exam                       | <b>HEENT:</b> Cracked lips, sunken eyes or cheeks indicating dehydration<br><b>Skin:</b> Cool, pale diaphoretic<br><b>Chest:</b> Labored breathing<br><b>Heart:</b> Tachycardia<br><b>Abdomen:</b> Scars, Tenderness, masses, fundal height, distention, deformity<br><b>Legs:</b> Edema<br><b>Neuro:</b> Mental status, Seizures<br><b>Gyn:</b> Vaginal bleeding, infant head crowning, prolapsed cord, presenting part, meconium staining   |
| Goals of Therapy                            | Atraumatically deliver newborn with maintenance of normal vital signs for both mother and newborn<br>Resuscitate infant if >20 weeks gestational age, uncertainty of dates, signs of life, or EMS discretion, If any doubt about accuracy of gestational age, initiate resuscitation  |
| Monitoring                                  | BP, HR, RR, frequency of contractions.  |

## EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical Care
- Administer oxygen as needed
- Avoid supine position, Transport pregnant patients on left side

### Cardiac Arrest Considerations in Pregnancy

- Manage rhythm per appropriate cardiac arrest guidelines
- Perform chest compressions with continuous manual left lateral uterine displacement using the two-handed method.
- The gravid uterus must remain displaced during transport.
- Post-mortem C-section has a high success rate for fetal survival if accomplished as early as possible. Therefore, rapid transport to an appropriate facility is essential.

### Vomiting Consideration

- **Zofran** use in pregnant/nursing mothers is acceptable if associated with signs of dehydration

### Trauma Consideration

- The fetus may be in grave danger following seemingly minimal maternal trauma

### Normal Delivery Considerations

- Evaluate for imminent delivery if:
  - History of precipitous delivery
  - Contractions 2 or less minutes apart
  - Mother feels need to push or have bowel movement
  - Visually inspect perineum for crowning
- If delivery appears imminent, open OB pack, apply sterile gloves, and drape abdomen
- In the absence of a breech presentation or prolapsed umbilical cord, do not attempt to prevent or delay delivery
- During contractions urge patient to push.
- Control rate of delivery of head using palm of your hand, applying gentle pressure to protect perineum
- When head is delivered do not routinely suction airway if suction is needed:
  - Compress bulb suction device and place into mouth to suction mouth then repeat for nose
  - Limit suction to ten (10) seconds
- Check to see if cord is wrapped around baby's neck
  - If so, gently attempt to slip cord over the baby's head if cord is semi-loose
  - If cord cannot be slipped over head or cord is tight, clamp two sites on the cord and cut between clamps
    - Use of sterile scissors is preferred over scalpel
    - Deliver promptly
- Gently guide head and neck down to allow delivery of upper shoulder
- Then guide head and neck up to deliver lower shoulder and body, if difficulty noted follow Abnormal delivery guidelines below.
- Prevent heat loss - Provide warm environment, dry baby, and wrap baby in clean blanket, if no resuscitation is needed place infant on maternal chest "Skin-to-skin"
- Ensure patent airway in "Sniffing position"
- Suction mouth then nose as needed, do not aggressively suction as this may stimulate bradycardia
- Note time of delivery.
- Evaluate mother post-delivery for evidence of shock due to excessive bleeding. (See [Vaginal Bleeding after Delivery Guidelines](#) p. 142).
- Continue to maintain an open airway and assess breathing rate and effort as well as tone
- Place baby lower than placenta and assess cord pulsations
- After pulsations have ceased, double clamp cord at approximately 6" and 9" from baby and sterilely cut between clamps
  - For vigorous single infants delay cord clamping for 30-60 seconds
- Assess baby for APGAR scoring [1] at 1 and 5 minutes after recorded time of birth
- See [Neonatal Resuscitation Guidelines](#) p. 103 for further treatment.

### Post-Partum Care of the Mother

- If perineum is torn/bleeding, apply direct pressure with gauze
- Notify ED early on to allow OB and ED to prepare for arrival
- Do not hasten delivery of placenta. Do not pull on cord. May deliver spontaneously enroute if necessary.
- After delivery, massaging the uterus (should be located at about the umbilicus) and allowing the infant to nurse will promote uterine contraction and help control bleeding
  - Estimate maternal blood loss
  - Treat mother per "[Vaginal Bleeding after Delivery](#)" p. 142.

### Abnormal Delivery

- Proceed with emergent transport if able and administer high flow O2 to mother
- Breech Presentation
  - coach the mother to perform shallow breathing and avoid pushing
  - If delivery is imminent, prepare the mother as usual and allow the buttocks and trunk to deliver spontaneously then support the body while the head is delivered.
  - If needed, put the mother in a kneeling position which may assist in the delivery of the newborn
  - If the head does not deliver suffocation can occur.
    - Place a gloved hand into the vagina, with your palm toward the baby's face.
    - Form a "V" with your fingers on either side of the baby's nose and push the vaginal wall away from the baby's face to create airspace for breathing.
- Prolapsed Umbilical Cord
  - Place mother in Left lateral Trendelenburg position, elevate hips, if possible or knee-chest position
  - Place gloved fingers into the vagina to hold the vaginal wall away from the cord
  - Wrap the prolapsed cord in moist sterile gauze
  - Maintain until relieved by hospital staff
- Shoulder dystocia – if delivery fails to progress after head delivers, quickly attempt the following
  - Hyperflex mother's hips to severe supine knee-chest position
  - Apply firm suprapubic pressure to attempt to dislodge shoulder.
  - Attempt to angle baby's head as posteriorly as possible but NEVER pull
- Limb presentation
  - The presentation of an arm or leg through the vagina is an indication for immediate transport to hospital

### AEMT

- IV 0.9% NS Lock or KVO prior to delivery if time permits.
- Initiate a 250 ml bolus 250ml for maternal hypotension/shock. Reassess vital & lung sounds and repeat. See [Vaginal Bleeding after Delivery Guidelines](#) p. 142

### PARAMEDIC

- Establish IV NS @ TKO/Lock, prior to delivery if approved and time permits
- Fluid bolus 250ml for maternal hypotension/shock. Reassess vital & lung sounds and repeat. See [Vaginal Bleeding after Delivery Guidelines](#) p. 142
- If patient is hypertensive and experiences seizure, see [Eclampsia Guidelines](#) p. 84.
- Pregnancy is a relative contraindication to RSA



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**2.15 HEAT EMERGENCIES**

**Note:**

- Heat emergencies can afflict any age patient, with or without underlying health problems, in a variety of ambient temperatures
- High temperatures, high humidity, and high exertion are often factors that lead to a heat emergency
- Heat emergencies are most common in elderly patients, infants and young children, morbidly obese patients, athletes, and other patients with underlying health problems
- Heat exhaustion is a circulatory system problem. It generally presents as hypovolemia. The patient may have a normal or slightly elevated core temperature.
- Heat stroke is a life-threatening neurological problem. The patient has an extremely high core temperature.
- Heat stroke patients can have hot, red, dry skin or moist skin.
- Initial assessment and aggressive cooling should be implemented based on the clinical suspicion, regardless of the degree of hyperthermia or mode of measurement.
- Hyperthermia may be a result of illegal drug use
- Many medications and illnesses compromise body's ability to thermoregulate
- Water intake and urination frequency are key history findings to differentiate hyponatremia and heat exhaustion

| <b>Problem</b>  | <b>Cause</b>                                     | <b>Possible Temperature</b> | <b>Clinical Findings and History</b>   |
|-----------------|--|-----------------------------|--|
| Heat Cramps     | Dehydration<br>Electrolyte imbalances            | 99-101.3 F                  | Most common in children and athletes<br>Severe localized cramps in abdomen or extremities<br>Normal vital signs<br>Usually occur suddenly during or after strenuous physical activity  |
| Heat Exhaustion | Inadequate fluid intake and excessive fluid loss | 99-104 F                    | <b>General:</b> fatigue, weakness, anxiety, intense headaches, profuse sweating, nausea and vomiting, and limited to no urine output<br><b>Compensated:</b> Altered mental status--lethargy or irritability, Elevated pulse and respirations, Normal blood pressure<br><b>Decompensated:</b> Decreased level of consciousness, decreased blood pressure, elevated pulse and respirations |
| Heat Stroke     | Dangerous Core Temperature Elevation             | > 104 F                     | Altered mental status, decreased level of consciousness, seizures skin color temperature and moisture is not a reliable finding, increased pulse and respirations, hypotension,  |

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | "Person hot, lethargic, acting funny, lethargic in a hot environment"  |
| OPQRST                                      | What led up to this? Where was the patient found?  |
| Associated Symptoms/<br>Pertinent Negatives | Consider other causes of altered mental status—i.e., drug use, hypoglycemia, head injury, toxin inhalation or ingestion.   |
| SAMPLE                                      | Check for medications that could be contributory (beta blockers, psychiatric medications, sedatives, narcotics or barbiturates).<br>Inquire about fluid consumption and frequency of urination   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br>If possible, obtain temperature in the field with a digital thermometer.<br><b>General Appearance:</b> overdressed for environment, sweating, evidence of trauma?<br><b>Skin:</b> pale, cool clammy OR hot, red, dry OR hot, red, moist<br><b>Lungs:</b> breath sounds<br><b>Heart:</b> Rate and rhythm?<br><b>Neuro:</b> Loss of coordination, impaired judgment, altered mental status, decreased level of consciousness |
| Data  | SpO <sub>2</sub> , Blood glucose, 12-Lead EKG  |
| Goals of Therapy                            | <ol style="list-style-type: none"> <li>1. End the heat challenge and increase heat loss from conduction, convection, radiation, and evaporation</li> <li>2. Support ABCs</li> <li>3. Replace fluid and electrolytes</li> </ol>   |
| Monitoring                                  | SpO <sub>2</sub> , Cardiac Monitoring  |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical Care
- End the heat challenge. Remove the patient from the hot environment into an area with shade, air conditioning, air movement, etc.
- Protect the patient from hot surfaces, i.e., running track or asphalt road
- Remove excessive clothing
- No food or fluids if the patient has altered consciousness, nausea, vomiting, or is otherwise not in control of his/her own airway
- Administer oxygen to keep SpO<sub>2</sub> > 94%, humidify if possible
- Begin rapid cooling in the prehospital setting as below if possible:
  - If feasible ice bath immersion provides the most rapid cooling but is technically difficult
  - Aggressively mist patient with tepid water and
  - Apply ice packs in neck, armpits, groin, cheeks, palms of hands, and soles of feet
  - As a last resort, cover patients with cool, wet sheets
  - Prepare for rapid transport
  - Continue cooling enroute to the hospital

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96.

### PARAMEDIC

- To treat seizures, refer to [Seizure Guidelines](#) p. 126.
- If shivering occurs during cooling and prevents effective cooling, consider **Versed** up to 2 mg (ped 0.05mg/kg max 2mg per dose) IV/IO/IN/IM may repeat x 1 in 5 minutes

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## 2.16 ADULT HYPERTENSIVE EMERGENCY

**Note:**

- Hypertension in an asymptomatic patient should not be treated pre-hospital.
- Adult hypertensive crisis can be defined as symptoms of end organ damage (severe headache with neuro changes (dizziness, blurred vision, altered LOC), dyspnea, edema, chest pain, arrhythmia as a result of the hypertension, >220 systolic or >120 diastolic in non-pregnant, non-trauma patients when Cushing’s Reflex is not suspected. If suspicions for drug use, follow [Toxic Exposure/Biologics/Overdose guideline](#) p. 135.
- This measurement should be confirmed with multiple measurements at least 5 minutes apart.
- **Hypertensive emergency:** Causes and signs and symptoms suggesting end-organ dysfunction
  - **Neurologic damage** may be due to hypertensive encephalopathy, stroke, subarachnoid hemorrhage, intracranial hemorrhage among others. Assess for headache, visual disturbances, seizures, AMS, weakness, paralysis
  - **Cardiovascular damage** may be due to myocardial ischemia/infarction; LV dysfunction, acute pulmonary edema; or aortic dissection among others: Assess for chest pain, dyspnea, JVD; back pain; pulse deficits between limbs
  - Other organ system dysfunction may lead to acute renal failure, retinopathy.
  - Assess for seizures, peaked T waves, hematuria.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Palpitations, fast heart rate, shortness of breath, chest pain, weakness  |
| OPQRST                                      | Onset and duration, precipitating factors and circumstances, associated symptoms, stroke symptoms, nausea vomiting  |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain, shortness of breath, weakness, anxiety, leg swelling  |
| SAMPLE                                      | Previous history, history of thyroid disease, CAD, cardiac medications  |
| Initial Exam                                | Check ABCs and correct any immediate life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vitals Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b><br><b>Skin:</b> Cool, pale diaphoretic<br><b>Neck:</b> JVD?<br><b>Chest:</b> Labored breathing<br><b>Lungs:</b> Wheezes, rales, rhonchi? Decreased breath sounds?<br><b>Heart:</b> Regular, rate fast or slow, murmur<br><b>Legs:</b> Edema? Signs of an acute arterial occlusion (embolism)?<br><b>Neuro:</b> ALOC? Signs of stroke? |
| Data  | SpO <sub>2</sub> , 12-Lead EKG, Blood Sugar if Diabetic or ALOC   |
| Goals of Therapy                            | Decrease Blood Pressure, treat chest pain, treat CHF  |
| Monitoring                                  | Cardiac Monitoring and SpO <sub>2</sub>   |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical Care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Transport sitting upright or head of cot at 30 degrees
- If the patient is suspected to have suffered a stroke, follow the [Suspected Stroke Guideline](#) p. 132.

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - Limit fluid bolus

## PARAMEDIC

- Follow pain management guideline for pain that may be contributing to HTN prior to other antihypertensive therapies
- If treated for >220 systolic or >120 diastolic as above, goal is to reduce BP by no more than 20% in first hour or symptoms are alleviated.
  - Consider **Labetalol** 10mg IVP over 2 min, if no effect, may repeat 20mg IVP every 10 min to a max of 100mg.
    - If Labetalol not available, Consider **Metoprolol** 5mg IVP, repeat every 5 min to max of 15mg.
  - For either medication hold if SBP<180 or DBP<100 or HR<60

Or

- **NTG Paste** 1" to chest
- For Pulmonary Edema follow [Congestive Heart Failure/Pulmonary Edema guideline](#) p. 80.

### FOOTNOTES:

If the patient is hemodynamically and clinically stable, transport, observe and monitor. Efforts to reduce the blood pressure will add little benefit.

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## 2.17 HYPOTHERMIA & FROSTBITE

**Note:**

- Many cases of accidental hypothermia encountered by EMS involve alcohol and drug abuse.
- In the hypothermic patient, rough handling can precipitate ventricular fibrillation.
- When checking pulses and respiratory rates, check for 60 seconds, because bradycardia and bradypnea are common in moderate to severe hypothermia.
- Look for signs of trauma in all patients with hypothermia.
- Hypothermia may be categorized by mild, moderate and severe. The following table may be used to estimate the degree of hypothermia based on clinical findings.
- Transport to a hospital capable of rewarming the patient.
- A temperature should be obtained if possible. Otherwise, clinical severity staging should be used.

| <b>Severity</b> | <b>Temperature</b> | <b>Clinical Findings</b>   |
|-----------------|--------------------|--|
| Mild            | 90-95 °F           | Shivering, impaired judgment; Tachycardia and hypertension may be present                        |
| Moderate        | 82-89 °F           | Consciousness clouded to stuporous, shivering stops. Blood pressure becomes difficult to obtain. |
| Severe          | < 82 °F            | Bradycardia, hypotension and slow respirations; Arrhythmias may develop; Consciousness is lost.  |

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | "Person found down in a cold environment"  |
| OPQRST                                      | What led up to this? Where was the patient found?  |
| Associated Symptoms/<br>Pertinent Negatives | Associated trauma and MOI? Drug or alcohol use?  |
| SAMPLE                                      | Check for medications that could be contributory (beta blockers, psychiatric medications, sedatives, narcotics or barbiturates).   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br>If possible, obtain temperature in the field with a digital thermometer.<br><b>General Appearance:</b> Shivering, paradoxical undressing, evidence of trauma?<br><b>Skin:</b> Signs of frostbite (pallor, blisters)?<br><b>Lungs:</b> pulmonary edema?<br><b>Heart:</b> Rate and rhythm?<br><b>Neuro:</b> Loss of coordination, impaired judgment, ALOC? |
| Data  | SpO <sub>2</sub> , Blood glucose, 12-Lead EKG, EtCO <sub>2</sub>   |
| Goals of Therapy                            | Above all, avoid rough handling! Initiate Active and passive external rewarming measures in the field. Support airway, breathing and circulation, prevent loss of limb, prevent further heat loss. Do not attempt to thaw frozen limbs in the field. Early transport to facility for optimal rewarming   |
| Monitoring                                  | SpO <sub>2</sub> , Cardiac Monitoring, EtCO <sub>2</sub> , Temp  |

## EMERGENCY MEDICAL RESPONDER/EMT

- Attempt to remove the patient from the cold environment if it can be done gently. Rough handling must be avoided.
  - Do not attempt to rewarm frostbitten or frozen parts by rubbing them.
- Remove wet clothing and gently dry the skin by patting, not rubbing, with dry towels.
- Initiate passive rewarming with blankets on top of and underneath the patient; insulate the patient from the cold ground; shield them from the cold wind.
- Initiate active external rewarming with warm blankets and hot packs in the axilla and groin and forced air warming blankets if available.
  - In patients who are unresponsive, or unable to recognize a developing injury, check the area in which the heating pad is placed regularly to ensure no tissue damage occurs.
  - Place a barrier between the heat pack and the skin
- Administer oxygen to keep SpO<sub>2</sub> > 94%
  - If oxygen is deemed necessary, it should be warmed to a maximum temperature between 40°–42°C (104°–108°F) and humidified if possible [1]
- If there is a pulse, no matter how slow, do not initiate chest compressions
- If there is no pulse, continue CPR until directed by a physician to discontinue
- If the chest is frozen solid, or ice blocks the airway, CPR will be futile and should be discontinued (or not even started) in the field, see [Termination/Withholding Of Resuscitation In The Field/Notification of Coroner](#) p. 49.
- Apply an AED and analyze. If shocks are indicated, attempt defibrillation
  - The first shock should be given no matter what the core temperature is
  - Do not delay defibrillation to measure a core temperature
  - Do not attempt to defibrillate more than once until the core temperature is documented to be > 86 °F
- If the patient is shivering and can swallow, support thermogenesis by giving the patient warm fluids and calories and consider administration of **Glucose Oral Gel** per diabetic emergencies.
- If frozen limbs are fractured and angulated, splint in the position found. Do not attempt to straighten until they are completely thawed.
- Warm ambulance compartment

## AEMT

- IV 0.9% NS Lock or KVO if indicated. [2]
- Initiate a 250 ml bolus (warmed IVF preferred for active warming) for severe hypothermia or signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated
  - PEDS Bolus 20ml/kg, follow Hypovolemia & Shock guideline p. 96.

## PARAMEDIC

- Continuous cardiac monitoring with frequent analysis of rhythm. If shockable rhythm, attempt defibrillation as follows:
  - The first shock should be given no matter what the core temperature is.
  - Do not delay defibrillation to measure a core temperature.
  - Do not attempt to defibrillate more than once until the core temperature is documented to be > 86 °F
- Consider endotracheal intubation, if the patient is unresponsive without a gag reflex.
  - Administer warm humidified oxygen [1]
- Cardiovascular drugs should be withheld if the victim's core body temperature is <30°C (86°F). If the core body temperature is > 86°F, IV medications may be administered but at double or triple the dosing interval for all medications given, because hypothermia slows metabolism and toxic levels can accumulate in the peripheral circulation.
- If Bradycardia is present, transcutaneous pacing should be withheld until the core temperature is > 86 °F

**FOOTNOTES:**

[1] Technique for warming and humidifying oxygen

- Place saline in a nebulizer
- Wrap a hot pack around the nebulizer
- Start oxygen flow
- Administer by mask
- If oxygen is deemed necessary, it should be warmed to a maximum temperature between 40°–42°C (104°–108°F) and humidified if possible

[2] Technique for warming IV Fluids in the field

- Use IV fluid warmer to maintain warm fluids, rotate stock frequently, follow manufacturer recommendations for temperature and rotation of fluids
- Place IV fluids in front of heating vents in vehicle while enroute to call
- Wrap the IV tubing around a hot pack several times
- IV fluids, if administered should be warmed ideally to 104°F

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**2.18 HYPOVOLEMIA & SHOCK**

**Note:**

- All patients should be evaluated for sepsis if they exhibit any of the following potential infections:
  - Pneumonia (cough/thick sputum)
  - Urinary tract infection (painful urination, hematuria, change in urination)
  - Altered mental status
  - Blood stream/catheter related
  - Abdominal pain, distention and/or diarrhea
  - Wound infection, cellulitis or skin/soft tissue infection
  - Device related infection
- Patients exhibiting signs of infection should be assessed for the following:
  - Temperature > 100.4° F
  - Temperature < 96.8° F
  - Tachypnea > 20/min. or EtCO<sub>2</sub><25 mmHg or SpO<sub>2</sub> ≤ 92% (See [Pediatric VS table](#) for tachypnea)
  - Tachycardia > 90 bpm (See [Pediatric VS table](#) pfor tachycardia)
  - Systolic BP < 90 mmHg (Peds 70 + {Age x2})
  - Acute Mental Status Change
  - If presentation suggestive of infection and more than 2 the vital signs changes are positive, call a SEPSIS ALERT and follow treatment below
- Potential other causes of hypovolemia and shock include:
  - Trauma
  - Hemorrhage (Internal, External)
  - Spinal cord injury (Neurogenic Shock)
  - Cardiogenic Shock
  - Heart Rhythm Disturbances
  - Dehydration
  - Drugs and Toxins
  - Vasovagal Syncope
  - Metabolic Disturbances
  - Anaphylaxis
  - Pulmonary Embolism
  - Aneurysms
  - Anaphylaxis
- Shock includes inadequate perfusion of vital organs, not merely hypotension. Clinical evidence of shock includes altered mental status.
- Avoid NSAIDS including Ibuprofen and Ketorolac in shock states.



| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | "Altered Level of Consciousness"  |
| OPQRST                                      | Identify onset, duration, progression and provocation.  |
| Associated Symptoms/<br>Pertinent Negatives | Fever/Chills, Chest Pain (Angina), Trauma   |
| SAMPLE                                      | Pertinent past history and medications may provide important clues.   |
| Initial Exam                                | ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub> , EtCO <sub>2</sub><br><b>General Appearance:</b> Does the patient appear ill? External Hemorrhage?<br><b>Skin:</b> Pale, cool, and moist? Flushed, warm and dry?<br><b>Chest:</b> Labored breathing?<br><b>Lungs:</b> Wheezes, rales or rhonchi?<br><b>Heart:</b> Rate and Rhythm?<br><b>Abdomen:</b> Internal hemorrhage? Tender? Distended? GI Blood loss?<br><b>Extremities:</b> Trauma? Edema?<br><b>Neuro:</b> ALOC? |
| Data  | SpO <sub>2</sub> , 12-Lead EKG, Blood Sugar, EtCO <sub>2</sub>  |
| Goals of Therapy                            | Restore volume and support blood pressure   |
| Monitoring                                  | Blood pressure, heart rate and cardiac rhythm   |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine Medical -or- Trauma Care
- Oxygen: Per nasal cannula at 2-4 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity) keep SpO<sub>2</sub> > 94%
- Keep patient flat with lower extremities elevated (if possible)
- Conserve body temperature, maintain warmth, and reassure patient.

### AEMT

- IV/IO 0.9% NS through large bore catheter, consider 2<sup>nd</sup> point of vascular access
- Fluid Bolus Adults standard dosing – 250 ml; reassess patient; repeat if indicated to max of 2 L or 30ml/kg
  - Pediatrics – standard dosing – 20 ml/kg. reassess patients; repeat if indicated max of 1 L or 60ml/kg
  - For all fluid boluses assess lung sounds following each administration and hold for signs of pulmonary overload
  - If multiple boluses needed, use Lactated Ringers as preferred solution.
  - For signs of hypotension (SBP <90mmhg and/or MAP <65mmhg), hypovolemia, or shock, reassess and repeat as indicated
- Pediatric Patients goal of resuscitation
  - Correction of hypotension for age (lowest acceptable systolic blood pressure in mmHg)
    - Less than 1 years of age: 60mmhg
    - 1–10 years old: (age in years) (2) + 70mmhg
    - Greater than 10 years old: 90mmhg
  - Cap refill less than 3 seconds
- Document total fluids given and report to receiving facility

### PARAMEDIC

- Consider RSA if indicated see [Respiratory Distress Guidelines](#) p. 112
- [Push Dose Epinephrine and Drip](#) p. 230, titrated to BP goals as above
- If hemorrhagic shock, refer to [Routine Trauma Care](#) p. 121, for TXA indications and dosing
- If there is a history of adrenal insufficiency, long-term steroid dependence, with fluid-refractory shock requiring vasopressors consider **SoluMedrol** 125mg IV (PEDS 2 mg/kg)

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## 2.19 NARROW COMPLEX TACHYCARDIA

**Note:**

- Narrow complex rhythms have a QRS duration < 0.12 sec

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | Palpitations, fast heart rate, shortness of breath, chest pain, weakness   |
| OPQRST                                      | Onset and duration, precipitating factors and circumstances, associated symptoms, stroke symptoms, nausea vomiting   |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain, shortness of breath, weakness, anxiety, leg swelling   |
| SAMPLE                                      | <ul style="list-style-type: none"> <li>Previous history, history of thyroid disease, cardiac medications</li> <li>Obtain history of previous episodes of tachycardia, including diagnoses if known. Pay particular attention to whether there is an underlying history of pre-excitation, including Wolff-Parkinson-White (WPW) Syndrome.</li> <li>Obtain history of what medications have been used to treat previous arrhythmias, if known.</li> <li>Obtain history of any previous complications from previous arrhythmia treatments, if known.</li> <li>Obtain history of the duration of the current episode of tachycardia, if known.</li> </ul> |
| Initial Exam                                | Check ABCs and correct any immediate life-threatening problems.  |
| Detailed Focused Exam                       | <p><b>Vitals Signs:</b> BP, HR, (Heart rate greater than 100 BPM in adults or relative tachycardia in pediatric patients) RR, Temp, SpO<sub>2</sub>, EtCO<sub>2</sub></p> <p><b>General Appearance:</b> Anxious?</p> <p><b>Skin:</b> Cool, pale diaphoretic</p> <p><b>Neck:</b> JVD?</p> <p><b>Chest:</b> Labored breathing</p> <p><b>Lungs:</b> Wheezes, rales, rhonchi? Decreased breath sounds?</p> <p><b>Heart:</b> Regular, rate fast or slow, murmur</p> <p><b>Legs:</b> Edema</p> <p><b>Neuro:</b> ALOC? Signs of stroke?</p>   |
| Data  | SpO <sub>2</sub> , 12-Lead EKG, EtCO <sub>2</sub> , Blood Sugar if Diabetic or ALOC  |
| Goals of Therapy                            | Decrease Rate, treat chest pain, treat CHF   |
| Monitoring                                  | Cardiac Monitoring and SpO <sub>2</sub>  |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- For angina or chest pain, see [Chest Pain of Suspected Cardiac Origin Guideline](#) p. 78
- With neurological deficit indicating stroke, follow the [Suspected Stroke Guideline](#) p. 132

### EMT

- Acquire 12-Lead EKG, if reads “\*\*\*ACUTE MI SUSPECTED\*\*\*”, see [Chest Pain of Suspected Cardiac Origin Guideline](#) p. 78.
- Consider ALS intercept
- If the rhythm is faster than 150 for adult, Child > 180, is perfectly regular, the patient is stable [1] and a 12-lead is able to be obtained, consider Valsalva maneuvers.
  - Adults/Children (if able to cooperate): have the patient bear down. If no success, have seated patient blow through a 10ml syringe trying to move plunger until out of breath, then lie them flat and elevate their legs into Trendelenburg position.

## AEMT

- IV 0.9% NS Lock or KVO, Large bore IV catheter in an antecubital site is preferred.
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96.

## PARAMEDIC

- Large bore IV catheter in an antecubital site is preferred for the administration of Adenosine.
- Obtain/Interpret 12 Lead EKG, if not already done
- Narrow Complex Tachycardia include:
  - Sinus Tachycardia (The upper rate of sinus tachycardia is calculated at approximately 220/min minus the patient's age in years)
    - If sinus tachycardia is present, the underlying causes may include: pain, dehydration, hypotension, shock, hypoglycemia, hypoxemia, anxiety, fever, sepsis, drug induced, recent heavy exertion, hyperthyroidism and anemia
    - Do not treat sinus tachycardia with cardiac medications or cardioversion, address the above causes
    - Note beat to beat variability with activity or stress level
  - Supraventricular Tachycardia (SVT) (regular, generally > 180 adults)
    - Vagal maneuvers are considered first line therapy in stable patients.
    - **Adenosine** 6 mg IV over 1-2 seconds. If unsuccessful, repeat with 12 mg IV over 1-2 seconds. Follow all doses with a 20-30 ml saline flush by rapid IV push
      - Warn patient about brief but unpleasant side effects of adenosine: including flushing, lightheadedness, slowing of heart rate, anxiety and chest pain
      - Record a rhythm strip during Adenosine administration
        - If Atrial Fibrillation/Flutter or Sinus Tachycardia is noted, do not administer additional doses
    - If the patient's narrow, regular tachycardia exceeds 180 BPM without other serious signs or symptoms, and without a history of WPW, a trial of **Adenosine** is acceptable (see doses above)
  - Rapid Atrial Fibrillation/Flutter (RAF) (irregular rate >150/min)- Adult only
    - Do not treat Rapid Atrial Fibrillation that is a normal physiologic response (e.g. Fever, Hypoxia, Shock, Sepsis)
    - If available consider **Diltiazem (Cardizem)** 0.25 mg/kg (max dose is 20mg) IV **SLOW** over 5 min can be given for Rapid Atrial Fibrillation/Flutter if causing significant palpitations or dizziness in the stable patient
      - If inadequate response after 15 minutes, may re-bolus at 0.35mg/kg (max dose 25mg) IV **SLOW** over 5 minutes. Hold if hypotensive.
      - For patients older than 65 years old, recommend maximum initial dose of diltiazem 10 mg IV and a maximum second dose of 20 mg
      - Avoid Diltiazem in WPW or wide complex irregular rhythms
      - Refer to calcium channel blocker overdose in [Toxic Exposure/Biologics/Overdose guideline](#) p. 135 if the patient becomes hemodynamically or clinically unstable.
- If the patient is hemodynamically or clinically unstable [1] due to SVT, WPW or Rapid Atrial Fibrillation/Flutter
  - Prepare to perform synchronized cardioversion
  - Perform first synchronized cardioversion @ 150 Joules
  - If unsuccessful, increase by 50 joules for each subsequent attempt
    - Consider **Fentanyl Citrate** up to 50-100 mcg IV/IO/IN/IM for pain control or low dose **Versed** 2mg IV/IO/IN/IM, but don't delay **Synchronized cardioversion** if immediately needed (reduce dose by 50% for smaller framed and elderly)

## FOOTNOTES:

### [1] Criteria for characterizing a patient as “unstable”

- Hemodynamic Criteria
  - SBP < 90 mmHg AND Heart Rate > 150 beats/min
- Clinical Criteria
  - Signs of shock (poor perfusion) are present, including
    - ALOC
    - Absent radial pulses
    - Pallor and diaphoresis
  - Signs of pulmonary edema are present, including
    - Labored breathing
    - Rales (wet lungs)
    - Hypoxia (SpO<sub>2</sub> <94%)
  - The patient complains of angina

### [2] Pediatric Considerations

#### Signs of “Unstable” Pediatric Patient

- Clinical signs of resp. distress or failure/hypoxemia
  - Apnea
  - Retractions, flaring or grunting
- Signs of decreased perfusion
  - AMS/Abnormal appearance
  - Inequality of central and distal pulses
  - Slowed or absent capillary refill <3 sec
  - Hypotension (See [Hypovolemia & Shock Guideline](#) p. 96)
  - Sinus Tachycardia is <220/min in infants, <180 in children with beat to beat variability with activity or stress level
    - If sinus tachycardia is present, the underlying causes include: pain, dehydration, hypotension, shock, hypoglycemia, hypoxemia, anxiety, fever, sepsis, drug induced, recent heavy exertion, hyperthyroidism and anemia
    - Do not treat sinus tachycardia with cardiac medications or cardioversion
- SVT
  - Infants treat rate >220/min
  - Children treat rate >180/min
  - Perform continuous EKG during treatment
  - Vagal Maneuvers
    - Children old enough to cooperate can follow adult procedures
    - Consider applying ice to the face as Vagal Maneuver for infants
      - inform parents of procedure prior to performing
      - Do not obstruct airway
  - Utilize Broselow or approved medical director product or app for dosing
  - Adenosine 0.1mg/kg first dose (max 6mg)
  - Adenosine 0.2mg/kg second dose (max 12mg)
  - If the patient is hemodynamically or clinically unstable due to SVT or Rapid Atrial Fibrillation/Flutter Prepare to perform **synchronized cardioversion**. Consider **Fentanyl** Pediatric dose up to 1mcg/kg IV/IO or 2mcg/kg IN max dose 100mcg per bolus **or MIDAZOLAM 0.1 mg/kg slow IVP (0.2 mg/kg IN/IM)** (max single dose 2 mg) Do not delay cardioversion
    - Synchronized Cardioversion 1j/kg first attempt
    - Synchronized Cardioversion 2j/kg subsequent attempts

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## 2.20 NAUSEA, VERTIGO, VOMITING

**Note:**

- Consider potential causes:
  - Infectious diseases
  - Food borne illness
  - Drug or alcohol intoxication
  - Adverse reaction to medication
  - Head injury
  - Diabetic problems
  - Heart problems (angina, AMI, CHF)
  - Hypotension
  - Abdominal Problems (bowel obstruction, pancreatitis)
  - Stroke
- Most patients complain about “dizziness”. The provider must differentiate the spinning or falling feeling associated with vertigo from lightheadedness, which is another common reason for patients to complain of “dizziness” but should not be treated according to this guideline.
- Extrapyrimal reactions: Condition causing involuntary muscle movements or spasms typically of the face, neck and upper extremities. May present with contorted neck and trunk with difficult motor movements.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Nausea and/or vomiting, vertigo   |
| OPQRST                                      | Onset, number of episodes of vomiting   |
| Associated Symptoms/<br>Pertinent Negatives | Associated diarrhea? Bloody emesis or diarrhea?   |
| SAMPLE                                      | Recent travel, exposure to others with similar problem, contaminated food? Alcohol excess? Drugs or other toxins?, Cardiovascular disease risk factors, trauma  |
| Initial Exam                                | ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO2<br><b>General:</b> Ill appearing? Dehydrated?<br><b>Abdomen:</b> Soft? Tender? Distended?<br><b>Neuro:</b> ALOC? Focal Neurological Deficits, GFAST Score, Assess for stroke |
| Data  | Blood sugar, SpO2, 12-Lead EKG  |
| Goals of Therapy                            | Stop vomiting, relieve nausea, correct dehydration  |
| Monitoring                                  | Response to medications.  |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Remove oxygen mask or CPAP if vomiting
- Have patient hold alcohol pad 2.5 cm from their nose and inhale up to 60 seconds. Stop if nausea resolves. If nausea persists or returns, may repeat up to 60 second inhalation every 2 minutes x2.

### EMT

- If patient is over 35 yrs old, acquire 12-Lead EKG. If **\*\*\*ACUTE MI SUSPECTED\*\*\***, see [Chest Pain of Suspected Cardiac Origin Guideline](#) p. 78.
- Consider **Ondansetron (Zofran)** 4 mg ODT. May repeat x1 in 15 min. Pediatric dose: 15kg-26kg 2mg ODT if possible. >27kg use 4mg ODT

## AEMT

- IV 0.9% NS Lock or KVO, Large bore IV catheter in an antecubital site is preferred.
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock Guideline](#) p. 96.
- **Ondansetron (Zofran)** 4 mg IV/IM or ODT. May repeat x1 in 15 min.
  - Pediatric dosing is 15kg-26kg: 2mg (if possible), > 27kg: use 4mg.

## PARAMEDIC

- If extrapyramidal or dystonic, give **Diphenhydramine (Benadryl)** 50 mg IM or IV. Pediatric 1mg/kg IM or IV max dose of 50mg.
- Evaluate for other causes of nausea and treat per guidelines.

### FOOTNOTES:

- Side effects of Zofran include:
  - QT interval prolongation
  - Headache
  - Blurred vision
  - Dizziness
  - Fatigue
- Use with caution if patient is taking neuroleptic drug therapy. May increase chance of extrapyramidal effects
- Extrapyramidal effects include involuntary muscle spasms or repetitive movements

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## 2.21 NEONATAL RESUSCITATION

**Note:**

- Hypothermia is common in newborns and worsens outcomes of nearly all post-natal complications. Maintain warmth.
- Anticipate need for additional resources
- Most newly born infants do not require immediate cord clamping or resuscitation and can be evaluated and monitored during skin-to-skin contact with their mothers after birth
- A rise in heart rate is the most important indicator of effective ventilation and response to resuscitative interventions.

| <b>Priorities</b>     | <b>Assessment Findings</b>  |
|-----------------------|---|
| Chief Complaint       | Birth, Delivery   |
| OPQRST                | Due date, Date and Time of Birth, Gestational Age   |
| SAMPLE                | <ul style="list-style-type: none"> <li>• Prenatal care</li> <li>• Complications of current pregnancy (i.e., preeclampsia, placenta previa, gestational diabetes, premature labor, ultrasound showing abnormal fetal position etc.)</li> <li>• Complications of delivery- shoulder dystocia, meconium, nuchal cord</li> <li>• Maternal History- substance abuse history, infections</li> <li>• Was the amniotic fluid clear? Meconium present?</li> </ul>      |
| Initial Exam          | 30 Second intervals for Cardiopulmonary Assessment  |
| Detailed Focused Exam | <p><b>HEENT:</b> Secretions, facial abnormalities</p> <p><b>Skin:</b> Central/Peripheral Color, Cyanosis</p> <p><b>Chest:</b> Symmetrical Breath sounds, bowel sounds in chest, retractions, respiratory effort</p> <p><b>Heart:</b> Murmur</p> <p><b>Abdomen:</b> Number of blood vessels on cord (3 is normal), stump pulsation, abdominal wall defect, diaphragmatic hernia</p> <p><b>Musculoskeletal:</b> Tone</p> <p><b>Neuro:</b> Grimace, Activity</p> |
| Goals of Therapy      | Resuscitate infant if >20 weeks gestational age, uncertainty of dates, signs of life, or EMS discretion, If any doubt about accuracy of gestational age, initiate resuscitation<br>Rapidly identify newly born infants requiring resuscitative efforts- poor tone, premature infants and those who are not crying or gasping should prompt immediate intervention   |
| Monitoring            | HR, RR, Spo2  |

### EMERGENCY MEDICAL RESPONDER/EMT

- **Assess: Gestational Age, If Neonate is Breathing normally, Crying and Tone**
- If immediate resuscitation is required and the newborn is still attached to the mother, clamp the cord in two places and cut between the clamps.
  - If immediate Resuscitation is not needed in an uncomplicated delivery, place baby lower than placenta and assess cord pulsations
  - After pulsations have ceased, double clamp cord at approximately 6" and 9" from baby and cut between clamps
- If no resuscitation is required, warm/dry/stimulate the newborn, and then cut/clamp the cord after 30-60 seconds or the cord stops pulsating
- **Dry, warm, and stimulate**
  - Wrap infant in dry towel or thermal blanket to keep infant as warm as possible during resuscitation; keep head covered if possible
  - Consider plastic bag/wrap to the level of the neck for preterm infants if available.

- If strong cry, regular respiratory effort, good tone, and term gestation, infant should be placed skin-to-skin with mother and covered with dry linen
  - Routine suctioning is not recommended
- If weak cry, signs of respiratory distress, poor tone, meconium or preterm gestation then position airway (sniffing position) and suction mouth then nose.
  - Compress bulb suction device and place into mouth to suction mouth then repeat for nose
  - Limit suction to ten (10) seconds do not aggressively suction as this may stimulate bradycardia
- If Apnea or Gaspings initiate BVM as below.
- Monitor SpO2 on right upper extremity. Administer oxygen
  - Expected pulse oximetry readings following birth:
    - 1 minute = 60 - 65 %
    - 2 minutes = 65 - 70%
    - 3 minutes = 70 - 75 %
    - 4 minutes = 75 - 80 %
    - 5 minutes = 80 - 85 %
    - 10 minutes = 85 - 95%.
- **Assess Circulation**
  - **If heart rate greater than 100 BPM**
    - Monitor for central cyanosis provide oxygen as needed
    - If apneic, respiratory distress, labored breathing or persistent cyanosis:
      - **Ventilate:** BVM ventilation with room air at 40–60 breaths per minute Positive pressure ventilation (PPV) with bag-mask device with room air (21% oxygen) in term babies; otherwise use 100% oxygen
  - **If heart rate less than 100 BPM**
    - **Ventilate:** BVM ventilation with room air at 40–60 breaths per minute Positive pressure ventilation (PPV) with bag-mask device with room air in term babies; otherwise use 100% oxygen
      - Primary indicator of effective ventilation is improvement in heart rate
      - If no improvement switch to 100% O2
    - Evaluate heart rate every 30 seconds
  - **If heart rate <60 beats per minute**, begin CPR
    - The ratio of compressions to ventilations should be 3:1, with 90 compressions and 30 breaths to achieve approximately 120 events per minute.
- Consider Airway Adjuncts or Supraglottic airway as needed per [Routine Medical Care](#) p. 118 for effective ventilations
- Assess baby for APGAR scoring [1] at 1 and 5 minutes after recorded time of birth
- Check BGM if signs of altered responsiveness, any signs of hypoglycemia or with any resuscitation. Treat <50mg/dl

## AEMT

- IV 0.9% NS lock.
- Initiate a bolus of up to 20ml/kg at 10ml/kg intervals, [follow Hypovolemia & Shock guideline](#) p. 96

## PARAMEDIC

- Place on Cardiac Monitor
- Consider Intubation when positive pressure ventilation is needed per [Respiratory Distress Guidelines](#) p. 112/[Routine Medical Care](#) p. 118
  - Use of RSI Medications generally not indicated in neonatal population
- For HR <60 despite above
  - Administer **Epinephrine** (0.1 mg/mL) 0.01 mg/kg IV/IO (preferable if access obtained) or 0.1 mg/kg via the ETT (if unable to obtain access) q 3–5 min if heart rate remains less than 60 BPM
  - Consider hypovolemia treatment with 10ml/kg 0.9 % NS for signs of hypovolemia or shock reassess and repeat as indicated
  - Consider pneumothorax – treat per [Chest Decompression Guidelines](#) p. 228.

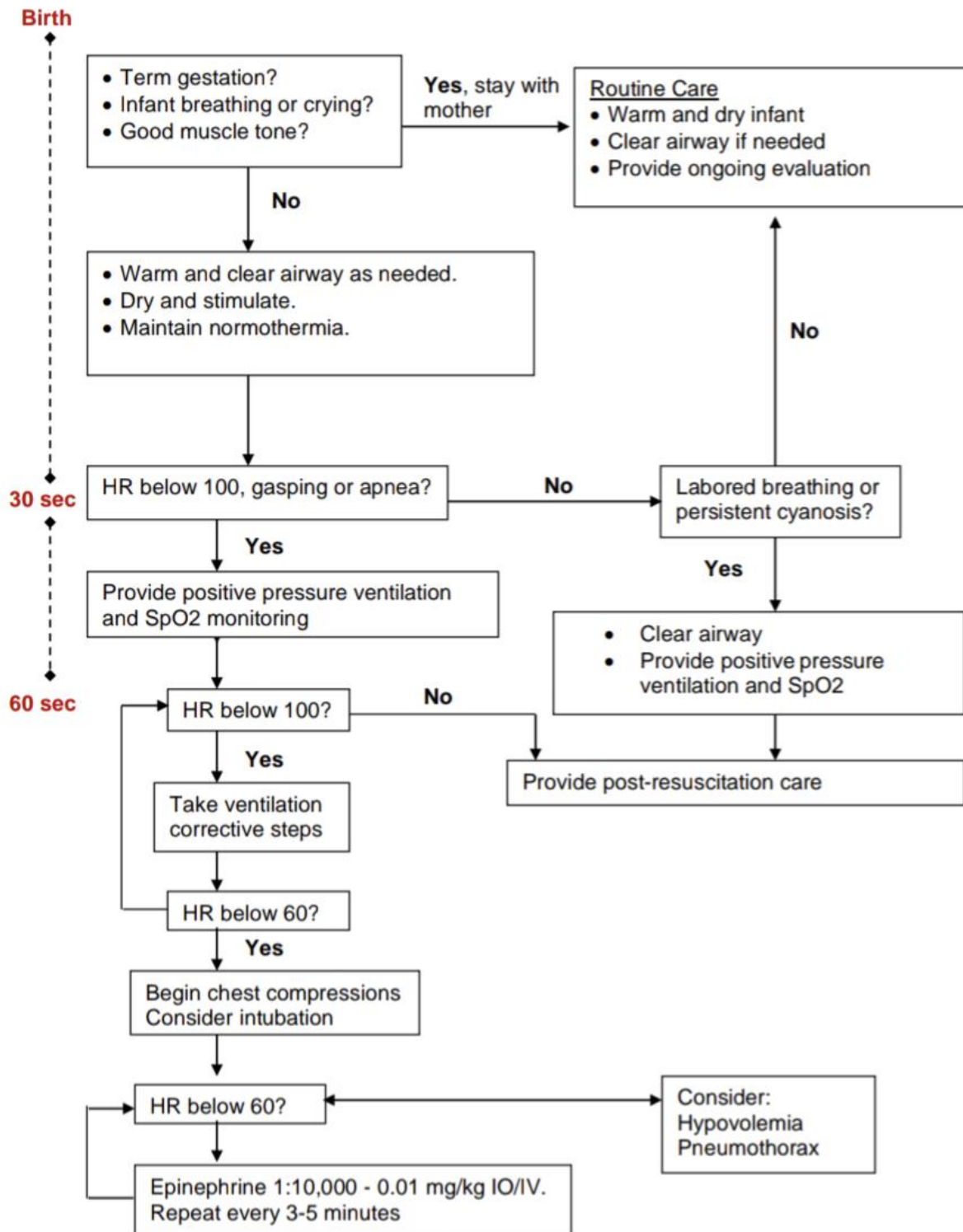


**FOOTNOTES:**

[1] APGAR Scores are performed at one minute and 5 minutes after birth according to the following table:

| SCORE        | 0                      | 1                          | 2                          |
|--------------|------------------------|----------------------------|----------------------------|
| APPEARANCE   | Blue/pale              | Pink Body/Blue Extremities | Pink                       |
| PULSE        | Absent                 | Slow (< 100/minute)        | > 100/minute               |
| GRIMACE      | No response to suction | Grimace to suction         | Cough or Sneeze to suction |
| ACTIVITY     | Limp                   | Some Flexion               | Active Motion              |
| RESPIRATIONS | Absent                 | Slow/Irregular             | Good/Crying                |

## Neonatal Resuscitation



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## 2.22 PAIN MANAGEMENT

- Use of non-invasive capnography is an earlier predictor of hypoventilation than pulse oximetry
- All patients who receive controlled substances require transport to the hospital at the ALS/ILS level

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | “Pain”  |
| OPQRST                                      | Location, onset, provocation, palliation, quality, radiation, severity (subjective pain score on a 0-10 scale or mild moderate, severe), time (intermittent or continuous; steady vs. improving or worsening). Pediatric consider using FACES scale [1]   |
| Associated Symptoms/<br>Pertinent Negatives | Trauma, swelling, discoloration, compare to other extremity<br>CMS before and after splinting   |
| SAMPLE                                      | Allergies, medications, pertinent past history, last meal   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Writching in pain, facial grimacing, moaning, screaming or crying? Assess objectively how severe the pain appears to you (mild, moderate or severe).<br><b>Skin:</b> Pale, cool, diaphoretic?<br><b>Source of pain (chest, abdomen, back, extremities, etc.):</b> Swelling, ecchymosis or deformity? Tenderness on palpation? CMS? |
| Data  | SpO <sub>2</sub> . EKG for chest pain (refer to chest pain guideline)   |
| Goals of Therapy                            | Reduce pain to a tolerable level, shoot for half the original pain number   |
| Monitoring                                  | BP, HR, RR, EKG, SpO <sub>2</sub> ., EtcO <sub>2</sub>  |

### EMERGENCY MEDICAL RESPONDER

- Acknowledge and assess the patient’s pain by obtaining a thorough history and rating
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Identify and treat the cause
- Reassure and comfort the patient; Use a calm and soothing voice
- Distract them or encourage them not to focus on their injury
- Eliminate stress inducing distractions—i.e. family, police and bystanders
- Coach the patient’s breathing—calm, deep full inhalations, and relaxed slow exhalations
- Explain to the patient what is happening and what will happen next
- Adjust the ambient temperature of the treatment area to a comfortable level for the patient
- Reassess pain after all interventions

### EMT

- Attempt non-pharmacological interventions prior to the administration of analgesia.
- Consider **Acetaminophen** PO (Pediatrics: Dose 15 mg/kg) to a max of 1000 mg per dose
  - Avoid if Acetaminophen containing products given within 6 hours
- Consider **Ibuprofen** PO (Pediatrics: >6 months old, Dose 10mg/kg) to a max of 400 mg per dose
  - Avoid if other NSAIDS (Ibuprofen, Ketorolac Naprosyn etc.) or Aspirin given within 6 hours
  - Avoid if dehydrated, suspected bleeding or signs of shock
- Prior to administering Acetaminophen or Ibuprofen for pain or fever document patient’s temperature and provide to ED staff upon arrival

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96.
- Consider **Ondansetron (Zofran)** 4 mg IV/IM or ODT with administration of opioids. May repeat x1 in 15 min.
  - Pediatric dosing is 15kg-26kg: 2mg (if possible), > 27kg: use 4mg.

## PARAMEDIC

- Consider for mild to moderate pain:
    - **Ketorolac** Adult: 15 mg IV/IM x1 (Pediatric {1 year and older} 0.5 mg/kg IV or IM x1 Max dose is 15mg IV/IM) for mild to moderate pain or in patients with a known history of narcotic abuse and/or treatment program for narcotic abuse or for pain from gallstones or kidney stones
      - Avoid if other NSAIDS (Ibuprofen, Naprosyn etc.) or Aspirin given within 6 hours
      - Avoid if dehydrated, suspected bleeding or signs of shock
  - For moderate to severe pain consider additional/other medications as below.
  - Reduce opioid pain medication dose by 50% in elderly or smaller framed patients
    - Administer opioids with caution to patients with altered mental status, hypotension, hypoxia (SPO2 less than 94%), or signs of hypoventilation
    - For opioid pain doses: start dose low – slowly increase –Titrate to effect up to listed dose
  - **Fentanyl Citrate** 50-100 mcg IV/IM/IO/IN repeat x 1 in 20 minutes if indicated-max dose of 200 mcg. Pediatric dose 1mcg/kg IV/IO or 2mcg/kg IN max dose 100mcg per bolus repeat x 1 in 20 minutes if indicated
    - Intranasal routes of opioid analgesia are preferred as the initial dosing route in pediatrics where IV access may be problematic; consider in other patient populations when an IV is not otherwise indicated
- Or
- **Dilaudid** 0.5-1 mg IV/IO/IM, may repeat in 20 minutes if indicated-max total dose 3 mg (Adults Only)
  - Consider low dose **Ketamine** for severe pain unresponsive to Opioids- 0.25mg/kg IV/IM (Adults Only) max dose 25mg repeat x 1 in 10 min if indicated)
  - Consider high dose **Ketamine** for extreme pain dissociation 1mg/kg **SLOW** IV (max dose 100mg) or 4mg/kg IM (Adults Only) max dose 400mg
  - Reassess patient's pain before each additional dose. Document intervention and response.
  - Recheck blood pressure before each additional dose; Dilaudid can cause hypotension. Fentanyl or Ketamine are preferred in hypotensive patient, hold Fentanyl, if SBP < 90 mmHg and preferentially use low dose Ketamine.
  - Do not withhold pain meds from someone in pain if indicate. Assessment at hospital can be done even after pain meds are given. For additional dosing, contact medical control.

## FOOTNOTES:

[1] Wong-Baker FACES scale

### Wong-Baker FACES® Pain Rating Scale



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## 2.23 PATIENTS WITH ESTABLISHED TRACHEOSTOMY OR VENTILATOR

**Note:**

- Patients with established use of a ventilator outside of a hospital/healthcare facility setting may be transported at any EMS provider level. In most cases, the patient should remain on the ventilator and accompanied by an experienced caregiver comfortable with and willing to manage the ventilator.
- Patients with a tracheostomy and/or chronic ventilator are prone to conditions such as infections, bed sores, blood clots, dehydration, and/or chronic pain. They often have additional chronic conditions and other impairments to their sensory systems, mobility, and/or dependency on other special devices, see [Special Needs Populations Guideline](#) p. 128.
- Caring for patients with a stoma or tracheostomy may present a significant risk of bodily fluid exposure; providers should take airborne, droplet, and contact isolation precautions to include protection of their eyes and mucous membranes as indicated.
- Irritation and infection of a stoma site can occur due to buildup of mucus or rubbing of a tracheostomy tube against the skin, causing tenderness, redness, foul odor, and/or drainage to occur
- A tracheostomy tube can be displaced into a false passage (usually in the pre-tracheal space) at any time, presenting a potentially life-threatening situation,
- Patients with tracheostomy tubes or stomas should not be intubated orally unless other airway measures are ineffective to maintain adequate oxygenation/ventilation
- Be familiar with the most common parts of a tracheostomy setup.

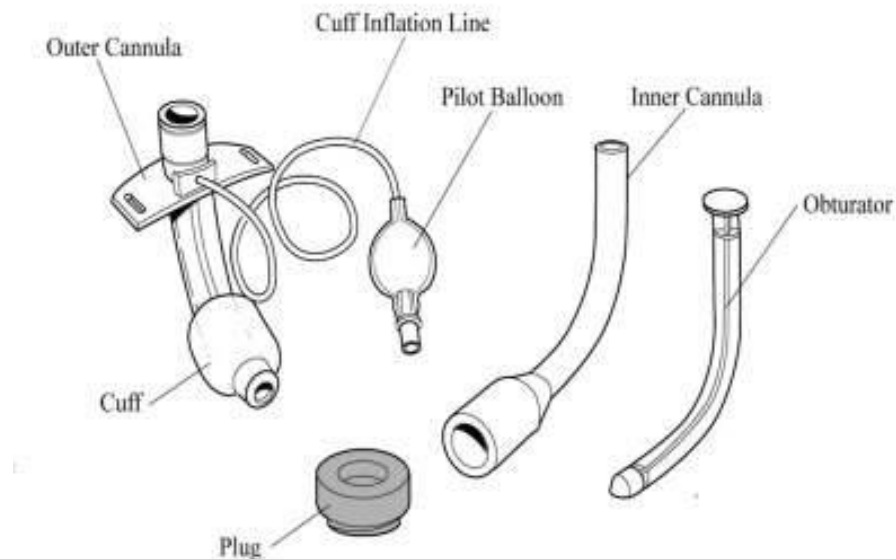


Photo source: <https://www.aliem.com/>

- Respiratory arrest is the most common cause of cardiac arrest in the pediatric patient.
- Severe hypoxia is a common cause of bradycardia and should be immediately addressed with aggressive airway management prior to the consideration of using cardiac drugs
- The hallmark of upper airway obstruction is inspiratory stridor, which may be caused by conditions such as a lodged foreign body, croup, tracheitis, diphtheria, abscess, or trauma, refer to [respiratory distress guideline](#) p. 112.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Provided by patient or a caregiver  |
| OPQRST                                      | Limited information may be available, use verbal or written speech  |
| Associated Symptoms/<br>Pertinent Negatives | Ask many direct “yes or no” questions, including fever, pain, shortness of breath, fatigue, vomiting, choking, or bleeding  |
| SAMPLE                                      | Try to obtain medical records, medication list (MAR), last dose of medications, changes from baseline, tertiary hospital location   |
| Initial Exam                                | ABCs, general impression, responsiveness  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> HR, RR, SpO <sub>2</sub> , Temp, BP, BGM<br><b>General Appearance:</b> Tone, color, activity<br><b>Skin:</b> Cyanosis, pallor, sores, erythema<br><b>Chest:</b> Respiratory effort, Accessory muscle use<br><b>Lungs:</b> Abnormal lung sounds<br><b>Heart:</b> Rate, rhythm, presence of murmur<br><b>Musculoskeletal:</b> Tone (hypertonic/hypotonic)<br><b>Neuro:</b> Level of consciousness |
| Data  | Type/Size/Manufacturer of medical device.   |
| Goals of Therapy                            | Secure airway, clear secretions, optimize oxygenation and ventilation, improve comfort level  |
| Monitoring                                  | SpO <sub>2</sub> , EtCO <sub>2</sub> , ventilation status, responsiveness   |

## EMERGENCY MEDICAL RESPONDER

- Routine Medical Care or Routine Trauma Care
- Allow/assist the patient to assume a position of comfort, especially if demonstrating tripodding or movement worsens their respiratory status. Do not force pediatric patients to lay supine
- Ventilated patients: If patient is having any respiratory distress or issues with proper function or alarming of ventilator, consider removing patient from ventilator and assisting breathing with gentle synchronous ventilations using bag-valve mask; Support ventilation with BVM if apnea or hypopnea occurs
- Tracheostomy patients: treat hypoxia or shortness of breath first by attempting to provide oxygen via trach collar at 5-15 LPM or per non-rebreather at 12-15 LPM. Patients with a tracheostomy often have patent upper airways and can therefore also be oxygenated via oral or nasal route
- Assess tracheostomy site for any misplaced or obstructed tubes, fullness of pilot balloon, bleeding, inflammation, infection, or foreign body. Deflating the tracheostomy cuff may relieve a partial obstruction
- If speaking cap or valve is present over tracheostomy, remove it.
- If inner cannula present, remove and rinse with a few ml of Normal Saline to help remove any potential debris contributing to an obstruction
- If unable to ventilate through an open trach, cover opening and ventilate with bag-valve mask over mouth and nose (consider using a smaller/pediatric bag-valve mask even on adult patients)
  - *Very important: some tracheostomy brands require replacement of inner cannula to safely and effectively ventilate with bag-valve mask or ventilator circuit*
- Never attempt to reinsert a dislodged tracheostomy tube. Trying to do so may cause a false channel in the subcutaneous tissue anterior to the trachea. Compression of the trachea may result
- Inhaled medications should be given via the stoma or tracheostomy tube, rather than mouth

- Assess patient for any upper respiratory (obstruction/stridor, congestion, infection, bleeding) or lower respiratory (pneumothorax, aspiration, pneumonia, asthma, COPD) condition, see [Respiratory Distress Guideline](#) p. 112.
- Provide suctioning of upper airway.
- If oral or nasal foreign body obstruction is suspected, try to dislodge with performance of manual finger sweep using protective device for possible teeth clenching
- The mnemonic **DOPE** can help you remember the most common causes of hypoxia or deterioration while on mechanical ventilation:
  - Displacement
  - Obstruction
  - Pneumothorax
  - Equipment failure
  - Stacked breaths
- If anaphylaxis is suspected, see [Allergy & Anaphylaxis Guideline](#) p. 57
- If wheezing or bronchospastic disease is suspected, consider **Albuterol Sulfate** indicated, see [Asthma/COPD Guideline](#) p. 62.

## EMT

- Provide oral rigid or soft deep/tracheobronchial suctioning of tracheostomy or other advanced airway, as needed, to clear secretions. Soft suction catheter should be rinsed with a few ml of **Normal Saline** for lubrication and to establish patency of the catheter. Suction attempts should be no longer than 10 seconds. Insert no more than ¾ length of neck. If unable to suction because of thick secretions, instill 2-3 ml of **Normal Saline**, then re-attempt to suction
- Monitor EtCO<sub>2</sub> (Capnography) if possible to assess ventilatory status, confirm advanced airway placement and monitor treatment effectiveness, see [EtCO<sub>2</sub> \(Capnography\) Monitoring Procedure](#) p. 196.
- If wheezing or bronchospastic disease is suspected, consider **Albuterol Sulfate** and **Ipratropium Bromide (Atrovent)** as indicated, see [Asthma/COPD Guideline](#) p. 62.
- Confirm airway and effective ventilations with per routine medical care.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96.

## PARAMEDIC

- Consider intubation of stoma for patients in respiratory failure with hypoventilation or persistent hypoxia on high-flow oxygen, see [Respiratory Distress Guideline](#) p. 112.
- If a mature tracheostomy tube is not able to be made effective as above, remove tube and try to insert an endotracheal tube of same approximate size in diameter over a bougie to depth of no more than ½ the length of ET tube, do NOT use a rigid stylet, inflate ETT cuff and confirm placement via EtO<sub>2</sub> waveform, chest rise, and auscultation of lung sounds. If unable to find the opening due to bleeding, thread suction catheter through an endotracheal tube and use catheter tip to probe opening, sliding tube over catheter into opening and then removing catheter. Attempt to ventilate and confirm as above.
- Ventilators may only be adjusted by paramedics with approval from medical director after completion of specific training. See [Ventilators](#) Practical Sections p. 229.
- For severe anxiety, in absence of severe hypoxia, consider low dose **Ketamine** 0.25mg/kg (25mg max bolus) IV/IO/IM, **Fentanyl** up to 1mcg/kg (100mcg max bolus) IV/IO/IN/IM, or **Versed** 0.1mg/kg (2mg max bolus) IV/IO/IN/IM to help relax or improve compliance with assisted ventilations
- If severe uncontrolled bleeding, within 3 hours, consider TXA 30mg/kg (up to 2 grams max bolus) IV/IO over 20 minutes
- Additional resource: Emergency Tracheostomy Algorithm, provided by the National Tracheostomy Safety Project in the UK, which is available for free download at: <http://www.tracheostomy.org.uk/storage/files/Patient%20Airway%20Algorithm.pdf>

*Mercyhealth System*  
**Medical Guidelines**  
**2.24 RESPIRATORY DISTRESS**

**Note:**

- This guideline may apply to the following conditions:
  - Congestive Heart Failure (CHF)
  - Asthma/COPD/Bronchospasm/Reactive Airway Disease
  - Allergy/Anaphylaxis
  - Pulmonary Infections
  - Pulmonary Edema
  - Pneumothorax
  - Upper Airway Obstruction
  - Anxiety and Hyperventilation Syndrome
  - Acute Coronary Syndromes
  - Toxic Exposure/Overdose

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Difficulty breathing”; “Shortness of breath”  |
| OPQRST                                      | Assess onset, duration, progression, subjective severity, possible triggering events, and response to treatments before EMS arrival.   |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain (what kind?), fever/chills, productive (of what?) cough   |
| SAMPLE                                      | Check for possible exposure to known allergens/toxins. Check past history, medications and compliance for clues to cause of present illness.   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Tripod positioning; Purse-lipped breathing. Severity of distress [1]?<br><b>Neck:</b> JVD? Tracheostomy?<br><b>Skin:</b> Cool, moist and pale? Warm, dry and flushed? Urticaria? Cyanosis?<br><b>Respiratory Effort:</b> Using accessory muscles, signs of fatigue; two-word sentences?<br><b>Lung Sounds:</b> Wheezes, rales, rhonchi or stridor?<br><b>Heart Sounds:</b> Rate, regularity.<br><b>Lower Extremities:</b> Pitting edema of the ankles?<br><b>Neuro:</b> ALOC, lethargy, somnolence? |
| Data  | EtCO <sub>2</sub> with waveform, SpO <sub>2</sub> , on room air or home O <sub>2</sub><br>EKG, if an acute coronary syndrome is suspected<br>Blood Sugar, if DKA is suspected or if there is ALOC  |
| Goals of Therapy                            | Improve oxygenation and ventilation, reduce the work of breathing, and treat underlying conditions.  |
| Monitoring                                  | SPO <sub>2</sub> frequently, and EtCO <sub>2</sub> continuously, cardiac rhythm, vitals  |



## EMERGENCY MEDICAL RESPONDER

- Routine Medical Care or Routine Trauma Care
- Allow/assist the patient to assume a position of comfort (usually upright)
  - Pediatrics consider placement of towel(s) behind shoulder
- Oxygen: Per nasal cannula at 1-6 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity)
  - Administer oxygen to keep SpO<sub>2</sub> > 94%
- Assisted Ventilation: Consider assisting breathing with gentle synchronous ventilations with bag-valve mask (BVM) and 100% Oxygen; Support ventilation with BVM if apnea or hypopnea occurs
- If choking, clear airway per AHA guidelines
- If there is altered level of consciousness, consider placement of an nasopharyngeal airway
- If patient is unresponsive with no gag reflex, consider oropharyngeal airway or supraglottic airway device
- Confirm all advanced airways and document with a minimum of three of the following:
  - EtCO<sub>2</sub> (Capnometry [EMR/EMT] or Capnography [EMT/Paramedic]) mandatory
  - Direct Visualization (ETT placement)
  - Lung Auscultation
  - Absence of gastric sounds
  - Misting in the tube
  - Bi-lateral chest rise
- If patient becomes responsive, remove advanced airway with patient in recovery position and suction ready
- If anaphylaxis is suspected, see [Allergy & Anaphylaxis Guideline](#) p. 57.
- **Albuterol Sulfate** for Asthma, COPD Reactive Airways Disease and Bronchospasm, see [Asthma/COPD Guideline](#) p. 62.

## EMT

- Monitor EtCO<sub>2</sub> (if available) to assess ventilatory status, confirm advanced airway placement and monitor treatment effectiveness, see [EtCO<sub>2</sub> \(Capnography\) Monitoring Procedure](#) p. 196.
  - If EtCO<sub>2</sub> and advanced airway is in place ventilate and generally attempt to maintain a reading between 35-45mmhg.
- Consider CPAP Refer to [CPAP Procedure](#) p. 198.
- Consider the following medications
  - **Albuterol Sulfate** with **Ipratropium Bromide (Atrovent)** is indicated for Asthma Reactive Airways Disease and Bronchospasm and COPD, see [Asthma/COPD Guideline](#) p. 62.
  - **Aspirin** and assisting with patient's prescribed **Nitroglycerine** are indicated for patients with angina, see [Chest Pain of Suspected Cardiac Origin Guideline](#) p. 78.

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96.

## PARAMEDIC

- If patient is showing signs of CHF, see [Congestive Heart Failure/Pulmonary Edema Guideline](#) p. 80.
- Confirm all advanced airway and effective ventilations with EtCO<sub>2</sub>, document
- If a tension pneumothorax is suspected, perform needle decompression on the affected side. See [Chest Decompression](#) p. 228.
- Non RSA intubations are restricted to patients with no gag reflex and need for airway management. Paramedics performing non RSA intubations should use the below guidelines for airway management, may not sedate or paralyze unless RSA credentialed.
  - Pediatric patients-consider intubation when other measures ineffective

- Stridor (Including Croup [Pediatric Specific])
  - Administer medications below to children with croup in respiratory distress with signs of stridor at rest or shock
    - Humidified oxygen or mist therapy is **not** indicated for croup
  - Administer to adults with non-choking stridor and signs of anaphylaxis non-responsive to parental epinephrine
    - Pediatric: 1 mL of **Epinephrine 1 mg/1 mL** mixed with 2 mL of normal saline in pediatric nebulizer connected to oxygen source at 6 LPM
    - Adult: 0.3mg (3 mL of **Epinephrine 1 mg/10 mL**) in adult nebulizer connected to oxygen source at 6 LPM
  - or
    - **Racemic epinephrine** 0.5 mL of 2.25% solution mixed in 2.5 mL NS (may repeat x1 in 20 minutes as needed)

### **Rapid Sequence Airway**

- Indications:
  - Severe respiratory distress or failure
  - Persistent hypoxia after high-flow O<sub>2</sub> and other methods
  - Airway management in a combative/agitated patient
  - Altered mental status with need to protect/secure airway
  - Airway compromise
- Absolute Contraindications:
  - Known allergy to RSA medications (use available alternatives)
  - Suspected epiglottitis
- Relative Contraindications (intubation should be considered high risk and reserved for those with inability to be ventilated/oxygenated with other means):
  - Severe oral, mandibular, or anterior neck trauma
  - Anatomic abnormalities that increase the risk of failed intubation including angioedema
  - Pediatrics, bariatrics, pregnancy
- Prepare:
  - Wide open flowing IV/IO (IM Medications have slower onset and are emergency backup only), consider fluid bolus prior to intubation.
  - Organize equipment, functional suction, etCO<sub>2</sub> for waveform capnography, cardiac monitor, Bougie [4], video assist device, back up airway, and surgical airway
  - Select and prepare ET tube/stylet
  - Draw up RSA medications
  - If unresponsive to fluid bolus refer to section [Epinephrine Push Dose and Drip p. 230](#) to increase pre-intubation SBP goal >100mmHg
  - Optimize pH, hemodynamics and oxygenation
- Pre-Oxygenate:
  - Continuous SPO<sub>2</sub> and cardiac monitoring required
  - High-flow oxygen for 3-5 minutes prior to intubation or 8 vital capacity breaths
  - High flow oxygen should be provided via NC (15 lpm) and NRB/BVM (25 lpm)/CPAP
  - Continuous high-flow oxygen via NC during entire procedure will reduce desaturation
  - If persistent hypoxia, consider using BVM with basic airway adjunct in addition to NC with PEEP valve attached to BVM.
  - Pre-oxygenation is not just about increasing O<sub>2</sub> sat but also allowing time for the nitrogen in the lungs to be replaced with Oxygen, also prolonging the period before desaturation.
- Protect and Position:
  - Position the head and neck for intubation
  - Place towels behind the back of pediatric patients to improve visualization

- Use towels blankets to ramp up bariatric patients to improve visualization
- Manual c-spine stabilization in trauma patients
- Pre-paralysis Sedation/Induction (**2 RSA trained and credentialed providers at patient's side [2]**):
  - **Etomidate** 0.3mg/kg IV/IO (max dose 30mg typical dose 20mg- Adults Only)  
Do not repeat any administration of **Etomidate** after initial sedation.
- Or
  - **Ketamine** 1-2 mg/kg **SLOW** IV/IO (max dose 200mg), or 4 mg/kg IM (max dose 400mg)  
For patients with concern of cardiac ischemia, avoid **Ketamine**
    - Consider Lower dose for:
      - Hypertension
      - Tachycardia
      - Critically ill or injured
      - Elderly/Frail
      - SBP <100 mmHg
- Or
  - If the above are unavailable or contraindicated **Midazolam** 0.1mg/kg IV/IO (max dose 5mg). Avoid if hypotensive, be prepared to treat resultant hypotension
- Paralyze (**only after sufficient sedation/induction**):
  - **Succinylcholine Chloride (Anectine)** 2 mg/kg IV/IO/IM max 200 mg x 1
    - **IM Succinylcholine has unreliable absorption and is only to be used in event of IV/IO failures**
    - Do not repeat dose for long term paralysis after intubation. If repeat dose of **Succinylcholine Chloride (Anectine)** is required for RSA, have **Atropine** available for bradycardia potential, use Bradycardia guidelines.
- Placement:
  - Insert the ETT until the cuff passes the vocal cords
    - Make only one (1) attempt [3]
    - If unsuccessful, proceed to the Difficult Airway Procedure below
  - Inflate the cuff
  - Immediately verify by viewing capnography waveform and print for verification
    - A waveform should be visible with each breath, if not, assume intubation attempt was not successful
  - Auscultate for bilateral breath sounds, negative gastric inflation, and equal chest rise.
  - Check for condensation in the tube
    - Confirm and document as above.
  - Monitor SpO<sub>2</sub>
  - Secure ET tube with commercial holding device, noting depth of tube placement
- Post-Intubation Management:
  - Secure ETT and consider placement of c-collar or manually stabilize head to reduce motion.
  - Monitor vitals for tachycardia and hypertension, as the paralysis may outlast the sedation. Provide sedation and/or pain management per guideline.
  - Monitor cardiac rhythm for signs of hyperkalemia.
  - Goal is to maintain SpO<sub>2</sub> 95-99% and etCO<sub>2</sub> 35-45mm Hg
    - Acidotic patients (DKA, ASA/TCA tox, severe sepsis, crush) etCO<sub>2</sub> goal is generally closer to 30mm Hg, note pre-intubation etcO<sub>2</sub>
  - Long-acting paralytics should only be used on patients at risk of self-extubation or those requiring full muscle paralysis for effective ventilation. Repeat doses are not usually indicated.
  - **Vecuronium Bromide (Norcuron)** 0.1 mg/kg IV/IO max of 10 mg x 1  
or  
**Rocuronium Bromide (Zemuron)** 1mg/kg IV/IO max of 100mg x 1
  - **DO NOT** re-paralyze under the age of 5 yrs

- Provide adequate sedation. Long term paralysis may be unnecessary if adequately sedated and soft restraints utilized. Monitor vitals, as adjustment in sedation drugs may be necessary.
  - **Ketamine** (1-2mg/kg IV/IO max 200mg per bolus)
    - Consider Lower dose for:
      - Hypertension
      - Tachycardia
      - Critically ill or injured
      - Elderly/Frail
      - SBP <100 mmHg
    - Or
    - **Fentanyl** (1mcg/kg IV/IO max 100mcg per bolus).
    - If possibility of ongoing seizures, or inadequate sedation with other agents use **Versed (0.05-0.1mg/kg IV/IO max 5mg per bolus)**.
    - Avoid Fentanyl and Versed if hypotensive
- If bradycardic, ensure adequate ventilation and recheck tube placement, see [Bradycardia Guideline](#) p. 67.
- Consider placement naso/orogastric tube for gastric decompression if trained and time allows unless contraindicated by facial trauma or concern skull fracture or other contraindications
- Services using ventilators will require ventilator specific training.
- Monitor closely for signs of pneumothorax, treat as indicated. See [Chest Decompression Guideline](#) p. 228.
- Utilize PEEP if needed to maintain oxygen saturations, monitor blood pressure. See [PEEP guideline](#) p. 232.
- The mnemonic **DOPEs** can help you remember the most common causes of post-intubation hypoxia or deterioration.
  - Displacement
  - Obstruction
  - Pneumothorax
  - Equipment failure
  - Stacked breaths
- Removing the ETT in the field
  - In general, an ETT should not be removed in the field unless the below indications are met:
    - The patient wakes up, can maintain their own airway, and medical indication for intubation has been resolved
    - The ETT is not performing adequately
  - Procedure for removing an ETT
    - Place the patient in the recovery position (left side)
    - Deflate cuff and remove tube
    - Be prepared to suction the pharynx
  - Continue to monitor and re-assess the patient
- Difficult Airway Procedure
  - If rescuer cannot intubate the trachea after one attempt, a second attempt at intubation may be attempted. Ventilate and ensure good oxygenation between attempts. If the patient is unable to be ventilated or is hypoxic proceed directly to a supraglottic airway. Utilize bougie, alternative visualization device, or additional bedside RSA provider to maximize chance of success.
  - **Failed Intubation:** If the second attempt to intubate is unsuccessful, proceed immediately to a supraglottic airway.
  - If the non-visualized airway fails, consider the following options if unable to oxygenate or ventilate via any other means:
    - Let the succinylcholine wear off, while ventilating the patient with basic adjuncts
    - Consider a surgical airway, bougie cricothyroidotomy[age> 116pprox.. 12 y/o], transtracheal jet ventilation, or medical director approved commercial device.

**FOOTNOTES:**

[1] Severity of Respiratory Distress:

- Mild = RR <20 + minimal additional breathing effort + speaking in complete sentences + minimal subjective distress, No ALOC
- Moderate = RR 20 to 25 + moderate additional breathing effort + difficult to complete a sentence + moderate subjective distress + No ALOC
- Severe = RR > 25 + marked additional breathing effort + 2 or 3 word sentences + marked subjective distress + possible ALOC

[2] Minimum of two Paramedics or one Paramedic and one EMT that are current with all RSA education and skill requirements of the local EMS Medical Director. If a single Paramedic unit, attempt to request a second ALS unit to respond, but do not delay procedure if patient condition warrants immediate action.

[3] For the purposes of endotracheal intubation, one "attempt" is counted when the laryngoscope is placed in the mouth, even if there has not been an attempt to pass the tube.

[4] Adult Bougie recommended for a 6.0 ETT and larger. Pediatric Bougie for a 4.0 to 5.5 ETT.

Mercyhealth System  
**Medical Guidelines**  
**2.25 ROUTINE MEDICAL CARE**

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Refer to specific guidelines for chief complaints   |
| OPQRST                                      | Location, Onset, Provocation/Palliation, Quality, Radiation, Severity, Time (duration, progression)<br>As an alternative: Use "Onset, Duration, Progression and Severity" |
| Associated Symptoms/<br>Pertinent Negatives | Associated Symptoms/Pertinent Negatives   |
| SAMPLE                                      | Allergies, Medications, Pertinent Past Medical History, Last Meal   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp  |
| Data  | Follow specific guideline. Consider SpO <sub>2</sub> , Blood Sugar, EKG, EtcO <sub>2</sub>  |
| Goals of Therapy                            | Follow specific guideline.  |
| Monitoring                                  | Follow specific guideline. The frequency of vital sign monitoring may be determined by patient condition.   |

**Pediatric Specific Normal Vital Signs:**

*Respiratory Rates*

| Age                      | Breaths/min |
|--------------------------|-------------|
| Infant (< 1 year)        | 30 – 60     |
| Toddler (1-3 years)      | 24 – 40     |
| Preschool (4-5 years)    | 22 – 34     |
| School age (6-12 years)  | 18 – 30     |
| Adolescent (13-18 years) | 12 – 16     |

*Heart rates*

| Age              | Awake Pulse/min | Mean | Sleeping Pulse/min |
|------------------|-----------------|------|--------------------|
| Newborn-3 months | 85-205          | 140  | 80-160             |
| 3 months-2 years | 100-190         | 130  | 75-160             |
| 2-10 years       | 60-140          | 80   | 60-90              |
| > 10 years       | 60-100          | 75   | 50-90              |

*Blood pressure*

| Age                   | Systolic |        | Diastolic |       |
|-----------------------|----------|--------|-----------|-------|
|                       | Female   | Male   | Female    | Male  |
| 1 day                 | 60-76    | 60-74  | 31-45     | 30-44 |
| 4 days                | 67-83    | 68-84  | 37-53     | 35-53 |
| 1 month               | 73-91    | 74-94  | 36-56     | 37-55 |
| 3 months              | 78-100   | 81-103 | 44-64     | 45-65 |
| 6 months              | 82-102   | 87-105 | 46-66     | 48-68 |
| 1 year                | 68-104   | 67-103 | 22-60     | 20-58 |
| 2 years               | 71-105   | 70-106 | 27-65     | 25-63 |
| 7 years               | 79-113   | 79-115 | 39-77     | 38-78 |
| Adolescent (15 years) | 93-127   | 95-131 | 47-85     | 45-85 |

## EMERGENCY MEDICAL RESPONDER

- Ensure **Scene Safety** and Body Substance Isolation (BSI) as indicated
- Request Advanced Life Support (ALS) and other additional resources as needed
- Airway Management – Perform the following, if indicated:
  - Head-tilt chin lift OR modified jaw thrust if unconscious and suspected trauma
  - Oropharyngeal or nasopharyngeal airway as indicated and no contraindications
  - Manage Foreign Body Airway Obstruction per American Heart Association standards.
  - Suction airway as needed
  - If there is loss of consciousness, insert an oropharyngeal, nasopharyngeal, or supraglottic airway/advanced airway of correct size depending on presence of gag reflex refer to [Respiratory Distress Guideline](#) p. 112.
    - Confirm all advanced airways (supraglottic, endotracheal intubation, cricothyrotomy) and document with a minimum of three of the following:
      - EtCO<sub>2</sub> (Capnometry or Capnography [preferred, if available]) is mandatory
      - Visualization (ETT placement)
      - Auscultation
      - Absence of gastric sounds
      - Misting in the tube
      - Bi-lateral chest rise
- Breathing Management – Perform the following, if indicated:
  - Check pulse oximetry (SpO<sub>2</sub>)
  - Administer oxygen to keep SpO<sub>2</sub> > 94%, if unable to assess SpO<sub>2</sub> consider administration of high flow oxygen
    - Use a nasal cannula at 1 – 4 LPM or Non-rebreather mask at 12 – 15 LPM (depending on the apparent severity)
  - Ventilate or assist ventilations with a bag-valve-mask connected to high-flow oxygen
    - Consider utilization of PEEP as indicated.
  - Support adequate oxygenation and ventilation
  - Consider Albuterol and/or epinephrine; See [Asthma/COPD Guideline](#) p. 62 and [Allergy & Anaphylaxis Guideline](#) p. 57.
- Circulation Management – Perform the following, if indicated:
  - Cardiopulmonary resuscitation (CPR) and defibrillation per and [Cardiac Arrest Guideline](#) p. 74.
  - Place the patient in Trendelenburg Position; see [Hypovolemia & Shock Guideline](#) p. 96.
- After checking ABCs, correct any immediate life threats, if indicated:
  - Assess for and treat hypoglycemia per [Diabetic Emergencies Guideline](#) p. 82.
- Obtain History
- Obtain Vital Signs
  - Blood Pressure (BP), Heart Rate (HR), Respiratory Rate (RR), and Pulse Oximetry (SpO<sub>2</sub>). Use a digital thermometer, if available
- Refer to [Pain Management Guideline](#) p. 107.
- Perform a focused physical exam

## EMT

- Airway Management – Perform the following, if indicated:
  - Supraglottic airway of correct size
- Breathing Management – Perform the following, if indicated:
  - EtCO<sub>2</sub> Monitoring
  - May assist patient with prescribed Albuterol and Atrovent (or Combivent®) inhalers; See [Asthma/COPD Guideline](#) p. 62 and [Allergy & Anaphylaxis Guideline](#) p. 57.

- Assist Paramedic with endotracheal intubation
- May administer Albuterol and Atrovent nebulized unit doses; See [Asthma/COPD Guideline](#) p. 62 and [Allergy & Anaphylaxis Guideline](#) p. 57.
- Circulation Management – Perform the following, if indicated:
  - CPR and Defibrillation per [Cardiac Arrest Guideline](#) p. 74.
- After checking ABCs, correct any immediate life threats, if indicated:
  - May use Epinephrine auto injector for anaphylaxis; see [Allergy & Anaphylaxis Guideline](#) p. 57.
  - Check blood glucose if there is an altered level of consciousness (ALOC); see [Altered Level of Consciousness Guideline](#) p. 60 and [Diabetic Emergencies Guideline](#) p. 82
- Initiate additional treatments as directed in specific guidelines
- Initiate Advanced level upgrade as needed
- Generally, transport secured in the position of comfort unless contraindicated
- Perform 12 Lead EKG as indicated and transmit to receiving hospital as indicated.

## AEMT

- Circulation Management
  - Obtain Adequate vascular access. Normal Saline or saline lock are indicated for patients who require immediate or potential fluid/volume replacement and/or medication administration prior to hospital arrival.
    - Attempts to establish IV's should not delay transport.
    - Consider 2<sup>nd</sup> IV for critical or potentially critical patients.
    - If patient condition warrants or IV access unsuccessful, establish IO access, see [EZ-IO Placement](#)
  - Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated
    - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#)
  - For all renal failure patients reduce bolus doses by ½.
- Flow rates is based on patient conditions.

## PARAMEDIC

- After checking ABCs, correct any immediate life threats.
- Initiate additional treatments as directed in specific guidelines.
- Perform cardiac rhythm monitoring, 12-Lead EKGs, and treat any dysrhythmias per appropriate guidelines.
- If indicated assess blood sugar:
  - Dextrose for hypoglycemia; see [Diabetic Emergencies Guideline](#) p. 82.
- Airway Management – Perform the following, if indicated:
  - Magill Forceps and Laryngoscopy for purposes of removing foreign body
  - Intubation per [Respiratory Distress Guideline](#) p. 112.
  - Perform a cricothyroidotomy (surgical/needle) if an upper airway obstruction cannot be relieved by non-invasive means
  - RSA; see [Respiratory Distress Guidelines](#) p. 112.
- Breathing Management – Perform the following, if indicated:
  - Needle decompression of a tension pneumothorax; see [Respiratory Distress Guideline](#) p. 112, [Chest Decompression Procedure](#) p. 228
- Circulation Management- Perform the following if indicated
  - If unresponsive to fluid bolus or indicated consider [Epinephrine Push Dose and Drip](#) p. 230
- After checking ABCs, correct any immediate life threats and, if indicated:
  - Synchronized Cardioversion in unstable patients; see [Wide Complex Tachycardias Guideline](#) p. 144 and [Narrow Complex Tachycardia Guidelines](#) p. 98.
  - Transcutaneous Pacing in unstable patients; see [Bradycardia Guideline](#) p. 67.
  - Defibrillation per [Cardiac Arrest Guideline](#) p. 74.



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**Medical Guidelines**  
**2.26 ROUTINE TRAUMA CARE**

**Note:**

- This guideline may be used as a general guide for trauma in both Adults and Pediatrics. Follow appropriate guideline and/or procedure for specific trauma care
- Do not delay transport and perform advanced skills during transport as able

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Various depending on incident. Note Mechanism of Injury   |
| OPQRST                                      | Identify specific cause of traumatic injury   |
| Associated Symptoms/<br>Pertinent Negatives | Significant mechanism, loss or altered level of consciousness. Evidence of intoxicant use.  |
| SAMPLE                                      | Identify medical conditions that may have led to the event (e.g., Alzheimer's, CVA, Diabetes, Seizures)   |
| Initial Exam – Rapid<br>Trauma Assessment   | Check ABC's and correct any immediate life threats. Manual C-spine stabilization. Perform rapid trauma assessment as appropriate.   |
| Detailed Focused Exam                       | <b>Vitals:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Unresponsive, pale, diaphoretic? Signs of trauma?<br><b>HEENT:</b> PERRL? Pupils constricted or dilated? Discharge from ears or nose?<br><b>Lungs:</b> Signs of respiratory distress, hypoventilation, diminished or absent lung sounds?<br><b>Heart:</b> Rate and rhythm? Signs of hypoperfusion?<br><b>Neuro:</b> Loss of movement and/or sensation in extremities, Unresponsive? Focal deficits? |
| Data  | Blood Glucose, SpO <sub>2</sub> , EKG, EtCO <sub>2</sub>  |
| Goals of Therapy                            | Maintain ABC's, restore adequate respiratory and circulatory conditions, reduce pain  |
| Monitoring                                  | SpO <sub>2</sub> , Cardiac monitoring, EtCO <sub>2</sub> , repeat vitals  |

**EMERGENCY MEDICAL RESPONDER**

- Ensure Scene Safety and Body Substance Isolation (BSI) as indicated
- Determine need for additional resources for extrication and transport
- C-Spine: Manual stabilization, c-collar alternative method if collar does not fit
- Airway Adjuncts: If there is loss of consciousness, insert an oropharyngeal, nasopharyngeal, or advanced airway depending on presence of gag reflex refer to [Respiratory Distress Guidelines](#) p. 112
  - Modified jaw thrust for unconscious patient
  - Oropharyngeal or nasopharyngeal airway (contraindicated in midface trauma)
  - Suction airway as indicated.
  - Manage Foreign Body Airway Obstruction per American Heart Association standards.
  - If patient is unresponsive, utilize medical director approved appropriately sized supraglottic airway device.
    - Confirm all advanced airways and document with a minimum of three of the following:
      - EtCO<sub>2</sub> (Capnometry [EMR/EMT] or Capnography [EMT/ALS]) mandatory
      - Visualization (ETT placement)
      - Auscultation
      - Absence of gastric sounds
      - Misting in the tube
      - Bi-lateral chest rise

- Breathing Management – Perform the following, if indicated:
  - Check pulse oximetry (SpO<sub>2</sub>)
  - Administer oxygen to keep SpO<sub>2</sub> > 94% if unable to assess SpO<sub>2</sub> consider administration of high flow oxygen.
    - Use a nasal cannula at 2 – 4 LPM or Non-rebreather mask at 12 – 15 LPM
  - Ventilate or assist ventilations with a bag-valve-mask connected to high-flow oxygen
  - Consider utilization of PEEP as indicated.
  - Cover sucking chest wounds with a medical director approved commercial vented chest seal or an occlusive dressing (Vaseline gauze, defibrillator pad), seal all 4 sides of dressing, lift as needed to vent any developing tension pneumothorax
  - Support adequate oxygenation and ventilation
- Circulation:
  - Control major external hemorrhage with direct pressure, pressure dressing, junctional tourniquet, tourniquet (to quickly control potentially fatal hemorrhagic extremity wounds), hemostatic gauze(non-exothermic) and/or wound packing as indicated.
  - If the patient arrests follow [Cardiac Arrest Guidelines](#) p. 74
    - CPR should not be attempted if:
      - There are other injured survivors with urgent needs for help
      - Obvious signs of death per [Termination/Withholding of Resuscitation in the Field/Notification of Coroner](#) p. 49
- Refer to [Pain Management Guidelines](#) p. 107
- If there is ALOC
  - Check Blood Glucose
  - Follow [Diabetic Emergencies Guideline](#) p. 82
  - Ensure adequate oxygenation/ventilation
- Amputation care
  - Control bleeding
  - Find and bring all amputated parts to hospital with patient
  - Wrap part in moist sterile dressings and place in waterproof bag
  - Place waterproof bag on ice or cold packs
- Avulsions/Degloving
  - Control bleeding
  - Do not replace flap or loose skin, handle gently
  - Dress with saline-soaked sterile dressings
- Crush Injuries
  - Leave gloves or shoes on unless actively hemorrhaging and direct wound care is necessary
  - Tourniquets should be used not to prevent crush syndrome but rather only to treat life-threatening bleeding.
- Eviscerations
  - Do not place organs back into body
  - Dress and cover in saline-soaked sterile dressings, keep warm
- Impaled Objects
  - Do not remove unless impairing airway, it is likely slowing the bleeding
  - Secure with bulky dressings
- Dental Injuries- placed avulsed tooth in saline or milk if available. Avoid touching the root.
- Epistaxis – squeeze nose (or have patient do so) for 10-15 minutes continuously.
- Eye injuries
  - Coach patient not to rub eyes
  - Chemical Splash/Burn/Foreign Body –
    - Thoroughly and continuously irrigate affected eye(s) using copious amounts of saline instilled
    - Remove superficial, non-impacted foreign bodies from the eyelids. Do not attempt to remove any intraocular foreign bodies.
  - Penetrating Injury/Ruptured Globe/Corneal Abrasion

- Avoid all pressure on injured eye. Cover with cup or metal/plastic protective patch and cover the uninjured eye.
  - If globe is avulsed or enucleated, do not put back into socket. Cover eye socket with moist saline dressings and then place eye shield over it
  - Shade from light
- Musculoskeletal injuries:
  - Realign angulated fractures, if possible, being cautious not to aggravate the injury or pain
  - Reposition (not reduce) dislocated joints to improve comfort, circulation, sensation, and motion
  - Apply a well-padded splint that immobilizes the long bone above and below the injury or the joint above and below the injury
    - Immobilize joints in mid-range position
    - Do not compromise distal circulation
    - Elevate the injured extremity if no fracture or dislocation is found
    - Apply ice or cold packs to the injured area as indicated
    - Apply a compression bandage or ace wrap if a splint is not needed
  - If backboard is needed to help immobilize long bone fractures, move patients, or unique extrication scenario:
    - Pad the backboard with a blanket(s) as needed
    - Pad voids between the patient and backboard—behind knees, and small of back as needed
    - Pad the straps as needed
    - Keep the patient warm and protected from rain/snow, ambulance exhaust, etc.
  - Check distal neurologic function, pulses, and capillary refill before and after splinting, document findings
  - Use pelvic wrap or commercial medical director approved pelvic binder for crepitus/movement on exam/suspected pelvic fracture and concern for major hemorrhage. See [practical skills section](#) p. 236.
    - Consider placement of a pelvic binder on all patients with blunt or blast trauma suffering traumatic arrest with know of suspected pelvic injury

## EMT

- Selective Spinal Motion Restriction – In the presence of a mechanism of injury for spinal trauma [1]:
  - Cervical collar application is optional if there is no:
    - complaint of neck or back pain or tenderness on exam
    - numbness, tingling or weakness in any extremity
    - distracting injury
    - evidence of alcohol or drug intoxication
    - inability to communicate
    - major trauma to the head or face
    - history of loss of consciousness
    - altered level of consciousness on exam
    - Patient is <65 years old
    - Torticollis in children
  - If all the above criteria are met, have patient move their neck 45° to either side of midline, flex, and extend neck, and if still no pain, no spinal motion restriction is indicated.
    - Document exam findings.
- Spinal Restriction Techniques
  - Assessment
    - Assess motor and sensory function before and after spinal restriction and regularly during transport.
    - Only remove a C-collar that has already been applied, if you need to examine the neck or the application is causing more harm than good, and they meet the above criteria
  - Apply appropriately sized cervical collar. If the cervical collar does not fit, use alternate mode of stabilization.

- Ambulatory patients
  - Alert cooperative patients may be allowed to self-limit movement, but a cervical collar is recommended.
  - Instruct patient to sit on the cot. Secure the patient in position of comfort. Limit the movement of the neck during this process.
- Non- ambulatory patients
  - Extricate patient as needed by the safest method available while limiting flexion, extension, rotation and distraction of the spine.
  - Tools such as pull sheets, scoop stretchers, KED, vacuum splints and backboards may be used.
  - Place the patient in the best position suited to protect the airway while applying appropriate spinal restriction.
  - Long board should only be used for extrication or short-term patient movement. Long board should not be routinely used immobilization device. Use alternative patient movement devices such as sheets or carriers to move
  - If patient is transported on a hard device apply adequate padding.
- Penetrating trauma
  - Patients with penetrating trauma without spinal pain or neurological deficits do not need spinal motion restriction.
- Pediatric Spinal Motion Restriction Considerations
  - Consider leaving the child in their uncompromised car seat with added padding.
  - If parent / guardian is available include them in the child's care.
  - If child has been removed from the vehicle / car seat consider the use of pediatric restriction devices (or adult restriction with additional padding). If this causes increased agitation, movement and potential harm to the child consider placing the child in a car seat and pad to restrict movement.
- Transport restrained in the position of comfort unless contraindicated per Spinal Motion Restriction.
- Perform 12 Lead EKG as indicated and transmit to receiving hospital as indicated.

## AEMT

- Obtain adequate vascular access, 0.9% Normal Saline @ KVO
- Normal Saline or saline lock are indicated for patients who require immediate or potential fluid/volume replacement and/or medication administration prior to hospital arrival.
  - Attempts to establish IV's should not delay transport.
  - Consider 2<sup>nd</sup> IV for critical or potentially patients.
  - If patient conditions warrant or IV access unsuccessful, establish IO access, see [EZ-IO Procedure](#)
- In hemorrhaging adult patients without closed head injury, practice permissive hypotension and maintain SBP of 90mmHg.
  - Permissive hypotension not indicated in pediatrics and pregnant patients
- In hemorrhaging adult patients with closed head injury maintain SPB > 100mmHg
- If available, hang blood tubing with Normal Saline to expedite transfusion upon arrival to hospital.
- Flow rates is based on patient condition.

## PARAMEDIC

- If the airway is obstructed or obstruction is imminent, 2 attempts to intubate the trachea have failed, and unable to utilize supraglottic airway, perform surgical or needle cricothyroidotomy.
- Consider bilateral needle decompression, pelvic binder, and pericardiocentesis for traumatic arrest as guided by exam
- Consider sedation for combative patients, refer to [Agitated & Combative Guidelines](#) p. 54

- Consider RSA in trauma patients with the following indications in consideration with [Respiratory Distress Guidelines](#) (p. 112):
  - Respiratory failure with hypoventilation or persistent hypoxia on high-flow oxygen
  - Severe head injury:
    - Glasgow Coma Scale < 8
    - Agitation/combativeness that jeopardizes the well-being of the patient or the safety of crew
  - Inability to protect the upper airway due to loss of gag reflex or ALOC
  - Threat of imminent airway compromise:
    - Massive facial injuries
    - Hemorrhaging into or around the airway
    - Expanding neck hematoma or Penetrating injuries of the neck
- Perform cardiac rhythm monitoring, 12-Lead EKGs, and treat any dysrhythmias per appropriate guidelines.
- Traumatic Hemorrhagic Shock within 3 hours of injury (Use of tourniquet, sustained tachycardia despite pain control/sedation, hypotension, clinical signs/symptoms of shock such as altered mental status, pale skin, or suspected internal bleeding.)
  - Over 12 years old: **TXA** 2 Grams IV/IO over 20 minutes. Hang blood tubing.
  - Under 12 years old: **TXA** 30mg/kg (maximum dose 2 Grams) IV/IO over 20 minutes. Hang blood tubing.
  - In the event of prolonged scene and transport time LR is the preferred fluid for hemorrhagic shock resuscitation. LR is not compatible with blood transfusion and a secondary IV access with blood tubing and NS or flushing the line with NS would be required.
- Traumatic Brain Injury
  - Adults with TBI within 3 hours of injury and Glasgow Coma Scale (GCS) score of 12 or lower
  - Over 12 years old: **TXA** 2 Grams IV/IO over 20 minutes
  - Under 12 years old: **TXA** 30mg/kg (maximum dose 2 Grams) IV/IO over 20 minutes
- Adult Crush injuries greater than 1 hour assume hyperkalemia and treat.
  - Suspect hyperkalemia if T-waves become peaked, QRS becomes prolonged (greater than 0.12 seconds), absent P wave, prolonged QTc, or sine wave.
  - Calcium Chloride and Sodium Bicarbonate are not compatible
  - Add 50meq **Sodium Bicarbonate** per liter of NS and initiate 500ml/hr infusion and give 1 liter bolus of this fluid just prior to extrication.
  - Consider **Calcium Chloride** 20mg/kg (max 1,000mg bolus) and 1meq/kg **Sodium Bicarbonate** (max 50meq bolus) **SLOW** IV/IO for peaked T-waves, widened QRS, or ventricular irritability.
  - **Albuterol** 10mg via nebulizer
- Pediatric Crush injuries greater than 1 hour assume hyperkalemia and treat
  - Calcium Chloride and Sodium Bicarbonate are not compatible
  - Pediatrics use 1meq/kg **Sodium Bicarbonate** in the NS infusion, infuse at
    - 10kg: 4ml/kg/hr
    - 10-20kg: 40ml/hr plus 2ml/kg/hr for each kg between 10-20kg
    - >20kg: 60ml/hr plus 1ml/kg/hr for each kg above 20kg
  - Bolus at 20ml/kg just prior to extrication
  - Consider **Calcium Chloride** **SLOW** 20mg/kg (max 500mg bolus) and 1meq/kg **Sodium Bicarbonate** (max 50meq bolus) **SLOW** IV/IO for peaked T-waves, widened QRS, or ventricular irritability.
  - **Albuterol** less than 1 year old 2.5mg, older than 1 year old 5mg via nebulizer
- Eye injuries:
  - Consider **Tetracaine** 2gtts/eye may repeat every 5-10 minutes, max 3 doses.
  - If irrigation indicated Morgan Lenses may facilitate irrigation

#### FOOTNOTES:

[1] Indications for spinal motion restriction:

- Significant mechanism of injury (MOI) without neck pain or neurologic deficit (numbness or tingling in extremities)
- Trauma patient complains of neck pain or neurologic deficit (numbness or tingling in extremities)
- Trauma patient has altered level of consciousness (from medical condition or drug use)
- Trauma patient significant distracting injury

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## 2.27 SEIZURE/STATUS EPILEPTICUS

**Note:**

- Seizures due to trauma, eclampsia, hyperthermia, or toxic exposure should be managed according to those condition-specific guidelines [1]. Search and treat for underlying cause of seizure especially if no history of epilepsy
  - Febrile Seizure is defined as a seizure with a fever >100.4 °F in a child 6mos-6yrs, see [Pain Management guidelines](#) p. 107 for antipyretic dosing when seizure after the seizure has stopped.
  - If the patient is more than 20 weeks pregnant, refer to the [Eclampsia Guidelines](#) p. 84.
- Status epilepticus is an emergency and is defined as a seizure with 5 minutes or more of continuous seizure activity or recurrent seizure activity without recovery between seizures
- Pseudoseizure is an older term for events that appear to be epileptic seizures but, in fact, do not represent the manifestation of abnormal excessive synchronous cortical activity, which defines epileptic seizures. They are not a variation of epilepsy but are of psychiatric origin. The most standard current terminology is psychogenic nonepileptic seizures (PNES). Careful assessment may reveal telltale clues [2]

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Seizure” “Unresponsive” “Convulsions”   |
| OPQRST                                      | How long did it last? History of seizures? Fever? Possible contributing factors [1], Trauma  |
| Associated Symptoms/<br>Pertinent Negatives | Unresponsive, Postictal, Incontinent   |
| SAMPLE                                      | History of seizures, Seizure medications? Pregnant?, Toxic Exposure  |
| Initial Exam                                | ABC’s and correct any immediate life threats   |
| Detailed Focused Exam                       | <b>Scene size-up:</b> Is there a significant mechanism of injury?<br><b>General Appearance:</b> Pt. currently seizing? Unresponsive? Postictal?<br><b>Vitals:</b> BP, HR, RR, Temp, SpO2<br><b>HEENT:</b> Lateral tongue laceration is highly specific for grand mal seizures<br><b>Skin:</b> Flushed, warm<br><b>Neuro:</b> ALOC?, Focal deficits (CVA) |
| Data  | Blood Glucose, SpO <sub>2</sub> , Temperature  |
| Goals of Therapy                            | Prompt cessation of seizure<br>Treat the underline cause<br>Monitor and maintain airway.   |
| Monitoring                                  | Vitals, Cardiac monitoring, SpO <sub>2</sub>   |

**EMERGENCY MEDICAL RESPONDER/EMT**

- Routine medical/trauma care
- Protect the patient with ongoing seizures from harming themselves by clearing away potential hazards and placing a pillow or padding under the head
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- Ventilate or assist ventilations with a bag-valve-mask connected to high-flow oxygen as indicated
- Obtain blood glucose. If < 70mg/dl refer to [Diabetic Emergencies Guideline](#) p. 82.
- Consider oropharyngeal, nasopharyngeal, or supraglottic airway, if the patient is unable to maintain a patent airway
- Minimize CNS and external stimulation – avoid sirens, bright lights and loud music if possible.
- EMT: consider acquisition of a 12-lead EKG following cessation of seizure in patients without a history of seizures to determine possible cardiac cause

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guideline](#) p. 96

## PARAMEDIC

- If the patient is still seizing, give **Versed** up to 0.1mg/kg IV/IO/IN (max 5mg bolus, 1ml per nare) or 0.2mg/kg IM (max 10mg bolus)
- If seizures persist, repeat doses of Versed every 10 min until seizures stop. Maximum total dose: **Versed** 20mg unless medical control orders additional doses
- IV 0.9% NS @ KVO or saline lock
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated
  - PEDS Bolus 20ml/kg follow shock guidelines
- If there is need for RSA to control airway, only short acting paralytics should be used. Once the patient is paralyzed, muscular convulsions will cease, but occult CNS seizure activity may persist. Therefore, you must repeat doses of **Versed** every 10 minutes under the assumption of ongoing seizure activity while maintaining stable vitals.
- For seizures treatment with Valium or from Organophosphate poisoning see [Toxic Exposure/Biologic/Overdose Guideline](#) p. 135.

## FOOTNOTES:

[1] The causes of seizures include but not limited to: fever in children up to approximately 6 months to 6 yrs, epilepsy, eclampsia, hypoglycemia, hypoxia, drug or alcohol withdrawal, drug overdose, stroke and head trauma

[2] Characteristics of psychogenic nonepileptic seizures are listed below:

- Identifiable trigger (emotional stress, crisis or grief)
- The patient usually has an audience
- Asynchronous or asymmetric motion during the seizure (“bicycling” or head turning)
- Mid-range and reactive pupils during the convulsion (they’re widely dilated in a real seizure)
- Lack of tongue biting or incontinence
- Apparent purposeful movements
- Remaining consciousness, or even speaking, during the convulsion

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## 2.28 SPECIAL NEEDS POPULATIONS

**Notes:** Be aware of the following

- Identify needs from the patient, the patient’s family, bystanders, medic alert bracelets or documents, or the patient’s adjunct assistance devices.
- Attempt to identify the patient’s normal baseline vital signs.
- Communication Barriers
  - If possible, consider transporting an individual who is fluent in the patient’s language with the patient. If this is not possible, consider the use of the following:
    - Medical translation cards
    - Online/Phone certified translation services
    - RockCom may be able to assist with arranging an interpreter, call (815) 968-0993 for assistance.
  - Any written communication between the patient and the EMS provider may become part of the medical record and should be retained with the storage and confidentiality policies and procedures that are applicable to the written or electronic patient report.
  - It may be desirable to obtain secondary confirmation of pertinent data (e.g., allergies) from the patient’s family, interpreters, or available written information.
- Sensory Barriers
  - Visual Impairment, Auditory Impairment, Cognitive impairments
- Mobility Barriers
  - Ambulatory Impairments
  - Neuromuscular impairments
  - Patients with Downs Syndrome, especially children, may have upper cervical instability and may be more prone to spinal cord injury. Consider spinal restriction in any mechanism of injury where there has been significant movement of the neck.
  - If a caregiver is present, ask if there is a “best way” to move the patient.
- Assistance Adjuncts See [Special Needs Devices](#) p. 239, for further information.
  - Device examples include, but are not limited to:
    - Extremity prostheses
    - Hearing aids
    - Tracheostomy
    - Central Intravenous Catheters
    - CSF Shunt
    - Gastrostomy Tube (G-Tube or J-Tube)
    - Colostomy or Ileostomy
    - Ureterostomy or Nephrostomy Tube (or Foley Catheter)
  - Consider utilizing patient’s medical equipment/supplies and for optimal results and appropriate sizing.
  - Use parents/caregivers/home health nurse as a medical resource at home and enroute.
- Service Animals
  - As defined by the American Disabilities Act, “any guide dog, signal dog or other animal individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items”.
  - Services animals are not classified as a pet and should, by law, always be permitted to accompany the patient with the following exceptions: A entity may ask an individual with a disability to remove a service animal if:



- The animal is out of control and the animal’s handler does not or cannot take effective action to control it.
    - The animal is not housebroken.
  - EMS Personnel may only ask the patient if the service animal is required because of a disability and the form of assistance the animal has been trained to perform.
    - Service animals are not required to wear a vest or a leash
    - EMS clinicians are not responsible for the care of the service animal. If the patient is incapacitated and cannot personally care for the service animal, a decision can be made whether to transport the animal in this situation.
    - Animals that solely provide emotional support, comfort, or companionship do not qualify as service animals
- **Police Dogs:** According to Illinois legislation: any “EMR, EMT, EMT-I, A-EMT, or Paramedic may transport a police/arson dog injured in the line of duty to a veterinary clinic or similar facility if there are no persons requiring medical attention”
  - Should any animal be transported by ambulance insure proper cleaning and decontamination of unit
- Documentation
  - Document specific physical barriers in the appropriate exam elements
  - Document transfer of assist devices
  - Document the patient’s functional needs and avenue exercised to support the patients.

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | Any, device malfunction/dislodgement   |
| OPQRST                                      | As indicated   |
| Associated Symptoms/<br>Pertinent Negatives | As indicated   |
| SAMPLE                                      | Past Medical/Surgical History, Device History/Complications  |
| Initial Exam                                | Check ABCs, correct any immediate life-threatening conditions  |
| Detailed Focused Exam                       | The physical examination should not be intentionally abbreviated, although the way the exam is performed may need to be modified to accommodate the specific needs of the patient. Detailed exam of device. Be aware of abuse                                      |
| Data  | When possible, for patients with communication barriers, it may be desirable to obtain secondary confirmation of pertinent data (e.g., allergies) from the patient’s family, interpreters, or available written information.<br>Size, manufacturer, type of device |
| Goals of Therapy                            | Limit complications, provide comfort, avoid iatrogenic injuries. To meet and maintain the additional support required for patients with special needs during the delivery of prehospital care  |
| Monitoring                                  | As indicated   |

### EMERGENCY MEDICAL RESPONDER/EMT/AEMT/PARAMEDIC

- Routine Medical Care

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**2.29 SUBMERSION**

**Notes:**

- RESCUER SAFETY IS #1. Many well-intentioned rescuers have been injured or killed attempting to save a drowning victim.
- If the victim is still in the water dispatch local water rescue resources
- Submersion is a loss of consciousness under water
- When delivering ventilations and chest compressions assume the patient will vomit. Be prepared to suction. Secure the patient’s airway as soon as possible.
- Any patient successfully resuscitated after a loss of consciousness underwater needs transport to the hospital and physician evaluation
- DAN, US Navy, as well as hyperbaric treatment centers have additional reference materials on neurological exams for divers. Have a low threshold for transport, as any divers experiencing neurologic or musculoskeletal complaint warrants a medical evaluation at a hospital.
- Uncertainty exists regarding survival in cold water drowning, the incident commander should consult with Medical Direction to make a risk vs benefit analysis when determining rescue vs. recovery. Generally, submersion durations <5min are associated with favorable outcomes, while those >30min are associated with poor outcomes. The following serve as guidelines only:
  - If water temperature is less than 43°F (6°C) and the patient is submerged with evidence of cardiac arrest:
    - Survival is possible for submersion time less than 90 minutes and resuscitative efforts may be indicated particularly if there is evidence that the patient was cooled prior to submersion
    - Survival is not likely for submersion time greater than 90 minutes and EMS should consider not initiating resuscitation or termination of resuscitation on scene
  - If water temperature is greater than 43°F (6°C) and the patient is submerged with evidence of cardiac arrest:
    - Survival is possible for submersion time less than 30 minutes and resuscitative efforts may be indicated
    - Survival is not likely for submersion time greater than 30 minutes and EMS should consider not initiating resuscitation or termination of resuscitation on scene

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | “Drowning”, “Near Drowning”   |
| OPQRST                                      | Onset. Duration of time under water. Water temperature, if known. Bystander CPR performed? AED Used?  |
| Associated Symptoms/<br>Pertinent Negatives | Alcohol involved? Trauma involved? Events leading up to submersion.   |
| SAMPLE                                      | Allergies? Medications?   |
| Initial Exam                                | Check ABCs and correct immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br>General Appearance: lifeless<br>Skin: pale, cool, mottled<br>Lungs: wet or clear?<br>Heart: Rate and regularity? Absent heart sounds?<br>Neuro: Unresponsive? |
| Data  | Blood sugar, EKG, SpO <sub>2</sub> , water temperature  |
| Goals of Therapy                            | Return of spontaneous circulation (ROSC)  |
| Monitoring                                  | BP, HR, RR, EKG, SpO <sub>2</sub> .   |
|   |   |

## EMERGENCY MEDICAL RESPONDER

- Routine C-spine stabilization of all submersion patients is not indicated
- Routine Medical/Trauma Care
- When a mechanism of injury (e.g. diving accidents), or obvious signs of trauma, is present:
  - Spinal motion restriction is indicated
  - Open the airway with a jaw-thrust maneuver
  - Ventilate the patient while maintaining C-spine stabilization
- Always assume that hypothermia is present and follow the [Hypothermia & Frostbite Guidelines](#) p. 93
- If the patient is pulseless and not breathing, follow the [Cardiac Arrest Guidelines](#) p. 74.
  - Remove the patient from standing water
  - Dry the chest
  - Attach an AED
- If an upper airway obstruction is suspected follow *American Heart Association Guidelines*
  - Routine use of abdominal thrusts and back blows is not indicated in submersions
- Utilize PEEP if needed to maintain oxygen saturations, monitor blood pressure. See [PEEP guidelines](#) p. 232
- Check blood glucose if hypoglycemia is suspected
  - Follow [Diabetic Emergencies Guideline](#) p. 82, if the blood glucose is < 70mg/dl

## EMT

- 12 lead EKG if indicated
- Monitor EtCO<sub>2</sub> if available
- All submersion patients are to be transported to the hospital

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guideline](#)
- Warm the IV fluids according to the [Hypothermia & Frostbite Guidelines](#)

## PARAMEDIC

- Consider endotracheal intubation per routine medical care

## FOOTNOTES:

- Adult Respiratory Distress Syndrome (ARDS) is very common in a near drowning victim. The onset may be life threatening. Monitor ventilation status (SPO<sub>2</sub>, EtCO<sub>2</sub> and lung sounds) often

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**2.30 SUSPECTED STROKE**

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | "Weakness", "Confusion", "Slurred Speech", "Unresponsive"  |
| OPQRST                                      | Last known well time? Was it witnessed?  |
| Associated Symptoms/<br>Pertinent Negatives | Headache, weakness, pupil dilation, slurred speech, aphasia, incontinent   |
| SAMPLE                                      | Medication consistent with history of stroke or TIA, blood thinners  |
| Initial Exam                                | ABC's and correct any immediate life threats   |
| Detailed Focused Exam                       | <b>Vital signs:</b> BP, HR, RR, Temp, SpO2<br><b>General Appearance:</b> Unresponsive?, noticeable facial droop, drooling, slouched posture<br><b>Neuro: G-F-A-S-T</b> (Gaze, Facial droop, Arm drift, Speech difficulties, Time symptoms started), balance, dizziness, vision, leg weakness |
| Data  | Blood Glucose  |
| Goals of Therapy                            | Maintain ABC's and adequate vital signs, protect the patient and any paralyzed limbs, avoid unnecessary scene time   |
| Monitoring                                  | 12 lead EKG, Heart rate and blood pressure, Neurological assessment, Cardiac Monitoring if available   |

### EMERGENCY MEDICAL RESPONDER

- Routine medical care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
  - Use a nasal cannula at 2 – 4 LPM or Non-rebreather mask at 12 – 15 LPM
- If blood glucose < 70mg/dl follow [Diabetic Emergencies Guideline](#) p. 82
- GFAST stroke scale every 15 minutes or if any neurologic changes
  - Protect paralyzed limbs
- Head of Bed (HOB) at 30 degrees if a spinal injury is not suspected and SBP >100 mmHg, maintain head in neutral alignment
- GFAST
  - Gaze 2 points
  - Facial Droop 1 point
  - Arm Drift 1 point
  - Speech Difficulties 1 point
  - Time last known well Not scored - Note activate stroke alert if last know well is <24 hours
- Any score greater than 0 is a positive GFAST stroke scale.

### EMT

- For those patients who are deemed hemodynamically stable and without airway compromise, those scoring 3 or more on the GFAST stroke scale should preferentially be transported to a thrombectomy capable center if the diversion time from acute stroke ready or primary stroke center if additional transport time adds less than 15 minutes of travel time and additional transport time will not disqualify for thrombolytics.
- Notify receiving facility ASAP of results of GFAST Stroke Scale
- Perform 12 Lead EKG as indicated and transmit to receiving hospital as indicated.
- For seizures refer to [Seizure Guidelines](#) p. 126

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg, [follow Hypovolemia & Shock guidelines](#) p. 96

## PARAMEDIC

- Perform cardiac rhythm monitoring, 12-Lead EKGs, and treat any dysrhythmias per appropriate guidelines
- Continuous cardiac monitoring
- Consider RSA if indicated; refer to [Respiratory Distress Guidelines](#) p. 112

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## 2.31 SYNCOPE/NEAR SYNCOPE

**Note:**

- Syncope is heralded by both the loss of consciousness and the loss of postural tone and resolves spontaneously without medical interventions. Syncope typically is abrupt in onset and resolves equally quickly. EMS clinicians may find the patient awake and alert on initial evaluation
- Near syncope is defined as the prodromal symptoms of syncope. The symptoms that can precede syncope last for seconds to minutes with signs and symptoms that may include pallor, sweating, lightheadedness, visual changes, or weakness
- Causes of syncope may include dehydration, vasovagal reflexes, arrhythmias, stroke, pulmonary embolism, internal bleeding (GI bleeding, ectopic pregnancy, etc.), anaphylaxis
- Recommend transport for all syncope/near syncope patients given the potential for underlying serious causes that may not be readily assessed on scene

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | “Passed Out”; “Fainted”   |
| OPQRST                                      | Determine onset, duration and triggering events (e.g., fright, defecation, micturition)   |
| Associated Symptoms/<br>Pertinent Negatives | Headache, dizziness, confusion, vomiting, diarrhea, dehydration, incontinence, seizure, lack of food or water   |
| SAMPLE                                      | Exposure to known allergen. History of heart disease or stroke. Current or past medication for these problems. Compliance with these medications recently.  |
| Initial Exam                                | Check ABCs and correct any immediately life-threatening problems. Consider trauma and c-spine.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO2<br><b>General Appearance:</b> may be normal or ill appearing<br><b>Skin:</b> Pale, cool, diaphoretic<br><b>Heart:</b> Hypotension, tachycardia, weak pulses, poor capillary refill?<br><b>Neuro:</b> May be A&OX3; ALOC? Focal deficits, signs of trauma due to falling? |
| Data  | Blood glucose. EKG  |
| Goals of Therapy                            | Treat symptomatic bradycardia/hypotension. identification and treatment of underlying cause/precipitant   |
| Monitoring                                  | Cardiac Rhythm monitoring, Heart rate and blood pressure  |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Gently lower the patient to a supine position or Trendelenburg position if hypotensive/altered
- Oxygen 2-4 LPM via nasal cannula; Maintain SpO2 ≥ 94%
- Check blood sugar if less than 70mg/dl treat per [Diabetic Emergencies Guideline](#) p. 82

### EMT

- Obtain/transmit 12 lead EKG

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#) p. 96

### PARAMEDIC

- Cardiac Monitoring

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## **2.32 TOXIC EXPOSURE/BIOLOGICS/OVERDOSE**

**Note:**

- Performing a scene size-up and maintaining crew safety are the top initial priorities. In a hazardous materials incident, crew members shall consider staging in a safe location, donning the appropriate level of PPE, request for additional special resources, identification of the hazardous substance, and decontamination procedures, prior to initiating patient care.
- A hazardous materials or intentional/terrorism event should be considered whenever multiple people and/or animals appear to display signs or symptoms of illness.
- Organophosphate compounds are a diverse group of chemicals used commonly for industrial, domestic, and terrorism applications, which may produce mild to rapidly fatal symptoms. Common sources include:
  - Insecticides – Malathion, parathion, diazinon, fenthion, dichlorvos, chlorpyrifos, ethion
  - Nerve gases – Soman, sarin, tabun, VX
  - Ophthalmic agents – Echothiophate, isofluorophate
  - Anthelmintics – Trichlorfon
  - Herbicides – Tribufos (DEF), merphos
  - Industrial chemical (plasticizer) – Tricresyl phosphate
- Anhydrous ammonia is an extremely toxic liquid or gas commonly used in manufacturing, refrigeration, and agriculture (as a fertilizer), which may cause severe and rapidly fatal irritation and corrosive damage to the skin, respiratory, or gastrointestinal tract. Additional PPE is required for uncontrolled venting/spills, close contact, or when not in a sufficiently well-ventilated area.
- Following cyanide ingestion, emesis may off-gas toxic hydrogen cyanide, placing rescuers at risk.
- Symptoms following a toxic ingestion or other form of exposure may include altered mental status, respiratory distress, lethal arrhythmias, severe vomiting, uncontrolled bleeding, seizures, shock, and death.
- Patients may clinically deteriorate quickly or progressively over time based upon the toxicity, dose, half-life, patient's weight or tolerance, or co-ingestion of other substances.
- Available resources for identification of, isolation from, safe handling of, and patient care for spilling of, exposure to, or contamination from a potentially toxic substance may include:
  - Product container label or placard for name, UN number, colors and symbols, or ingredients listed according to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS) or other standard
  - Emergency Response Guidebook
  - Safety Data Sheets (SDS)
  - Representative of site or transport agency
  - Poison Control Center, 1-800-222-1222
  - Online Medical Control
- Biologic Agents: Category A: Anthrax, Botulism, Plague, Category B: Ricin, Cholera, T2 Mycotoxin Category C: Viruses that cause Encephalitis Hantavirus Influenza- if notify medical direction if actual or potential encounter
- If the patient is found naked, this may elevate the suspicion for stimulant use or abuse. These substances increase the risk for sudden death secondary to delirium with agitated behavior.
- Single pill ingestion can kill a toddler. It is very important that a careful assessment of medications the toddler could have access to is done by EMS and suspect medications brought into the ED.
- If eye or skin contamination is present, decontaminate by irrigating with copious amounts of normal saline or tap water. Dry chemicals should be brushed off prior to decontamination.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | “Overdose”, “Exposure” to a substance, “Bottle found”, “Unresponsive”, “Suicidal”, “Intentional”, “Mass Casualty”   |
| OPQRST                                      | Determine time of exposure/ingestion, Determine amount/length of exposure   |
| Associated Symptoms/<br>Pertinent Negatives | Dyspnea, nausea/vomiting, abdominal pain, unresponsive; Suicidal ideation or suicide attempt. Accidental or intentional exposure.   |
| SAMPLE                                      | Psychiatric history, prescribed or access to medications, exposure to chemicals, co-ingestions, suicidal/homicidal ideations  |
| Initial Exam                                | Check ABC’s, and correct any immediate life threats   |
| Detailed Focused Exam                       | <b>Vitals:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> level of alertness, signs of agitation, willingness to cooperate with authorities<br><b>Skin:</b> Cool, pale and diaphoretic? Warm, dry and flushed?<br><b>HEENT:</b> Are the pupils constricted or dilated? Nystagmus?<br><b>Lungs:</b> Wheezes, rales or rhonchi?<br><b>Heart:</b> Rate, regularity, BP, peripheral perfusion?<br><b>Neuro:</b> Signs of intoxication? Ataxia? Slurred speech?<br><b>Psych:</b> Depressed affect? Bizarre thoughts? Signs of suicidal ideation or intent? |
| Data  | Blood glucose, identify possible toxic substances ingested/exposed too.   |
| Goals of Therapy                            | Identification of Agent. Decontamination to reduce exposure, stabilization and supportive care, provision of antidotes, anticipation and correction of toxic effects on the CNS, cardiovascular and respiratory systems.  |
| Monitoring                                  | Cardiac monitoring, EtCO <sub>2</sub> , temperature   |

### EMERGENCY MEDICAL RESPONDER/EMT

- Routine medical care
- Oxygen @ 2-4 LPM per nasal cannula to keep SpO<sub>2</sub> ≥ 94%. Increase flow or convert to non-rebreather mask as needed.
- If the patient is unconscious, place him/her in the recovery position. Follow the [ALOC Guidelines](#) p. 60.
  - Consider use of a supraglottic airway.
  - Check blood glucose. If < 70mg/dl, follow the [Diabetic Emergencies Guideline](#) p. 82
  - Carbon monoxide is an odorless and tasteless gas that can cause headache, dizziness, fatigue, flu-like symptoms, confusion, decreased LOC, and in severe cases death. Regardless of on-scene carbon monoxide levels the patient is exposed to, or their personal carbon monoxide levels, all symptomatic patients shall be transported for formal evaluation.
    - Any patient in a confined space with combustion products or for Carbon monoxide, Cyanide poisoning or inhaled poison, remove patient from exposure and treat with high-flow oxygen therapy regardless of SpO<sub>2</sub> reading.
- Address all other issues with appropriate guidelines.
- If opiate overdose, consider **Narcan** 0.5-2mg IN or IM (EMT only) per dose. PEDS dose 0.1mg/kg, max 0.5 mg dose, to support oxygenation/ventilation, remove opioid patches with gloves.

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & shock guideline](#) p. 96
- If the patient has an altered level of consciousness and a narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5 -2mg IV/IO/IN/IM per dose (PEDS dose 0.1mg/kg, max 0.5 mg dose). Using lowest doses of Narcan possible is recommended, as the goal is only to increase respirations, not fully awaken patient.



## PARAMEDIC

- Suspected Cyanide exposure that results in shock not attributed to other causes, respiratory/cardiac arrest or depression may be treated with a cyanide treatment kit per manufacturer’s recommendation.
  - Attempt to draw blood prior to administration
  - Consider **Cyanokit (hydroxocobalamin)** 5 grams (Pediatric dose 70mg/kg) over 15 minutes.
- See drug class guidance below:

| <b><i>Class of drugs</i></b> | <b><i>Treatment Indications</i></b>  | <b><i>Specific Treatment(s)</i></b>  |
|------------------------------|--|--|
| Amphetamines                 | Agitation, psychosis, Hypertensive Emergency or ventricular arrhythmias  | PARAMEDIC may consider the following medications for sedation or seizures:<br><b>Versed:</b> dosing per <a href="#">Agitated &amp; Combative Patients Guideline</a> p. 54, <a href="#">Seizure Guidelines</a> p. 126   |
| Benzodiazepines (BZD)        | Treat signs and symptoms. Be aware for respiratory depression and treat.   | Treat arrhythmias according to the appropriate guideline.<br>Treat seizures according to the <a href="#">Seizure Guidelines</a> p. 126   |
| Beta Blockers                | Profound bradycardia, hypotension or conduction defects.<br>Check blood glucose level on all patients but especially on pediatric patients as beta-blockers can cause hypoglycemia in pediatric population | PARAMEDIC consider <b>Glucagon</b> 2 mg slow IVP for adults and 0.1mg/kg pediatrics with hypotension or bradycardia. May repeat every 3 min up to 5 mg total for adults and 3mg total for pediatrics (if available) . <a href="#">Treat hypoglycemia</a> (p. 82) per guidelines  |
| Calcium Channel Blockers     | Profound bradycardia, hypotension or conduction defects  | PARAMEDIC consider <b>Calcium Chloride 10%</b> 1000mg (10 ml) IV/IO <b>SLOW</b> over 10 minutes for adults and 20mg/kg <b>SLOW</b> IVP for pediatrics in extremis.<br>Consider <b>Glucagon</b> 2 mg slow IVP for adults and 0.1mg/kg pediatrics. May repeat every 3 min up to 5 mg total for adults and 3mg total for pediatrics |
| Cocaine                      | Agitation, seizures, Hypertensive Emergency or ventricular arrhythmias,  | PARAMEDIC may consider the following medication:<br><b>Versed:</b> Dosing per <a href="#">Agitated &amp; Combative Patients Guideline</a> p. 54<br><b>Sodium Bicarbonate:</b> 1 mEq/kg up to 50mEq may be given if a wide QRS is noted. May repeat once in discussion with medical control                                       |

|   |  |  |
|---|--|--|
| Narcotics   | Narcan may be used in cases of oversedation due to narcotic administration, or in suspected narcotics overdoses in patients without a history of long-term use, chronic abuse or addiction. Signs of narcotic overdose or oversedation include decreased level of consciousness, pinpoint pupils (except Demerol), and respiratory depression. Caveat: Giving Narcan to a long-term narcotic user, chronic abuser or addict can induce narcotic withdrawal, which creates a new set of difficult problems.   | <p>In the setting of an overdose, if the patient has ALOC – with or without a gag reflex, or shows signs of respiratory depression, airway management takes precedence over reversing the overdose with Narcan.</p> <p><b>Naloxone (Narcan)</b> 0.5mg up to 2mg IV/IO/IN/IM per dose (Pediatric 0.1mg/kg) until the patient reaches normal respiratory pattern.</p>  |
| Organophosphate Poisoning (Pesticides and Nerve Agents) | <p>Profound bradycardia, seizures, abnormal (wet) lung sounds<br/> The organophosphate toxidrome:<br/> <b>S</b> – Salivation, Seizures<br/> <b>L</b> – Lacrimation<br/> <b>U</b> – Urination<br/> <b>G</b> – GI vomiting and diarrhea<br/> <b>B</b> – Bradycardia*, bronchorrhea, bronchospasm<br/> <b>A</b> – Arrhythmias<br/> <b>M</b> – Miosis (small pupils) *<br/> * Tachycardia and mydriasis (dilated pupils) are also possible<br/> Caveat: Organophosphates are highly toxic in very small quantities and pose a significant risk to EMS.</p> | <p>Autoinjector/Atropine IM dosing below every 5 min until lung sounds clear to auscultation and improvement in HR/BP. Use atropine in the initial treatment of bradycardia and seizures.</p> <p>Signs of atropinization are the end point of treatment: flushing, pupil dilation, dry mouth, and tachycardia.</p> <p>If seizures develop <b>Versed</b> 0.1mg/kg IV/IO/IN (max 5mg bolus) or 0.2mg/kg IM(max 10mg bolus) per seizure guidelines</p> <p>Valium 5 mg IV or 5-10mg IM every 10 minutes for seizures. PEDS dosing per Broselow Tape</p> <p>CANA® (Convulsive Antidote Nerve Agent) is a commercially available IM autoinjector that contains 10 mg of diazepam</p> <p>For additional dosing information see [1] below</p> <p>.....</p> |

|                                 |  |   |
|---------------------------------|--|---|
| Tricyclic Antidepressants (TCA) | Decreased level of consciousness; hypotension, seizures, malignant arrhythmias (e.g., <i>Torsades de Pointes</i> , VT), prolongation of the QT or QRS intervals.<br>Caveat: Patients with TCA overdoses are prone to deteriorating very quickly. Note: Sodium containing solutions act like antidotes, because they protect the heart against the toxic effects of the TCA. Induced alkalosis from bicarbonate and hyperventilation also help protect against the toxic effects of TCAs. | PARAMEDIC: Run 1 or 2 IVs of Normal Saline wide open. Treat arrhythmias according to the appropriate guideline. Treat seizures according to the <a href="#">Seizure Guidelines</a> p. 126<br><b>Sodium Bicarbonate 8.4%</b> 1 mEq/kg up to 50mEq may be given if a wide QRS is noted. May repeat once in discussion with medical control. For long adult transports, consider a Sodium Bicarbonate drip with 3 amps in a liter of NS @ 250 ml/hr after the initial boluses are in in discussion with medical control. If advanced airway in place hyperventilate to an EtCO <sub>2</sub> of 25 – 30.  |
| Hydrofluoric (HF) Acid Exposure | An oral or large dermal exposure can result in significant systemic hypocalcemia with possible QT prolongation and cardiovascular collapse. Consult with Medical control for IV calcium administration. Ensure appropriate PPE   | For patients in whom a HF exposure is suspected:<br>1) Vigorously irrigate all affected areas with water or normal saline for a minimum of 15 minutes<br>2) Apply a cardiac monitor for oral or large dermal exposures significant HF exposures, assess for prolonged QT<br>3) PARAMEDIC: Consider application calcium preparation to exposed external skin if pain or redness present by combining 10ml of calcium chloride with 75-150ml of water soluble lubricant if available Contact Medical Control for assistance.<br>4) PARAMEDIC: Consider <b>Calcium Chloride 10%</b> 1000mg (10 ml) IV/IO <b>SLOW</b> for adults and 20mg/kg <b>SLOW</b> IVP for pediatrics in cardiac arrest |

[1] **Mild Acetylcholinesterase Inhibitor Agent Exposure-** Miosis and severe rhinorrhea – Atropine Alone, do not administer 2-Pam

| Patient                                       | Atropine Dose (Weight) IM or via Auto-injector   |
|---|--|
| <b>Infant:</b><br>0–2 years of age            | 0.05 mg/kg IM or via auto-injector (i.e., <i>0.25 and/or 0.5 mg auto-injector(s)</i> ) |
| <b>Child:</b><br>3–7 years of age (13–25 kg)  | 1 mg IM or via auto-injector (i.e., <i>one 1 mg or two 0.5 mg auto-injectors</i> )     |
| <b>Child:</b><br>8–14 years of age (26–50 kg) | 2 mg IM or via auto-injector (i.e., <i>one 2 mg or two 1 mg auto-injectors</i> )       |
| <b>Adolescent/Adult</b>                       | 2 mg IM or via auto-injector   |
| <b>Pregnant Patients</b>                      | 2 mg IM or via auto-injector   |
| <b>Geriatric/Frail</b>                        | 1 mg IM or via auto-injector   |

**Mild to Moderate Acetylcholinesterase Inhibitor Agent Exposure** -These include localized swelling, muscle fasciculations, nausea and vomiting, weakness, shortness of breath. Utilize auto-injectors if available. May use a 600 mg 2PAM Cl auto-injector in an infant as small as 12 kg.

| Patient (Weight)                              | Atropine Dose IM or via Auto-injector   | Pralidoxime Chloride Dose IM or via 600 mg Auto-injector |
|---|---|--|
| <b>Infant:</b><br>0–2 years of age            | 0.05 mg/kg IM or via auto-injector<br>(i.e., 0.25 mg and/or 0.5 mg auto-injector)           | 15 mg/kg IM  |
| <b>Child:</b><br>3–7 years of age (13–25 kg)  | 1 mg IM or via auto-injector<br>(i.e., one 1 mg auto-injector or two 0.5 mg auto-injectors) | 15 mg/kg IM<br><b>OR</b><br>One auto-injector (600 mg)   |
| <b>Child:</b><br>8–14 years of age (26–50 kg) | 2 mg IM or via auto-injector<br>(i.e., one 2 mg auto-injector or two 1 mg auto-injectors)   | 15 mg/kg IM<br><b>OR</b><br>One auto-injector (600 mg)   |
| <b>Adolescent/ Adult</b>                      | 2–4 mg IM or via auto-injector  | 600 mg IM<br><b>OR</b><br>One auto-injector (600 mg)     |
| <b>Pregnant Patients</b>                      | 2–4 mg IM or via auto-injector  | 600 mg IM<br><b>OR</b><br>One auto-injector (600 mg)     |
| <b>Geriatric/Frail</b>                        | 2 mg IM or via auto-injector  | 10 mg/kg IM<br><b>OR</b><br>One auto-injector (600 mg)   |

- Repeat initial dose (2 mg max) of atropine via autoinjector (preferable) or IM every 5 - 10 minutes until dyspnea, resistance to ventilation, and secretions are minimized.
- If resistance to ventilation is significant, requiring repeat dosing in less than 5 minutes utilize the higher doses and increase frequency depicted in the severe effects section below
- May repeat pralidoxime - up to a total of 45 mg/kg during the first hour.
- May repeat pralidoxime - up to 45 mg/kg 1 hour after initial treatment.

**Severe Acetylcholinesterase Inhibitor Agent Exposure-** These include the above as well as unconsciousness, convulsions, apnea, flaccid paralysis and requiring assisted ventilation (severe respiratory distress). I.V. atropine has produced ventricular fibrillation in hypoxic animals with nerve agent poisoning. Therefore, it is recommended that hypoxia be corrected prior to atropine administration. However, atropine should not be withheld due to fears of this complication. It would be preferable to utilize an atropine autoinjector for the first dose in the hypoxic nerve agent exposed patient.

| Patient (Weight)                               | Atropine Dose<br>IM or via 600 mg Auto-injector  | Pralidoxime Chloride Dose<br>IM or via Auto-injector                   |
|--|--|--|
| <b>Infant:</b><br>0–2 years of age             | 0.1 mg/kg IM or via auto-injector<br>(i.e., 0.25 mg and/or 0.5 mg auto-injector)                                 | 45 mg/kg IM  |
| <b>Child:</b><br>3–7 years of age (13–25 kg)   | 0.1 mg/kg IM <b>OR</b><br>2 mg via auto-injector<br>(i.e., one 2 mg auto-injector or four 0.5 mg auto-injectors) | 45 mg/kg IM <b>OR</b><br>One auto-injector (600 mg)                    |
| <b>Child:</b><br>8–14 years of age (26–50 kg)  | 4 mg IM or via auto-injector<br>(i.e., two 2 mg auto-injectors or four 1 mg auto-injectors)                      | 45 mg/kg IM <b>OR</b><br>Two auto-injectors (1200 mg)                  |
| <b>Adolescent:</b><br>14 years of age or older | 6 mg IM or via auto-injector<br>(i.e., three 2 mg auto-injectors)  | Three auto-injectors (1800 mg)   |
| <b>Adult</b>                                   | 6 mg IM or via auto-injector<br>(i.e., three 2 mg auto-injectors)  | Three auto-injectors (1800 mg)   |
| <b>Pregnant Patients</b>                       | 6 mg IM or via auto-injector<br>(i.e., three 2 mg auto-injectors)  | Three auto-injectors (1800 mg)   |
| <b>Geriatric/Frail</b>                         | 2–4 mg IM or via auto-injector<br>(i.e., one to two 2 mg auto-injectors)   | 25 mg/kg IM <b>OR</b><br>two to three auto-injectors<br>(1200-1800 mg) |

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## 2.33 VAGINAL BLEEDING AFTER DELIVERY

| <b>Priorities</b>                           | <b>Assessment Findings</b>   |
|---|--|
| Chief Complaint                             | “Vaginal bleeding after delivery”  |
| OPQRST                                      | Onset. Attempt to quantify the amount of blood lost if possible  |
| Associated Symptoms/<br>Pertinent Negatives | Is the patient having severe crampy pains? Has any fetal tissue passed?  |
| SAMPLE                                      | Has there been any prenatal care? An ultrasound? Was it normal?  |
| Initial Exam                                | ABCs and correct any immediately life-threatening problems.  |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Pain or anxiety-related distress? External Hemorrhage?<br><b>Skin:</b> Pale, cool, and moist?<br><b>Chest:</b> Labored breathing?<br><b>Heart:</b> Rate and Rhythm?<br><b>Abdomen:</b> Internal hemorrhage? Tender? Distended? GU Blood loss?, Uterus Location/Quality<br><b>Neuro:</b> ALOC? |
| Data  | SpO <sub>2</sub>   |
| Goals of Therapy                            | Identify potentially life-threatening hemorrhage. Treat for shock. Display sensitivity to the emotional needs of the parents. Reduce pain to the “comfortable” range.  |
| Monitoring                                  | Monitor blood pressure, heart rate and mental status for signs of shock.   |

### EMERGENCY MEDICAL RESPONDER/EMT

- Oxygen 2-4 LPN per nasal cannula or higher flow if needed to maintain SpO<sub>2</sub> > 94%
- Massage fundus vigorously while applying suprapubic pressure with your other hand to prevent uterus from expelling. This may cause discomfort to the mother
- Place baby to breast or chest level (make sure to perform neonatal care and assessment/resuscitation)
- Transport in head down, left lateral recumbent position
- Loose bulky dressings (do not pack vagina)
- Encourage mother to breastfeed baby if able

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.

### PARAMEDIC

- Treat for shock as needed refer to [Hypovolemia & Shock Guidelines](#) p. 96
  - **TXA** 2 Grams IV/IO over 20 minutes if concerned for hemorrhagic shock with sustained SBP < 90 mm Hg or sustained heart rate > 110 beats per minute. Hang blood tubing.
- Consider pain control for painful contractions

*Mercyhealth System*  
**Medical Guidelines**

## 2.34 VAGINAL BLEEDING BEFORE DELIVERY

**Note:**

- Vaginal bleeding and severe lower abdominal pain in the first trimester of pregnancy should be considered a ruptured ectopic pregnancy until proven otherwise. Be wary of the female of child bearing age who presents with signs of hemorrhagic shock or syncope.
- Bleeding at any point in pregnancy can be associated with loss of the fetus. Be sensitive to of potential loss of pregnancy.
- After about 20 weeks of pregnancy, when the mother is in a supine position, the gravid uterus can compress the inferior vena cava, which decreases preload and causes hypotension.
- Pregnancy usually lowers a patient’s blood pressure. If you get systolic readings between 80 – 100 mmHg, ask the mother what her most recent blood pressure was in her obstetric provider’s office.

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | “Vaginal bleeding and pregnant”   |
| OPQRST                                      | Onset. Attempt to quantify the amount of blood lost   |
| Associated Symptoms/<br>Pertinent Negatives | Is the patient having severe crampy pains? Has any fetal tissue passed?   |
| SAMPLE                                      | Has there been any prenatal care? An ultrasound? Was it normal?   |
| Initial Exam                                | ABCs and correct any immediately life-threatening problems.   |
| Detailed Focused Exam                       | <b>Vital Signs:</b> BP, HR, RR, Temp, SpO <sub>2</sub><br><b>General Appearance:</b> Pain or anxiety-related distress? External Hemorrhage?<br><b>Skin:</b> Pale, cool, and moist?<br><b>Chest:</b> Labored breathing?<br><b>Heart:</b> Rate and Rhythm?<br><b>Abdomen:</b> Internal hemorrhage? Tender? Distended? GU Blood loss?<br><b>Neuro:</b> ALOC? |
| Data  | SpO <sub>2</sub>  |
| Goals of Therapy                            | Identify potentially life-threatening hemorrhage. Treat for shock. Display sensitivity to the emotional needs of the parents. Reduce pain to the “comfortable” range.   |
| Monitoring                                  | Monitor blood pressure, heart rate and mental status for signs of shock.  |

### EMERGENCY MEDICAL RESPONDER/EMT

- Oxygen 2-4 liters NC or 12-15 per NRB
- Place in supine position with legs elevated
- If > 20 weeks pregnant, place on left lateral side, recumbent, for transport
- Keep the mother warm and offer comfort measures
- Attempt to preserve any products of conception that pass and take them to the ED
- Place the patient in left lateral Trendelenburg Position, if possible.

### AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - Avoid Permissive Hypotension

### PARAMEDIC

- Monitor closely for any changes in abdominal exam or condition.

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**Medical Guidelines**

## 2.35 WIDE COMPLEX TACHYCARDIAS

**Note:**

- Wide complex rhythms have a QRS duration > 0.12 sec
- Although some wide complex tachycardias develop from supraventricular tachycardias, pre-hospital providers should always assume that wide complex rhythms are ventricular tachycardia (VT), particularly if the patient is unstable [1].
- Treating wide complex tachycardias with medications used to treat supraventricular tachycardias is fraught with danger and must be avoided in the pre-hospital setting
- Adult Ventricular Tachycardia Rate usually >120

| <b>Priorities</b>                           | <b>Assessment Findings</b>  |
|---|---|
| Chief Complaint                             | Palpitations, fast heart rate, shortness of breath, chest pain, weakness, syncope, cardiac arrest/pulseless non-breather  |
| OPQRST                                      | Onset and duration, precipitating factors and circumstances, associated symptoms, stroke symptoms, nausea vomiting  |
| Associated Symptoms/<br>Pertinent Negatives | Chest pain, shortness of breath, weakness, anxiety, leg swelling  |
| SAMPLE                                      | <ul style="list-style-type: none"> <li>• Previous history, history of thyroid disease, CAD, Cardiac Medications</li> <li>• Obtain history of previous episodes of tachycardia, including diagnoses if known. Pay particular attention to whether there is an underlying history of pre-excitation, including the Wolff-Parkinson-White (WPW) Syndrome.</li> <li>• Obtain history of what medications have been used to treat previous arrhythmias, if known.</li> <li>• Obtain history of any previous complications from previous arrhythmia treatments, if known.</li> <li>• Obtain history of the duration of the current episode of tachycardia, if known.</li> </ul> |
| Initial Exam                                | Check ABCs and correct any immediate life-threatening problems.   |
| Detailed Focused Exam                       | Vitals Signs: BP, HR, RR, Temp, SpO <sub>2</sub><br>General Appearance:<br>Skin: Cool, pale diaphoretic<br>Neck: JVD?<br>Chest: Labored breathing<br>Lungs: Wheezes, rales, rhonchi? Decreased breath sounds?<br>Heart: Regular, rate fast or slow, murmur<br>Legs: Edema<br>Neuro: ALOC?   |
| Data  | SpO <sub>2</sub> , 12-Lead EKG, Blood Sugar if Diabetic or ALOC   |
| Goals of Therapy                            | Decrease Rate, treat chest pain, treat CHF  |
| Monitoring                                  | Cardiac Monitoring and SpO <sub>2</sub>   |

### EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer oxygen to keep SpO<sub>2</sub> > 94%
- If the patient is having difficulty breathing allow them to sit upright
- If the patient becomes unresponsive, pulseless and non-breathing, follow the [Cardiac Arrest Guidelines](#) p. 74
- If the patient also experiences shortness of breath, follow the [Congestive Heart Failure Guidelines](#) p. 80



## EMT

- Obtain/transmit 12-Lead EKG

## AEMT

- IV 0.9% NS Lock or KVO
- Initiate a 250 ml bolus if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated.
  - PEDS Bolus 20ml/kg [follow Hypovolemia & Shock guidelines](#)

## PARAMEDIC

- Interpret 12-Lead EKG, or perform if not already done, consider recording continuous EKG during treatments
  - Do not routinely treat PVC's or short (less than 6 beats) runs of asymptomatic VTACH
  - Differentiate between monomorphic and polymorphic ventricular tachycardia
  - Differentiate between regular and irregular rhythms
    - **Regular rhythms are monomorphic VT until proven otherwise**
    - **Irregular rhythms are polymorphic VT (including Torsades de Pointes) until proven otherwise**
- For all stable patients with monomorphic VT
  - **Amiodarone** 150mg slow IV over 10 minutes, may repeat x1
  - If amiodarone unsuccessful, consider **Magnesium** 2 grams IV slowly (over 10 minutes)
- If the patient is hemodynamically or clinically unstable [1] with monomorphic VT or polymorphic VT
  - Prepare to perform synchronized cardioversion.
  - Consider **Fentanyl Citrate** up to 50mcg IV/IO/IN/IM or low dose **Versed** 2 mg for sedation and pain control before cardioversion (reduce dose by 50% for smaller framed and elderly)
  - Perform first synchronized cardioversion @ 150 Joules.
  - If unsuccessful, increase by 50 joules for each subsequent attempt.
- If the patient is patient develops pulseless VT defibrillate (i.e., unsynchronized cardioversion) at max Joules and follow Cardiac Arrest guidelines
- For all stable patients with polymorphic VT, **Torsades** de pointes, or tachycardia with QTC > 500ms (especially patients with h/o ESRD, alcoholism, Long QT Syndromes, or other risk factors):
  - Consider **Magnesium** 2 grams IV slowly (over 10 minutes)
  - Amiodarone is contraindicated in Torsades de Pointes
  - Avoid QT prolonging medication (Zofran, Amiodarone, Diphenhydramine)
- Wide complex due to Tricyclic Antidepressant other Sodium Channel Blocking Drug Overdose administer 1mEq/kg **Sodium Bicarbonate**, not to exceed 50mEq per dose, avoid amiodarone administration
- If suspicious for hyperkalemia administer **Calcium Chloride** 20mg/kg (1,000mg max dose) **SLOW** IV/IO, **Sodium Bicarbonate** 1mEq/kg IV/IO max 50meq Dose and **Albuterol** 10mg via nebulizer
- If the patient remains hemodynamically and clinically stable, further treatment can be safely delayed until the patient arrives in the emergency department.

**FOOTNOTES:**

[1] Criteria for characterizing a patient as “unstable”

- Hemodynamic Criteria
  - SBP < 90 mmHg AND signs of hypoperfusion
- Clinical Criteria
  - Signs of shock (poor perfusion) are present, including
    - ALOC, including syncope
    - Absent radial pulses
    - Pallor and diaphoresis
  - Signs of pulmonary edema are present, including
    - Labored breathing
    - CHF with Rales (wet lungs)
    - Hypoxia (SpO<sub>2</sub> <94%)
  - The patient complains of angina

[2] Criteria for characterizing a Pediatric patient as “unstable”

- Clinical signs of resp. distress or failure/hypoxemia
  - Apnea
  - Retractions, flaring or grunting
- Signs of decreased perfusion indicating “unstable” pediatric patients
  - AMS/Abnormal appearance
  - Inequality of central and distal pulses
  - Slowed or absent capillary refill <3 sec
  - Hypotension (See PEDS [Shock Guideline](#) p. 96)
- Wide QRS in a Pediatric Patient is defined at >0.09 sec
- Utilize Broselow or approved medical director product or app for dosing
  - For Stable Pediatric Patients with regular monomorphic wide complex believed to be SVT with aberrancy consider:
    - **Adenosine** 0.1mg/kg first dose (max 6mg)
    - **Adenosine** 0.2mg/kg second/third dose (max 12mg)
    - Consult Medical Control for Amiodarone 2.5mg/kg Max 150mg over 10 min
    - Perform continuous EKG during treatments
  - If the patient is hemodynamically or clinically unstable due to VTACH prepare to perform **synchronized cardioversion**. Consider **Fentanyl** Pediatric dose up to 1mcg/kg IV/IO and 2mcg/kg IN max dose up to 100mcg per bolus **or MIDAZOLAM 0.1 mg/kg slow IVP (0.2 mg/kg IN/IM)** (max single dose 2 mg. Do not delay cardioversion
    - Synchronized Cardioversion 1j/kg first attempt
    - Synchronized Cardioversion 2j/kg subsequent attempts
  - For all polymorphic VT/Torsades de pointes
    - **Magnesium** 50mg/kg (max 2 grams) IV
      - Administer Over 10 minutes for stable patients
      - Avoid QT prolonging medication (Zofran, Amiodarone, Diphenhydramine)
      - Amiodarone contraindicated in Torsades de pointes
      - IV push in cardiac arrest

# SECTION 3 MERCY EMS PHARMACOLOGY

### 3.01 APPROVED MEDICATION LIST

| EMR | EMT | AEMT | I99 | P | Medication  |
|-----|-----|------|-----|---|---|
|     | ✓   | ✓    | ✓   | ✓ | Acetaminophen (Tylenol) 325mg tablet, 500mg tablet, 160mg/5ml liquid            |
|     |     |      | ✓   | ✓ | Adenosine (Adenocard) 12mg/4ml pre-loaded syringe, or 6ml/12 ml vial            |
| ✓   | ✓   | ✓    | ✓   | ✓ | Albuterol Sulfate 0.83% 2.5mg/3ml unit dose                                     |
|     |     |      | ✓   | ✓ | Amiodarone Hydrochloride (Cordarone) 150mg/10ml pre-load syringe                |
| ✓   | ✓   | ✓    | ✓   | ✓ | Aspirin bottle, chewable baby, 81mg tablets                                     |
|     |     |      | ✓   | ✓ | Atropine Sulfate 1mg/10ml preloaded syringe                                     |
|     |     |      |     | ✓ | Calcium Chloride 10% solution, 1gram/10ml pre-loaded syringe or vial            |
|     |     |      |     | ✓ | Cyano-Kit   |
|     |     | ✓    | ✓   | ✓ | Dextrose 10%  |
|     |     |      |     | ✓ | Diltiazem (Cardizem) 5mg/ml 5ml vial (refrigerated)                             |
|     |     |      | ✓   | ✓ | Diphenhydramine Hydrochloride (Benadryl) 50mg/1ml vial                          |
|     | ✓   | ✓    | ✓   | ✓ | Diphenhydramine Hydrochloride (Benadryl) 25mg,12.5mg tablets, 12.5mg/5ml liquid |
|     |     |      | ✓   | ✓ | Epinephrine 1mg/10ml solution, 1mg/10ml preloaded syringe                       |
|     | ✓   | ✓    | ✓   | ✓ | Epinephrine 1:1000 solution, 1mg/1ml ampule                                     |
| ✓   | ✓   | ✓    | ✓   | ✓ | Epinephrine (adult and pediatric) pre-loaded auto injector                      |
|     |     |      |     | ✓ | Epinephrine (Racemic)   |
|     |     |      |     | ✓ | Etomidate 40mg/20ml vial  |
|     |     |      | ✓   | ✓ | Fentanyl Citrate (Sublimaze) 100mcg/2ml vials                                   |
|     | ✓   | ✓    | ✓   | ✓ | Glucagon (Glucagen) 1mg/1ml reconstituted vials                                 |
| ✓   | ✓   | ✓    | ✓   | ✓ | Glucose Oral Gel 15-25g/tube or Tablets   |
|     |     |      |     | ✓ | Hydromorphone 1mg/1ml   |
|     | ✓   | ✓    | ✓   | ✓ | Ibuprofen (Motrin, Advil) 200mg tablets or 100mg/5ml liquid                     |
|     | ✓   | ✓    | ✓   | ✓ | Ipratropium Bromide (Atrovent) 0.5mg/2ml unit dose                              |
|     |     | ✓    | ✓   | ✓ | IV fluids (Normal Saline, Lactated Ringers, D10W)                               |
|     |     |      |     | ✓ | Ketamine 500mg/5ml  |
|     |     |      |     | ✓ | Labetalol 100mg/20ml  |
|     |     | ✓    | ✓   | ✓ | Lidocaine Hydrochloride 2% 100mg/5ml preloaded syringe                          |
|     |     |      |     | ✓ | Magnesium Sulfate 50% 5gram/10ml pre-loaded syringe                             |
| ✓   | ✓   | ✓    | ✓   | ✓ | Mark I Kit/Duodote (Atropine & Pam2chloride) pre-loaded auto injector           |
|     |     |      | ✓   | ✓ | Methylprednisolone (Solu-Medro) 125mg/2ml Act-O-Vial                            |
|     |     |      |     | ✓ | Metoprolol tartrate (Lopressor) 5mg/5ml vial (If labetalol unavailable)         |
|     |     |      | ✓   | ✓ | Midazolam Hydrochloride (Versed) 10mg/2ml vial                                  |
| ✓   | ✓   | ✓    | ✓   | ✓ | Naloxone Hydrochloride (Narcan) 2mg/2ml pre-loaded syringe                      |
|     |     |      | ✓   | ✓ | Nitroglycerin 0.4mg/tab or metered spray  |
|     |     |      |     | ✓ | Nitroglycerin Paste packet  |
|     |     | ✓    | ✓   | ✓ | Ondansetron Hydrochloride (Zofran) 4mg/2ml vial                                 |
|     | ✓   | ✓    | ✓   | ✓ | Ondansetron ODT 4mg Oral Dissolving Tablet                                      |
|     |     |      |     | ✓ | Rocuronium Bromide (Zemuron) 50mg or 100mg vial (If vecuronium unavailable)     |
|     |     |      |     | ✓ | Sodium Bicarbonate 8.4% 50mEq/50ml, preload syringe                             |
|     |     |      |     | ✓ | Succinylcholine Chloride (Anectine) 200mg/10ml vial                             |
|     |     |      |     | ✓ | Tetracaine 0.5%   |
|     |     |      |     | ✓ | Toradol (Ketorolac) 30mg/1ml or 60mg/2ml vial                                   |
|     |     |      |     | ✓ | Tranexamic Acid (TXA) 1G vial   |
|     |     |      |     | ✓ | Vecuronium Bromide (Norcuron)10mg vial-powder                                   |

Concentrations above are preferred but may require substitution based on availability and medical director approval.

## 3.02 ACETAMINOPHEN (TYLENOL)

### INDICATION:

1. Treatment of mild to moderate pain
2. Reduction of fever

### CONTRAINDICATION:

1. Known allergy or hypersensitivity to Acetaminophen
2. Liver Disease
3. Inability to tolerate PO in form available (Tablet/Liquid)

### PRECAUTIONS:

1. Many prescriptions and over the counter medications are compounded with Acetaminophen. Ask patient about medications they have taken in the last 6 hours prior to administration.
2. Can be toxic in overdose. Proper dosing is important.
3. Potential for aspiration with AMS or post febrile seizure.

### ADMINISTRATION:

1. Adults and Pediatrics: Dose 15 mg/kg to a max of 1000 mg per dose
2. PO liquid or tablet
3. Can be administered with Ibuprofen.

### ADVERSE REACTIONS:

1. Nausea, Vomiting
2. Rash

### REFERENCE GUIDELINE

[Routine Medical Care](#)  
[Pain Management](#)

## 3.03 ADENOSINE (ADENOCARD)

### INDICATION:

1. Conversion of supraventricular tachycardia (SVT)

### PRECAUTIONS:

1. May worsen bronchospasm in asthmatics and some patients with COPD.
2. Flushing and chest pain may occur briefly after administration.
3. A reduced dose must be used in heart transplant recipients.

### CONTRAINDICATIONS:

1. 2<sup>nd</sup> or 3<sup>rd</sup> degree heart block
2. Sick Sinus Syndrome
3. Hypersensitivity

### ADMINISTRATION:

1. A initial 6 mg IV bolus may be given to the adult patient. Pediatric dose is 0.1 mg/kg. Document effect on rhythm on ECG strip.
2. If rhythm does not convert or does not slow enough to allow diagnosis, a second dose of 12 mg may be given. Pediatric second dose is 0.2 mg/kg max adult dose.
3. Adenosine IV injection must be given rapidly via the IV port closest to the patient, followed by at least a 20ml rapid flush to assure the entire drug has cleared the IV tubing. Elevation of arm during administration may be beneficial.
4. In adult heart transplant recipients, the initial dose is 4 mg. If a second dose is necessary, 8 mg may be given after medical control contact.

### SPECIAL NOTES:

1. It is cleared very rapidly, having a half-life of less than 10 seconds. Thus the drug must be given as a rapid bolus. Side effects are also usually very short lived.
2. After the administration of adenosine, a rhythm other than SVT may be evident, resulting in the choosing of a different form of treatment.
3. In doses of 6-12 mg, there are usually minimal hemodynamic side effects, i.e. hypotension.
4. At the time of conversion, a variety of new rhythms may appear on the ECG. Short-lasting first, second or third degree heart block or transient asystole may result after administration. Due to the drugs short half-life, these effects are generally self-limiting.
5. May use during pregnancy

### REFERENCE GUIDELINE:

[Narrow Complex Tachycardia](#)  
[Wide Complex Tachycardia](#)

## 3.04 ALBUTEROL SULFATE

### INDICATION:

1. For relief of acute bronchospasm.
2. Known or suspected hyperkalemia

### PRECAUTIONS:

1. Rarely may produce paradoxical bronchospasm, which can be life threatening, discontinue treatment immediately if this occurs.
2. Immediate allergic reactions may occur.
3. Beta receptor blocking agents and albuterol inhibit the effect of each other.
4. Use with caution in patients with cardiovascular disorders, or in patients being treated with antidepressants.

### CONTRAINDICATION:

1. Allergy or known hypersensitivity to albuterol.

### ADMINISTRATION:

1. Pour contents of one unit dose bottle (2.5 mg = 3 ml of 0.083% solution) into nebulizer reservoir.
2. Connect nebulizer to oxygen source at 6-8 liters per minute.
3. Have patient breath as calmly, deeply, and evenly as possible until no more mist is found in the nebulizer chamber (5-15 minutes). Routine nebulizer therapy should be accomplished using the nebulizer unit and instructing the patient to close his/her lips tightly around the mouthpiece. An acceptable alternative to using the mouthpiece would be to attach the nebulizer reservoir to an oxygen mask, i.e. remove the bag from a non-rebreather nebulizer reservoir and do not use the T-piece or the mouth piece.
4. Restart patient on oxygen at appropriate concentration.
5. Treatments may be repeated as needed.
6. May be diluted with Normal Saline for Pediatric dosing
7. Administer HFA **or** via Nebulizer

### SPECIAL NOTES:

1. May begin treatment prior to IV therapy. This may decrease anxiety in the patient.
2. Whenever possible, nebulizer treatment should be administered en-route rather than delaying transport, however nebulizer treatments for the patient with active tuberculosis or other airborne pathogens should be performed in well-ventilated areas (outside patient compartment if possible).
3. Solution should be clear and colorless to light yellow.
4. Utilized in treating COPD, Emphysema, Chronic Bronchitis, and Asthma.

### REFERENCE GUIDELINE:

[Asthma/COPD](#)

[Allergy and Anaphylaxis](#)

[Burns](#)

[Cardiac Arrest](#)

[Congestive Heart Failure/Pulmonary Edema](#)

[Pain Management](#)

[Respiratory Distress](#)

[Routine Medical Care](#)

[Routine Trauma Care](#)

[Wide Complex Tachycardia](#)

## 3.05 AMIODARONE HYDROCHLORIDE (CORDARONE)

### INDICATIONS:

1. ACLS/PALS- Management of wide complex tachycardia, and as antidysrhythmic for the management of ventricular fibrillation (VF) and ventricular tachycardia (VT)

### PRECAUTIONS:

1. Continuous cardiac monitoring is required due to potential of arrhythmias.
2. May prolong the QT interval

### CONTRAINDICATIONS:

1. Cardiogenic shock
2. 2<sup>nd</sup> or 3<sup>rd</sup> degree block
3. Severe SA node disease resulting in bradycardia unless an artificial pacemaker is present.
4. In unstable patients, use cardioversion or defibrillation prior to amiodarone.
5. Torsades de points

### ADMINISTRATION:

1. Comes in 150 mg/3ml vial, 10ml preload syringe, or premixed infusion.
2. Initial adult pulseless dose is 300 mg as a bolus, a second 150 mg as a bolus can be given if still pulseless.
3. Antiarrhythmic dose is 150mg over 10 minutes mix in 100 ml 0.9% NS for infusion
4. Pediatric Dose 5mg/kg (Maximum single dose is 300mg)
  - a. Bolus During Cardiac Arrest for VTACH/VFIB may repeat x 2
  - b. Given over 10min in Stable Ventricular Tachycardia

### SPECIAL NOTES:

1. May cause: Bradycardia, arrhythmias, prolonged QT, heart failure, heart block, sinus arrest.
2. May cause: Coagulation abnormality, hepatic failure, adult respiratory distress syndrome.
3. May cause: Visual disturbance, malaise, fatigue, nausea and vomiting

### REFERENCE GUIDELINE:

[Cardiac Arrest](#)  
[Wide Complex Tachycardia](#)  
[Narrow Complex Tachycardia](#)



## 3.06 ASPIRIN

### INDICATION:

1. Suspected adult cardiac ischemia.

### PRECAUTIONS:

1. Recent internal bleeding (within last 3 months).
2. Known bleeding diseases.
3. Recent surgery.
4. Possibility of pregnancy.
5. Currently using Coumadin (Warfarin)

### CONTRAINDICATIONS:

1. True allergy to aspirin or other non-steroidal anti-inflammatory agents, this includes many non-aspirin/non-Tylenol pain relievers such as Advil and Aleve.
2. Pediatrics
3. Inability to tolerate PO in form available and chew

### ADMINISTRATION:

1. For the comfort of the patient, it is preferred to orally administer 4 chewable aspirin (81mg tablets) commonly called baby aspirin.
2. Give supplemental (up to 324mg) chewable aspirin if patient took other forms greater than 8 hours prior

### SPECIAL NOTES:

1. An expected side effect is upset stomach, which is not a reason to not give it.

### REFERENCE GUIDELINE:

[Chest Pain](#)

[Congestive Heart Failure](#)

## 3.07 ATROPINE SULFATE

### INDICATION:

1. For brady-arrhythmias (electrical activity less than 50/minute), either supraventricular or ventricular in origin, accompanied by significant hypotension, PVCs or lightheadedness.
2. Organophosphate poisoning.

### PRECAUTIONS:

1. Do not give less than 0.1 mg to pediatric patients as it may cause paradoxical bradycardia.

### ADMINISTRATION:

1. For symptomatic bradycardia, administer atropine 1 mg IV push every 3 to 5 minutes up to a total of 3 mg. Pediatric 0.02mg/kg (max single dose 0.5mg child, 1.0mg adolescent) to a maximum of 1 mg for a child, 2 mg for an adolescent.
2. Monitor change in heart rate and blood pressure.
3. For organophosphate poisoning, administer 1 to 5 mg IV/IO every 5 minutes depending on severity of symptoms. Large doses are often required.
4. If unable to establish IV, it may be given IO.
5. May be supplied in multidose vials, prefilled syringes or autoinjectors

### SPECIAL NOTES:

1. Atropine may not be effective if the rhythm is idioventricular.
2. Caution Atropine use in STEMI or Cardiac ischemia as tachycardia may increase ischemia
3. Avoid relying on atropine in type II second degree block and third-degree block with a new wide QRS complex in these situations, epinephrine or transcutaneous pacing is the treatment of choice.
4. For post cardiac arrest bradycardia pacing is preferred to atropine.
5. Atropine is not recommended in asymptomatic bradycardia
6. Atropine will be ineffective in the transplanted heart

### REFERENCE GUIDELINE:

[Bradycardia](#)  
[Respiratory Distress](#)  
[Toxic Exposure/Overdose](#)

## 3.08 CALCIUM CHLORIDE 10%

### INDICATION:

1. Known or suspected hyperkalemia.
2. Hypocalcemia.
3. Calcium channel blocker toxicity.
4. Hydrofluoric Acid Exposure
5. Magnesium Toxicity

### PRECAUTIONS:

1. Rapid administration of calcium in a beating heart may produce slowing of the cardiac rate.
2. Patients taking digitalis may have increased ventricular irritability and calcium may produce digitalis toxicity.
3. Do not inject Calcium Chloride in the same IV line as Sodium Bicarbonate as precipitation will occur.
4. Infiltration will cause tissue necrosis. Administer in largest, proximal line possible **SLOW** (approximately 1ml/min unless cardiac arrest) and only in emergency situations, monitor closely during administration. Ensure line functions well prior to use.

### ADMINISTRATION:

1. Adult 10mg/kg (normal dose is one amp)
2. Pediatric 20mg/kg only to be given if patient is in extremis, follow Broselow Tape or approved medical director product or app for accurate pediatric dosing.
3. Supplied in vial 1000mg per 10ml (100mg/ml)

SPECIAL NOTES: If commercial calcium gel unavailable can combine up to 10ml of Calcium Chloride with 5oz of water-soluble lubricant and apply to decontaminated external skin.

### REFERENCE GUIDELINE:

[Cardiac Arrest](#)  
[Toxic Exposure/Overdose](#)  
[Bradycardia](#)  
[Wide Complex Tachycardia](#)  
[Routine Trauma Care](#)  
[Burns](#)

## 3.08 CALCIUM GLUCONATE 10%

INDICATION: As an alternative or substitute to Calcium Chloride

1. Known or suspected hyperkalemia.
2. Hypocalcemia.
3. Calcium channel blocker toxicity.
4. Hydrofluoric Acid Exposure
5. Magnesium Toxicity

PRECAUTIONS:

1. Rapid administration of calcium in a beating heart may produce slowing of the cardiac rate.
2. Patients taking digitalis may have increased ventricular irritability and calcium may produce digitalis toxicity.
3. Do not inject Calcium Chloride in the same IV line as Sodium Bicarbonate as precipitation will occur.
4. Infiltration will cause tissue necrosis. Administer in largest, proximal line possible **SLOWLY** and only in emergency situations, monitor closely during administration. Ensure line functions well prior to use.

ADMINISTRATION:

1. Adult 1 gram in any location where 1g CaCl administered may repeat x 2 max 3g. For Cardiac arrest give 3 g. PEDS 60mg/kg
2. Pediatric 60mg/kg for cardiac arrest, follow Broselow Tape or approved medical director product or app for accurate pediatric dosing.
3. Supplied in preloaded syringe containing 1000mg per 10ml (100mg/ml)

SPECIAL NOTES: If commercial calcium gluconate gel unavailable can combine up to 35ml of Calcium gluconate with 5oz of water-soluble lubricant and apply to decontaminated external skin. May be administered via other routes in consultation with medical control. Optional medication which requires additional training prior to use.

REFERENCE GUIDELINE:

[Cardiac Arrest](#)  
[Toxic Exposure/Overdose](#)  
[Bradycardia](#)  
[Wide Complex Tachycardia](#)  
[Routine Trauma Care](#)  
[Burns](#)

## 3.09 CYANIDE ANTIDOTES

### INDICATION AND USAGE:

If clinical suspicion of cyanide toxicity is high, Cyanide antidote should be administered without delay.

- Cyanide toxicity should be considered in patients with sudden cardiovascular collapse, especially in the appropriate context of occupational exposure (e.g., laboratory or industrial work) or in a fire victim with hemodynamic instability, or coma.

Any of the following antidote kits may be used in accordance with manufacturer guidelines:

Cyanokit

Do not use below with CO/smoke exposure:

Cyanide Package/Antidote Kit

Nithiodote

Hydroxocobalamin is only agent safe for treatment of cyanide poisoning in pregnant patients

Draw blood for analysis prior to administration if possible.

Optional medication which requires additional training prior to use.

### REFERENCE GUIDELINE:

[Toxic Exposure/Biologics/Overdose](#)

## 3.10 DEXTROSE 10%

### INDICATION:

1. Suspected or known hypoglycemia.

### PRECAUTIONS:

1. Infiltration can cause tissue necrosis.

### ADMINISTRATION:

1. Perform blood glucose measurement. For an accurate reading, capillary blood should be used; however venous blood can be used and will be about 10% lower.
2. Start IV of Normal Saline, 0.9 Sodium Chloride, ensure patency.
3. Administer dextrose 10% (12.5 grams) IV to adults repeat x 1 as needed
4. Administer dextrose 10% 5ml/kg to maximum of 12.5 grams to pediatrics.
5. Repeat blood glucose measurement in 5 minutes.

### SPECIAL NOTES:

1. ALS/ A-EMT services: In patients with blood sugars of < 70 mg/dL, IV dextrose and/or glucagon are considered first/second line treatment.
2. All patients whose hypoglycemia is due to oral hypoglycemic agents should be monitored by family member and be given something to eat with high carbohydrate and protein content.
3. Overdose of insulin, intentional or otherwise, should be transported.
4. All patients that are hypoglycemic and on sulfonylureas must be transported due to rebound hypoglycemia.

### REFERENCE GUIDELINE:

[Diabetic Emergencies](#)  
[Altered Level of Consciousness](#)

## 3.11 DILTIAZEM (CARDIZEM)

### INDICATION:

1. Adult Stable, Symptomatic Atrial fibrillation or atrial flutter with Rapid Ventricular Response: It should **not** be used in patients with atrial fibrillation or atrial flutter associated with an accessory bypass tract such as in Wolf-Parkinson-White (WPW).
2. SVT following consultation with Medical Control

### PRECAUTIONS:

1. Symptomatic hypotension may result. Give **SLOW** over approximately 5 minutes.
2. PVCs may be present on conversion of PSVT to sinus rhythm. They are transient and typically benign.

### CONTRAINDICATIONS:

1. Patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker.
2. Documented Hypersensitivity
3. Patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker.
4. Patients with severe hypotension, cardiogenic shock or heart failure
5. Patients who have demonstrated hypersensitivity to the drug.
6. Patients with Wolf-Parkinson-White (WPW) syndrome.
7. Patients with ventricular tachycardia. Administration of calcium channel blockers to patients with wide complex tachycardia (QRS > 0.12 seconds) has resulted in hemodynamic deterioration and ventricular fibrillation.
8. Patients currently taking or who have been given a Beta-Blocker
9. Pediatric Patients
10. Rate control of Atrial Fibrillation with rapid ventricular response that is a physiologic response (ex. Fever, hypoxia, shock)

### ADMINISTRATION:

1. Supplied in vial of 5mg/5ml (25mg) and requires refrigeration or 100mg Powder for reconstitution
2. Adults only IV **SLOW** push 0.25 mg/kg actual body weight **over 5 minutes** (max 20mg dose).
3. If inadequate response after 15 minutes, re-bolus with 0.35 mg/kg **over 5 minutes** (max 25mg). Avoid if hypotensive.
4. Maintain infusions at 5-15 mg/hr if patient currently on infusion. Titrate to heart rate per sending providers order
5. For patients older than 65 years old, recommend maximum initial dose of diltiazem 10 mg IV and a maximum second dose of 20 mg

### SPECIAL NOTES:

1. Refer to calcium channel blocker overdose in Toxic Exposure/Overdose guideline if the patient becomes hemodynamically or clinically unstable
2. Optional Medication at the ALS Level
3. May require refrigeration.

### REFERENCE GUIDELINE:

[Narrow Complex Tachycardia](#)

## 3.12 DIPHENHYDRAMINE HYDROCHLORIDE (BENADRYL)

### INDICATION:

1. In anaphylaxis, as an adjunct to epinephrine.
2. In allergic reactions.
3. Treatment or prevention of extrapyramidal symptoms.

### PRECAUTIONS:

1. Use cautiously in children, as overdose may cause hallucinations, convulsions, or death.
2. In elderly, antihistamines may cause dizziness, sedation, and hypotension.
3. Side effects include sedation, dizziness, epigastric distress, and thickening of bronchial secretions.
4. Benadryl has an atropine-like action, therefore use with avoid in patients with active bronchial asthma, hyperthyroidism, cardiovascular disease, hypertension, and COPD.
5. < 2 years old.

### CONTRAINDICATIONS:

1. Allergy or known hypersensitivity to diphenhydramine HCL.
2. Inability to tolerated PO in form available (Tablet/Liquid)

### ADMINISTRATION:

1. Supplied in vial 50mg/ml vial
2. Adults Administer 50mg IV, IM, PO. Pediatric dose is 1 mg/kg to a maximum of 50 mg.
3. May use OTC liquid 12.5mg/5ml for those >1y/o with extensive hives.

### SPECIAL NOTES:

1. Benadryl is an antihistamine with anticholinergic and sedative side effects.
2. Benadryl in the injectable form has a rapid onset of action.
3. IV route is preferred. IM route can be used if unable to establish an IV.

### REFERENCE GUIDELINE:

[Allergic & Anaphylaxis](#)  
[Nausea & Vomiting](#)



## 3.13 DOPAMINE HYDROCHLORIDE

### INDICATION:

1. Symptomatic hypotension in the absence of hypovolemia.
2. Symptomatic Bradycardia

### PRECAUTIONS:

1. May increase heart rate and induce supraventricular or ventricular tachycardia.
2. May compromise cardiac output.
3. May produce tissue necrosis if infusion infiltrates.
4. Pediatric Patients

### CONTRAINDICATIONS:

1. Pheochromocytoma
2. Uncorrected Tachyarrhythmias

### ADMINISTRATION:

1. Comes prepared in various size bags. Most common concentration is 1.6mg/ml.
2. Start infusion at 5 mcg/kg/min titrated to satisfactory hemodynamic performance. (See Drip Rate Chart on following page for 400mg in 250 D5W or 800 mg in 500 D5W concentrations.)
3. Pediatric dose is the same as adult.
4. Titrate to effect for blood pressure or heart rate or per Medical Control Orders

### SPECIAL NOTES:

1. When administering a dopamine infusion, the appropriate drip rate should be monitored closely. Drip control or pump should be used in interfacility setting.
2. 5mcg/kg/min (renal dose) is not used to start correcting for hypotension, however these smaller doses may be titrated to in order to maintain appropriate blood pressure.
3. Protect medication from exposure to light.
4. As an alternative ALS medication

### REFERENCE GUIDELINE:

Interfacility and Critical Care Guidelines

## 3.14 EPINEPHRINE 1MG/1ML

### INDICATION:

1. Severe allergic reaction from stings, and ingested, inhaled, injected, or absorbed allergens.
2. Anaphylaxis with evidence of severe respiratory distress, increased heart rate, hives, and/or decreased blood pressure.
3. Severe asthma
4. For Nebulized administration for stridor
5. For Dilution

### PRECAUTIONS:

1. Do not use in patients with asthma exacerbation over the age of 55 or with known cardiac disease without physician order.

### ADMINISTRATION:

1. Supplied in ampule or vial 1mg/ml
2. Epinephrine 0.5 mg IM may be given. Pediatric dose is 0.01 mg/kg to a maximum of 0.5 mg IM
3. Epinephrine push dose and drip can be utilized per section 5.42.
4. For Nebulized dosing see [Respiratory Distress Guideline](#)

### SPECIAL NOTES:

1. Additional concentrations may be supplied for interfacility transport

### REFERENCE GUIDELINE:

[Allergic & Anaphylaxis](#)  
[Asthma & COPD](#)  
[Cardiac Arrest](#)  
[Bradycardia](#)  
[Respiratory Distress](#)  
[Hypovolemia and Shock](#)

## 3.15 EPINEPHRINE 1MG/10ML

### INDICATION:

1. All pulseless cardiac arrhythmias
2. For Nebulized administration in stridor
3. For Dilution

### PRECAUTIONS:

1. May precipitate with sodium bicarbonate if tubing is not flushed between drugs.
2. May induce or exacerbate ventricular ectopy, especially in patients receiving digitalis.

### ADMINISTRATION:

1. Cardiac arrest (V-fib, V-tach, asystole, PEA):
  - a. Administer 1mg epinephrine 1mg/10ml IV push and circulate with CPR. Pediatric dose is 0.01mg/kg IV/IO
2. Epinephrine push dose and drip can be utilized per section 5.42.

### REFERENCE GUIDELINE:

[Allergy & Anaphylaxis](#)  
[Asthma & COPD](#)  
[Cardiac Arrest](#)  
[Bradycardia](#)  
[Respiratory Distress](#)  
[Hypovolemia and Shock](#)

## 3.16 EPINEPHRINE (INHALED)

### INDICATION:

1. Respiratory distress with stridor at rest
2. Severe Croup
3. Anaphylaxis in conjunction with IM Epinephrine
4. Severe asthma
5. Severe bronchospasm in intubated patient

### CONTRAINDICATION:

1. Known allergy or hypersensitivity to Epinephrine
2. Congenital heart problems

### PRECAUTIONS:

1. Alternative cause of stridor should be considered
  - a. Airway Obstruction (choking)
  - b. Aspiration
  - c. Epiglottitis
2. Not to be used as a substitute for clearly indicated advance airway
3. Do not use in patients over the age of 55 or with known cardiac disease without physician order.
4. May worsen the condition of glaucoma if it gets in the eyes. *Have the patient close their eyes during nebulization.*

### ADMINISTRATION

1. Pediatric: 1 mL of 1 mg/1 mL Epinephrine mixed with 2 mL of normal saline (ie 2mL saline flush) in pediatric nebulizer connected to oxygen source at 6 LPM
2. Adult: 0.3mg (3 mL of 1 mg/10 mL) in adult nebulizer connected to oxygen source at 6 LPM
3. In case of severe bronchospasms in the adult intubated patient 1 mg of 1mg/10 mL Epinephrine may be given directly in the ETT to improve compliance with ventilation. This is an extreme circumstance in an unstable peri-arrest patient only.
4. May repeat after initial treatment if symptoms return
5. Cardiac monitoring indicated unless not tolerated and no concern for arrhythmia
  1. Nervousness/Tremors
  2. Palpitations, Arrhythmias, Tachycardia
  3. Flushing/Diaphoresis
  4. Chest Discomfort
  5. Dizziness/Headache

REFERENCE GUIDELINE:

[Respiratory Distress](#)  
[Allergy and Anaphylaxis](#)

<http://pehsc.org/wp-content/uploads/2014/12/VTR1012-02-RACEMIC-EPINEPHRINE.pdf>  
<https://www.maine.gov/ems/sites/maine.gov.ems/files/inline-files/9-Final-2021-Protocol-Pink.pdf>

Nebulizer Treatment [Epinephrine | Joint EMS Protocols](#)

National guidelines NAEMSO [Microsoft Word - National Model EMS Clinical Guidelines 2017 Word for PDF Version No Distribution or Posting 11-23-20.docx \(nasemso.org\)](#)

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26. Westley CR, Cotton EK, Brooks JG. Nebulized racemic epinephrine by IPPB for the treatment of croup: a double-blind study. Am J Dis Child. 1978;132(5):484-7.

## 3.17 Etomidate (Amidate)

### INDICATION:

- 1) Sedation prior to paralysis for rapid sequence airway in credentialed RSA teams

### CONTRAINDICATIONS:

- 1) Hypersensitivity
- 2) Age less than 10 y/o
- 3) Hypotension

### PRECAUTIONS:

- 1) May cause skeletal muscle movements and masseter muscle spasm, laryngospasm

### ADMINISTRATION:

- 1) 0.3mg/kg IV/IO to maximum of 30mg- typical adult dose is 20mg

### SPECIAL NOTES:

- 1) Intravenous injection of etomidate produces hypnosis characterized by a rapid onset of action
- 2) Duration of hypnosis is relatively brief, usually three to five minutes
- 3) Administer oxygen
- 4) Only give when all equipment and personnel are ready for intubation
- 5) Monitor heart rhythm, pulse oximetry
- 6) Check BP frequently; vital sign monitoring recommended
- 7) Be prepared with analgesia/sedation after intubation due to short half life
- 8) Contact medical direction for any adverse effects or concerns

### REFERENCE GUIDELINES:

[\*Respiratory Distress\*](#)

## 3.18 FENTANYL CITRATE (SUBLIMAZE)

### INDICATION:

1. Adult and Pediatric moderate to severe pain management

### CONTRAINDICATIONS:

1. Hypersensitivity to opiates.
2. Myasthenia gravis
3. Hypotension
4. Respiratory Depression without a secure airway

### PRECAUTIONS:

1. Elderly patients
2. Opioid Naive
3. Respiratory depression
4. Seizure disorders
5. Cardiac dysrhythmias
6. Rapid administration can cause respiratory muscle rigidity
7. Concurrent use of CNS, Cardio/Respiratory depressing drugs
8. Bowel Ileus/Obstruction

### ADMINISTRATION:

1. Supplied in a vial containing 100mcg/2ml.
2. Can be given IV/IO/IN/IM with a dose of 50-100 mcg given slowly over 1-2 minutes, every 20 min as needed: maximum 200 mcg. Pediatric dose 1mcg/kg IV/IO/IM and 2mcg/kg IN (maximum dose 100mcg).
3. Reduce dose by 50% for smaller framed and elderly.
4. It has a rapid onset of 1-2 minutes and short duration. Repeat x 1 in 20 minutes

### PEDIATRIC CONSIDERATIONS:

1. Can be given intranasal route by attaching Mucosal Atomization Device (MAD).

### SPECIAL NOTES

1. Controlled Substance, your organizational drug control measures and EMS system guidelines should be followed closely.

### REFERENCE GUIDELINE:

[Narrow Complex Tachycardia](#)

[Pain Management](#)

[Respiratory Distress](#)

[Wide Complex Tachycardia](#)

## 3.19 GLUCAGON (GLUCAGEN)

### INDICATION:

1. Suspected or known hypoglycemia in diabetic patients when IV access is not available.
2. Beta Blocker overdose or ineffective response to Epinephrine when patient is taking a beta blocker
3. Calcium channel blocker overdose.

### PRECAUTIONS:

1. Nausea and vomiting.
2. May cause transient increase in blood pressure and pulse rate.

### CONTRAINDICATION:

1. Allergy or known hypersensitivity to glucagon.

### ADMINISTRATION

1. Obtain blood glucose measurement.
2. When no IV access is available, an initial IM dose of glucagon may be given.
3. Glucagon is provided as one unit (1 mg) of powdered glucagon with a vial containing 1 ml of diluting solution (must use diluent packed with medication).
4. Inject diluting solution into powdered glucagon vial. Shake gently until solution is clear.
5. Inject IM into deltoid, buttocks, or thigh. See specific guidelines for dosing.
6. Turn patient to one side in case vomiting should occur.
7. Repeat blood glucose measurement in 5 minutes.

### SPECIAL NOTES:

1. For hypoglycemia (blood sugar <70 mg/dL), dextrose IV is treatment of choice.
2. For conscious patients, simple, oral carbohydrates are most effective.
3. If patient has already been given glucagon, a second dose may be given if unconscious after 15 minutes.

### REFERENCE GUIDELINE:

[Allergy & Anaphylaxis](#)  
[Diabetic Emergencies](#)  
[Toxic Exposure/Overdose](#)



## 3.20 GLUCOSE ORAL GEL OR TABLETS

### INDICATION:

Suspected or known hypoglycemia patient that is able to tolerate PO.

### PRECAUTION:

Airway must be carefully monitored and maintained

### CONTRAINDICATION:

Inability to tolerate PO in available product (Tablet, Gel)

### ADMINISTRATION:

1. Perform blood glucose measurement.
2. Adult Administer 1 tube (15-25g/tube) or have patient chew 4 tablets (4g/tablet).
3. **Pediatric** Dosing: 0.5–1 g/kg.
4. Administer slowly, monitoring absorption. Maintain adequate airway.
5. Repeat blood glucose measurement in 5 minutes.

### SPECIAL NOTES:

1. ILS/ALS services: Not a substitute for IV dextrose in extreme cases of hypoglycemia
2. Many patients find glucose tablets much more palatable.

### REFERENCE GUIDELINE:

[Diabetic Emergencies](#)  
[Hypothermia & Frostbite](#)

## 3.21 HYDROMORPHONE (DILAUDID)

### INDICATION:

1. Adult Moderate to Severe Pain

### PRECAUTION:

1. Elderly patients
2. Opioid Naive
3. Concurrent use of CNS, Cardio/Respiratory depressing drugs
4. Bowel Ileus/Obstruction

### CONTRAINDICATION:

1. Allergy or known hypersensitivity
2. Hypotension
3. Respiratory Depression

### ADMINISTRATION:

1. Attach tubex or carpujet to pre-fill 1mg/1ml
2. Attach to needles port of IV tubing or attach needle for IM injection
3. Usual dose Adult 0.5-1 mg IV/IO/IM, may repeat in 20 minutes-max dose 3 mg
4. Monitor and treat for respiratory depression & hypotension

### SPECIAL NOTES:

1. Not to be used for pediatric patients
2. Reduce dose by 50% for smaller framed and elderly
3. 1 mg Hydromorphone is equal to approximately 8mg morphine
4. Controlled Substance and your organizational drug control measures and EMS system guidelines should be followed closely.

### REFERENCE GUIDELINE:

[Pain Management](#)

## 3.22 IBUPROFEN (MOTRIN, ADVIL)

### INDICATION:

1. Treatment of mild to moderate pain
2. Reduction of fever

### CONTRAINDICATION:

1. Known allergy or hypersensitivity to Non-Steroidal Anti-Inflammatory medications (NSAIDS) –including Motrin or Advil (Ibuprofen), Aleve (Naproxen), Toradol (Ketorolac)
2. Active hemorrhage
3. Concern for intracranial hemorrhage due to trauma or active stroke
4. Under the age of 6 months
5. Current use of blood thinning agent Coumadin (Warfarin), Xarelto (Rivaroxaban), Eliquis (Apixaban), Aspirin
6. If other NSAID including Motrin or Advil (Ibuprofen), Aleve (Naproxen), Toradol (Ketorolac) has been administered within 6 hours
7. Dehydration, hypotension or shock
8. Known or suspected renal insufficiency
9. History of GI bleeding
10. CHF
11. Inability to tolerate PO in available product (Tablet, Liquid)
12. Pregnancy or breast feeding

### PRECAUTIONS:

1. Potential for aspiration with AMS or post febrile seizure.
2. Asthma

### ADMINISTRATION:

1. Adults and Pediatrics: Dose 10 mg/kg to a max of 400 mg per dose
2. PO tablet or liquid
3. Can be administered with acetaminophen

### ADVERSE REACTIONS:

1. GI Bleeding
2. Nausea/Vomiting
3. Headache

### REFERENCE GUIDELINE

[Routine Medical Care](#)  
[Pain Management](#)

## 3.23 IPRATROPIUM BROMIDE (ATROVENT)

### INDICATION:

1. Asthma and COPD.
2. Adjunct to organophosphate poisoning

### PRECAUTIONS:

1. Use with caution in patients with heart disease, hypertension, glaucoma, and the elderly.
2. May worsen the condition of glaucoma if it gets in the eyes. *Have the patient close their eyes during nebulization.*
3. Common side effects include cough, dry mouth, or unpleasant taste.
4. Less common side effects include vision changes, eye burning or pain, dizziness, headache, nausea, nervousness, palpitations, sweating, trembling, increased wheezing or dyspnea, chest tightness, rash, hives, or facial swelling.
5. Must contact medical control for use in patients under 3 years of age

### CONTRAINDICATIONS:

1. Allergy or known hypersensitivity.
2. Known peanut or soy allergy
3. Hypersensitivity to atropine (chemically related).

### ADMINISTRATION:

1. For bronchospasm that has already begun, Atrovent is used only in combination with albuterol.
2. Dosage for adults: Pour one unit dose bottle (0.5mg = 2.5ml of 0.02% solution) into nebulizer reservoir with one unit dose of albuterol.
3. Connect nebulizer to oxygen source at 6-8 liters per minute.
4. Have patient breathe as calmly, deeply, and evenly as possible until no more mist is found in the nebulizer chamber (5-15 minutes). An acceptable alternative to using the mouthpiece would be to attach the nebulizer reservoir to an oxygen mask, i.e. remove the bag from a non-rebreather nebulizer reservoir and do not use the T-piece or the mouthpiece. If a mask is used, adjust the mask to prevent mist from getting into the patient's eyes.
5. Repeat Ipratropium/Combivent x 2 for adults.

### PEDIATRIC CONSIDERATIONS:

1. Atrovent is not indicated in routine childhood asthma. Contact Medical Control if considering the use of Atrovent.
2. Ipratropium should not be given in pediatric bronchiolitis

### SPECIAL NOTES:

1. Nebulizer treatments for patients with potential infectious respiratory diseases should be performed in well-ventilated areas (outside patient compartment if possible).

### REFERENCE GUIDELINE:

[Asthma/COPD  
Respiratory Distress](#)

## 3.24 KETAMINE (KETALAR)

### INDICATION:

1. Sedation for RSA
2. Sedation for extreme agitation, combative refractory to non-pharmacologic interventions
3. Severe Pain control unresponsive to opioids

### PRECAUTIONS:

1. Can cause respiratory depression/hypotension/laryngospasm, ensure administered **SLOW** if given IV/IO
2. Can cause extra secretions in the airway
3. Can cause emergence reactions
4. Pediatric administration
5. Pregnancy
6. Consider Lower dose for:
  - Hypertension
  - Tachycardia
  - Critically ill or injured
  - Elderly/Frail
  - SBP <100 mmHg

### CONTRAINDICATIONS:

1. Cardiac decompensation
2. Hypersensitivity
3. Severe Hypertension

### ADMINISTRATION:

1. Adult – severe pain unresponsive to opioids 0.25mg/kg IV/IM (max dose 25mg)
2. Adult – extreme agitation/delirium/extreme pain dissociation 4mg/kg IM (max dose 400mg), 1mg/kg max dose 100mg **SLOW** IV/IO
3. RSA adult/peds – 1-2mg/kg (max dose 200mg) or 4mg/kg IM max dose 400mg. ½ dose may be repeated for continued sedation
4. Ensure adequate access to airway and all resuscitation and monitoring equipment is immediately available prior to administration.

### SPECIAL NOTES:

1. For emergence reactions Consider titrating **Versed** up to 2 mg (ped 0.05mg/kg max 2mg per dose) IV/IO/IN/IM to treat mild to moderate agitation every 5 minutes as needed max of 10mg total, be cautious of paradoxical effect
2. Reduce dose by 50% for smaller framed and elderly
3. Generally avoid in pregnancy, discussion with medical control is prior to use in pregnancy

### REFERENCE GUIDELINE:

[\*Agitated/Combative\*](#)  
[\*Asthma/COPD\*](#)  
[\*Respiratory Distress\*](#)  
[\*Pain Management\*](#)

## 3.25 LABETALOL (TRANDATE)

### INDICATION:

1. Adult Treatment of hypertensive emergency
2. Adjunct to Eclampsia

### CONTRAINDICATIONS:

1. AV block - second or third degree.
2. HR <60 bmp
3. Hypotension.
4. Cardiogenic shock.
5. Acute COPD or Asthma.

### PRECAUTIONS:

1. Use cautiously in elderly, hepatic or renal disease (increased risk of toxicity).
2. Bronchospastic disease (may aggravate).
3. Insulin dependent diabetes (may mask hypoglycemia).
4. Digitalized patient (may potentiate AV conduction delay).

### ADMINISTRATION:

1. Supplied in 100mg/20ml vial
2. Initial dose 10mg over 2 minutes if inadequate response based on relative guidelines administer 20mg in 10 minutes, hold for bradycardia or hypotension.
3. Contact Medical Control if in doubt.
4. As drip in interfacility

### REFERENCE GUIDELINE:

[Eclampsia](#)  
[Hypertensive Crisis](#)  
[Stroke](#)

## 3.26 LIDOCAINE HYDROCHLORIDE 2%

### INDICATION:

1. Reduce pain of EZ-IO infusion.
2. Alternative to Amiodarone in ACLS/PALS at 1-1.5mg/kg for initial dose and 0.5 to 0.75 mg/kg IV/IO for a second dose if required. May repeat every 5 min as needed (max dose 3 mg/kg)

### PRECAUTIONS:

1. Observe closely for symptoms of toxicity such as CNS problems and/or seizures.
2. In ACLS patients >70 years, dosage should be reduced to 0.5 mg/kg. max dose 100mg
3. Lidocaine is contraindicated in dysrhythmias associated with cocaine use/abuse and hypothermia.

### CONTRAINDICATION:

1. Allergy or known hypersensitivity to lidocaine.
2. Second-degree heart block (Mobitz II) or third degree (complete) heart block in the absence of an artificial pacemaker
3. Junctional bradycardia
4. Ventricular ectopy associated with bradycardia
5. Idioventricular or escape rhythms

### ADMINISTRATION (For pain associated with IO):

1. Prior to bolus of lidocaine, flush the IO line to ensure patency, give Adults 40mg preservative free **SLOWLY** into IO extension set for conscious patient to reduce pain on infusion. After lidocaine is used to control infusion pain, an aggressive 10ml saline bolus flush is often required to improve IO flow rates. PEDS dose is 0.5mg/kg maximum dose 20mg.

### SPECIAL NOTES:

1. Must use preservative free formulation

### REFERENCE GUIDELINE:

[EZ-IO Procedure](#)  
[Cardiac Arrest](#)

## 3.27 MAGNESIUM SULFATE

### INDICATION:

1. Ventricular tachycardia recurrent, Torsades de pointes, or persistent ventricular fibrillation.
2. Eclamptic seizures.
3. Status Asthmaticus/Severe COPD Exacerbation
4. Management of pre-term labor

### PRECAUTIONS:

1. Use cautiously in patients with impaired renal function.
2. Use cautiously in pregnant patients during labor.
3. Pediatric Magnesium Infusion without a IV pump

### CONTRAINDICATION:

1. Parenteral administration in patients with heart block, severe myocardial damage, or shock

### ADMINISTRATION:

1. For Eclampsia, 4 grams IV/IO over 10 minutes. IM dosing for eclampsia up to 8g in 4g injections (if available). IV/IO dosing preferred.
2. For Status Asthmaticus, 2 grams IV/IO over 10 minutes.
3. Pediatrics administer diluted solution and a dose of 50mg/kg (max 2 grams) over 10 minutes.
  - a. If administering to pediatric patient do not hang entire bag. Draw out and discard all but desired dose before hanging.

### SPECIAL NOTES:

1. If rhythm is unresponsive to magnesium, consider other causes such as hypoxia, hypothermia.
2. Observe closely for symptoms of toxicity such as CNS depression, respiratory depression, symptoms of heart block, depressed reflexes and/or seizures.
  - a. Toxicity can be treatment with Calcium Chloride 1g **SLOW** (over 10 minutes) IV/IO (PEDI dose 20mg/kg max dose 1g)
3. If given too concentrated or too fast, it will cause flushing and feeling of heat.
4. Supplied as Vial or Bag, check concentration

### REFERENCE GUIDELINES:

[Asthma/COPD](#)  
[Cardiac Arrest](#)  
[Eclampsia](#)  
[Respiratory Distress](#)  
[Wide Complex Tachycardia](#)



## 3.28 MARK I KIT/DUODOTE

### INDICATION:

1. Nerve agent chemical exposure >30kg
2. Organophosphate exposure >30kg

### PRECAUTIONS:

1. Auto-injectors will go through clothes, but try and keep to a minimum, while ensuring speed of injection
2. Once injector is pulled from cap, it is activated. Do not place thumb over end.

### CONTRAINDICATION:

1. None when used in an emergency

### ADMINISTRATION:

1. Supplied in two-pre-loaded, auto-injector syringes containing Atropine, Pralidoxime

### SPECIAL NOTES:

1. Crewmember may also need full face protective mask and other PPE to escape toxic environment.
2. May not be routinely stocked on all EMS vehicles

### REFERENCE GUIDELINES:

[Toxic Exposure/Overdose](#)

## 3.29 METHYLPREDNISOLONE SODIUM SUCCINATE (SOLUMEDROL)

### INDICATION:

1. For the treatment of severe exacerbation of asthma, COPD, or in acute severe allergic reactions and anaphylaxis.
2. Consider in Adult Cardiac arrest
3. Known Adrenal Insufficiency or long-term steroid dependence, with fluid-refractory shock requiring vasopressors.

### PRECAUTIONS:

1. Hyperglycemia

### CONTRAINDICATIONS:

1. Hypersensitivity

### ADMINISTRATION:

1. It comes in an Act-O-Vial (125mg/2ml) that separates the white powder from the solute until ready to use.
2. 125 mg IV/IO/IM bolus may be given. Pediatric dose is 2 mg/kg IV/IO/IM bolus up to 125 mg maximum.
3. Administer Slowly

### REFERENCE GUIDELINES:

[Allergy & Anaphylaxis](#)  
[Asthma/COPD](#)  
[Respiratory Distress](#)  
[Cardiac Arrest](#)  
[Hypovolemia and Shock](#)

## 3.30 METOPROLOL TARTRATE (LOPRESSOR)

### INDICATION:

1. Treatment of acute myocardial infarction, treatment of angina and hypertension, it may reduce mortality by decreasing myocardial oxygen consumption.
2. Treatment of supraventricular tachyarrhythmia.
3. As an alternative medication

### CONTRAINDICATIONS:

1. AV block - second or third degree.
2. Adult HR <60
3. SBP <100mmhg
4. Cardiogenic shock.
5. Acute COPD or Asthma.
6. Pediatrics

### PRECAUTIONS:

1. Use cautiously in elderly, hepatic or renal disease (increased risk of toxicity).
2. Bronchospastic disease (may aggravate).
3. Insulin dependent diabetes (may mask hypoglycemia).
4. Digitalized patient (may potentiate AV conduction delay).

### ADMINISTRATION:

1. Supplied in 5ml/5mg ampule
2. 5mg IVP, repeat every 5 min to max of 15mg per relative guidelines, see relevant, hold for bradycardia or hypotension.
3. Contact Medical Control if in doubt about administering second and third doses or if patient has CHF, asthma, or COPD.

### SPECIAL NOTES:

1. Life threatening: Severe bradycardia, hypotension, AV block, cardiac arrest, cardiac failure, respiratory distress and bronchospasm.
2. Other: Mild CNS depression, nausea/vomiting, and wheezing/dyspnea.

### REFERENCE GUIDELINES:

[Eclampsia](#)  
[Hypertensive Emergency](#)

## 3.31 MIDAZOLAM HYDROCHLORIDE (VERSED)

### INDICATION:

1. Agitation
2. Sedation
3. Anxiolytic
4. To facilitate intubation as part of RSA
5. Seizures
6. Uncontrolled Shivering in Hypothermia
7. Emergence Reactions post Ketamine use

### PRECAUTIONS:

1. May cause mental, respiratory and cardiovascular depression(hypotension)
2. Be prepared to ventilate the patient and support the cardiovascular system.
3. Use with caution when used concomitantly with barbiturates, narcotics, and/or any other CNS depressants such as ETOH.

### CONTRAINDICATION:

1. Allergy or known hypersensitivity.
2. Hypotension
3. Pregnancy (unless actively seizing)
4. Respiratory depression in the patient without a secure airway

### ADMINISTRATION:

1. Usually supplied in vial(5mg/5ml). Be aware of other concentrations
2. See specific guideline for dosing
3. Versed is a controlled substance and its use must be documented according to each service Controlled Substance Policy.

### SPECIAL NOTES:

1. Onset of action is more rapid, the drug is more potent, and is cleared faster than diazepam (Valium). Injection is also less irritating to veins than diazepam.
2. Can be administered by intranasal route using the MAD.

### REFERENCE GUIDELINES:

[Bradycardia](#)

[Seizures](#)

[Narrow Complex Tachycardia](#)

[Wide Complex Tachycardia](#)

## 3.32 NALOXONE HYDROCHLORIDE (NARCAN)

### INDICATION:

1. Naloxone, an opioid antagonist, should be considered for administration to patients with respiratory depression in a confirmed or suspected opioid overdose.

### PRECAUTIONS:

1. In the chronic narcotic user, may precipitate withdrawal symptoms, miscarriage, pulmonary edema, or premature labor.
2. Very short half-life; monitor patient closely and prepare to re-dose and manage airway if deterioration occurs.

### CONTRAINDICATION:

1. Allergy or known hypersensitivity.

### ADMINISTRATION:

1. Therapeutic interventions to support the patient's airway, breathing, and circulation should be initiated prior to the administration of naloxone.
2. Naloxone can be administered via the IV/IO, IM, IN
  - a. **Adults:** The typical initial adult dose ranges between 0.5–2 mg IV, IM per dose
  - b. **Pediatrics:** The pediatric dose of naloxone is 0.1 mg/kg IV/IO, IM, IN max adult doses

### PRECAUTIONS:

1. Neonates who have been administered naloxone for respiratory depression due to presumed intrauterine opioid exposure may be narcotic dependent and should be monitored closely for seizures
2. Administration of naloxone can result in the sudden onset of opiate withdrawal (agitation, tachycardia, pulmonary edema, nausea, vomiting, and, in neonates, seizures)

### SPECIAL NOTES:

1. If no response after 4-8 mg, it is unlikely to be effective, proceed to advanced airway if indicated.
2. In cardiac arrest focus first on high quality compressions and ventilation
3. Goal is adequate oxygenate and ventilate, not to awaken patient fully.
4. The clinical opioid reversal effect of naloxone is limited and may end within an hour whereas opioids often have a longer duration.

### REFERENCE GUIDELINE:

[Altered Level of Consciousness](#)  
[Pain Management](#)  
[Toxic Exposure/Overdose](#)

## 3.33 NITROGLYCERIN

### INDICATION:

1. Adult chest pain of suspected cardiac origin.
2. Adult pulmonary edema.
3. Confirmed or suspected acute coronary syndrome
4. Hypertensive Emergency
5. Decreases preload, and to a lesser extent, afterload

### PRECAUTIONS:

1. Headache and hypotension may occur after nitroglycerin (NTG) administration.
2. Do not administer if blood pressure is <100 systolic without IV in place.
3. Do not give to pediatric patients without a physician order.
4. Extreme bradycardia (less than 50 BPM), Tachycardia in the absence of heart failure (greater than 100 BPM)

### CONTRAINDICATION:

1. Allergy or known hypersensitivity.
2. Viagra or Levitra in the last 24 hours, or Cialis in the last 48 hours without physician order

### ADMINISTRATION:

1. For Adults may be administered via the drip (tier 1), paste, spray or tablet route.
2. See specific guideline for dosing.
3. For Tier 1 Nitro drip is typically started at 10 mcg/min and is used when an IV pump is available. Obtain orders from sending provider, titration allowed from Tier 2 and higher. (See chart below for drip rates).

**NITROGLYCERINE DRIP RATE CHART**  
(50mg nitroglycerine in 250ml D5W or NS = 200mcg/cc)

| Dosage mcg/min   | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|--|----|----|----|----|----|----|----|----|----|-----|
| <b>FLOW RATE IN ML/HR</b><br>(In the absence of an IV pump, use microdrip tubing and ml/hr = drops/minute) |    |    |    |    |    |    |    |    |    |     |
|  | 3  | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 | 30  |

### SPECIAL NOTES:

1. Consider giving opioid as early adjunct for pain control
2. NTG is effective in relieving angina pectoris. Other conditions such as esophageal spasm can also respond well.
3. Tablet must be fully dissolved before resuming CPAP

### REFERENCE GUIDELINES:

[Chest Pain of Suspected Cardiac Origin](#)  
[Congestive Heart Failure](#)  
[Hypertensive Emergency](#)

## 3.34 ONDANSETRON HYDROCHLORIDE (ZOFRAN)

### INDICATION:

1. Treatment and or Prevention of Nausea and or vomiting.

### PRECAUTIONS:

1. May cause headache and dizziness.
2. May cause sedation/drowsiness.
3. May prolong QT

### ADMINISTRATION:

1. Supplied in vial containing 4mg/2ml or 4mg Oral Disintegrating Tablet
2. Give adult patient 4mg IV slowly over 2 minutes into running IV may repeat every 15 minutes to a max dose of 8mg, pediatric patients <40kg 0.15mg/kg IV dose can be given and may repeat twice
3. Can be given IM or orally (ODT).
4. EMT Basic may only give ODT. Pediatric dose- 15kg-26kg 2mg ODT if scored and able to divide in half. >27kg use 4mg ODT

### SPECIAL NOTES:

1. If rare extrapyramidal effects are observed, Benadryl can be given (IV Preferred).
2. Don't repeat adult dose if they have impaired renal function.
3. Use in pregnant/nursing mothers if associated with signs of dehydration

### REFERENCE GUIDELINE:

[Nausea & Vomiting](#)

## 3.35 OXYTOCIN (PITOCIN)

### INDICATION:

1. Stimulates post-partum contraction of the uterus to control bleeding.
2. May transport per interfacility initiated drip in the post-partum patient.

### CONTRAINDICATIONS:

1. Hypersensitivity
2. Uterine Rupture

### PRECAUTIONS:

1. Hypertension
2. Rapid administration may lead to hypotension and dysrhythmia

### ADMINISTRATION:

1. 10-40 units added to 1000ml IV fluid to control hemorrhage
2. Alternate is 10 U IM x 1
3. Usual rate is 10-20 milliunits/minutes.

### SPECIAL NOTES:

Monitor heart rhythm  
Check BP frequently; vital sign monitoring recommended  
Contact medical control for any adverse effects  
Continue sending facility rate on infusion pump.



## 3.36 ROCURONIUM BROMIDE (ZEMURON)

### INDICATION:

1. Facilitation of RSA in RSA qualified teams.
2. Skeletal muscle relaxation.
3. As an alternative medication for RSA

### CONTRAINDICATIONS:

1. Hypersensitivity

### PRECAUTIONS:

1. Cardiac, respiratory, neuromuscular, or liver disease
2. Pregnancy
3. Dehydration
4. Neuromuscular Disease

### ADMINISTRATION:

1. Give 1 mg/kg IV/IO (max dose 100mg) for paralysis. Should last >30 minutes.

### SPECIAL NOTES:

1. Nondepolarizing neuromuscular blocker.
2. Administer oxygen
3. Only give when all equipment and personnel are at patient's bedside
4. If giving for RSA only give when all equipment and personnel are ready for invasive airway methods and preoxygenation has been performed.
5. If giving for long term paralysis on administer after secure airway has been established and confirmed
6. Monitor heart rhythm, pulse oximetry, BP
7. Administer with analgesia/sedation post intubation.
8. Contact medical direction for any adverse effects or concerns.
9. EtcO<sub>2</sub> monitoring mandatory

### REFERENCE GUIDELINES:

[Respiratory Distress](#)

## 3.37 SODIUM BICARBONATE 8.4%

### INDICATION:

1. Known or suspected metabolic acidosis
2. Known or Suspected Hyperkalemia
3. Tricyclic overdoses.
4. Cocaine overdose with wide QRS.
5. ASA overdose.
6. Urinary Alkalinization
7. Crush Injury

### PRECAUTIONS:

1. May cause hyponatremia and hyperosmolality.
2. Use of sodium bicarbonate in cardiac arrest is not usually indicated if adequate ventilation and effective chest compressions are performed.
3. May precipitate with multiple medications if tubing is not flushed between drugs.

### ADMINISTRATION:

1. Supplied in pre-loaded syringe containing 50mEq/50ml.
2. Administer 1mEq/kg IV as initial dose over 1-2 minutes. See guideline for specific dosing

### SPECIAL NOTE:

1. Infant to 2 years old administration should include dilution to 4.2%.

### REFERENCE GUIDELINE:

[Cardiac Arrest](#)  
[Toxic Exposure/Overdose](#)  
[Routine Trauma Care](#)

## 3.38 SUCCINYLCHOLINE CHLORIDE (ANECTINE)

### INDICATION:

1. Facilitation of RSA
2. Skeletal Muscle Relaxation

### CONTRAINDICATIONS:

1. Hypersensitivity
2. Malignant hyperthermia
3. Penetrating eye injury
4. Pediatric <2 y/o

### PRECAUTIONS:

1. Pregnancy
2. Burns greater than 24hrs
3. Glaucoma, eye surgery
4. Elderly or debilitated patients
5. Known or suspected hyperkalemia
6. Neuromuscular Disorders
7. Known Pseudocholinesterase deficiencies.
8. Renal Failure
9. Organophosphate toxicity

### ADMINISTRATION:

1. Supplied in vial containing 200mg/10ml.
2. Adult dose: IV/IO/IM 2 mg/kg.
3. Pediatric dose: IV/IO/IM 2 mg/kg.
4. May repeat x1 if needed for RSA. Have Atropine available and treat per bradycardia guideline. Do not repeat for prolonged paralysis, proceed to Vecuronium if long acting agent needed.
5. Administer with analgesia/sedation for RSA

### SPECIAL NOTES:

1. Needs to be refrigerated. May store not refrigerated for 90 days
2. Expect possible muscle fasciculations.
3. Depolarizing neuromuscular blockade.
4. Only give when all equipment and personnel are ready for invasive airway methods and preoxygenation has been preformed.
5. Monitor heart rhythm, pulse oximetry, BP Frequently
6. If cardiac arrest occurs and no other cause identified, treat for hyperkalemia.
7. Contact medical direction for any adverse effects or concerns.
8. EtcO<sub>2</sub> monitoring mandatory.

### REFERENCE GUIDELINE:

[Respiratory Distress](#)

## 3.39 TETRACAINE

### INDICATION:

1. Temporary relief of pain due to corneal abrasion, foreign body, or burns to eye(s).

### CONTRAINDICATIONS:

1. Open globe injury
2. Hypersensitivity

### PRECAUTIONS:

1. Once drops are placed, be sure patient does not rub eyes.
2. Not for prolonged use

### ADMINISTRATION:

1. Two drops per effected eye. May repeat in 5-10 minutes x4.

### SPECIAL NOTES:

### REFERENCE GUIDELINE:

[Routine Trauma Care](#)  
[Eye Irrigation](#)

## 3.40 TORADOL (KETOROLAC)

### INDICATION:

1. Temporary relief of moderate pain, especially pain related to isolated orthopedic injuries, kidney and gall stones, fever if unable to tolerate PO

### CONTRAINDICATIONS:

1. Known allergy or hypersensitivity to Non-Steroidal Anti-Inflammatory medications (NSAIDs) – including Motrin or Advil (Ibuprofen), Aleve (Naproxen)
2. Known allergy to Toradol (Ketorolac)
3. Active hemorrhage
4. Concern for intracranial hemorrhage or stroke
5. <1 year old
6. Pregnancy or breastfeeding
7. History of GI bleeding
8. Known or suspected Renal Insufficiency/Disease
9. Current use of blood thinning agent e.g. Coumadin (Warfarin), Xarelto (Rivaroxaban), Eliquis (Apixaban), Aspirin
10. Dehydration, Hypotension or shock due to renal concerns
11. CHF
12. Asthma
13. Should not be given via the Intraosseous route.

### PRECAUTIONS:

1. Elderly (>65 y/o)
2. Post procedure/post-surgical patients

### ADMINISTRATION:

1. Adult: 15 mg IV/IM x1
2. Pediatric (1 year old and older): 0.5 mg/kg IV/IM x1. Max dose is 15mg IV/IM

### REFERENCE GUIDELINE:

[Pain Management](#)

## 3.41 TRANEXAMIC ACID (TXA)

### INDICATION:

1. Suspected Traumatic Hemorrhage Shock within three hours of injury and suspected need for blood transfusion.
2. Suspected Traumatic Intracranial Hemorrhage within three hours of onset
3. Post-partum hemorrhage with suspected need for blood transfusion

Class: Anti-Fibrinolytic

Actions/Pharmacodynamics:

Decreases clot breakdown in the setting of massive hemorrhage.

### CONTRAINDICATIONS:

1. Non-hemorrhagic shock(septic/spinal/cardiogenic)
2. Bleeding > 3 hours
3. Hypersensitivity

### PRECAUTIONS:

1. Rapid Administration may cause hypotension

### ADMINISTRATION:

1. Supplied as 1 gram/10mL vial or ampule (100mg/mL), Administer diluted over 20 min in 100ml or 250ml NS
2. Refer to guideline for specific dosing.

### REFERENCE GUIDELINE:

[\*Patients with Established Tracheostomy or Ventilator  
Routine Trauma Care  
Vaginal Bleeding After Delivery\*](#)

## 3.42 VASOPRESSIN (PITRESSIN)

### INDICATION:

1. Shock
2. As an alternative medication

### CONTRAINDICATIONS:

1. Hypersensitivity

### ADMINISTRATION:

1. Per sending facility with IV pump

### SPECIAL NOTES:

1. A non-adrenergic vasopressor increases coronary perfusion pressure, vital organ flow, and cerebral oxygen delivery.
2. A potent, peripheral vasoconstrictor for use in cardiac arrest. It causes no increase in myocardial oxygen consumption during CPR.

### REFERENCE GUIDELINE:

Interfacility/Critical Care

## 3.43 VECURONIUM BROMIDE (NORCURON)

### INDICATION:

1. Skeletal muscle relaxation after secure airway has been established and confirmed.

### CONTRAINDICATIONS:

1. Hypersensitivity
2. Unsecured Airway

### PRECAUTIONS:

1. Cardiac, respiratory, neuromuscular, or liver disease
2. Pregnancy
3. Dehydration

### ADMINISTRATION:

1. Supplied in vial in powder form 10mg or 20mg. Reconstitute with normal saline.
2. Give 0.1 mg/kg IV (max dose 10mg) in order to maintain paralysis. Should last >30 minutes.

### SPECIAL NOTES:

1. Nondepolarizing neuromuscular blocker.
2. Should not be given to children less than two years of age.
3. Administer oxygen
4. Monitor heart rhythm, pulse oximetry, BP frequently.
5. EtcO<sub>2</sub> monitoring mandatory.
6. Administer with analgesia/sedation post intubation.
7. Contact medical direction for any adverse effects or concerns

### REFERENCE GUIDELINES:

[Respiratory Distress](#)



## 3.44 XOPENEX (LEVABUTEROL)

### INDICATION:

1. Xopenex 1.25 mg (nebulized) may be used in place of Albuterol on any guidelines in place of Albuterol.
2. Pediatric dosing: 6-11y/o is 0.63 mg, <6 y/o 0.31 ml.

### CONTRAINDICATIONS:

1. Hypersensitivity

### PRECAUTIONS:

1. Rarely may produce paradoxical bronchospasm, which can be life threatening, discontinue treatment immediately if this occurs.
2. Immediate allergic reactions may occur.
3. Beta receptor blocking agents and albuterol inhibit the effect of each other.
4. Use with caution in patients with cardiovascular disorders, or in patients being treated with antidepressants.
5. Arrhythmias

### CONTRAINDICATION:

1. Allergy or known hypersensitivity to albuterol.

### ADMINISTRATION:

1. Indication for administration and documentation will be the same as for Albuterol.

### SPECIAL NOTES:

1. Only to be used in Albuterol shortage or as authorized by medical direction

### REFERENCE GUIDELINES:

Multiple

### 3.45 LIQUID DOSING CHARTS

| Patient Weight (KG) | Patient Weight (LBS) | Acetaminophen Dose (mg) | Acetaminophen 160mg/5ml Dose (ml) | Ibuprofen Dose (mg) | Ibuprofen 100mg/5ml Dose (ml) | Diphenhydramine Dose (mg) | Diphenhydramine 12.5mg/5ml Dose (ml) |
|---------------------|----------------------|-------------------------|-----------------------------------|---------------------|-------------------------------|---------------------------|--------------------------------------|
| 3                   | 6.6                  | 45                      | 1.4                               | XXX                 | Do                            | XXX                       | XXX                                  |
| 4                   | 8.8                  | 60                      | 1.9                               | XXX                 | Not                           | XXX                       | Do                                   |
| 5                   | 11                   | 75                      | 2.3                               | XXX                 | Use                           | XXX                       | Not                                  |
| 6                   | 13.2                 | 90                      | 2.8                               | XXX                 | <6 mo/old                     | XXX                       | Use                                  |
| 7                   | 15.4                 | 105                     | 3.3                               | XXX                 | XXX                           | XXX                       | < 1y/o                               |
| 8                   | 17.6                 | 120                     | 3.8                               | 80                  | 4                             | 8                         | XXX                                  |
| 9                   | 19.8                 | 135                     | 4.2                               | 90                  | 4.5                           | 9                         | XXX                                  |
| 10                  | 22                   | 150                     | 4.7                               | 100                 | 5                             | 10                        | 4                                    |
| 11                  | 24.2                 | 165                     | 5.2                               | 110                 | 5.5                           | 11                        | 4.4                                  |
| 12                  | 26.4                 | 180                     | 5.6                               | 120                 | 6                             | 12                        | 4.8                                  |
| 13                  | 28.6                 | 195                     | 6.1                               | 130                 | 6.5                           | 13                        | 5.2                                  |
| 14                  | 30.8                 | 210                     | 6.6                               | 140                 | 7                             | 14                        | 5.6                                  |
| 15                  | 33                   | 225                     | 7.0                               | 150                 | 7.5                           | 15                        | 6                                    |
| 16                  | 35.2                 | 240                     | 7.5                               | 160                 | 8                             | 16                        | 6.4                                  |
| 17                  | 37.4                 | 255                     | 8.0                               | 170                 | 8.5                           | 17                        | 6.8                                  |
| 18                  | 39.6                 | 270                     | 8.4                               | 180                 | 9                             | 18                        | 7.2                                  |
| 19                  | 41.8                 | 285                     | 8.9                               | 190                 | 9.5                           | 19                        | 7.6                                  |
| 20                  | 44                   | 300                     | 9.4                               | 200                 | 10                            | 20                        | 8                                    |
| 22                  | 48.4                 | 330                     | 10.3                              | 220                 | 11                            | 22                        | 8.8                                  |
| 24                  | 52.8                 | 360                     | 11.3                              | 240                 | 12                            | 24                        | 9.6                                  |
| 26                  | 57.2                 | 390                     | 12.2                              | 260                 | 13                            | 26                        | 10.4                                 |
| 28                  | 61.6                 | 420                     | 13.1                              | 280                 | 14                            | 28                        | 11.2                                 |
| 30                  | 66                   | 450                     | 14.1                              | 300                 | 15                            | 30                        | 12                                   |
| 32                  | 70.4                 | 480                     | 15.0                              | 320                 | 16                            | 32                        | 12.8                                 |
| 34                  | 74.8                 | 510                     | 15.9                              | 340                 | 17                            | 34                        | 13.6                                 |
| 36                  | 79.2                 | 540                     | 16.9                              | 360                 | 18                            | 36                        | 14.4                                 |
| 38                  | 83.6                 | 570                     | 17.8                              | 380                 | 19                            | 38                        | 15.2                                 |
| 40                  | 88                   | 600                     | 18.8                              | 400                 | 20                            | 40                        | 16                                   |
| 42                  | 92.4                 | 630                     | 19.7                              | 400                 | 20                            | 42                        | 16.8                                 |
| 44                  | 96.8                 | 660                     | 20.6                              | 400                 | 20                            | 44                        | 17.6                                 |
| 46                  | 101.2                | 690                     | 21.6                              | 400                 | 20                            | 46                        | 18.4                                 |
| 48                  | 105.6                | 750                     | 23.4                              | 400                 | 20                            | 48                        | 19.2                                 |
| 50                  | 110                  | 750                     | 23.4                              | 400                 | 20                            | 50                        | 20                                   |
| Patient Weight (KG) | Patient Weight (LBS) | Acetaminophen Dose (mg) | Acetaminophen 160mg/5ml Dose (ml) | Ibuprofen Dose (mg) | Ibuprofen 100mg/5ml Dose (ml) | Diphenhydramine Dose (mg) | Diphenhydramine 12.5mg/5ml Dose (ml) |

## **SECTION 4 MERCY EMS REFERENCE MATERIALS**

## 4.01 END-TIDAL CO<sub>2</sub>

**Key Considerations:** For EtCO<sub>2</sub> to be present metabolism, perfusion, and ventilation must be occurring.

- 1) EtCO<sub>2</sub> value, respiratory rate, and waveform describes airway status.
- 2) If EtCO<sub>2</sub> is low and not related to airway status, consider perfusion issues.

Procedure:

- 1) Attach the appropriate capnography sensor for a patient with an advanced airway or a spontaneously breathing patient.
- 2) Note the EtCO<sub>2</sub> level, respiratory rate and waveform. (See below for examples)
- 3) EtCO<sub>2</sub> levels:
  - a. Normal 35 – 45 mmHg
  - b. If EtCO<sub>2</sub> is low and not related to airway status think perfusion (shock).
  - c. In cardiac arrest EtCO<sub>2</sub> may be low due to poor perfusion and /or metabolism. In arrest if EtCO<sub>2</sub> is below 10mmhg ensure high quality compressions are being performed.
    - i. In an arrest a sudden increase on EtCO<sub>2</sub> may indicate ROSC.
  - d. In patients with possible increased intracranial pressure attempt to maintain an EtCO<sub>2</sub> of approximately 35mmhg
- 4) When EtCO<sub>2</sub> is NOT detected three factors must be quickly assessed:
  - a. Loss of airway - apnea? Esophageal endotracheal tube placement/migration? Obstruction?
  - b. Circulatory collapse - cardiac arrest? Massive pulmonary embolism? Exsanguination?
  - c. Equipment failure - disconnected or malfunctioning bag-valve or ventilator?
- 5) A waveform with a “shark fin” pattern may indicate bronchospasm.
- 6) EtCO<sub>2</sub> should be monitored as any other vital sign when assessing a patient.

# CAPNOGRAPHY

EDUCATIONAL SERIES

End-tidal CO<sub>2</sub> (EtCO<sub>2</sub>) is the measurement of carbon dioxide (CO<sub>2</sub>) in the airway at the end of each breath. Capnography provides a numeric reading (amount) of the EtCO<sub>2</sub> and a graphic display (waveform) of CO<sub>2</sub> throughout the respiratory cycle.

CO<sub>2</sub>, produced by cells, is transported via the vascular system and diffused into the alveoli to be exhaled. PaCO<sub>2</sub>, the partial pressure of CO<sub>2</sub> in arterial blood, is normally 2–5mmHg higher than EtCO<sub>2</sub> in the airway.



## Capnography • Intubated Patient

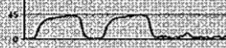
Applications on intubated patients:

- Verification of ET-tube placement
- Monitoring and detection ET tube dislodgment
- Loss of circulatory function
- Determination of adequate CPR compressions
- Confirmation of return of spontaneous circulation

Examples:

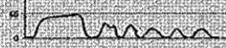
Sudden loss of waveform, EtCO<sub>2</sub> near zero

- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function



Decreasing EtCO<sub>2</sub> with loss of plateau

- ET tube cuff leak or deflated cuff
- ET tube in hypopharynx
- Partial obstruction



CPR Assessment

- Attempt to maintain minimum of 10mmHg



Sudden increase in EtCO<sub>2</sub>

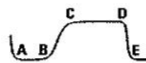
- Return of spontaneous circulation



**Normal Ranges:**

Arterial PaCO<sub>2</sub> 38–45mmHg  
Airway EtCO<sub>2</sub> 35–45mmHg (4–6 Vol. %)

**Normal Waveform:**



- A-B Respiratory baseline
- B-C Expiratory upstroke
- C-D Expiratory plateau
- D End-tidal value—peak CO<sub>2</sub> concentration—at the end of exhalation
- D-E Inspiratory downstroke



**Applications:**

Capnography is an objective monitoring tool for patients in respiratory distress and patients undergoing procedural sedation. It may be used to confirm, monitor and document ET tube intubation. A nasal-oral cannula is used to assess, monitor and document the respiratory status of the non-intubated patient. EtCO<sub>2</sub> monitoring with LIFEPAK defibrillator/monitors may be used on patients of any age.

**Monitoring and Printing:**

Capnography waveforms on the monitor screen are condensed to provide adequate information in the 4-second view. The correct respiratory rate is displayed in breaths per minute (bpm). Printouts of the waveforms are in real time and therefore may differ in duration.

**Note:**

Examples are illustrations for training purposes. Level of sedation and severity of condition may affect respiratory rate and EtCO<sub>2</sub> level in patients.

**Troubleshooting Tips for EtCO<sub>2</sub> Monitoring with LIFEPAK defibrillator/monitors:**

| Observation  | Possible Cause   |
|--|--|
| ALARM APNEA message appears.   | No breath has been detected for 30 seconds since last valid breath (>8mmHg).         |
| CO <sub>2</sub> FILTERLINE OFF message appears.                          | FilterLine® disconnected or not securely connected.                                  |
| CO <sub>2</sub> FILTERLINE BLOCKAGE message appears.                     | FilterLine is twisted or clogged. Airway adapter clogged.                            |
| CO <sub>2</sub> FILTERLINE PURGING message appears.                      | FilterLine tube twisted or clogged, or rapid altitude change occurred.               |
| EtCO <sub>2</sub> values are erratic.                                    | Leak in the tubing. Ventilated patient breathes spontaneously.                       |
| EtCO <sub>2</sub> values are consistently higher or lower than expected. | Physiological cause. Ventilator malfunction. Improper calibration.                   |
| xxx appears in place of EtCO <sub>2</sub> value.                         | CO <sub>2</sub> module not calibrated successfully, or CO <sub>2</sub> module fails. |

## Capnography • Non-intubated Patient

Applications on non-intubated patients include:

- Assessment of asthma and COPD
- Documented monitoring during procedural sedation
- Detection of apnea or inadequate breathing
- Measurement of hypoventilation
- Evaluation of hyperventilation

Examples:

Plateau has curved, "shark-fin" appearance

- Asthma
- COPD



Slow rate with increased EtCO<sub>2</sub>

- Hypoventilation
- Partial airway obstruction



Rapid rate with decreased EtCO<sub>2</sub>

- Hyperventilation



Decreased EtCO<sub>2</sub>, variable waveform

- Apnea, inadequate breath
- Sedation



The LIFEPAK® 12 defibrillator/monitor with Microstream® capnography provides the most versatility and ease of use:

- Superior moisture handling eliminates need for water traps or additional filters
- No calibration required between patients
- Does not require user corrections or compensation for commonly used gasses (O<sub>2</sub>, N<sub>2</sub>O, etc.)



## 4.02 CPAP

- **INDICATIONS** – Patients in respiratory distress for reasons other than pneumothorax and:
  - Is awake and oriented.
  - Are over 12 years old and is able to fit the CPAP mask.
  - Has the ability to maintain an open airway
  - Has a systolic blood pressure above 90 mmHg.
    - Note: CPAP may decrease preload, which make the blood pressure drop
  - Using accessory muscles of respiration with SPO<sub>2</sub> <94%
  - Signs and symptoms are consistent with asthma, COPD, pulmonary edema, CHF, or pneumonia.
- **CONTRAINDICATIONS**
  - Patient is in respiratory arrest.
  - BP < 90 mmHg
  - Heavy oral secretions or vomiting
  - Patient is suspected of having a pneumothorax.
  - Patient has a tracheotomy.
  - Major trauma
- **PRECAUTIONS** – Use care if the patient has:
  - Impaired mental status and is not able to cooperate with the procedure
  - Failed at past attempts at noninvasive ventilation
  - Active upper GI bleeding or history of recent gastric surgery
  - Complains of nausea (remove if vomiting begins)
  - Inadequate respiratory effort
  - Excessive secretions
  - Facial deformity that prevents the use of CPAP
  - If a sublingual medication such as Nitroglycerin has been administered assure the tablet is fully dissolved prior to applying/resuming CPAP.
- **ALTERNATIVE** – Intubation should be performed if:
  - Respiratory or cardiac arrest
  - Unresponsive to verbal stimuli and loss of gag reflex
  - EMR, EMT may use a supraglottic airway
  - Paramedics may use an endotracheal tube
- **PROCEDURE:**
  - Assess patient for pneumothorax
  - Explain procedure to patient
  - Ensure adequate oxygen supply to ventilation device (100% when starting therapy and until SpO<sub>2</sub> is >95%)
  - Place the patient on continuous pulse oximetry and EtCO<sub>2</sub>
  - Place the delivery device over the mouth and nose

- Secure the mask with provided straps or other provided devices per manufacturer recommendations
  - Use 5 cm H<sub>2</sub>O of PEEP to start and titrate to effect up to 15 cm H<sub>2</sub>O. Monitor BP closely during titration
  - Check for air leaks
  - Monitor and document the patient's respiratory response to treatment
  - Check and document vital signs every 5 minutes
    - If BP drops to < 90 mmHg, discontinue CPAP
  - Continue to coach patient to keep mask in place and readjust as needed
  - If respiratory status deteriorates, remove device and consider intermittent positive pressure ventilation with or without endotracheal intubation
  - If wheezing present, consider Albuterol/Ipratropium inline treatment
- **REMOVAL PROCEDURE:**
    - CPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask or experiences continued or worsening respiratory failure.
    - Intermittent positive pressure ventilation and/or intubation should be considered if the patient is removed from CPAP therapy.

## 4.03 12 LEAD ACQUISITION AND TRANSMISSION

Early prehospital 12-Lead ECGs may decrease the time to percutaneous coronary intervention (PCI) for patients with acute ST segment elevation myocardial infarctions (STEMI). 12-Lead ECGs done by EMTs are a non-diagnostic skill and should be interpreted by Paramedic or transmitted for interpretation.

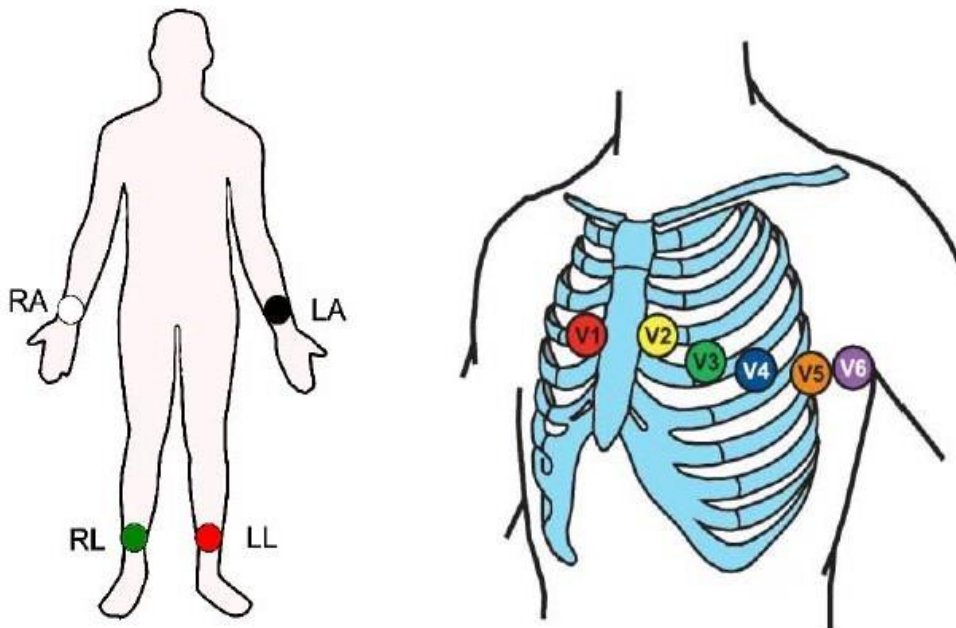
### Indications

1. Chest pain, pressure or discomfort suggestive of acute coronary syndrome
2. Acute onset of dyspnea
3. Other concerning signs/symptoms in which a 12-lead EKG would be beneficial.
4. Syncope, generalized weakness, new onset seizures or altered level of consciousness.
5. New onset of cardiac dysrhythmia (palpitations, irregular heart rate, <60 or >120)
6. Any patient who has sustained chest trauma and exhibits signs or symptoms of myocardial injury.

### Procedure

1. Place the patient in a supine position or semi-fowler if orthopnea.  
Explain the procedure, its importance and get consent.
2. Ensure privacy, wipe skin, encourage patient to remain still.
3. Connect precordial leads to 5-lead monitoring cable.
4. Attach electrodes to all ten leads and place limb leads (not on torso)
5. Position precordial chest leads:
  - a. **V1** (4<sup>th</sup> intercostals space) then 1" off center
  - b. **V2** same space other side
  - c. **V4** (5<sup>th</sup> intercostals space) left midclavicular line.
  - d. **V3** directly between V2 & V4
  - e. **V5** directly horizontal (level) left anterior axillary line.
  - f. **V6** directly horizontal (level) left midaxillary line.
    - i. Do not place V3-V6 on the breast, place underneath. Ask patient to lift left breast or use the back of your hand.
6. Acquire the 12-Lead ECG as directed by the manufacturer of the monitor. Encourage patient to remain still as 12-Lead is being acquired.
7. If BLS and printout states **\*\*\*ACUTE MI SUSPECTED\*\*\***, call for ALS transport to closest hospital follow [Chest Pain guideline](#) p. 78.
8. If transporting unit, attach a copy of the 12-Lead printed strip to the EMS Patient Care Report and leave the report with the receiving hospital RN or Physician.
9. If patient condition changes, consider repeating ECG.





**RA** – right forearm or wrist

**LA** – left forearm or wrist

**LL** – left lower leg, proximal to ankle

**RL** – right lower leg, proximal to ankle

**V1** – 4-th intercostal space, right sternal edge

**V2** – 4-th intercostal space, left sternal edge

**V3** – midway between V2 and V4

**V4** – 5-th intercostal space, mid-clavicular line

**V5** – anterior axillary line in straight line with V4

**V6** – mid-axillary line in straight line with V4 and V5

### Special Notes

1. In most cases the 12-Lead ECG should be done before moving the patient. The acquisition of a 12-Lead strip is targeted to be achieved within 10 minutes of the initial patient contact. Although there may be situations where this may not be possible, the 10 minute acquisition is optimal. Attempt supine position, but if patient has increased work of breathing, move to semi-fowler or then sitting.
2. If in a public place and patient privacy cannot be maintained move to ambulance quickly. Even in the home, be sensitive to patient's privacy. Have extra responders do something away from patient to improve privacy. Use a towel to cover patient and work from top and bottom of folded towel. If you assist in moving breast, use the back of your straight hand not the palm.
3. Whenever a 12-Lead ECG is performed, present a copy to the ED.
4. If Monitor or Paramedic interpretation **\*\*\*ACUTE MI SUSPECTED\*\*\***, tell the patient they may be having a heart attack and recommend they choose the most appropriate facility for Percutaneous Coronary Intervention.
5. Do not inform patient that they are not having a heart attack if the ECG reads normal.
6. Reduce causes of artifact:
  - a. Avoid placing electrodes on large muscle mass
  - b. Avoid placing electrodes on boney prominences
  - c. Ensure limbs are relaxed resting on firm surface
  - d. Don't let electrodes dry out
  - e. Don't press in the center of the electrode, or touch the gel in center
  - f. Abrade skin by wiping briskly with alcohol and gauze pad
  - g. Excessive hair may have to be clipped

## 4.04 CENTRAL IV LINES

*Access only for patient who is critically ill or has an immediate need for fluids/medications.* These devices should not be accessed by EMS providers other than in emergency situations when trained/credentialed. Otherwise they are only to be utilized if already accessed by healthcare facility, or if IV/IO access is unavailable. All ports must be extensively cleansed with alcohol prep prior to use.

Central IV lines flow through a catheter with its tip within a large vein, usually the superior vena cava *or* inferior vena cava, or within the right atrium of the heart. This has several advantages over a peripheral IV:

- It can deliver fluids and medications that would be overly irritating to peripheral veins because of their concentration or chemical composition. These include some chemotherapy drugs and total parenteral nutrition.
- Medications reach the heart rapidly and are quickly distributed to the rest of the body.
- There is room for multiple parallel compartments (lumens) within the catheter, so that multiple medications can be delivered at once even if they would not be chemically compatible within a single tube.
- Caregivers can measure central venous pressure and other physiological variables through the line.

Central IV lines carry higher risks of bleeding, bacteremia, and gas embolism (see Risks below).

There are several types of central IVs, depending on the route that the catheter takes from the outside of the body to the vein

Indications for the use of central lines include:

- Monitoring of the central venous pressure (CVP) in acutely ill patients to quantify fluid balance
- Parenteral nutrition
- Drugs that are prone to cause phlebitis in peripheral veins (caustic), such as:
  - Calcium
  - Chemotherapy
  - Potassium chloride
  - Amiodarone
- Need for intravenous therapy when peripheral venous access is impossible
  - Blood
  - Medication
  - Rehydration

## Possible problems

### Infection

It is possible for an infection to develop either inside the central line or around the exit site. You should contact the accepting facility if:

- the exit site becomes red or swollen
- you notice discolored fluid coming from it
- the patient develops a fever

### Clots

It is possible for a blood clot (thrombosis) to form in the vein at the tip of the line. The patient may be given an anticoagulant to take each day to help prevent this. If a clot does form the line may have to be removed.

### Air in the central line

No air must be allowed to get into the central line. The clamps should always be closed when the line is not in use. The line must not be left unclamped when the caps are not in place.

### Break or cut in the line

It is important that you do not get a break or cut in the line. Do not use scissors near the line and only use the clamp on the thicker, strengthened part of the line. If the line does get cut or split, try to clamp the line above the cut and call medical control and the accepting facility. The line may need to be removed by the hospital if it cannot be repaired while still in place.

## Peripherally inserted central catheter (PICC)

A PICC is a long, thin, flexible tube known as a catheter. It is inserted into one of the large veins of the arm near the bend of the elbow. It is then pushed into the vein until the tip sits in a large vein just above the heart.

The space in the middle of the tube is called the lumen. Sometimes the tube has two or three lumens (known as double or triple lumen). This allows different treatments to be given at the same time. At the end of the tube outside the body, each lumen has a special cap to which a drip line or syringe can be attached. There is also a clamp to keep the tube closed when it is not in use.

A PICC line is inserted into a peripheral vein, usually in the arm, and then carefully advanced upward until the catheter is in the superior vena cava or the right atrium. This is usually done by feel and estimation; an X-ray then verifies that the tip is in the right place.

A PICC may have two parallel compartments, each with its own external connector (double-lumen), or a single tube and connector (single-lumen). From the outside, a single-lumen PICC resembles a peripheral IV, except that the tubing is slightly wider.

The insertion site must be covered by a larger sterile dressing than would be required for a peripheral IV, due to the higher risk of infection if bacteria travel up the catheter. However, a PICC poses less of a systemic infection risk than other central IVs, because bacteria would have to travel up the entire length of the narrow catheter before spreading through the bloodstream.

The chief advantage of a PICC over other types of central lines is that it is easy to insert, poses a relatively low risk of bleeding, is externally unobtrusive, and can be left in place for months to years for patients who require extended treatment. The chief disadvantage is that it must travel through a relatively small peripheral vein and is therefore limited in diameter, and also somewhat vulnerable to occlusion or damage from movement or squeezing of the arm.

### Implantable ports

A *port* (often referred to by brand names such as Port-a-Cath or *MediPort*) is a central venous line that does not have an external connector; instead, it has a small reservoir implanted under the skin. Medication is administered intermittently by placing a small needle through the skin into the reservoir. Ports cause less inconvenience and have a lower risk of infection than PICCs, and are therefore commonly used for patients on long-term intermittent treatment.

### Medications:

Any medication that can be given via peripheral IV line can be given via Central Line or PICC Line. Always flush the medication with 5cc of saline prior to administration of a medication and flush with 20cc of saline after the medication administration.

If the medications are incompatible with an IV line or incompatible when mixed with another medication, do not use in a PICC line or a Central Line.

## 4.05 EZ-IO PLACEMENT

### Training:

EZ-IO® infusion systems requires specific training prior to use.

Site locations: Proximal Humerus (Adult Only), Proximal Tibia (Adult, Child, Infant), Distal Femur (Adult, Infant, Child)

### INDICATIONS:

EZ-IO® 25mm (40 kg and over) & EZ-IO® 15mm (3–39 kg) EZ-IO® 45mm (40 kg and over)

**For adults and pediatrics anytime in which vascular access is difficult to obtain in emergent, or medically necessary cases.**

### CONTRAINDICATIONS:

- Fracture of the bone selected for IO infusion (*consider alternate sites*)
- Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate sites*)
- Previous significant orthopedic procedures (*IO within 24 – 48 hours, prosthesis - use alternate sites*)
- Infection at the site selected for insertion (*use alternate sites*)
- Use for > 24 hours.
- Inability to locate landmarks.

### CONSIDERATIONS:

**Flow rate:** Ensure the administration of a rapid and vigorous 10ml flush with normal saline prior to infusion **“NO FLUSH = NO FLOW”** Repeat syringe bolus (flush) as needed

**Pain:** Paramedic may infuse 2% lidocaine without preservatives, but must be infused **SLOWLY** to prevent it from being sent directly into the central circulation. Medications intended to remain in the medullary space, such as a local anesthetic, must be administered **SLOWLY** until the desired anesthetic effect is achieved.

### EQUIPMENT:

- One (1) EZ-IO Power Driver
- Appropriate size intraosseous Needle Set based on patient size and weight
- One (1) EZ-Connect®
- Two (2) 10 ml syringes
- Sterile saline solution for flush **Note:** Paramedic may consider 2% lidocaine without preservative for adults 40mg **SLOWLY over 2 minutes, let dwell for 60 seconds prior to administer rapid flush**
- Non-sterile non-latex gloves
- Antiseptic agent
- One (1) semi-permeable transparent dressing (optional)
- One (1) sterile 2x2 or 4x4 gauze pad
- One (1) (appropriate volume and type) intravenous solution
- One (1) fluid administration set
- One (1) fluid administration pump or pressure bag

**PROCEDURE:** *If the patient is conscious, explain procedure*

- Apply latex free gloves.
- Cleanse site using antiseptic agent.
- Allow to air dry thoroughly.
- Connect appropriate Needle Set to driver
- Stabilize site
- Remove needle cap
- Insert EZ-IO needle into the selected site. **IMPORTANT:** Keep hand and fingers away from Needle Set
- Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface.
- Gently pierce the skin with the Needle Set until the Needle Set tip touches the bone.
- Ensure visualization of at least one black line on Needle Set
- Penetrate the bone cortex by squeezing driver's trigger and applying gentle, consistent, steady, downward pressure (allow the driver to do the work)
  - \***Do not use excessive force.** In some patients, insertion may take greater than 10 seconds, if the driver sounds like it is slowing down during insertion; reduce pressure on the driver to allow the RPMs of the needle tip to do the work.
  - \*Avoid penetration of the needle through the posterior cortex, if this occurs do not use site and inform hospital staff.
- Insert per manufacturers recommendations.
- On adult patients access the distal femur placement, 5cm proximal from the patella midline and perpendicular.
- On pediatric patients when you feel a decrease in resistance indicating the Needle Set has entered the medullary space, release the trigger.
- Remove EZ-IO Power Driver from Needle Set while stabilizing the catheter hub
- Remove stylet from catheter by turning counter-clockwise and immediately dispose of stylet in appropriate biohazard sharps container
  - \***NEVER** return used stylet to the EZ-IO kit
- Connect primed EZ-Connect to exposed Luer-lock hub
- Confirm placement, ensure no extravasation, discontinue if suspected
- Syringe bolus: flush the catheter with 10 ml of normal saline
  - \* If the patient is responsive to pain, the paramedic may consider 2% lidocaine without preservatives 40mg **SLOWLY** over 2 minutes for anesthetic effect . For pediatric patients for pain management **SLOWLY** administer 0.5 mg/kg [Lidocaine 2%](#) (not to exceed 20 mg).
- Assess for potential IO complications
- Disconnect 10 ml syringe from EZ-Connect extension set
- Secure IO as needed
- Connect primed EZ-Connect extension set to primed IV tubing
- Begin infusion utilizing a pressure delivery system if needed
- Secure tubing
- Continue to monitor extremity for complications



## 4.06 INTRANASAL DRUG ADMINISTRATION (MAD)

### INTRANASAL MEDICATION DELIVERY PROCEDURE

using the MAD<sup>®</sup> Nasal (Mucosal Atomization Device)

#### Intranasal Medication Delivery

##### MATERIALS

- 1 MAD<sup>®</sup> Nasal device with vial adapter and 3ml syringe (Cat. # MAD140)
- 2 Medication of appropriate concentration for intranasal medication delivery
  - » High concentration – Low volume



1

##### PROCEDURE

- 1 Remove and discard the green vial adapter cap.
- 2 Pierce the medication vial with the syringe vial adapter.
- 3 Aspirate the proper volume of medication required to treat the patient (an extra 0.1ml of medication should be drawn up to account for the dead space in the device).
- 4 Remove (twist off) the syringe from the vial adapter.
- 5 Attach the MAD<sup>®</sup> device to the syringe via the luer-lock connector.
- 6 Using the free hand to hold the crown of the head stable, place the tip of the MAD<sup>®</sup> snugly against the nostril aiming slightly up and outward (toward the top of the ear).
- 7 Briskly compress the syringe plunger to deliver half of the medication into the nostril.
- 8 Move the device over to the opposite nostril and administer the remaining medication into that nostril.



3



5



6



8

##### KEY CONCEPTS

To improve Intranasal Medication Delivery success:

- 1 Minimize volume, maximize concentration
  - » 1/3 ml per nostril is ideal, 1 ml is maximum
  - » Use the appropriately concentrated drug
- 2 Maximize total mucosal absorptive surface area
  - » Atomize the drug (rather than drip it in) to cover broad surface area
  - » Use BOTH nostrils to double the absorptive surface area
  - » Aim slightly up and outwards to cover the turbinates and olfactory mucosa
- 3 Beware of abnormal mucosal characteristics
  - » Mucous, blood and vasoconstrictors reduce absorption
  - » Suction nostrils or consider alternate drug delivery method in these situations



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## 4.07 USING KED (KENDRICK EXTRICATION DEVICE)

The KED can be used as a splint for pelvic stabilization and hip and/or femur stabilization. Two possible methods of adaptation are shown here.

### HIP AND/OR FEMUR STABILIZATION (Figure 1)

The KED and patient are placed on a long spine board with the head portion of the KED toward the foot end of the board.

The torso portion of the KED positioned a little above the waist and centered. The torso flaps are secured around the patient and the head flaps are wrapped around the patient's **injured leg** and secured with the KED head straps.

### PELVIC STABILIZATION (Figure 2)

The KED and patient are placed on a long spine board with the head portion of the KED toward the foot end of the board.

The torso portion of the KED positioned a little above the waist and centered. The torso flaps are secured around the patient's pelvic area and the head flaps are wrapped around **both legs** and secured with the KED head straps.



Stabilizing the Hip and/or Femur –  
note the position of the Head Flaps

**Figure 1: Stabilizing Hip/Femur**



Stabilizing the Hip and/or Femur –  
note the position of the Head Flaps

**Figure 2: Stabilizing Pelvis**

## 4.08 SPINAL ASSESSMENT AND SELECTIVE SPINAL MOTION RESTRICTION

Patients with blunt traumatic injuries with mechanism concerning for spinal injury should be assessed for spinal injury. Patients may have specific spinal motion restriction omitted if ALL of the following conditions apply:

- They are conscious, cooperative and able to communicate effectively with provider<sup>2,3,4</sup>.
- There is no major mechanism for severe injury<sup>2</sup> (i.e. No prehospital trauma triage criteria to go to a high level trauma center.)
- Have no history of new or temporary neurologic deficit such as numbness or weakness in an extremity<sup>1,2,3</sup>.
- Have no evidence of intoxication or altered mental status<sup>1,2,3,5</sup>.
- Have no evidence of a distracting injury<sup>1,3</sup> such as
  - Fractures
  - Major burns
  - Crush injuries
  - Severe or distracting pain
  - Have no midline back or neck pain or tenderness upon palpation<sup>1,2,3</sup>.

If all the above criteria are met, have patient move their neck 45° to either side of midline, flex, and extend neck, and if still no pain<sup>2</sup>, no spinal motion restriction is indicated. Document exam findings.

Consider performing spinal motion restriction for anyone >65 y/o regardless of the above criteria if mechanism is concerning for spinal injury

Spinal motion restriction consists of keeping the head, neck and spine inline. The neck can have spinal motion restriction with a well fitted cervical collar. Patients who are already walking or standing should be laid on the ambulance stretcher and secured to the stretcher with seatbelts. Once extricated, patients may be taken off the back board or scoop stretcher and be placed directly on the ambulance stretcher. In situations where extrication is not needed, use a sheet with adequate personnel to move any non-ambulatory patient. Keep spine in neutral position.

Infants and some children can be left in an intact car seat as a method of spinal motion restriction. Infants and some children may not be able to describe pain, and therefore cannot have their c-spine cleared with selective spinal motion restriction. Utilize blanket or towel rolls to immobilize child's head from moving in car seat. If child is too large for car seat, utilize appropriate size c-collar. If torticollis is present in children perform spinal motion restriction.

Patients with penetrating traumatic injuries should only be immobilized if a focal neurologic deficit is noted on physical examination (although there is little evidence of benefit even in these cases).

Decisional patients have the right to refuse aspects of treatment including spinal motion restriction. If a patient refuses spinal motion restriction after being informed of possible permanent paralysis, do not perform spinal motion restriction them and document the patient's refusal in your medical record.

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<sup>2</sup> Hoffman JR et al. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. *N Engl J Med* 2000; 343:94-99.

<sup>3</sup> Stiell IG et al. The Canadian C-spine rule for radiography in alert and stable trauma patients. *JAMA* 2001; 286:1841-1848.

<sup>4</sup> Burton JH et al. A Statewide, Prehospital Emergency Medical Service Selective Patient Spinal Immobilization. *J Trauma* 2006; 61: 161-167.

<sup>5</sup> Evaluation for evidence of intoxication: Ask "What medications did you take today? Have you had any alcohol? Have you had any recreational drugs?" Is there slurring of speech, dilated or constricted pupils, unsteady gait? Do they smell like alcohol or marijuana?

## 4.09 MECHANICAL CPR

This procedure describes the appropriate methods to apply, operate, and discontinue mechanical CPR devices in patients requiring mechanical chest compression related to cardiac arrest.

### Indications

1. Mechanical CPR devices may be used in patients being treated as adults where manual compressions would otherwise be used.
2. Use per manufacturer guidelines

### Contraindications

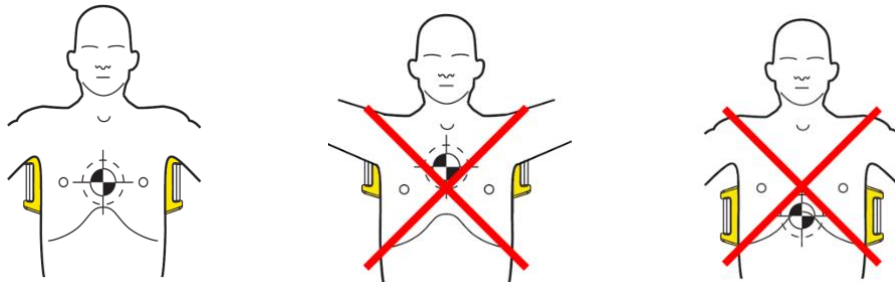
1. Patients who do not fit within the device.

### Precautions

1. Refrain from mechanical CPR if by history or physical it is obvious that the patient has had open heart surgery within the last 2-3 months.
2. Pregnancy: Must lie 10-15° to side to prevent vena cava syndrome after 20 wks

### Guideline for Placement

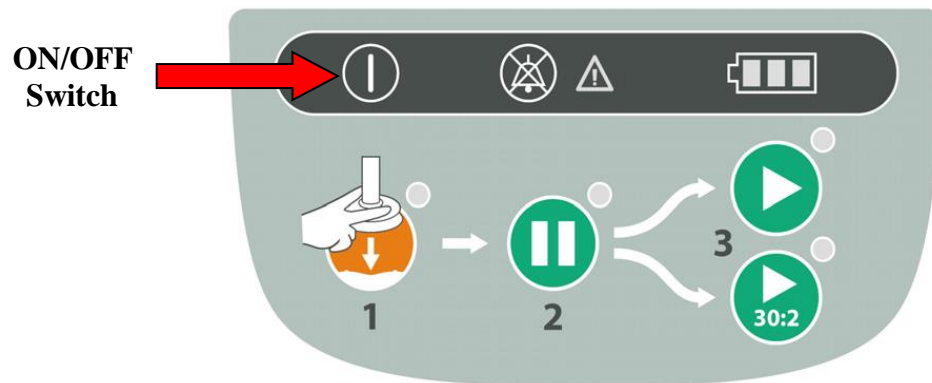
1. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined
2. Initiate resuscitative measures following guidelines
  - a. Early defibrillation should be considered and provided as indicated based on clinical presentation.
  - b. Manual chest compressions should be initiated *immediately* while the device is being placed on the patient.
  - c. Limit interruptions in chest compressions.
  - d. Do not delay manual CPR for the device. Continue manual CPR until the device can be placed.
  - e. While resuscitative measures are initiated, the device should be removed from its carrying device and placed on the patient. The backplate should be centered on the nipple line and the top of the backplate should be located just below the patient's armpits.



In cases for which the patient is already on the stretcher, place the backplate underneath the thorax. This can be accomplished by log-rolling the patient or raising the torso (Placement should occur during a scheduled discontinuation of compressions).

### Position the LUCAS Device Compressor

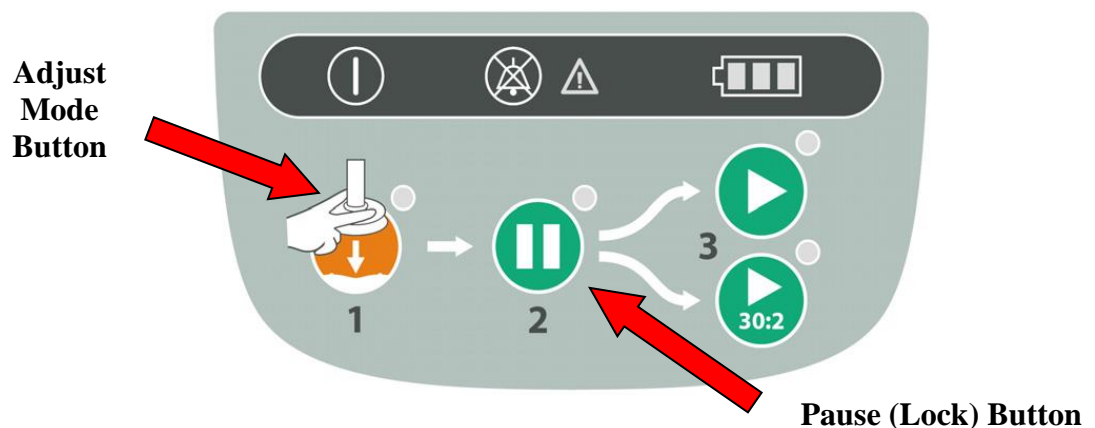
- Turn the LUCAS Device on (the device will perform a 3 second self-test).



- Remove the LUCAS device from its carrying case using the handles provided on each side.
- With the index finger of each hand, pull the trigger to ensure the device is set to engage the backplate. Once this is complete, you may remove your index finger from the trigger loop.
- Approach the patient from the side opposite the person performing manual chest compressions.
- Attach the claw hook to the backplate on the side of the patient opposite that where compressions are being provided.
- Place the LUCAS device across the patient, between the staff member's arms who is performing manual CPR.
- At this point the staff member performing manual CPR stops and assists attaching the claw hook to the backplate on their side.
- Pull up once to make sure that the parts are securely attached.

### Adjust the Height of the Compression Arm

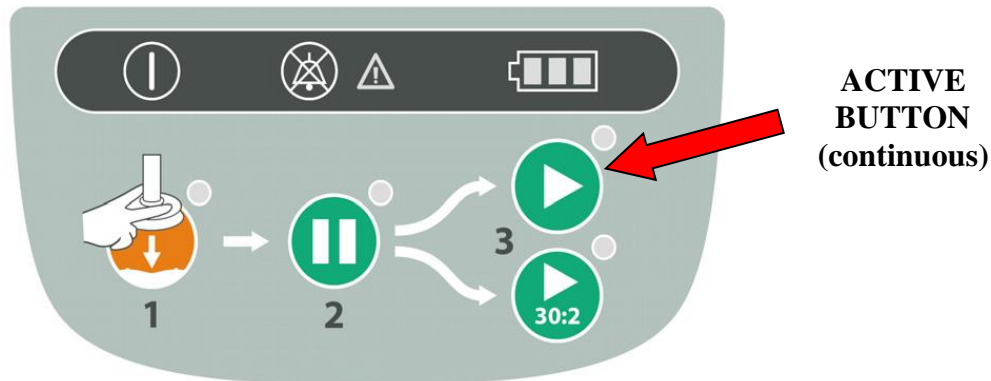
- Use two fingers (V pattern) to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position
- Press the Adjust Mode Button on the control pad labeled #1 (This will allow you to easily adjust the height of the compression arm).



- To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient's chest)
- Once the position of the compression arm is satisfactory, push the green PAUSE button labeled #2 (This will lock the arm in this position), then remove your fingers from the SUCTION CUP.
- If the position is incorrect, press the ADJUST MODE BUTTON and repeat the steps.

#### Start Compressions

- Provide continuous compressions push ACTIVE (continuous) button



#### Patient Adjuncts

- Place the neck roll behind the patient's head and attach the straps to the LUCAS device.
  - This will prevent the LUCAS from migrating toward the patient's feet.
- Place the patients arms in the straps provided.

#### Using the LUCAS during the Resuscitation

##### Defibrillation

- Defibrillation can and should be performed with the LUCAS device in place and in operation
- One may apply the defibrillation electrodes either before or after the LUCAS device has been put in position
  - The defibrillation pads and wires should not be underneath the suction cup
  - If the electrodes are already in an incorrect position when the LUCAS is placed, you must apply new electrodes

- Defibrillation should be performed according to guidelines and following the instructions of the defibrillator manufacturer.
- If the rhythm strip cannot be assessed during compressions, one may stop the compressions for analysis by pushing the PAUSE BUTTON (The duration of interruption of compressions should be kept as short as possible. There is no need to interrupt chest compressions other than to analyze the rhythm).
- Once the rhythm is determined to require defibrillation, the appropriate ACTIVE BUTTON should be pushed to resume compressions while the defibrillator is charging and then the defibrillator should be discharged.

#### Pulse Checks/Return of Spontaneous Circulation (ROSC)

- Pulse checks should occur intermittently while compressions are occurring
- If the patient moves or is obviously responsive, the LUCAS Device should be paused and the patient evaluated.
- If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, one may consider pausing the LUCAS Device. If the pulse remains, reassess the patient. If the pulse disappears, one should immediately restart the LUCAS Device.

#### Disruption or Malfunction of Lucas Device

- If disruption or malfunction of the LUCAS device occurs, immediately revert to Manual CPR.

### Device Management

#### Power Supply

- Battery Operation
  - When fully charged, the Lithium Polymer battery should allow 45 minutes of uninterrupted operation
  - An extra battery should be kept in the Lucas Device bag
  - The battery is automatically charged when the device is plugged into a wall outlet with AC adaptor.
- One may connect the LUCAS Device to wall power with AC adaptor in all operational modes.



**Power Supply  
Cord Slot  
(for charging  
and AC  
operation)**

### Care of the LUCAS Device after use

- Remove the Suction cup and the Stabilization Strap (if used, remove the Patient Straps).
- Clean all surfaces and straps with a cloth and warm water with an appropriate cleaning agent
- Let the device and parts dry.
- Replace the used Battery with a fully-charged Battery.
- Remount (or replace) the Suction Cup and straps
- Repack the device into the carrying bag

## **4.10 BLOOD DRAW**

Medical blood draws by EMS can be extremely beneficial to the patient. When an IV or saline lock is to be established, blood may be drawn for hospital use in those hospitals accepting prehospital blood draws. This may reduce the amount of needle sticks and increases the speed in which laboratory results are available to guide patient treatment in the hospital.

Bloodborne pathogen precautions must always be utilized. After initial venipuncture, either attach a non-flushed extension loop for blood draw, or draw directly off the catheter with appropriate equipment or syringe. Commercial devices should be utilized, and at no time should needles be utilized to fill blood tubes. Limit tourniquet time.

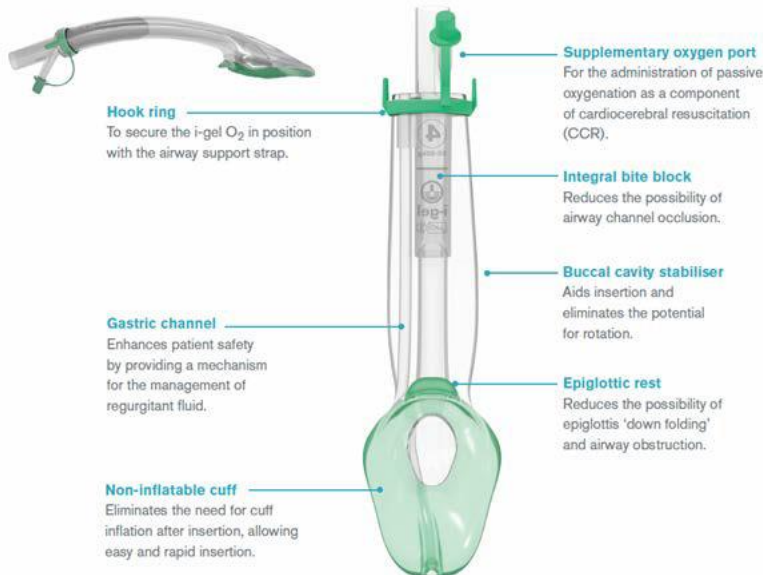
Draw appropriate blood quantity to fill required blood tubes based on destination hospital requirements. This is typically 15 cc per adult patient. Blood draws should be labeled and delivered directly to receiving nurse in ED. Name, DOB, date, and time should be documented to ensure the sample is properly identified.

## 4.11 SUPRAGLOTTIC AIRWAYS

The current medical director approved Supraglottic Airways for adult and pediatric patients are the King Airway and the i-gel. One device may be carried. No other devices may be used without express written permission of the medical director. All personnel must be trained prior to utilizing these devices for patient care.

i-gel Airway

### The new i-gel O<sub>2</sub>



King Airway



**Indications:** Either device should be sized based on manufacturer guidance for patients with no gag reflex in need of advanced airway.

### Contraindications:

- Responsive patients with an intact gag reflex
- Known esophageal disease.
- Caustic substance ingestion.
- Patients with laryngectomy / tracheostomy
- Complete airway obstruction
- Foreign body aspiration
- Pharyngeal hemorrhage.

**Monitoring:** etCO<sub>2</sub> with continuous waveform should be utilized if available to ensure proper ventilation with the device. Ensure working suction is available, suction as needed. Placement confirmation with colorimetric capnometry is required if etCO<sub>2</sub> unavailable. When using the colorimetric capnometry purple should change to Gold if CO<sub>2</sub> is present in the exhaled air. This is indicative of correct placement of the ETT in the trachea.



## Colorimetric Capnometry



### Procedure:

#### i-gel

1. Have another trained provider ventilate the patient. Determine appropriate size i-gel.
2. Open packaging and gently lubricate device.
3. Open patient's mouth and insert device until it seats in position. If difficulty occurs consider smaller size i-gel.
4. Attempt to ventilate patient. The chest should rise, there should be breath sounds, and absent epigastric sounds. If device is not ventilating, it may be too deep or too shallow, adjust device and attempt to ventilate again. If unable to ventilate, remove device and resume BVM ventilations. Consider larger size i-gel and re-attempt if inadequate BVM ventilations.
5. Confirm per [Routine Medical Care Guidelines](#) p. 118.
6. Secure with strap, tape or commercial tube holder.
7. If equipped with suction port, consider placement of soft suction catheter to reduce aspiration risk.

### I-GEL Airway Chart

| Size | Patient Criteria           | Color  |
|------|----------------------------|--------|
| 1.0  | Neonate – 2-5 kg           | Pink   |
| 1.5  | Infant - 5-12 kg           | Blue   |
| 2.0  | Small Pediatric – 10-25 kg | Grey   |
| 2.5  | Large Pediatric – 25-35 kg | White  |
| 3    | Small Adult – 30-60 kg     | Yellow |
| 4    | Medium Adult – 50-90 kg    | Green  |
| 5    | Large Adult – 90+ kg       | Orange |

## King

1. Have another trained provider ventilate the patient. Determine appropriate size King.
2. Open packaging, inflate pilot balloon and leak check with manufacturer recommended volume of air. Gently lubricate device.
3. Open patient's mouth and insert device until proximal portion of tube adaptor is at teeth or gumline. If difficulty is met, do to force, consider smaller size King.
4. Inflate to manufacturer's recommended volume of air and gently withdraw device.
5. Once device is seated, attempt to ventilate patient. The chest should rise, there should be breath sounds, and absent epigastric sounds. If device is not ventilating, it may be too deep or too shallow, adjust device and attempt to ventilate again. If unable to ventilate, remove device and resume BVM ventilations. Consider adding additional air to cuff or replacing with larger size King airway.
6. Confirm per [Routine Medical Care Guidelines](#) p. 118.
7. Secure device with commercial tube holder.
8. If equipped with suction port, consider placement of soft suction catheter to reduce aspiration risk.

## 4.12 GLASGOW COMA SCALE

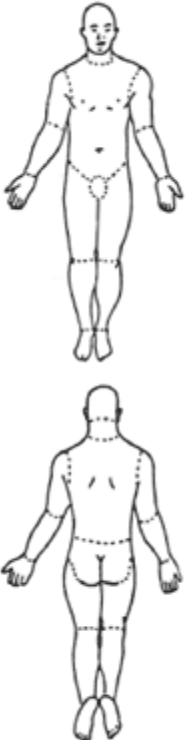
The Glasgow Coma Scale provides a score in the range 3-15. The total score is the sum of the scores in three categories. For adults the scores are as follows:

|                             |   |          |
|-----------------------------|---|----------|
| <b>Eye Opening Response</b> | Spontaneous--open with blinking at baseline         | 4 points |
|                             | Opens to verbal command, speech, or shout           | 3 points |
|                             | Opens to pain, not applied to face                  | 2 points |
|                             | None  | 1 point  |
| <b>Verbal Response</b>      | Oriented  | 5 points |
|                             | Confused conversation, but able to answer questions | 4 points |
|                             | Inappropriate responses, words discernible          | 3 points |
|                             | Incomprehensible speech                             | 2 points |
|                             | None  | 1 point  |
| <b>Motor Response</b>       | Obeys commands for movement                         | 6 points |
|                             | Purposeful movement to painful stimulus             | 5 points |
|                             | Withdraws from pain                                 | 4 points |
|                             | Abnormal (spastic) flexion, decorticate posture     | 3 points |
|                             | Extensor (rigid) response, decerebrate posture      | 2 points |
|                             | None  | 1 point  |

For children under 5, the verbal response criteria are adjusted as follow

| SCORE | 2 to 5 YRS                      | 0 TO 23 Mos.                                   |
|-------|---------------------------------|--|
| 5     | Appropriate words or phrases    | Smiles or coos appropriately                   |
| 4     | Inappropriate words             | Cries and consolable                           |
| 3     | Persistent cries and/or screams | Persistent inappropriate crying &/or screaming |
| 2     | Grunts                          | Grunts or is agitated or restless              |
| 1     | No response                     | No response                                    |

## 4.13 BURN ESTIMATION

| Area            | Birth to | 1 to 4 | 5 to 9 | 10 to 14 | 15    | Adult | 2nd* | 3rd* | TBSA | Burn diagram   |
|-----------------|----------|--------|--------|----------|-------|-------|------|------|------|--|
|                 | 1 year   | years  | years  | years    | years |       |      |      |      |  |
| Head            | 19       | 17     | 13     | 11       | 9     | 7     |      |      |      |  |
| Neck            | 2        | 2      | 2      | 2        | 2     | 2     |      |      |      |  |
| Anterior trunk  | 13       | 13     | 13     | 13       | 13    | 13    |      |      |      |  |
| Posterior trunk | 13       | 13     | 13     | 13       | 13    | 13    |      |      |      |  |
| Right buttock   | 2.5      | 2.5    | 2.5    | 2.5      | 2.5   | 2.5   |      |      |      |  |
| Left buttock    | 2.5      | 2.5    | 2.5    | 2.5      | 2.5   | 2.5   |      |      |      |  |
| Genitalia       | 1        | 1      | 1      | 1        | 1     | 1     |      |      |      |  |
| Right upper arm | 4        | 4      | 4      | 4        | 4     | 4     |      |      |      |  |
| Left upper arm  | 4        | 4      | 4      | 4        | 4     | 4     |      |      |      |  |
| Right lower arm | 3        | 3      | 3      | 3        | 3     | 3     |      |      |      |  |
| Left lower arm  | 3        | 3      | 3      | 3        | 3     | 3     |      |      |      |  |
| Right hand      | 2.5      | 2.5    | 2.5    | 2.5      | 2.5   | 2.5   |      |      |      |  |
| Left hand       | 2.5      | 2.5    | 2.5    | 2.5      | 2.5   | 2.5   |      |      |      |  |
| Right thigh     | 5.5      | 6.5    | 8      | 8.5      | 9     | 9.5   |      |      |      |  |
| Left thigh      | 5.5      | 6.5    | 8      | 8.5      | 9     | 9.5   |      |      |      |  |
| Right leg       | 5        | 5      | 5.5    | 6        | 6.5   | 7     |      |      |      |  |
| Left leg        | 5        | 5      | 5.5    | 6        | 6.5   | 7     |      |      |      |  |
| Right foot      | 3.5      | 3.5    | 3.5    | 3.5      | 3.5   | 3.5   |      |      |      |  |
| Left foot       | 3.5      | 3.5    | 3.5    | 3.5      | 3.5   | 3.5   |      |      |      |  |
| Total:          |          |        |        |          |       |       |      |      |      |  |

\*—Second-degree burns are now more often designated as superficial partial-thickness or deep partial-thickness burns, and third-degree burns are designated as full-thickness burns.

## 4.14 APGAR SCORE

| Sign                   | 0            | 1                            | 2                             | 1 min | 5 min |
|------------------------|--------------|------------------------------|-------------------------------|-------|-------|
| Heart Rate             | Absent       | <100/min                     | >100/min                      |       |       |
| Respiratory (Effort)   | Absent       | Slow or Irregular            | Normal, Crying                |       |       |
| Muscle Tone            | Limp         | Some Extremity Flexion       | Active, Good Extremity Motion |       |       |
| Irritability (Grimace) | No response  | Grimace, Crying, Some Motion | Strong Crying, Vigorous       |       |       |
| Skin Color             | Blue or Pale | Pink Trunk, extremities blue | Pink Throughout               |       |       |
| <b>Total Score</b>     |              |                              |                               |       |       |

## 4.15 EYE IRRIGATION, MORGAN LENS USE

Purpose:

Immediate irrigate on of the eye to remove toxic materials or particles

Equipment:

1000mNS, IV tubing

Pt. Position:

Preferably supine

Technique:

- Close clamp on tubing, spike bag of irrigating solution (NS).
- Select/Set tubing to 10gtts/ml setting.
- Flush IV Line.
- Place towels, blankets, or catch basin next to patient's head for run-off.
- Gently retract both upper and lower eyelids with fingers. (Retracting upper and lower eyelids separately is acceptable if this is all patient can tolerate)
- Hold tip of tubing over eye (avoid touching eye directly). Goal is for nasal to temporal flow of irrigation
- Open clamp on tubing to begin flow of saline solution. Adjust flow as needed to obtain good flush.
- Instruct patient to alternate looking up, down, and from side to side during fluid flow.

\*\*\*If riot control agent was use and commercially produced wipes are available, utilize these to wipe facial area.

### Morgan Lens

Indication: For use in adult patients who have sustained an exposure injury to the eye(s), (i.e. dry or liquid chemical).

Equipment:

1. Gloves
2. 1000ml IV bag Lactated Ringers or Normal Saline
3. IV tubing (macro drip)
4. Morgan Lens
5. Tetracaine
6. Towels or chux

Procedure:

1. Explain procedure to patient and give rationale.
2. Use BSI (Body Substance Isolation)
3. Unless contraindicated, instill one or two drops of Tetracaine.
4. Instruct patient not to touch/rub eye(s).
5. Spike IV bag and attach/flush tubing, connect Morgan Lens, maintain sterile environment of Morgan Lens.
6. Have the patient look down, insert the Morgan Lens under the upper lid, then have the patient look up, retract lower lid and allow lens to drop into place.
7. Begin flow rate at wide open and maintain this rate per patient tolerance. Have plenty of towels or chux to absorb flow.

## 4.16 CONDUCTED ELECTRICAL WEAPON (TASER)

If called upon to treat a person who has been subjected to the TASER, it is important to make sure that the patient has either been appropriately restrained by the police, or that there are sufficient police personnel available to assist with the patient prior to any intervention attempted. Typically, it is not the "TASER" event itself that leads to the need for transport to the hospital, rather the events that have led up to the individual being tased. Refer to [Agitated and Combative Guidelines](#) (p. 54) if indicated. Police personnel may have already removed the probes and you are only needed for patient evaluation for possible secondary injuries.

1. Gloves must be worn.
2. Confirm device has been turned off and that the barb cartridge has been disconnected from the electrical weapon.
3. Patients with conducted electrical weapon (Taser®) barb penetration in vulnerable areas of body as below should be transported to the hospital for further evaluation and probe removal.
  - Barbs embedded in skin above level of the clavicles, genitalia, or female breasts.
  - Suspicion that probe might be embedded in bone, blood vessel or other sensitive structure.
4. Barbs may be removed if not in an area listed above, by stabilizing the skin surrounding the barb and grasping the barb shaft and pulling straight out with a gentle but quick motion.
5. Once extracted, visually inspect barb to make sure it is intact and that nothing remains in patient. If concern exists, transport to hospital.
  - If the probes are not going to be collected and maintained for evidence by the LEO, dispose of the probe in a sharps container, being careful not to poke oneself with the probe
  - Document the removal location and time of removal in the patient care report
6. Cleanse area, apply bandage to the area where the barb was removed.
  - Ensure hemostasis, for excessive bleeding, apply pressure and transport.
  - Inform the patient that they will need tetanus prophylaxis if they have not received one in the last five years or if primary series is not complete.
  - Advise patient to seek care for signs of infection including increased pain at the site, redness swelling or fever.
7. Cardiac Monitoring/Transport is indicated if the patient has signs and or symptoms that could be cardiac in nature including but not limited to: irregular pulse, palpitations, abnormal vital signs, altered mental status, history of AICD, or if the patients experienced a loss of consciousness and/or seizure following electrical discharge.
8. Be aware that secondary injuries are possible due to the subject falling from a standing position. A thorough physical examination should be performed in these cases.
9. If the probes have been removed pre-hospital and the patient is being transported to the ED for further examination, make sure that the staff is notified and that the location of the puncture sites are pointed out to the staff upon arrival.
10. If after removal of all TASER probes, the patients should generally be transported to the hospital by EMS. The patient may refuse medical treatment and/or transportation if they meet criteria established in the Refusal of Medical Care Guidelines and the Patient has no other acute medical or psychiatric condition requiring medical evaluation, such as: Traumatic injury sustained in taser induced fall or police encounter, hypoglycemia, acute psychiatric disturbance, or delirium.
  - Recommend that the patient be evaluated in an emergency department.
  - Complete refusal form as applicable per [Consent/Refusal of Medical Care](#) (p. 35).

## 4.17 EMERGENCY SURGICAL AND NEEDLE CRICOTHYROTOMY

**Indications:** To establish definitive airway control in patients in whom such control cannot otherwise established by other methods.

**Contraindications:** The ability to obtain airway control and effective ventilation by less invasive means.  
Inability to identify proper landmarks.

### **ADULT PROCEDURE (Age approximately >12 y/o)**

- A. Unless contraindicated by trauma, place a small roll under patient's shoulders to slightly extend neck. In patients suspected of having a spinal injury, inline stabilization should be maintained throughout the procedure.
- B. Locate cricothyroid membrane by tilting patient's head back (if not contraindicated by possible spinal injury) and palpating for the V-Notch of the thyroid cartilage (Adams Apple).
- C. Prepare the skin with antiseptic solution and maintain aseptic technique.
- D. Stabilize the thyroid cartilage between thumb and middle finger of one hand.
- E. Press index finger of same hand between the thyroid and cricoid cartilage to identify cricothyroid membrane.
- F. Using a short scalpel, make a vertical incision through the skin, to locate the cricothyroid membrane.
- G. After identifying the cricothyroid membrane, make a horizontal incision using the short scalpel blade. An adequate incision eases the introduction of the tube.
- H. Maintain opening in cricothyroid membrane with finger/Bougie/ scalpel/handle of scalpel.
- I. Carefully insert the tracheostomy tube supplied in the surgical cricothyrotomy kit or ET tube (generally a size 6.0 for adults). Inflate the cuff.
- J. Provide ventilation by a bag-valve device with 100% oxygen.
- K. Determine adequacy of ventilation through bilateral auscultation, epigastrium auscultation, and observation of rise and fall of the chest and waveform capnography and adjust the tube if necessary. Confirm via methods described in routine medical care.
- L. Securely fix the trach tube or ET tube in place, including manually guarding if necessary.
- M. Provide update of patient's status to hospital and transport immediately. All Emergency cricothyrotomies will be reported to the medical director.

### **Transtracheal Jet/Needle Cricothyrotomy PEDIATRIC PROCEDURE (Age approximately <12 y/o)**

- A. Unless contraindicated by trauma place a small roll under patient's shoulder to slightly extend the neck.
- B. Locate cricothyroid membrane by tilting patient's head back and palpating for the V-notch of the thyroid cartilage (Adam's Apple).
- C. Prepare the skin with antiseptic solution and maintain aseptic technique.
- D. Stabilize the thyroid cartilage between the thumb and middle finger of one hand.
- E. Press index finger of same hand between the thyroid and cricoid cartilage to identify cricothyroid membrane.
- F. Using index finger as a guide, rest middle or ring finger of hand holding needle/cannula on the skin to stabilize and prevent needle from penetrating membrane too deeply.
- G. Make a puncture in the midline with a smooth motion.
- H. Insert cannula at a 45-60° angle.
- I. After entry into trachea, begin removing needle and advancing cannula into place.
- J. Advance cannula into trachea at a 45° angle with tip toward patient's feet; care must be taken not to kink the catheter when removing the needle and syringe.
- K. Draw back on the syringe to aspirate an air bubble to confirm placement in the trachea.
- L. Tape cannula securely in place and hold the hub of the catheter to prevent accidental dislodgement while providing ventilation.

Last Updated June 2023

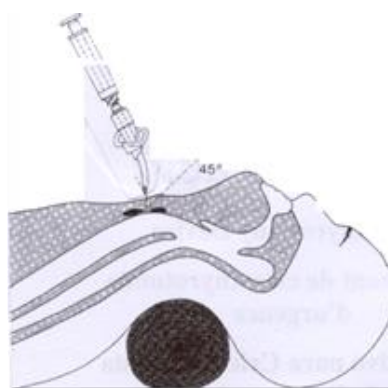


- M. Attach 3.0 mm ETT or appropriate adaptor to the end of the catheter.
- N. Ventilate with 100% oxygen using the pediatric BVM via the ETT adaptor; allow for exhalation after each ventilation. The ratio of inhalation to exhalation should be approximately 1:4
- O. Further check airway placement by ventilating and watching chest rise as well as listening for air exchange at site and observing patient for improved color and respiratory condition.
- P. Continue to assess for adequate air exchange.
- Q. Provide update of patient's status to hospital and transport immediately.
- R. All Emergency cricothyrotomies will be reported to the medical director.

**QuickTrach/QuickTrach II 4.0mm (adult) QuickTrach 2.0mm (pediatric)**

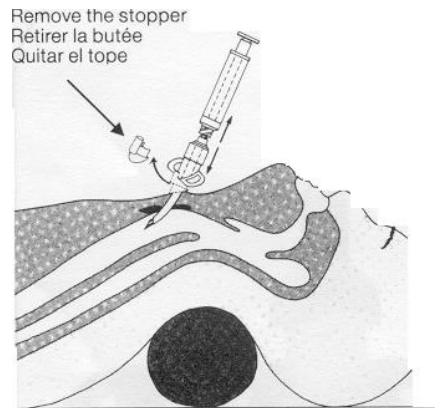
- Purpose:** To establish definitive airway control in patients in whom such control cannot otherwise be established by other approved methods.
- Equipment:** QuickTrach or QuickTrach II Emergency Cricothyrotomy Device. 4.0mm(Adult)  
2.0mm(Pediatric)
- Pt. Position:** Supine.
- Landmarks:** Superiorly-thyroid cartilage; Inferiorly-cricoid cartilage.
- Technique:** Follow Instructions listed as follows for the QuickTrach.
- Note:** Paramedics credentialed and trained by medical director for open surgical cricothyrotomy/pediatric needle cricothyrotomy may use that technique or QuickTrach. All Emergency cricothyrotomies will be reported to the medical director.

1. Open package and remove pre-assembled device.
  - a. If using QuickTrach II, remove cap from inflation port and deflate cuff with provided syringe.
2. Place the patient in a supine position. If no C-spine injury is suspected, hyperextend the neck and stabilize with a pillow under the patient's shoulders.
3. Secure the larynx laterally between the thumb and forefinger
4. Landmark the cricothyroid membrane (between thyroid cartilage, superiorly and the cricoid cartilage, inferiorly.)
5. Firmly hold the device and puncture the membrane with the tip of the device at a 90 degree angle.

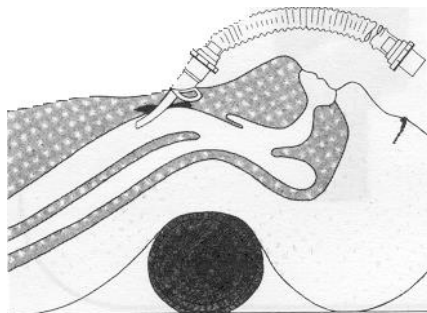


6. After puncturing the membrane, check the entry of the needle into the trachea by aspirating air through the syringe. (If air is present the device is within the trachea)

7. Should no aspiration of air be possible in step 6 because of an extremely thick neck, it is possible to remove the stopper and carefully insert the needle further until entrance into the trachea is made. Once placement is verified, continue with step 10.
8. Change the angle of the needle insertion to 60 degrees and advance the device forward into the trachea to the level of the attached stopper.
9. Remove the stopper (Be careful not to advance the device further with the needle still attached.)



10. Hold the needle and syringe firmly and slide the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
11. If utilizing the QuickTrach II, inflate the cuff with 10ml of air with provided syringe.
12. Secure the cannula with the neck tape.
13. Attach connecting tube to the 15mm connection and the other end to a BVM and ventilate. Confirm with capnography and via routine medical care.



## 4.18 PERICARDIOCENTESIS

Purpose: To treat life threatening pericardial tamponade. Medical director must be notified of all pericardiocentesis procedures.

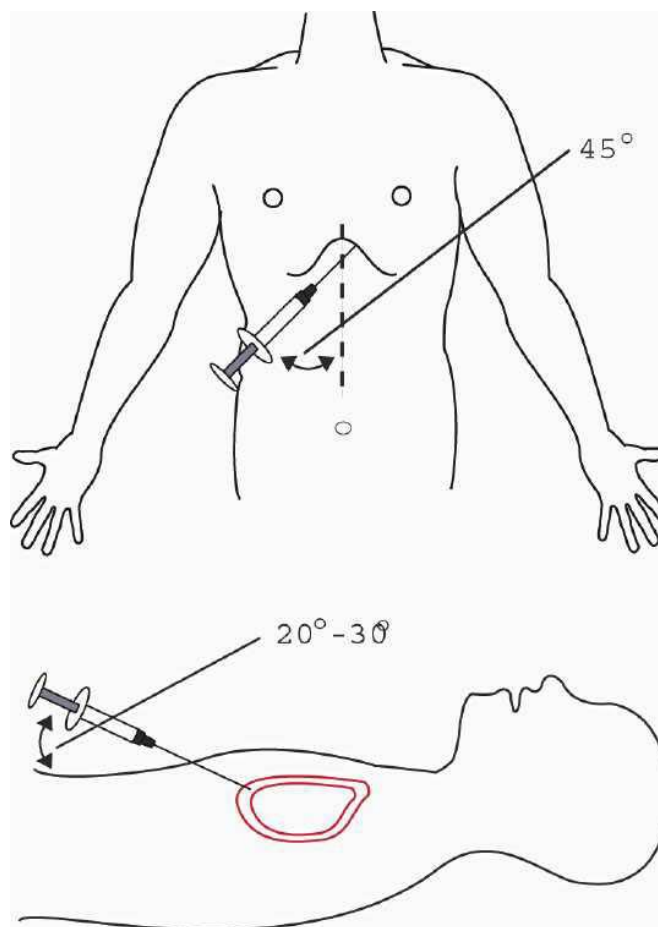
Equipment: 18 gauge spinal needle, 20ml syringe.

Pt. Position: Supine.

Landmarks: Insertion site is just below and patient left of the xiphoid process.

Technique: Find land mark, insert needle at a 90-degree angle to the skin approximately 1cm. Once under skin, direct needle toward inferior tip of left scapula with plunger of syringe retracted slightly during advancement. Stop advancement when blood return appears, aspirate all freely available blood. Remove needle.

Other: Monitor any changes in EKG.



## 4.19 CHEST DECOMPRESSION

Signs and symptoms of a patient suffering a tension pneumothorax may include restlessness and agitation; severe respiratory distress; increased airway resistance on ventilating patient; JVD, abdominal rigidity; tracheal deviation; subcutaneous emphysema; unequal breath sounds and/or absent on the affected side; hyper- resonance to percussion on the affected side; hypotension; cyanosis; and, traumatic cardiac and/or respiratory arrest.

|                      |  |
|----------------------|--|
| <b>Purpose:</b>      | Convert tension pneumothorax to an open pneumothorax.  |
| <b>Equipment:</b>    | ARS (Air Release System 3.5 inch) needle or 10 or 14 gauge 3.5" angiocath.<br>Pediatrics use 18 gauge 1.88" angiocath.   |
| <b>Pt. Position:</b> | Supine   |
| <b>Landmarks:</b>    | Either the 5th intercostal space (ICS) in the anterior axillary line (AAL) or the 2nd ICS in the mid-clavicular line (MCL) may be used for needle decompression (NDC.)<br>If the anterior (MCL) site is used, do not insert the needle medial to the nipple line. For Adults the lateral site is preferred. For Pediatrics the anterior site is preferred. |
| <b>Technique:</b>    | Direct needle over top of the rib and insert at a 90-degree angle listening for air rush. Insert to hub, hold in place for 10 seconds prior to removing stylets. Remove stylet, but leave catheter in place after relief.  |
| <b>Other:</b>        | If the initial chest decompression fails to improve the signs/symptoms from the suspected tension pneumothorax: – Perform an additional chest decompression on the same side of the chest at whichever of the two recommended sites was not previously used. Use a new needle/catheter unit for the second attempt.  |

## 4.20 VENTILATORS

Ventilators may only be used by Paramedic level and Tier I-III services with specific training and medical director approval. Approved Paramedic level services may only use FiO<sub>2</sub>, rate, and volume adjustments in assist control (AC) mode.

The mnemonic **DOPES** can help you remember the most common causes of post-intubation hypoxia or deterioration.

- **D**isplacement
- **O**bstruction
- **P**neumothorax
- **E**quipment failure
- **S**tacked breaths

## 4.21 EPINEPHRINE PUSH DOSE AND DRIP

Do not give cardiac arrest doses (1mg) to patients with a pulse.

Do not utilize as first line treatment for shock, initiate only after appropriate other resuscitation measures.

- Pediatric Patients goal of resuscitation
  - Hypotension for age (lowest acceptable systolic blood pressure in mmHg)
    - Less than 1 years of age: 60
    - 1–10 years old: (age in years) (2) + 70
    - Greater than 10 years old: 90
  - Cap refill >3 seconds

BP must be monitored frequently, no less than every 5 minutes.

Route: IV/IO. Use largest possible line in most proximal location. Closely monitor for extravasation, immediately discontinue if noted and report to receiving facility if noted. May cause tissue necrosis.

- Assemble a 1mg/10ml epinephrine syringe and place a double female luer lock adaptor on end
- Use an empty 20 mL syringe to draw up 2ml of the 1mg/10ml epinephrine
- With same 20ml syringe, draw up 18ml of normal saline to dilute the epinephrine
- The concentration of epinephrine in the 20mL saline flush syringe is now 10 mcg/mL
- Label the syringe to avoid medication errors
- Administer as necessary to maintain blood pressure

Onset: 1 minute

Duration: 5-10 minutes

Goal: Adult Maintain mean arterial pressure (MAP)>65

Adult Dose:

2ml (20mcg)- 5ml (50mcg) every 2-5 minutes as needed

Pediatric Dose:

Goal: see pediatric goals of resuscitation above

0.05-2mcg/kg (max 50mcg/dose) every 2-5 minutes as needed

In situations where a continuous infusion is needed, an epinephrine drip for adults may be utilized.

- Draw up 1mg of either 1mg/1ml or 1mg/10ml epinephrine
- Inject into a 1 liter bag of Normal Saline
- The concentration of epinephrine in the 1 liter 1mcg/mL
- Label the bag to avoid medication errors
- Use a 10gtt/ml macrodrip tubing set and piggyback into primary infusing fluid
- Administer as necessary to maintain blood pressure

Onset: Immediate

Duration: Continuous while infused

Goal: Maintain mean arterial pressure (MAP)>65

Adult Dose:

**Mild hypotension SBP<80**

1mcg/min or .001mg/min = 1gtt every 5 seconds

**Moderate hypotension SBP<70**

20mcg/min or .02mg/min = 4 drops per second

**Severe hypotension (cardiovascular collapse)**

50mcg/min or .05mg/min = 8 drops per second

## 4.22 PEEP VALVE GUIDELINES

**Indications:** PEEP should be considered if equipment is available in pulsatile patients requiring positive pressure ventilation of all age groups to increase alveolar recruitment, reduce risk of repetitive alveolar collapse injury, and increase oxygenation.

Patients presenting with the following history or signs may benefit from PEEP:

- Conditions prior to respiratory arrest would indicate CPAP.
- Hypoxia
- Lung disease prior to intubation such as ARDS, Asthma or COPD
- Atelectasis (alveoli collapse)
- Extended duration of artificial respiration such as interfacility transfer (Greater than 30 minutes)
- Pulmonary contusion or flail chest

### **Contraindications:**

- Hypotension (Adult-Systolic BP less than 90, Peds  $70 + \{Age \times 2\}$ )
- Cardiac Arrest (reduces effectiveness of CPR)
- Suspected or Known Pneumothorax

### **Special Considerations:**

- Patients should be monitored closely for pneumothorax.
- Patients with Supraglottic airways in place should be closely monitored for the develop of leak when utilizing PEEP
- The airway should be monitored closely for the need to suction.
- Higher levels of PEEP can decrease ETCO<sub>2</sub>.
- Monitor for stacked breaths (Auto-PEEP) due to incomplete exhalation. (Asthma, COPD)
- If at any time ventilation becomes difficult, or hypotension occurs, the PEEP valve should be removed.
- Decreased tidal volumes are often required to achieve adequate chest rise with PEEP.
- Nebulized medications can be administered during PEEP use.

### **Procedure:**

- Connect PEEP valve to exhalation port of BVM or ventilator circuit.
- If CPAP was used prior to mechanical ventilation, set PEEP valve to last CPAP level.
- If no previous CPAP, initially set PEEP valve at 3-5 cmH<sub>2</sub>O (physiologic PEEP)
- Titrate PEEP in 5 cmH<sub>2</sub>O increments as needed to achieve SPO<sub>2</sub> >93% and reduce adventitious lung sounds. Frequently monitor blood pressure.
- Medical direction should be sought when PEEP greater than 10 cmH<sub>2</sub>O is indicated.

\*\*If abrupt decrease in O<sub>2</sub> saturation, evaluate for potential causes **DOPES:**

**Tube Displacement, Obstruction, Pneumothorax, Equipment, Stacked Breaths**

**Referenced Guidelines:** [Respiratory Distress](#)

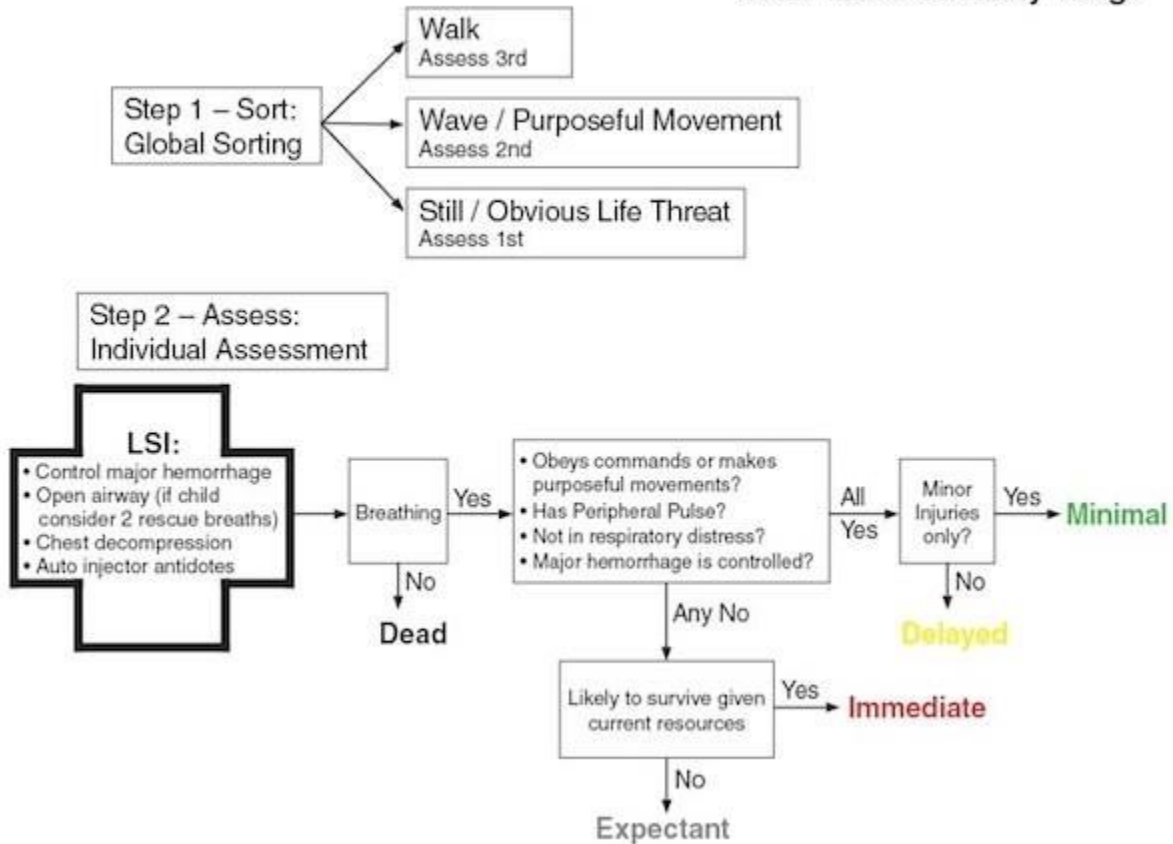


**Photo credits:** Ambu USA



## 4.23 SALT TRIAGE

### SALT Mass Casualty Triage



### Step 1: Sort

Direct any patients who can walk to a designated safe area. These patients should be assigned last priority for individual assessment. Those who remain should be asked to wave (e.g., follow a command) or be observed for purposeful movement. Those who do not move and those with obvious life threat should be assessed first since they are most likely to need lifesaving interventions.

### Step 2: Assess

Assess patients based on the above sorting steps, with priority given to those who did not walk to the designated safe area or show purposeful movements. Next, assess those who remained in place but were able to wave or show other purposeful movement. Finally, assess those who were able to walk to the designated area. Remember, triage is a fluid and ongoing process, and patients' conditions may change, so all patients must be assessed and reassessed.

The individual assessment should begin with limited rapid lifesaving interventions.

Life Saving Interventions:

- Control major hemorrhage using tourniquets or by direct pressure provided by other patients or devices.
- Open the airway through positioning or basic airway adjuncts. If the patient is a child, give 2 rescue breaths.
- Chest needle decompression
- Auto injector/antidotes as needed.

Life Saving Interventions should only be performed within the responder's scope of practice and only if the appropriate equipment is immediately available.

Patients should be prioritized for treatment and/or transport by assigning them to one of five categories: **Immediate**, **Expectant**, **Delayed**, **Minimal**, **Dead**. If, after life-saving interventions are attempted, a patient remains not breathing may be triaged as dead, designated with the color black. For patients who are breathing but do not obey commands, **or** do not have a peripheral pulse, **or** are in respiratory distress, **or** have uncontrolled major hemorrhage, triage as immediate, designated with the color red. Providers must also consider those patients with injuries that are likely to be incompatible with life given the currently available resources, and these patients may be triaged as expectant, designated with the color gray. Patients who have mild injuries that are self-limited if not treated and can tolerate a delay in care without increasing their risk of mortality may be triaged as minimal, designated with the color green. The remaining patients may be triaged as delayed, designated with the color yellow.

**Step 3: Treatment and/or Transport**

In a large mass casualty event, treatment may need to be provided on scene for prolonged periods. Consider requesting additional resources, to provide on scene care.

Transport should be provided to those designated immediate first, then delayed, and then minimal, as resources are available. In extreme circumstances, means of transportation other than ambulances, such as buses, may be utilized for transport of appropriate patients.

Destination determination will depend on the incident location, duration, and scope. Each agency, county, or MABAS division may have its own plan in place for MCI communications, please follow these plans. When possible, patients should be distributed to area hospitals in an effort to not overwhelm any one particular hospital. Re-triage frequently for duration of MCI

## 4.24 PELVIC BINDER

Goal: To provide circumferential compression to reduce and stabilize a suspected fractured pelvis. Prompt recognition and treatment during primary survey.

### Equipment:

- 1) Appropriately sized commercial pelvic binder  
OR
- 2) Folded bed sheet

### Indications

- 1) Hemodynamically unstable or potentially unstable patients with a suspected or confirmed traumatic pelvic fracture.
- 2) Pelvic fracture can be suggested by:
  - a. Abrasions and contusions around the pelvic area
  - b. Superficial hematoma above inguinal ligament, scrotum, and thigh
  - c. Limb length discrepancy, deformity, pain and movement of pelvis
  - d. Unexplained shock/hypotension in trauma

### Procedure

- 1) Gather equipment and supplies, as needed. Anticipate need for spinal motion restriction
- 2) Assess pelvic area, distal circulation, sensation, and motor function of lower extremities.
- 3) For sheets, fold smoothly (do not roll the sheet)
- 4) Remove objects from patient's pockets or pelvic area. In male patients, make certain genitalia are out of the way
- 5) Center Pelvic Binder/sheet beneath patient at the level of trochanters (hips) or pubic symphysis
- 6) Tighten per manufacturer guidelines or wrap and twist the two running ends of the sheet around the patient's pelvis. Once tightened, cross the running ends and tie, or clamp them to maintain tension.
- 7) Reassesses distal circulation, sensation, and motor function after splint application.

## 4.25 ADULT AND PEDIATRIC CARIOVERSION

### PROCEDURE:

- 1) Ensure criteria are met for cardioversion per “unstable” criteria
- 2) If indicated perform sedation per appropriate guidelines
- 3) Apply limb leads
- 4) Place conductive hands-free multi-function pads on the patient in appropriate location
  - a. Anterior / Posterior: Place negative electrode on left anterior chest, half way between the xiphoid process and the left nipple. This corresponds with the V2 – V3 EKG position. Place the positive electrode on left posterior chest beneath the scapula and lateral to the spine.
  - b. Anterior / Anterior: Place the negative electrode on the left chest, mid-axilla over the fourth intercostal space. Place positive electrode on anterior right chest, sub-clavicular area. Avoid placing the pads over any implantable electrical device or transcutaneous medication patches.
- 5) Apply limb leads.
- 6) Select appropriate energy level for clinical situation
  - a. Adult perform first synchronized cardioversion @ 150 Joules.
    - i. If unsuccessful, increase by 50 joules for each subsequent attempt.
  - b. Pediatric perform first synchronized cardioversion @ 1j/kj
    - i. If unsuccessful, increase synchronized cardioversion to 2j/kg first attempt
- 7) Press synchronizer switch/button.
- 8) Assure machine is sensing R-wave.
- 9) Charge defibrillator.
- 10) CLEAR patient. Ensure supplement oxygen is removed and has dissipated.
- 11) Press discharge button and hold button until delivery of shock occurs. Obtain rhythm strip.
- 12) Reassess patient and proceed as indicated by patient condition.
- 13) If repeat shock is indicated increase to next energy level and ensure sync mode is activated as above.

## 4.26 TRACTION SPLINT FOR FEMUR FRACTURE

**Indications:** Suspected isolated mid shaft closed femur fracture.

### **Contraindications**

- A. Open femur fracture.
- B. Injury to ipsilateral knee, hip, pelvis, ankle, lower leg
- C. Wound over anchor points

### **Procedure**

- 1) Upon recognizing the injury, Rescuer One should stabilize leg in the position found.
- 2) Rescuer Two will then expose the injured leg
  - A. Assess neurological function distal to injury site.
  - B. Assess circulatory function distal to injury site.
- 3) Rescuer Two should prepare traction splint.
  - A. Adjust splint to length of uninjured leg.
  - B. Secure
- 4) Rescuer Two should apply the ankle hitch to the patient.
- 5) Secure Proximal Anchor.
- 6) Rescuer One will now move the splint into position.
- 7) Applying mechanical traction until the pain and muscle spasms are improved.
  - A. Maintain manual traction until the mechanical traction takes over.
  - B. Traction can be stopped when the injured leg is approximately the same length as the uninjured leg.
- 8) Secure the remaining straps around the leg avoiding suspected fracture site.
- 9) Reevaluate all of the straps. When splint is properly applied, the patient's foot should be upright.
- 10) Reassess circulatory and neurological function distal to injury site. Compare to original findings and note any changes.

### **Notes:**

- 1) If the patient is determined to be unstable, do not waste time applying the traction splint. Splint the injured leg against the uninjured leg to expedite transport.
- 2) Continue to reassess circulatory and neurological function distal to injury site during transport.

## 4.27 SPECIAL NEEDS DEVICES

- CSF SHUNT
  - Assessment for infection.
  - Assessment for signs of increased intracranial pressure.
  - Ventilate patient if signs of brain herniation (unresponsiveness with equal pupils, fixed, dilated, or unresponsive pupils, or increased blood pressure and decreased heart rate). Ventilation rate should be the higher end of normal or to an EtCO<sub>2</sub> of 35mmhg.
  
- COLOSTOMY OR ILEOSTOMY
  - Assessment for infection, irritation/trauma, or peritonitis.
  - Direct pressure if bleeding at site.
  - Saline moistened sterile dressing covered by dry dressing if stoma is exposed.
  
- GASTROSTOMY (FEEDING) TUBE
  - Assessment for displaced or obstructed tube.
  - Assessment for peritonitis or perforation of the stomach/bowel.
  - Assessment for equipment issues, such as kinked or cracked tubing or infusion pump failure.
  - Direct pressure if there is bleeding at the site.
  - Dry, sterile dressing over the area if tube is dislodged, or tape partially dislodged tube in place.
  - If tube is blocked (as noted by abdominal distension or vomiting) stop the feeding. Attach the connector to the tube and leave tube open and draining into a sterile container.
  - Bring tubing with patient to the hospital for sizing purposed and reinsertion/replacement of the tube.
  
- URETEROSTOMY OR NEPHROSTOMY TUBE (OR FOLEY CATHETER)
  - Assessment for infection, irritation/trauma, peritonitis, blocked urinary drainage.
  - Direct pressure if bleeding at site.
  - Saline moistened sterile dressing covered by dry dressing if stoma is exposed.
  
- FISTULA, SHUNT, OR ARTERIOVENOUS GRAFT (AV SHUNT)
  - Blood pressure should not be taken in same extremity.
  - IV should not be started in same extremity.
  - Apply direct pressure to control bleeding at site.

## REFERENCED FORMS



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**Mercyhealth Prehospital and Emergency Services Center Physician On-Scene Form**

**ON-SCENE PHYSICIAN RESPONSIBILITY ACKNOWLEDGMENT**

Thank you for your offer of assistance. Be advised the EMS personnel are operating under the authority of state law and regulations. No physician or other person may intercede in patient care without the Mercyhealth EMS Medical Director, or his or her appropriate designee, relinquishing responsibility of the scene or otherwise giving approval in accordance with EMS Regional and state guidelines.

**If YOU ARE A PHYSICIAN AND DESIRE TO ACCEPT RESPONSIBILITY FOR AND DIRECTION OF THE CARE OF THE PATIENT(S) AT THE SCENE:**

1. You MUST show your medical license to the EMT and state your specialty.
2. You MUST accompany any patient whose care you direct to the medical facility in the ambulance or other attending medical vehicle.
3. Your direction of a case MUST be approved by the Mercyhealth EMS Medical Director or his or her appropriate designee.

*Please print except for your signature:*

I, \_\_\_\_\_ M.D. / D.O., assume full responsibility for the pre-hospital direction of medical care of the patient(s) identified below during this ambulance call, and I will accompany the patient(s) to the medical facility. I understand that the Mercyhealth EMS Medical Director, or his or her appropriate designee, retains the right to resume responsibility for the medical care of such patient(s) at his or her discretion in accordance with Mercyhealth Prehospital and Emergency Services Medical Guidelines at any time, and that the care of the patient(s) will be relinquished to the appropriate personnel upon arrival at the medical facility. Patient Identification (please initial and provide information as appropriate):

\_\_\_\_\_ All patients at the scene, OR  
\_\_\_\_\_ The following patient(s):

\_\_\_\_\_  
\_\_\_\_\_

Physician Signature (M.D. / D.O.) \_\_\_\_\_  
IL Physician License Number \_\_\_\_\_

Date \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Specialty \_\_\_\_\_

EMS Personnel to complete:  
Run Number \_\_\_\_\_ EMT Initials \_\_\_\_\_

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**Mercyhealth Prehospital and Emergency Services Mass Refusal Form**

Date: / /      Location of Call \_\_\_\_\_  
Time: Dispatched: \_\_\_\_\_ Enroute: \_\_\_\_\_ Arrived: \_\_\_\_\_ Completed: \_\_\_\_\_  
Agency: \_\_\_\_\_ Unit#: \_\_\_\_\_ Call-#: \_\_\_\_\_  
Type of incident: \_\_\_\_\_

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Medical Control contacted? \_\_\_\_\_ M.D./ECRN Name: \_\_\_\_\_

**REFUSAL OF CARE/TRANSPORT AND RELEASE FROM LIABILITY**

I, ***listed below***, am refusing care and transport to a hospital following the above incident. I acknowledge that all refusals carry the risk that my medical condition could get worse, up to and including death. In voluntarily making this decision, I release the Emergency Medical Services System(s), their affiliated hospital(s), physicians, and personnel from any responsibility for the worsening of my medical condition. If my medical condition worsens, I should call 911.

**Print Name**

**DOB**

1. \_\_\_\_\_  
Address \_\_\_\_\_
2. \_\_\_\_\_  
Address \_\_\_\_\_
3. \_\_\_\_\_  
Address \_\_\_\_\_
4. \_\_\_\_\_  
Address \_\_\_\_\_
5. \_\_\_\_\_  
Address \_\_\_\_\_
6. \_\_\_\_\_  
Address \_\_\_\_\_
7. \_\_\_\_\_  
Address \_\_\_\_\_

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**Signature of EMS crew #1**

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**Signature of EMS crew #2**

If School Bus Accident: signature of authorized school designee: \_\_\_\_\_

Region 1 Rehab Tracking Form

|                      |                         |             |
|----------------------|-------------------------|-------------|
| Date:                | Incident Address:       |             |
| Incident Command:    | Rehab Division Manager: |             |
| Ambient Temp:        | Wind Speed:             | Humidity:   |
| Dept:                | Ambulance #:            | Incident #: |
| Ambulance Personnel: | Ambulance Personnel:    |             |

| Name, Dept, Company | # Bottles | Time IN:<br>Time OUT: | Vitals x<br>3<br>Time: | B/P | Pulse | Resp. | Temp. | SpO <sub>2</sub> | SpCO | Additional Info |
|---------------------|-----------|-----------------------|------------------------|-----|-------|-------|-------|------------------|------|-----------------|
| A                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| B                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| C                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| D                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| E                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| F                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| G                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| H                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
| I                   |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |
|                     |           |                       |                        |     |       |       |       |                  |      |                 |

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## **6.01 INTRODUCTION TO TEMS GUIDELINES:**

Only those individuals with Tactical Endorsements and acting during a tactical event will operate under these guidelines. Tactical EMS providers will be required to undergo additional training and skills evaluation at the discretion of the EMS Medical Director.

Tactical EMS Providers shall be comprised of experienced Paramedics who are selected by the EMS service director, the EMS Medical Director, and the SWAT Commander. Once deployed, or while actual training is underway, the Paramedics shall be under command of the SWAT Team Leader. All medical procedures shall be performed on an as need basis based on the circumstances and shall be carried out under authority of written guidelines or direct orders of the EMS Medical Director or Associate EMS Medical Director.

Once a patient is moved outside the warm zone perimeter, usual and customary practice shall commence. This typically shall occur once the patient is taken to the ambulance or a casualty collection point. The hospital which may receive patients from the SWAT encounter shall be notified that a SWAT call is underway. No other information is required.

All actual SWAT calls shall have a debriefing done. The medical director should be present at SWAT calls and debriefings when possible.

A Tactical Run File shall be instituted and kept in accordance with EMS Medical Director and State Office of EMS guidelines. All patient encounters and sick calls shall have a formal run sheet filled out. Minimal assistance or First Aid assessments of police officers do not require a run sheet, but documentation of the assistance given should be kept.

A Medical Threat Assessment shall be completed for all SWAT calls and training which has special logistics that puts officers and medical crews at risk. This assessment shall be given to the SWAT Commander.

When the Tactical EMS team is deployed outside their service area, Medical Direction shall remain with the EMS Medical Director or Associate EMS Medical Director, unless an accountable, pre-arranged and qualified Medical Direction source is identified and approved by the EMS Medical Director. The EMS Medical Director should be contacted when possible anytime a deployment is made outside the immediate area and arrangements made for voice contact if necessary.

These Tactical Guidelines will cover some specific care issues unique to medical care rendered while involved with a SWAT incident. It should be clear that TEMS Guidelines are in addition to the Mercy EMS Guidelines, and those guidelines should be referenced when the TEMS guidelines don't cover a specific situation.

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## 6.02 TEMS APPROVED MEDICATIONS

Adenosine 6mg pre-load syringe  
Adenosine 12mg pre-load syringe  
Albuterol solution for nebulizer  
Amiodarone 150 mg vials  
Aspirin 81mg chewable tablets  
Atropine 1mg pre-load syringe  
Atrovent solution for nebulizer  
Benadryl 50mg pre-load syringe  
Dextrose 50% pre-load syringe  
Epinephrine 1:1000 1mg ampule  
Epinephrine 1mg/10ml 1mg pre-load syringe  
Glucose for oral use  
Ketamine 500 mg vial  
Lidocaine 100mg pre-load syringe  
Magnesium Sulfate 5 grams Pre-load syringe  
Dilaudid/Hydromorphone 2mg pre-load syringe  
Narcan 2mg pre-load syringe  
Nitroglycerine spray 0.4mg per dose  
Norcuron 10mg vial  
Ondansetron 4mg pre-load syringe and Ondansetron ODT  
Tetracaine 1 bottle  
TXA 1 G unit vial  
Solumedrol 125mg vial  
Succinylcholine 100mg vial  
Versed 5mg vial

TEMS Approved OTC Medications (to be used in accordance with manufacturer instructions):

Ibuprofen 200mg tablets  
Kaopectate  
Loratadine 10mg tablets  
Sudafed tablets  
Acetaminophine 500mg tablets  
Pepto Bismol  
Imodium  
Pepcid

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## 6.03 AIRWAY MANAGEMENT

TEMS Paramedics will require expert airway skills and validation of these skills by the medical director. Oxygen will be provided per standard guidelines unless oxygen is unavailable due to the tactical situation. Oxygen will be administered as soon as the tactical situation permits.

It is feasible that the tactical situation will prohibit the use of BVM Ventilations and/or Endotracheal Intubation. If this is the case and the patient needs a definitive airway, the Supraglottics Airway shall be placed as necessary. It is entirely permissible to remove the Supraglottic Airway and intubate if the patient condition warrants once outside the perimeter in a controlled setting. Nasal airways are acceptable airway devices in the hot zone or during care under fire period.

Rapid Sequence Airway may be instituted when felt appropriate by the Tactical Paramedic and the patient is unable to maintain their own airway. The Mercy EMS guidelines for RSA will be followed, but a colorimetric indicator may be used to immediately confirm tube placement in the hot zone if an ETCO<sub>2</sub> monitor is unavailable. It is mandatory that an advanced airway be checked and monitored for efficacy after every patient movement. A low threshold for surgical or non-visualized airway is expected of TEMS Paramedics.

If penetrating trauma has occurred to the chest and a tension pneumothorax is suspected, the Tactical Paramedic shall relieve the tension immediately using a large bore angiocath (14g 3.25" minimum). Place the needle into the chest 4<sup>th</sup>/5<sup>th</sup> intercostal space at the anterior axillary line. Once tension is relieved, remove the needle and leave catheter in place. Move the patient to safety once able and arrange for rapid transport as this patient will need a chest tube as a definitive treatment. Repeat as needed. Cover all sucking chest wounds with Vaseline Gauze or commercially available chest wound dressing. All four sides should be occluded, there is no role for an open side as this does not effectively relieve a tension pneumothorax and increases risk of drawing air into chest cavity.

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## 6.04 HEMORRHAGE CONTROL

Normal treatments should be used when possible to control bleeding including direct pressure and/or tourniquet. The SAM junctional tourniquet is approved for inguinal and axillary use by TEMS trained medics.

For wounds to the neck, chest, or areas where a tourniquet can't be utilized, the use of HemCon, Combat Gauze, or other commercially available non-exothermic hemostatic dressings are to be utilized.

For deep contaminated wounds or open fractures where time to definitive care is expected to be over 60 minutes, administer Ancef, 1 gram IVPB over 30 minutes. Verify patient is not allergic prior to administering.

For adult patient that is hypotensive (SBP<90) or tachycardica (HR>110) administer **TXA** 2 Grams IV/IO over 20 minutes. For unstable pediatric patients administer **TXA** 30mg/kg (maximum 2 Grams). Make sure transporting service is aware that patient received TXA, so receiving facility is aware. TXA should not be administered more than 3 hours after the time of wounding. TXA may also be given for patients with Traumatic Brain Injury less than 3 hours ago and GCS 12 or lower.

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## **6.05 USE OF IV FLUIDS**

An IV or IO may be established at any time feasible. Use Normal Saline and follow Routine Guidelines. It is understood that needed IV access may be delayed until outside the perimeter if the situation warrants. In the event of prolonged scene and transport time LR is the preferred fluid for hemorrhagic shock resuscitation. LR is not compatible with blood transfusion and a secondary IV access with blood tubing and NS, or flushing the line with NS would be required.



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## **6.06 SPINAL IMMOBILIZATION**

Unless operating in a hot zone, standard selective spinal immobilization techniques shall be utilized. Routine use of c-spine precautions in penetrating trauma is not indicated.

If emergency evacuation from the hot zone is needed, and this movement is approved by the SWAT Commander, move the patient rapidly to a safe zone in the most appropriate manner. Once in a safe area, use standard selective immobilization techniques.

Perform neuro checks once the patient is safe and document these. Document why initial spinal immobilization was not done and how the person was moved.

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## 6.07 CARE OF SWAT PERSONNEL

**Sprains and sprains:** Ibuprofen 600mg PO, Tylenol 1G PO, ice pack and elevate extremity. An ACE wrap may also be applied. Do not apply so tight that circulation is impaired.

**Allergies:** Loratadine (OTC) 10mg PO one dose.

**Anaphylaxis:** Epinephrine 1mg/1ml 0.5mg IM as per routine care. Benadryl 50mg PO/IM/IV/IO. SoluMedrol 125mg IV/IO/IM.

**Fever:** If over 101 degrees, advise SWAT Commander to remove from duty. For any level of fever, administer Acetaminophen, 1,000mg PO or Ibuprofen 600mg PO.

**Abrasions:** check Tetanus Status. If greater than 5 years advise officer to be immunized in next 72 hours. Clean wound, apply antibiotic ointment and dress as appropriate.

**Diarrhea:** Provide Kaopectate, Pepto Bismol, or Imodium for personal use.

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## 6.08 WOUND CARE

**Lacerations:** If the wound is deep and pulls apart, it will likely require closure in the ED. At times, you may be hours from an ED. In this case, to stop bleeding and prevent infection, irrigate with copious high pressure clean water and dress as appropriate. Advise SWAT Commander and patient of need for definitive care. Tactical Trained and credentialed TEMS Paramedics may apply Dermabond, steristrips, or staple simple lacerations if unable to seek timely care in the ED and physician not available for field response. Any wound repaired in the field requires emergency department evaluation after the incident and personnel can be safely sent for evaluation.

\*Clean the wound well and pat dry.

\*Using gloved fingers or forceps, approximate wound edges, apply at least 3 layers.

\*Wait 30 seconds between each application of the Dermabond.

\*Do not use in hair, on mucosal surfaces, or on face.

Place a standard dressing once dry. Do not apply antibiotic ointment over Dermabond.

Again, check Tetanus Status.

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## 6.09 TRIAGE

Standard triage techniques should be utilized when feasible. The ability to get to injured persons and to perform triage may be inhibited or require modification based on the tactical circumstance.

The SWAT Commander dictates all activities of personnel, including Tactical Paramedics. Once threats are eliminated and the Commander deems an area secure, the Tactical EMS Personnel shall approach and triage as appropriate and feasible.

It is imperative that all non-SWAT persons be searched prior to removal to safe zone for treatment and transport.

When numerous victims are present and it is deemed safe to approach by the SWAT Commander, advise the need for appropriate ambulance support. Remove victims in order of need providing only the needed life-saving care such as airway and severe bleeding control. Allow safe zone crews to provide definitive management.

Approach of victims requires a direct order from the SWAT Commander **UNDER ALL CIRCUMSTANCES**.

### **OTHER MEDICAL CARE ISSUES:**

Use of medications per routine guidelines for any encountered emergency is approved. Treat as time, situation, and equipment/meds available permit. Once to the safe zone, move to the ambulance and treat patients as would be standard practice. Contact medical control at Mercy Hospital any time you feel it is necessary and situation permits this communication.

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## 6.10 USE OF MARK 1 INJECTOR KITS

### THIS DEVICE IS FOR SWAT TREATMENT ONLY

The Mark 1 Kit contains two medications, Atropine and 2-Pam, both in automatic syringes and is used by crew members who have been exposed to nerve gas (Sarin, VX, Tabun, Soman) or organophosphates.

Symptoms of exposure include:

S – Salivation

L – Lacrimation (tearing)

U – Urination

D – Defecation

G – GI upset (cramps)

E – Emesis

M – Muscle Weakness or Twitching

1. Clear the area immediately. Do not stay downwind from scene.
2. Call for help and advise of threat so other responders are prepared.
3. Administer Mark 1 Kit to your crew partner or self as necessary.
4. Decontaminate yourself if agent is on skin or clothes. Do not move the emergency to a new location. Understand that you need immediate medical treatment and move to hospital ASAP.

### PROCEDURE:

- A. Remove Kit from package.
- B. Select injection site. Any large muscle area is OK. Thigh is good place. May inject through clothing.
- C. With your dominant hand grasp the Atropine auto injector which is the smaller of the two. Do not put your hand or thumb over the needle site.
- D. Pull the auto injector out of the clip with a smooth motion. The injector is now armed.
- E. Hold the auto injector between two fingers and your thumb like a pencil.
- F. Position the green end onto the injection site. Stay away from joints.
- G. Apply firm pressure (do not jab) until the needle goes into the skin.
- H. Hold continuous pressure for 10 seconds to allow medication to be administered.
- I. Remove the auto injector from the injection site and dispose of the device into a sharps container.
- J. Remove the large auto injector which is 2-Pam. The black end is the needle end.
- K. Repeat the steps above.
- L. Dispose of device into sharps container.
- M. Transport to hospital. You are now a patient, not a responder.

If SLUDGEM Symptoms are seen in anyone, immediate evacuation is mandatory. Inform the SWAT Commander that Nerve Gas appears to be in the area and rapidly withdraw from the area when the command is given to do so. Re-entry to the area for any person is prohibited until a response team geared for this emergency is on scene.

Decontaminate in a warm Zone before transport. If Mark I kits are exhausted, administer 3 mg of Atropine IV or IM as soon as possible to others in need.