Mercyhealth
Pre-Hospital & Emergency Services Center
Medical Guidelines

for
Wisconsin EMS Providers

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With special gratitude to the telecommunicators, EMS providers, firefighters, and law enforcement officers who have contributed to not only these guidelines but improving public safety in the community. We are grateful for your efforts and sacrifice.

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SECTION 1 MERCY EMS ADMINISTRATIVE GUIDELINES

1.01 INTRODUCTION

I. Only Mercyhealth EMS providers that have been credentialed by the EMS Medical Director may utilize these guidelines clinically.

II. It is the understanding of the EMS Medical Director that care is to be initiated for all patients upon assessment. Care will be provided in accordance with Wisconsin Department of Health Services (DHS) rules and regulations, applicable laws, and these Medical Guidelines for WI 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 Medical Guidelines have been aligned with other regional EMS standing orders and guidelines.

   A. Find the appropriate Medical Guideline. Carry out instructions as written in the Medical 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. State rules require that a short form of documentation approved by the EMS System must be left with the receiving hospital. All reports will be completed in a timely fashion and in accordance with appropriate state and EMS system requirements.

   A. Each run report must be signed by the person who wrote it.

   B. An EMR, EMT, AEMT, and/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 Online 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 Online 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, Online/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 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.

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 Online 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.

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 cancelled.

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 EMS 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 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 EMS Medical Director approved adjuncts such as the Broselow tape and Pediatape are acceptable.
2. If weight is not available, and the child does not fit on Broselow tape, then 1/2 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 a state EMS authority 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 EMS 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 EMS 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 EMS 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 EMS Medical Director 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 EMS 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 EMS 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 EMS 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 EMS 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. Wisconsin Concealed Carry of a Firearm.

A. Overview: 2011 Wis. Act 35 regarding licenses authorizes 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 Online 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 cancelled 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 cancelled 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 EMS 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 PAs (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. Emergency Medical RN's (EMRN) who undergo additional training and credentialing will function under the EMT-Basic guidelines.

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 under Wisconsin Statutes 48.981 (2). Any suspected abuse which falls into mandatory reporting criteria should be immediately reported to the County where the child resides or to the law enforcement of where the possible abuse and/or neglect occurred to provide immediate safety for at risk individuals. Ensure mandatory reporting is completed and documented immediately after safety of EMS and individual is accomplished. Treat injuries per Medical Guidelines and provide psychological support. In additional to completion of mandatory reporting, EMS personnel shall report their suspicions to the emergency department physician and/or charge nurse and/or police and document on the EMS medical record.

A. Child Abuse

1. Local Child Protective Services (CPS) can be reached through a 911 dispatcher.

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 obvious injuries.

b) If parent or guardian refuses to let you treat and/or transport the child, remain at the scene. Contact Online Medical Control 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 CPS 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 Online 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.

B. Elder Abuse (60 years and older) and Adults-At-Risk (18-59 years) with Disabilities Abuse

1. All EMS personnel who have reasonable cause to believe a geriatric patient may be abused or neglected shall report the circumstances to the appropriate authority upon completion of patient care.

2. Reporting number for Geriatric Abuse:

a) Adult Protective Services (APS) can be reached through the Elder Abuse Hotline, 833-586-0107.

b) Nursing Home Abuse - Suspected victims of nursing home abuse or neglect are to be reported to the APS Division of Quality Assurance.

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.

C. Domestic Abuse

1. All EMS personnel who have reasonable cause to believe a patient is the victim of domestic assault and/or violence shall provide immediate and appropriate referral information to the patient. This requirement will be fulfilled by the receiving hospital.

a) If someone is a victim of domestic violence and/or is in immediate danger, advise them to call 911 for law enforcement response.

b) Information about shelter and alternatives is available through End Domestic Abuse Wisconsin, the Wisconsin statewide membership organization representing domestic abuse victim service providers and survivors. Their 24-hour regional crisis or help lines can be found online at: *https://www.endabusewi.org/get-help/*

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.

D. Human Trafficking

1. Human trafficking is the misuse of other people. This often happens for the purpose of sexual exploitation or forced labor. Trafficking can occur at any age. Human traffickers often recruit vulnerable youth with force or deception. They may exploit youth through fraud, abuse of power, control, violence, or physical abduction. They may also threaten the youth or their family. Economic pressure can make a person more vulnerable to being trafficked. Trafficking occurs in cities, suburbs, and rural areas. It is a statewide issue. Many youth who are being trafficked do not see themselves as victims. They may not realize they are being trafficked.

a) The *Wisconsin Child Sex Trafficking and Exploitation Indicator and Response Guide* (available online) can help determine whether suspected cases should be referred to the Department of Children and Families (DCF) Anti-Human Trafficking website (*https://dcf.wisconsin.gov/ys/aht*), CPS, or local law enforcement.

E. School Violence

1. Wisconsin law 175.32 requires that any mandated reporter who believes in good faith, based on a threat made by an individual seen in the course of professional duties regarding violence in or targeted at a school, that there is a serious and imminent threat to the health or safety of a student or school employee or the public, make a report to law enforcement.

F. For victims of sexual assault see section 1.5 Crime Scene Management

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.

D. Masks should be placed on patients or over oxygen delivery devices as source control of respiratory borne illness as indicated.

III. **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.

IV. **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.

V. **NEEDLESTICK 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.

E. NEEDLE STICK INJURIES SHOULD BE REPORTED PER YOUR INTERNAL DEPARTMENT POLICY.

VI. **MISCELLANEOUS**

A. Thorough hand washing is recommended after every patient encounter.

B. Non-latex equipment should be used on all patients that have 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.

VII. 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. Brief 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 Hypovolemia & Shock Guidelines*)

F. Sepsis Alert should be called when the sepsis screening tool is positive (*See Hypovolemia & Shock Guidelines*)

1.04 TRANSFER OF PATIENT CARE RESPONSIBILITY

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 **I**njuries or **I**nspections
(Time of injury/list injuries head to toe or time of onset/brief medical exam findings)

S Vital **S**igns
(First set and significant changes, include glucose)

T **T**reatments 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. Online 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.

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*, consider IV Fluids, Cold Water Immersion, and transport to the hospital
- If temperature low, treat per *Cold emergencies*
- 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 must 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 Control 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.

<u>Release from Rehab</u>

- 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

<u>Post-Incident Recovery</u>

- 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		

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	–5	–10	–15	–20	–25	–30	–35	–40	–45
	05	36	31	25	19	13	7	1	–5	–11	–16	–22	–28	–34	–40	–46	–52	–57	–63
	10	34	27	21	15	9	3	–4	–10	–16	–22	–28	–35	–41	–47	–53	–59	–66	–72
	15	32	25	19	13	6	0	–7	–13	–19	–26	–32	–39	–45	–51	–58	–64	–71	–77
	20	30	24	17	11	4	–2	–9	–15	–22	–29	–35	–42	–48	–55	–61	–68	–74	–81
	25	29	23	16	9	3	–4	–11	–17	–24	–31	–37	–44	–51	–58	–64	–71	–78	–84
	30	28	22	15	8	1	–5	–12	–19	–26	–33	–39	–46	–53	–60	–67	–73	–80	–87
	35	28	21	14	7	0	–7	–14	–21	–27	–34	–41	–48	–55	–62	–69	–76	–82	–89
	40	27	20	13	6	–1	–8	–15	–22	–29	–36	–43	–50	–57	–64	–71	–78	–84	–91
	45	26	19	12	5	–2	–9	–16	–23	–30	–37	–44	–51	–58	–65	–72	–79	–86	–93
	50	26	19	12	4	–3	–10	–17	–24	–31	–38	–45	–52	–60	–67	–74	–81	–88	–95
	55	25	18	11	4	–3	–11	–18	–25	–32	–39	–46	–54	–61	–68	–75	–82	–89	–97
	60	25	17	10	3	–4	–11	–19	–26	–33	–40	–48	–55	–62	–69	–76	–84	–91	–98

Frostbite times: 30 minutes; 10 minutes; 5 minutes

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 EMS 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 Advanced 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 to the receiving hospital is less than the time to complete an advanced level intercept, initiate lower-level transport and do not delay patient care. Otherwise intercept as able and resume transport as soon as possible

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 cancelled. It is encouraged for our agencies to utilize the responding Advanced level crew or Online Medical Control to assist with assessment questions. All downgrades/cancellations need to be documented and may be reviewed by the EMS 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 HELICOPTER EMS 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[i] in reaching hospitals that can provide interventions **IF** the patient can be delivered during an interventional window[ii] **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[1]
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. Online/On-Scene Medical Control
F. Hospital diversion/bypass status
G. Patients medical home
H. Weather
I. Mass Casualty/Disaster Considerations

The 2022 National Guideline for the Field Triage of Injured Patients has been approved and endorsed by Wisconsin DHS, the Statewide Trauma Advisory Council (STAC), and the EMS Advisory Board during the statewide meetings in June 2022. EMS providers should refer to this Guideline.

[1] 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.

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
• Penetrating injuries to head, neck, torso, and proximal extremities • Skull deformity, suspected skull fracture • Suspected spinal injury with new motor or sensory loss • Chest wall instability, deformity, or suspected flail chest • Suspected pelvic fracture • Suspected fracture of two or more proximal long bones • Crushed, degloved, mangled, or pulseless extremity • Amputation proximal to wrist or ankle • Active bleeding requiring a tourniquet or wound packing with continuous pressure	All Patients • Unable to follow commands (motor GCS < 6) • RR < 10 or > 29 breaths/min • Respiratory distress or need for respiratory support • Room-air pulse oximetry < 90% Age 0–9 years • SBP < 70mm Hg + (2 x age in years) Age 10–64 years • SBP < 90 mmHg or • HR > SBP Age ≥ 65 years • SBP < 110 mmHg or • HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA

Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
• High-Risk Auto Crash – Partial or complete ejection – Significant intrusion (including roof) • >12 inches occupant site OR • >18 inches any site OR • Need for extrication for entrapped patient – Death in passenger compartment – Child (age 0–9 years) unrestrained or in unsecured child safety seat – Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height > 10 feet (all ages)	Consider risk factors, including: • Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact • Anticoagulant use • Suspicion of child abuse • Special, high-resource healthcare needs • Pregnancy > 20 weeks • Burns in conjunction with trauma • Children should be triaged preferentially to pediatric capable centers If concerned, take to a trauma center

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

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 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. Consent or refusal for treatment/transport should be **"informed"**. EMS personnel should clearly explain the proposed treatments to the patient and when appropriate, the family.
4. 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*)

F. **Adult**: A person who is 18 years of age or older or an emancipated minor

G. **Minor:** Any person under the age of 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 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 On-Scene Medical Control, 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 Online 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 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*)
   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
   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. Patients who are a danger to self or others. (*Behavioral Emergencies, Involuntary Petition*)
4. 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 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, Online Medical Control should 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*)

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.

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 Child 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 Online 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 Online 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 Online 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 Online 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.

VII. Multiple Patients/Highway Response

A. In high-risk interstate highway responses, Mass Casually 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* 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*

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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* 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.

C. **Statement of Emergency Detention by Law Enforcement Officer ("Emergency Detention")**: Chapter 51 of Wisconsin Statutes refers to alcohol, drug abuse, developmental disabilities, and mental health act (2021). *WI Stat § 51.15* refers to the legal basis and document used by law enforcement to request that a person be involuntarily detained, on an emergency basis, to allow treatment for individuals meeting certain criteria.

D. **Applicable Wisconsin Statutes**:

- Chapter 94.03 – Implied Consent
  - In emergency situations or where time and distance requirements preclude obtaining written consent before beginning treatment and a determination is made that harm will come to the patient if treatment is not initiated before written consent is obtained.
- Chapter 51.15 – Emergency Detention
  - In emergency situations when a person manifests a substantial probability of physical harm to himself or herself or to other persons through threats, attempts, or other behavior, or a substantial probability of physical impairment or injury to himself or herself or other individuals due to impaired judgment, or that death, serious physical injury, serious physical debilitation, or serious physical disease will imminently ensue unless the individual receives prompt and adequate treatment for a mental illness.
- Chapter 51.45 – Prevention and Control of Alcoholism and Drug Dependence
  - In emergency situations when a person, as a result of the use of or withdrawal from alcohol or another drug, is unconscious or has his or her judgment otherwise so impaired that he or she is incapable of making a rational decision ("incapacitated"), as evidenced objectively by such indicators as extreme physical debilitation, physical harm or threats of harm to himself or herself or to any other person, or to property.
- Chapter 55.06 – Protective Services and Protective Placement
  - EMS may be asked by a legal body to transport an individual, against their will, who is adjudicated incompetent in Wisconsin or for a minor who is alleged to have a developmental disability, and only if there is a finding of a need for court-ordered protective placement/services.

III. Guideline Statement and Process:

When a patient lacks Decision-Making Capacity, their judgment must be replaced by someone else's. 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. This includes situations when the EMS provider has reasonable cause or evidence to suspect a patient may intentionally or unintentionally physically injure himself/herself or others, is unable to care for his/her own physical needs or needs mental health treatment against their will per assertation criteria above. In these situations, prehospital providers should generally initiate treatment and transport in the interest of the patient's welfare, employing the following guidelines:

1. Attempt to determine whether the patient's Decisional Capacity is impaired due to a medical condition (See *Capacity*).
2. Assess Decision making *capacity* 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 self 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 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 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, Online Medical Control must immediately be contacted.
    d) If the Online Medical Control Physician determines the patient does not have Decision Making Capacity and transportation to the hospital and emergency treatment is required to preserve life or prevent serious impairment to health, the Physician shall order, against patient will, and based upon implied consent, the emergency care and transportation to the hospital. This shall 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 who lacks capacity following failure of appropriate de-escalation techniques. (See *Agitated and Combative Guidelines*)
    f) If it is necessary to transport a patient against their will, law enforcement should be requested to scene for consideration of an emergency detention.
    g) 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.

III. Wisconsin EMS Use of an Emergency Detention:

Note: Mental illness alone is insufficient to involuntarily detain a person. Rather, a person may require immediate treatment for the prevention of harm as below:

1. A law enforcement officer will involuntarily detain a person using CH51.15 when they have cause to believe that:

a. The subject is mentally ill, drug dependent, or developmentally disabled.
b. The subject evidences behavior which constitutes a substantial probability of physical harm to self or to others, or as otherwise set forth in §51.15(1), Wisconsin Statutes.
c. Taking the subject into custody is the least restrictive alternative appropriate to the subject's needs.

2. An emergency detention 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.
3. Prehospital provider should indicate on the EMS Patient Care Report that involuntary transport has been ordered by law enforcement via emergency detention or Online Medical Control via implied consent.
4. 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 emergency evaluation and treatment.
5. At no time should EMS Providers place themself in an unsafe situation per their assessment. If EMS is unable to obtain law enforcement assistance to safely facilitate transport of a patients this should be documented and relayed to Online 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 the Online Medical Control Physician 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 Online Medical Control** and communicate those concerns. The Online Medical Control 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 Online 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 Online 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) Online 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 EMS MD or his/her designee.

1.14 ADVANCED DIRECTIVES & HOSPICE CARE

The EMS System supports the use DNR orders, POLST, Advanced Directives, or other state approved pre-determined patient care processes to allow patients to express their desire for provisions or withholding of 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.

POLST Guidelines:

I. SECTION A Cardiopulmonary Resuscitation: (no pulse and not breathing)
   A. If "Attempt Resuscitation" box is checked, start full resuscitation per Medical Guidelines.
   B. If "Do Not Attempt Resuscitation/DNR" 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 of sustaining life by medically indicated means. In addition to treatment described in selected treatment and comfort-focused treatment, use of intubation, mechanical ventilation, and cardioversion as indicated.
   B. **Selective Treatment:** Primary goal of treating medical conditions with selected medical measures. In addition to treatment described in Comfort-focused Treatment, use medical treatment, IV fluids and IV medications as medically appropriate, and consistent with patient preference. **Do not intubate.** May consider less invasive airway support (i.e. CPAP).
   C. **Comfort-Focused Treatment:** Primary goal of maximizing comfort. Relieve pain and suffering through use of medications by EMS approved routes as needed; use oxygen, suction, manual treatment of airway obstruction. Do not use treatments listed in Full and Selected Treatment unless consistent with comfort goal.

III. COMPONENTS OF A VALID POLST form/ DNR order: the EMS Systems recognizes an appropriately executed IDPH POLST form and/or any other written document that has not been revoked; containing at least the following elements:
   A. Patient Name
   B. Resuscitation order (Section A)
   C. Date

      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 Signature Signatures

      i. Patient or Legal Representative Signature

      ii. Authorized Practitioner Name & 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 the order contains the criteria for a valid DNR/ POLST Order as listed above.
   B. Make a reasonable attempt to verify the identity of the patient named in a valid DNR/POLST Order.
   C. Contact Online Medical Control as needed to discuss the situation and advise them of the presence of a DNR/POLST Order, along with the description of any specific treatments to be withheld that are set forth in the DNR/POLST Order.
   D. If the order is valid and Online Medical Control does not order otherwise, follow the terms of the DNR/POLST order, and attach a copy of the DNR/POLST Order to the patient care report if possible.
   E. If there is any doubt as to the validity of the DNR/POLST order, treat the patient as soon as possible. Document any concerns in the patient care report.

V. Additional Considerations
    A. A patient, power of attorney, or Surrogate that consented to the POLST form may revoke it at any time. A power of attorney or Surrogate should not overturn decisions made, documented, and signed by the patient.
        1. If resuscitation begun prior to from presentation, follow form instructions after order validity is confirmed.
    B. If such documentation is not available, but circumstances or individuals at the scene indicate the patient may be a DNR patient:
        1. Initiate resuscitative measures and immediately contact Online Medical Control for clarification and direction.
        2. The Online Medical Control Physician **may** give "No Code" order

Power of Attorney for Healthcare (POA)/ Living Wills:

I. Illinois law allows persons to appoint an "agent" to make health care decisions for the patient if the patient is unable to make his or her own medical decisions. An agent is appointed by the patient via a document called a "power of attorney for health care." The agent can order you to withdraw or withhold medical care of the patient.
II. A health care agent has no authority if the patient himself or herself has capacity to make healthcare decision.
    A. If the patient clinically has capacity, continue to treat the patient, even if thereafter the patient is unable to communicate with you. In such situations, the health care agent has no authority over the treatment of the patient.
III. If someone represents to you that they have a court appointed guardianship or power of attorney to make medical decisions for the patient, follow these procedures:
    A. Begin treatment of the patient.
    B. Contact Online Medical Control; explain situation and follow orders received.
    C. Living Wills/Surrogate orders alone may not be honored by EMS personnel unless instructed otherwise by Online Medical Control.
    D. *The agent named as Power of Attorney for Health may consent to or refuse any or all care, including resuscitation, on behalf of the patient. Any requests must be reported to Online Medical Control.*
    E. If there is any doubt, continue treatment, contact Online Medical Control, explain the situation, and follow orders received.
    F. Bring any documents received to the hospital and document concerns.

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.
II. Consult with hospice representatives if on scene regarding other care options.
III. Contact Online Medical Control; communicate patient's status; POLST selection; hospice recommendations; presence of written treatment plans and/or valid DNR orders. Follow Online Medical Control orders.
IV. If hospice enrollment is confirmed but a POLST form is not on scene, contact Online Medical Control. A DNR order should be assumed in these situations; seek Online 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 en-route to the hospital. Do not withhold oxygen or medications unless specifically included in the POLST order.

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 Online Medical Control Physician, the patient's personal physician, or other recognized physician. The ordering physician assumes responsibility for this order and Online Medical Control should be contacted. All other situations require ALS response and Online Medical Control involvement.

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

A. For Patient with valid DNR/POLST (follow *Advanced Directive Guidelines*)
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/nonsurvivable 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 Online 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 Online 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 Online 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 Online 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 Online Medical Control 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 Online 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* 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 Online 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 Online 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 Online 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*
    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 Online Medical Control 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 Online Medical Control 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 Online Medical Control. 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 Online 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 Online Medical Control, 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*.

Document all attempts to contact legal guardian, all contacts/discussions with Online Medical Control, 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, COMBATIVE, OR VIOLENT PATIENT

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.

Priorities	***Assessment Findings***
Chief Complaint	"Behavioral Disturbance"; "Violent behavior";
OPQRST	Determine onset, duration and progression, triggering events
Associated Symptoms/ 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	**General Appearance**: Bizarre behavior, violent, aggressive, combative, loud, obnoxious, agitated; partial or complete undressing? Uncooperative (Does not respond to verbal commands to desist)? **Skin:** Diaphoresis? Cool, moist and pale? Warm, dry and flushed? **Respiratory Effort:** Labored breathing? Heavy breathing? **Lung Sounds:** Wheezes, rales, rhonchi or stridor? Decreased lung sounds? **Cardiovascular:** Hypertensive and tachycardic? **Extremities:** Trauma? **Neuro:** agitated, delirium, increased activity and increased intensity of activity **Psych:** Bizarre thoughts and actions; Paranoia, delusional, confused, clouded consciousness?
Data	SpO2 in all patients and ETCO2 when able (continuous or frequent re-checks); 12-Lead EKG as soon as it becomes practical to obtain one. 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, EtCO2 (if available), SpO_2.- All required post sedation

EMERGENCY MEDICAL RESPONDER

- 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
- Initiate *Routine Medical Care Guidelines* once it is safe and practical
- Consider application of 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_2 consider administration of high flow oxygen
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- Consider continuous cardiac monitoring.

EMT

- Monitor vital signs every 5 minutes including continuous etCO2 and SpO2.

AEMT

- Consider IV 0.9% NS saline lock or KVO
    - Attempt IV/IO only after it is safe for the patient and EMS provider.
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- 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.
        - Consult Online 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 Online 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.
- 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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Medical Guidelines

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 Angioedema, Benadryl and Epinephrine may be attempted, but are not likely to help
- 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

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General:** Identify degree of severity: mild moderate or severe [1]. **Skin:** Urticaria (hives)- Note skin findings may be absent on some cases of anaphylaxis **HEENT:** Swelling of the lips, tongue or pharynx (Angioedema) **Chest:** Use of accessory muscles of respiration, labored breathing **Lungs:** Wheezing **Cardiovascular:** Hypotension, tachycardia (anaphylactic shock) **Neurological:** ALOC, Syncope
Data	$EtCO_2$(if available) , $SpO_{2,,}$ 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_2 > 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 Online Medical Control to repeat in 5-10 minutes one time as needed.
    - Alternative EMS Medical Director approved epinephrine auto injectors may also be used.
    - Drawn up epinephrine in 1cc syringe using EMT IM dosing below only for approved EMR providers with additional training.
- Oxygen and therapies per *Routine Medical Care Guidelines*.
- 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

- If unconscious, consider non-visualized airway (See *Respiratory Distress Guideline*)
- **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 Online Medical Control.
- 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 **Glucagon Adult** 2 mg IM if the patient is taking Beta Blockers and displays refractory bronchospasm and/or hypotension despite receiving Epinephrine.

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- If unconscious, consider non-visualized airway or endotracheal intubation (See *Respiratory Distress Guideline*)
- **Diphenhydramine (Benadryl)** 50 mg IM/IV/IO (peds 1mg/kg) for moderate or severe reactions.
- Consider **Diphenhydramine (Benadryl)** 50 mg PO if greater than 50kg (peds dose liquid or chewable 1mg/kg max 50mg for >2 y/o older) and available for mild reactions.
- **Methylprednisolone (Solu-Medrol)** 125 mg IV/IO/IM (peds 2mg/kg) for moderate to severe reactions
- Consider ***Epinephrine Push Dose and Drip*** for Moderate to Severe Reactions refractory to the above therapies.
- Consider **Glucagon Adult** 2 mg IV/IO if the patient is taking Beta Blockers and displays refractory bronchospasm and/or hypotension despite receiving Epinephrine.
- 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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Medical Guidelines

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.

Priorities	***Assessment Findings***
Chief Complaint	"Confused" "Unresponsive", Not acting themselves"
OPQRST	Determine onset and duration. Triggering events (e.g. Trauma)
Associated Symptoms/ 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	**Vitals:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Unresponsive, pale, diaphoretic? Signs of trauma? **HEENT:** PERRL? Pupils constricted or dilated? **Lungs:** Wheezes, rales or rhonchi? Signs of respiratory distress or hypoventilation? **Heart:** Rate and rhythm? Signs of hypo-perfusion? **Neuro:** Unresponsive? Focal deficits (CVA)?
Data	Blood Glucose, SpO_2, $EtCO_2$, 12-Lead ECG
Goals of Therapy	Restore normal mental status, Maintain ABC's
Monitoring	Cardiac monitoring, repeat vitals

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 94%
- Consider assisting ventilations with bag-valve-mask with high-flow oxygen
- Consider placing oropharyngeal airway or nasopharyngeal airway
- Consider placing non-visualized airway (e.g.: i-gel) of appropriate size
- If agonal respirations and narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5mg up to 2mg IN (ped dose 0.1mg/kg) per dose, max of 1ml per nostril per dose, every 2 minutes, up to 8mg max for all doses/routes. 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/Biologics/Overdose Guidelines*
- Check glucose level, if < 70, follow *Diabetic Emergencies Guidelines*
- If neuro deficits, suspect stroke, refer to *Stroke Guidelines*

EMT

- If agonal respirations and narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5mg up to 2mg IM (ped dose 0.1mg/kg) per dose, every 2 minutes, up to 8mg max for all doses/routes.

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

- If agonal respirations and narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5mg up to 2mg IV/IO (ped dose 0.1mg/kg) per dose, every 2 minutes, up to 8mg max for all doses/routes.

PARAMEDIC

- Consider RSA. See *Respiratory Distress Guidelines*
- Suspected toxic overdose, refer to *Toxic Exposure/Biologics/Overdose Guidelines*

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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 ($SpO_2 \geq 94\%$), 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.

Priorities	***Assessment Findings***
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/ 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 mediations recently, Prior ICU Admissions
Initial Exam	Check ABCs and correct immediately life-threatening problems.
Detailed Focused Exam	**General Appearance**: Tripod positioning, purse-lipped breathing, nasal flaring in peds, age-appropriate verbal response? Severity of distress [1]? **Skin:** Cool, moist and pale? Warm, dry and flushed? Urticaria? Cyanosis? **Respiratory Effort:** Using accessory muscles, signs of fatigue; two-word sentences? **Lung Sounds:** Wheezes, rales, rhonchi or strider? Decreased lung sounds? Prolonged expiratory phase? Absence of wheezing? **Heart Sounds:** Rate, regularity? **Lower Extremities:** Pitting edema, pale and mottled in peds? **Neuro:** ALOC, lethargy, somnolence?
Data	SpO2 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, $EtCO_2$ to check ventilation
Goals of Therapy	Improve oxygenation and ventilation; reduce distress and work of breathing.
Monitoring	BP, HR, RR, EKG, SpO_2, $EtCO_2$

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines*
- 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) to keep SpO_2 > 94%
  Or
  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 handheld nebulizer, mask or in-line nebulizer; If no improvement, may repeat albuterol X 2 if needed
  Or
  Assist ventilation 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 basic or advanced airway device, depending on presence of gag reflex, refer to *Respiratory Distress Guidelines*
- Status Asthmaticus (severe symptoms unresponsive to nebs, impending respiratory failure, difficult to ventilate via BVM): **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 Online Medical Control to repeat in 5-10 minutes one time as needed
  - Alternative EMS Medical Director approved epinephrine auto injectors may also be used.
  - Drawn up epinephrine in 1cc syringe using EMT IM dosing below only for approved EMR providers with additional training.

EMT

- 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
- If in severe distress [1] and responsive, consider CPAP, see *CPAP Procedure*
  - In-line Nebulizer therapy may need to be performed if advanced airway is in place (e.g.: i-gel)
- Status Asthmaticus (administer as above): **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

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- **Solu-Medrol** 125 mg IV/IO/IM (peds dose 2mg/kg)
- Consider **Terbutaline** 0.25 mg (PEDS 6-11 years old: 0.01 mg/kg max 0.25 mg) SC, see ***Terbutaline (Brethine)***
  - May repeat x1 after 15-30 min, if needed (max combined dose 0.50 mg SC)
- Consider **Magnesium Sulfate** 2 gm (peds 50mg/kg) IV infusion (over 10 minutes) or slower to avoid hypotension.
- **For imminent respiratory arrest consider *Epinephrine Push Dose and Drip***
  - 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 (ETT). 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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Medical Guidelines

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 for 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.

Priorities	***Assessment Findings***
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/ 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	**Scene Size-Up**: Scene safety and PPE (A,B, or C). Is decontamination required? **Vital Signs**: BP, HR, RR, Temp, SpO2, ETCO2. **General Appearance**: Varies based on proximity, exposure, and injury pattern. **Skin**: Trauma, Burns, Appearance **HEENT**: Hearing, Pupils, EOM, Facial stability **Lungs**: Work of breathing, Lung sounds, Trauma **Cardiac**: Heart sounds **Circulatory**: Pulse presence, rate, and quality **Musculoskeletal**: Amputation, fractures, crush injuries, compartment syndrome **Neuro**: Mental status, GCS, Disability **Abdomen**: Distention, Evisceration
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 Guidelines.
- Notify Online Medical Control.

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Consider treatment for Crush Injury per *Routine Trauma Care Guidelines*

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Medical Guidelines

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 **pediatrics**, 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.
- For **neonatal** bradycardia see *Neonatal Resuscitation Guidelines*
- 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/Biologics/Overdose Guidelines*

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Anxious? **Skin:** Cool, pale diaphoretic? **Neck:** JVD? **Chest:** Laboring to breathe? **Lungs:** Wheezes, rales, rhonchi? Decreased breath sounds? **Heart:** Rate, regularity? **Legs:** Pedal Edema? **Neuro:** ALOC?
Data	SpO_2, 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_2

EMR

- *Routine Medical Care Guidelines*
- It is critical to ensure adequate Oxygenation and Ventilation. Administer oxygen therapy to keep SpO_2 > 94% and assist ventilations as needed.
- Monitor pulse and blood pressure frequently. Place all patients on cardiac monitor.
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- If the patient is having:
    - Chest pain – Refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
    - Shortness of breath – Refer to the *Congestive Heart Failure Guidelines*
- Neonates: If despite adequate oxygenation and ventilation, the heart rate is <60/min with signs of poor perfusion, begin CPR and refer to *Neonatal Resuscitation Guidelines*
- Older infants, children, and adults: If pt becomes pulseless, refer to *Cardiac Arrest Guidelines*

EMT

- For unstable patients [1], initiate ALS intercept

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- If the patient remains hemodynamically and clinically stable [2], 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 adult patients 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
- For unstable pediatric patients the initial treatment is **Epinephrine** 1mg/10ml, 0.01mg/kg (0.1ml/kg)
    - Consider **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 patient remains unstable or demonstrates high AV block, initiate transcutaneous pacing (TCP) as follows:
    - Initiate transcutaneous pacing (TCP) immediately
    - Turn on pacer and ensure R waves are marked
    - Set HR to age appropriate rate (70 bpm for adults, refer to PEDS chart in *Routine Medical Care Guidelines*)
    - 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
        - Increase voltage by 10%
    - For pain control or sedation while pacing:
        - Adults: 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)

        - PEDS: 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)

- If persistent unstable or impending cardiac arrest, consider ***Epinephrine Push Dose and Drip*** until symptoms resolve or SBP > 90 mmHg
- If no improvement, consider:
    - Beta-blocker OD:
      Glucagon 2mg IV/IO (PEDS dose 0.05 mg/kg IV/IO max 2 mg), repeat every 10min as needed for persistent hypotension with bradycardia.
        - Check blood sugar as Beta-blocker overdoses may result in hypoglycemia
    - Calcium channel blocker OD in extremis:
        - Administer **Calcium Chloride** 1 gram IV/IO (peds: 20 mg/kg IV/IO to max 1 gram), may repeat as needed per QRS widening. Infiltration will cause tissue necrosis. Administer in largest, proximal line possible SLOW approx 1ml/min and only in emergency situations (over 2-5min in cardiac arrest), monitor closely during administration. Ensure line functions well prior to use.
        - If no improvement, consider **Glucagon** 2mg IV/IO (PEDS dose 0.05 mg/kg IV/IO 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" bradycardia:

- Hemodynamic Criteria
    - Adults: SBP < 90 mmHg AND Heart Rate < 60 bpm
    - PEDS:
        - Less than 1 year of age: SBP < 60 mmHg and HR < 100 bpm
        - 1–10 years old: [2 x (age in years) + 70 mmHg] and HR < 60 bpm
        - Greater than 10 years old: same as adult
- Clinical Criteria
    - Signs of shock (poor perfusion) are present, including:
        - ALOC, including syncope, weakness, lightheadedness, fatigue
        - Diminished central or distal pulses
        - Pallor and diaphoresis
        - Prolonged capillary refill > 3 sec
    - Signs of pulmonary edema are present, including:
        - Labored breathing, retractions, grunting
        - Rales (wet lungs)
        - Hypoxia (SpO_2 <94%)
    - The patient complains of angina- Caution Atropine use in STEMI or Cardiac ischemia as tachycardia may increase ischemia

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Medical Guidelines

2.07 BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

Note:

- A Brief Resolved Unexplained Event (BRUE), formerly termed an Apparent Life-Threatening Event (ALTE), 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.
- 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 pertinent abnormality identified in history or physical exam would indicate the presence of another condition and therefore not constitute a BRUE.
- Be aware for signs of abuse (non-accidental trauma).

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** HR, RR, SpO_2, Temp, BP **General Appearance:** Tone, color, activity **Skin:** Cyanosis, pallor **Chest:** Respiratory effort, Accessory muscle use **Lungs:** Abnormal lung sounds **Heart:** Rate, rhythm, presence of murmur **Musculoskeletal:** Tone (hypertonic/hypotonic) **Neuro:** Level of consciousness
Data	SpO_2, Blood Sugar if altered LOC
Goals of Therapy	Good history and exam to identify underlying/causative condition
Monitoring	SpO_2, Cardiac monitoring if indicated

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines*
- Remain calm and provide reassurance for parents/caretakers
- Consider 12-lead EKG if history or exam raises concern for cardiac arrhythmia, transmit to receiving facility
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- If respiratory distress identified, follow the *Respiratory Distress Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- *Routine Medical Care Guidelines* with Cardiac Monitoring

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Medical Guidelines

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*).
- 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.

Priorities	***Assessment Findings***
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/ 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	**Vitals:** Estimate BSA with "rule of nines" or "rule of palms", BP, HR, RR, Temp, SpO_2, **General Appearance:** Varies depending on burn; may show signs of extreme pain **Skin:** Depending on the degree on the burn, erythema, blisters, pale leathery appearance, charring, sloughing **HEENT:** Pupils, check nose & mouth for signs of burns (e.g. soot, edema, redness) **Lungs:** Signs of respiratory distress, stridor, diminished or absent lung sounds? **Heart:** Rate and rhythm? Especially in electrical burns

	Neuro: Loss of movement and/or sensation in extremities, focal deficits?
Data	BSA estimate, EKG, $EtCO_2$, SpO_2,
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 Guidelines* or *Routine Trauma Care Guidelines*
- If in cardiac arrest, see *Cardiac Arrest Guidelines*
- Remove burned, hot, warm, and/or contaminated clothing
- Administer oxygen to keep SpO_2 > 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*

AEMT

- Consider IV/IO 0.9% NS saline lock or Lactated Ringers (LR) KVO
    - Unburned sites are preferred, but burned sites are acceptable if no better option.
- Initiate a LR 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock.
    - Re-assess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Monitor ABC's and vitals closely
- For hypotension or signs of hypovolemia shock, administer fluid bolus per *Hypovolemia & Shock Guidelines,* reassess and repeat as indicated. Consider other injuries or cyanide/carbon monoxide poisoning for hypotension or sighs 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.
- Continue pain control, refer to *Pain Management Guidelines*.
- 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*
- For Hydrofluoric Acid Burns see *Toxic Exposure/Biologics/Overdose Guidelines*

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Medical Guidelines

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 Guidelines*"
- For patients with identifiable Do Not Resuscitate (or equivalent such as POLST) see "*Advanced Directives/Hospice Guidelines*"
- These guidelines should be used in conjunction with "*Termination/Withholding Of Resuscitation In The Field/Notification of Coroner*" guidelines as applicable.
- For patients in arrest due to traumatic etiology see "*Routine Trauma Care Guidelines*"

Priorities	***Assessment Findings***
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/ 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	**Vitals Signs:** non-breathing (or agonal respirations/gasps) **General:** Look for rigor mortis, dependent lividity, or unsurvivable trauma. Look for valid Do-not-resuscitate. **Skin:** Warm/cold, dependent lividity, rash, ecchymosis? **HEENT:** Airway patient, foreign bodies (e.g., dentures), neck swelling or trauma, trachea in midline, **pupil size and response**? **Chest:** Spontaneous respirations, subcutaneous air or crepitation, or deformity? **Lungs:** Equal breath sounds, difficulty bagging or ventilating? **Cardiovascular:** Absence of heart sounds, carotid or femoral pulses? **Abdomen:** Distended? **Extremities:** Rigor mortis, edema, deformity? **Neurological:** Unresponsive to verbal and painful stimulation?
Data	Initial Cardiac rhythm, $EtCO_2$, event data
Goals of Therapy	Return of spontaneous circulation (ROSC), provide adequate brain perfusion
Monitoring	Cardiac Monitoring, Vital Signs, and SpO_2, $EtCO_2$

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*"

- **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 Ration without advanced airway
        - 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.
    - If AED is the only device available within scope of practice: apply device and push analyze, follow prompts.
    - Following each shock, 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 2nd defibrillator available perform consider adult sequential defibrillation.
- **Fourth Priority: A-(airway)**
    - Ventilate with 100% oxygen
    - Intubation by paramedic or placement of supraglottic airway by EMR-AEMT. Confirm placement per *Routine Medical Care Guidelines*.
        - Do not interrupt compressions or defibrillation attempts for airway placement. **For Adults Ventilate at 10/minute only enough volume to just make chest rise.**
    - **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 and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

EMT

- For Manual Defibrillation, deliver maximum Joules for ventricular fibrillation or pulseless ventricular 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.

AEMT

- **Fifth Priority: I-(IV) Establish venous access**
  - Initiate IV/IO 0.9% Normal Saline bolus
  - IV is preferred route for ACLS medications

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 is already in place by another provider, paramedic should consider intubation as soon as feasible.
- Consider **Solu-Medrol** 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]
  - Administer **Calcium Chloride** 1 gram IV/IO (peds: 20 mg/kg IV/IO to max 1 gram), may repeat as needed per QRS widening. Infiltration will cause tissue necrosis. Administer in largest, proximal line possible SLOW approx 1ml/min and only in emergency situations (over 2-5min in cardiac arrest), monitor closely during administration. Ensure line functions well prior to use.
  - 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 Five H's and the Five T's
  - "The Five 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*)
  - "The Five T's" (treatment orders are in parentheses)
    - Toxins (See *Toxic Exposure/Biologics/Overdose Guidelines*)
    - 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*)
    - 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 EtCO2 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*.
- Monitor patient's EtCO2 and ventilate accordingly (maintain EtCO2 around 35-45 mmHg SpO2>94%
- Adult Maintain SBP >90 mmHg, consider ***Push Dose Epinephrine***
    - 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

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

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Anxious? **Skin:** Cool, pale diaphoretic? **Neck:** JVD? **Chest:** Laboring to breathe? **Lungs:** Wheezes, rales, rhonchi? Decreased breath sounds? **Heart:** Rate, regularity? **Legs:** Pedal Edema? **Neuro:** ALOC?
Data	SpO_2, 12-Lead ECG, Blood Sugar if Diabetic, $EtCO_2$ 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_2 and serial 12-Leads

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines*
- Titrate oxygen to a saturation of 94-98%
- Acquire 12-Lead EKG 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 12-lead 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 EKG, call for ALS or continue to nearest hospital, whichever is faster to acquire the 12-lead.
- 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
- If the patient also experiences shortness of breath, follow the *Congestive Heart Failure Guidelines*

EMT

- While patient experiences chest pain, contact Online Medical Control to consider assisting the patient in administering the patient's prescribed **Nitroglycerin** sublingually, unless the Systolic BP < 110 mmHg
    - 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 chest pain is relieved
    - Discontinue nitroglycerine if the Systolic BP drops below 110 mm Hg

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- Consider **Nitroglycerin** 0.4 mg SL, repeat every 5 minutes as long as Systolic BP > 110 mmHg is maintained, max of three doses

PARAMEDIC

- Continuous cardiac monitoring and interpretation of all 12-lead EKGs,
    - 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
- Consider **Nitroglycerine** paste 1" to left chest for adults unless Systolic BP < 110 mmHg.
- Consider **Fentanyl Citrate** 50-100 mcg IV/IO, may repeat with max of 200 mcg total all doses for persistent pain (reduce dose by 50% for smaller framed and elderly).
- Consider for adults: **Dilaudid** 0.5-1 mg IV/IO/IM, may repeat in 20 minutes if indicated - max total dose 3 mg.

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

Priorities	***Assessment Findings***
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/ 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	**General Appearance**: Tripod positioning; Severity of distress [1]? **Skin:** Cool, moist and pale? Warm, dry and flushed? Cyanotic? **Neck:** JVD? **Respiratory Effort:** Using accessory muscles, signs of fatigue; two-word sentences? **Lung Sounds:** The presence of rales (wet lungs) is a strong indication of CHF. Wheezing is also common in CHF. **Heart Sounds:** Rate, regularity. **Peripheral Edema:** Pitting edema of the ankles is common in CHF, but its absence does not rule out CHF? **Neuro:** ALOC? Lethargy? Somnolence?
Data	SpO_2, EtCO2, 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_2, and EtCO2

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines*
- 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_2 > 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
- Acquire 12-Lead EKG and transmit to receiving facility. If patient not in supine position, mark as such
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- Consider **Aspirin** per *Chest Pain of Suspected Cardiac Origin Guidelines*

- 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*

EMT

- While patient is experiencing chest pain, contact Online Medical Control to consider assisting the patient in administering the patient's prescribed **Nitroglycerin** sublingually, unless the Systolic BP < 110 mmHg
    - 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 chest pain is relieved
    - Discontinue nitroglycerine if the Systolic BP drops below 110 mmHg
- Initiate CPAP, refer to *CPAP Procedure*, ensure nitro tablets have dissolved prior to initiating CPAP

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- 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 **Nitroglycerine** 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

- Apply 1" of Nitroglycerine **Paste** for patients on CPAP after initial sublingual dose, hold if SBP ≤ 110 mmHg
- If SBP < 110 mmHg withhold NTG and consider ***Epinephrine Push Dose and Drip*** to maintain SBP > 90 mmHg
- Consider RSA if any of the following indications are met: refer to *Respiratory Distress Guidelines*
    - 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 and SPO_2 is < 94% + possible ALOC

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Medical Guidelines

2.12 DIABETIC EMERGENCIES

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Unresponsive? Agitated and combative? **Skin:** Cool, pale, diaphoretic? **Neuro:** 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 Guidelines*
- Administer oxygen to keep SpO_2 > 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, unconscious, give **Glucagon** 1 mg IM, may repeat x1 in 15min
    - Pediatric patient under 20kg give ½ dose, may repeat x1 in 15min

AEMT

- Consider IV 0.9% NS saline 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 NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
  - In adults: volume expansion of up to 20ml/kg total early infusion may also be needed for hyperglycemia

PARAMEDIC

- Evaluate for and treat for hyperkalemia
- Consider RSA for patients with glucose reading "high" and unable to protect airway, refer to *Respiratory Distress Guidelines*

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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Medical Guidelines

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 20th week of pregnancy and the 6th 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.

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP [2], HR, RR, Temp, SpO_2 **General Appearance:** Seizing or postictal? Incontinent (bowel, bladder)? **Abdomen:** Appears pregnant? **Skin:** Pale, cool, moist? Cyanotic? **Mouth:** Frothy salivation? Tongue biting? **Legs:** Pedal edema? **Neuro:** Focal deficits? ALOC?, Reflexes-if able to assess, Hyperreflexia?
Data	SpO_2, 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_2, Neuro Status; Cardiac Monitor for possible rhythm disturbances

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines* and *Emergency Obstetrics & 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_2 > 94%
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

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 Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- For seizures administer **Midazolam (Versed**) 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 20th 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 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.

Priorities	***Assessment Findings***
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/ 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	• Allergies • Medications • Past medical history, past surgical history, , prenatal care, number of previous pregnancies, previous Cesarean delivery, prenatal care • Previous pregnancy or delivery complications (eclampsia, precipitous delivery, etc.) • Last menstrual period • Fetal movement? • Recent infectious diseases • Complications of current pregnancy (i.e., preeclampsia, placenta previa, gestational diabetes, premature labor, ultrasound showing abnormal fetal position etc.)
Initial Exam	ABCs
Detailed Focused Exam	**HEENT:** Cracked lips, sunken eyes or cheeks indicating dehydration **Skin:** Cool, pale diaphoretic **Chest:** Labored breathing **Heart:** Tachycardia **Abdomen:** Scars, Tenderness, masses, fundal height, distention, deformity **Legs:** Edema **Neuro:** Mental status, Seizures **Gyn:** 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 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 Guidelines*
- Administer oxygen as needed
- Avoid supine position, Transport pregnant patients on left side
- **Cardiac Arrest Considerations in Pregnancy**
    - Manage rhythm per appropriate *Neonatal Resuscitation Guidelines* and child/adult *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.

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*).
- 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* for further.

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*"

Abnormal Delivery

- Proceed with emergent transport if able and administer high flow 02 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

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- If patient is hypertensive and experiences seizure, see *Eclampsia Guidelines*
- Pregnancy is a relative contraindication to RSA but airway is top priority, contact Online Medical Control for assistance

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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 thermo regulate
- Water intake and urination frequency are key history findings to differentiate hyponatremia and heat exhaustion

Problem	Cause	Possible Temperature	Clinical Findings and History
Heat Cramps	Dehydration Electrolyte imbalances	99-101.3 F	Most common in children and athletes Severe localized cramps in abdomen or extremities Normal vital signs Usually occur suddenly during or after strenuous physical activity
Heat Exhaustion	Inadequate fluid intake and excessive fluid loss	99-104 F	**General:** fatigue, weakness, anxiety, intense headaches, profuse sweating, nausea and vomiting, and limited to no urine output **Compensated:** Altered mental status--lethargy or irritability, Elevated pulse and respirations, Normal blood pressure **Decompensated**: 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,

Priorities	***Assessment Findings***
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/ 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). Inquire about fluid consumption and frequency of urination
Initial Exam	Check ABCs and correct immediately life-threatening problems.
Detailed Focused Exam	**Vital Signs:** BP, HR, RR, Temp, SpO_2 If possible, obtain temperature in the field with a digital thermometer. **General Appearance:** overdressed for environment, sweating, evidence of trauma? **Skin:** pale, cool clammy OR hot, red, dry OR hot, red, moist **Lungs:** breath sounds **Heart:** Rate and rhythm? **Neuro:** Loss of coordination, impaired judgment, altered mental status, decreased level of consciousness
Data	SpO_2, Blood glucose, 12-Lead EKG
Goals of Therapy	1. End the heat challenge and increase heat loss from conduction, convection, radiation, and evaporation 2. Support ABCs 3. Replace fluid and electrolytes
Monitoring	SpO_2, Cardiac Monitoring

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines*
- 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_2 > 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

- Consider IV 0.9% NS saline lock or KVO
    - Consider a second IV
    - Do not delay transport to initiate an IV
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*.

PARAMEDIC

- To treat seizures, refer to *Seizure Guidelines*
- 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 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 Guidelines*
- **Hypertensive emergency**: Causes and S&S suggesting end-organ dysfunction
    - **Neurologic damage** due to hypertensive encephalopathy, stroke, subarachnoid hemorrhage, intracranial hemorrhage. Assess for headache, visual disturbances, seizures, AMS, weakness/paralysis
    - **Cardiovascular damage** due to myocardial ischemia/infarction; LV dysfunction, acute pulmonary edema; or aortic dissection: 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.
- This measurement should be confirmed with multiple measurements at least 5 minutes apart.

Priorities	***Assessment Findings***
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/ 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	**Vitals Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** **Skin:** Cool, pale diaphoretic **Neck:** JVD? **Chest:** Labored breathing **Lungs:** Wheezes, rales, rhonchi? Decreased breath sounds? **Heart:** Regular, rate fast or slow, murmur **Legs:** Edema? Signs of an acute arterial occlusion (embolism)? **Neuro:** ALOC? Signs of stroke?
Data	SpO_2, 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_2

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 94%
- Transport sitting upright or head of cot at 30 degrees
- If the patient is suspected to have suffered a stroke, follow the *Stroke Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO

- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

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 *CHF guidelines*

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.

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

Priorities	***Assessment Findings***
Chief Complaint	"Person found down in a cold environment"
OPQRST	What led up to this? Where was the patient found?
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 If possible, obtain temperature in the field with a digital thermometer. **General Appearance:** Shivering, paradoxical undressing, evidence of trauma? **Skin:** Signs of frostbite (pallor, blisters)? **Lungs:** pulmonary edema? **Heart:** Rate and rhythm? **Neuro:** Loss of coordination, impaired judgment, ALOC?
Data	SpO_2, Blood glucose, 12-Lead EKG, $EtCO_2$
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_2, Cardiac Monitoring, $EtCO_2$, 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
- If cardiac arrest is present, attempt defibrillation as follows:
    - If the core temperature is < 86 °F, no more than one shock, focus on high quality compressions and warming. Defibrillation has low likelihood of success at temperatures less than < 86 °F
    - Obtain a core temperature if possible before additional shocks are given
    - If the core temperature is > 86 °F, additional shocks may be attempted in the field, see *Cardiac Arrest Guidelines*
    - If the core temperature is unknown, continue CPR and transport emergently to the hospital
- 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_2 > 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*
- 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 the ambulance compartment environment

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO bolus (warmed fluids preferred for active warming) for severe hypothermia or signs of hypotension, hypovolemia, or shock. Reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- Consider a second IV of warm saline but do not delay transport to initiate an IV

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
    - There is no evidence that laryngoscopy or tracheal intubation increases the risk of ventricular fibrillation
    - 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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Medical Guidelines

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 (See **Tylenol** and **Ibuprofen** pages for dosing)
  - Temperature < 96.8˚ F
  - Tachypnea > 20/min. or EtCO2 < 25 mmHg or SpO2 ≤ 92% (See *Pediatric table* for tachypnea)
  - Tachycardia > 90 bpm (See *Pediatric table* for 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
- Shock is defined as 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.

Priorities	***Assessment Findings***
Chief Complaint	"Altered Level of Consciousness"
OPQRST	Identify onset, duration, progression and provocation.
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO2, $EtCO_2$ **General Appearance:** Does the patient appear ill? External Hemorrhage? **Skin:** Pale, cool, and moist? Flushed, warm and dry? **Chest:** Labored breathing? **Lungs:** Wheezes, rales or rhonchi?

	Heart: Rate and Rhythm? **Abdomen:** Internal hemorrhage? Tender? Distended? GI Blood loss? **Extremities:** Trauma? Edema? **Neuro:** ALOC?
Data	SpO2, 12-Lead EKG, Blood Sugar, $EtCO_2$
Goals of Therapy	Restore volume and support blood pressure
Monitoring	Blood pressure, heart rate and cardiac rhythm

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines* and *Routine Trauma Care Guidelines*
- Oxygen: Per nasal cannula at 2-4 LPM or per non-rebreather at 12-15 LPM (depending on the apparent severity) keep SpO_2 > 94%
- Keep patient flat with lower extremities elevated (if possible)
- Conserve body temperature, maintain warmth, and reassure patient
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

AEMT

- Initiate IV 0.9% NS saline lock or infusion, consider blood tubing, large bore catheter in an antecubital site is preferred.
- 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 patient goals of resuscitation
    - 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*
- ***Push Dose Epinephrine and Drip*** titrated to BP goals as above
- If hemorrhagic shock refer to *Routine Trauma Care Guidelines* for TXA indications and dosing
- If there is a history of adrenal insufficiency, long-term steroid dependence, with fluid-refractory shock requiring vasopressors consider **Solu-Medrol** 125mg IV (Peds 2 mg/kg)

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Medical Guidelines

2.19 NARROW COMPLEX TACHYCARDIA

Note:

- Narrow complex rhythms have a QRS duration < 0.12 sec

Priorities	***Assessment Findings***
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/ Pertinent Negatives	Chest pain, shortness of breath, weakness, anxiety, leg swelling
SAMPLE	• Previous history, history of thyroid disease, CAD, cardiac medications • 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. • Obtain history of what medications have been used to treat previous arrhythmias, if known. • Obtain history of any previous complications from previous arrhythmia treatments, if known. • Obtain history of the duration of the current episode of tachycardia, if known.
Initial Exam	Check ABCs and correct any immediate life-threatening problems.
Detailed Focused Exam	**Vitals Signs:** BP, HR, (Heart rate greater than 100 BPM in adults or relative tachycardia in pediatric patients) RR, Temp, SpO_2, $EtCO_2$ **General Appearance:** Anxious? **Skin:** Cool, pale diaphoretic **Neck:** JVD? **Chest:** Labored breathing **Lungs:** Wheezes, rales, rhonchi? Decreased breath sounds? **Heart:** Regular, rate fast or slow, murmur **Legs:** Edema **Neuro:** ALOC? Signs of stroke?
Data	SpO_2, 12-Lead EKG, $EtCO_2$, Blood Sugar if Diabetic or ALOC
Goals of Therapy	Decrease Rate, treat chest pain, treat CHF
Monitoring	Cardiac Monitoring and SpO_2

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 94%
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- For angina or chest pain, see *Chest Pain of Suspected Cardiac Origin Guidelines*
- With neurological deficit indicating stroke, follow the *Stroke Guidelines*

EMT

- Consider ALS intercept
- If the patient is stable [1], consider **Valsalva maneuvers** as follows:

- 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 for a few seconds. Reassess rhythm.
- Infants: consider applying ice to the face
    - First inform parent/family present of procedure prior to performing
    - Do not obstruct airway

AEMT

- Initiate IV 0.9% NS saline lock or infusion, large bore 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 Guidelines*

PARAMEDIC

- Continuous cardiac monitoring. Interpret 12-Lead EKG or perform if not already done. Consider recording continuous 12-lead EKG during treatments
- Narrow Complex Tachycardia include:
    - Sinus Tachycardia
        - The upper rate limit is calculated as 220 bpm 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
        - Typically should see beat to beat variability with activity or stress level
    - Supraventricular Tachycardia (SVT)
        - HR generally > 180 bpm adults, > 220 in infants
        - Vagal maneuvers (see above) are considered first line therapy in stable [1] patients
    - If patient remains stable with no concern for WPW, consider **Adenosine** 6 mg (PEDS dose: 0.1mg/kg to max 6mg) IV over 1-2 seconds. If unsuccessful, repeat with 12 mg (PEDS dose: 0.2mg/kg to max 12mg) IV over 1-2 seconds. Follow all doses with a 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
    - Atrial Fibrillation/Flutter with Rapid Ventricular Response
        - Do not treat Rapid Atrial Fibrillation that is a normal physiologic response (e.g. Fever, Hypoxia, Shock, Sepsis)
        - Adults Only: If available, consider **Diltiazem (Cardizem)** 0.25 mg/kg (max dose is 20mg) IV slowly over 5 min can be given for Rapid Atrial Fibrillation/Flutter if causing significant palpitations or dizziness in the stable patient (HR typically > 130 bpm)
            - If inadequate response after 15 minutes, may re-bolus at 0.35mg/kg (max dose 25mg) IV slowly 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 Guidelines* 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 for adult (PEDS: 1 J/Kg to max 150 J)
    - If first attempt unsuccessful,
        - Adults: increase by 50 joules for each subsequent attempt

- PEDS: perform at 2 J/Kg for all subsequent attempts
- Consider **Fentanyl Citrate** 50-100 mcg IV/IO/IN/IM (PEDS dose: 1mcg/kg IV/IO or 2mcg/kg IN max dose 100mcg) for pain control or low dose **Versed** 2mg IV/IO/IN/IM (PEDS dose: 0.1 mg/kg slow IVP or 0.2 mg/kg IN/IM, max single dose 2 mg)
    - Do not delay Synchronized cardioversion if immediately needed
    - Reduce adult dose by 50% for smaller framed and elderly

FOOTNOTES:

[1] Criteria for characterizing a patient as "unstable" tachycardia:

- Hemodynamic Criteria
    - Adults: SBP < 90 mmHg AND Heart Rate > 150 bpm
    - PEDS:
        - Less than 1 year of age: SBP < 60 mmHg and HR > 220 bpm
        - 1–10 years old: [2 x (age in years) + 70 mmHg] and HR > 180 bpm
        - Greater than 10 years old: same as adult
- Clinical Criteria
    - Signs of shock (poor perfusion) are present, including:
        - ALOC, including syncope, weakness, lightheadedness, fatigue
        - Diminished central or distal pulses
        - Pallor and diaphoresis
        - Prolonged capillary refill > 3 sec
    - Signs of pulmonary edema are present, including:
        - Labored breathing, retractions, grunting
        - Rales (wet lungs)
        - Hypoxia (SpO_2 <94%)
    - The patient complains of chest discomfort (angina)

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Medical Guidelines

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.
- Extrapyramidal 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.

Priorities	***Assessment Findings***
Chief Complaint	Nausea and/or vomiting, vertigo
OPQRST	Onset, number of episodes of vomiting
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO2 **General:** Ill appearing? Dehydrated? **Abdomen:** Soft? Tender? Distended? **Neuro:** 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/EMT

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 94%
- Remove oxygen mask or CPAP if vomiting
- Have patient hold isopropyl alcohol pad 2.5cm 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.
- If patient is over 35 yrs old, acquire 12-Lead EKG and transmit to receiving facility.
  - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO

- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- **Ondansetron (Zofran)** 4 mg IV/IM or ODT. May repeat x1 in 15 min.
    - Zofran use in pregnant/nursing mothers is acceptable if associated with signs of dehydration
    - 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/vomiting 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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Medical Guidelines

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.

Priorities	***Assessment Findings***
Chief Complaint	Birth, Delivery
OPQRST	Due date, Date and Time of Birth, Gestational Age
SAMPLE	• Prenatal care • Complications of current pregnancy (i.e., preeclampsia, placenta previa, gestational diabetes, premature labor, ultrasound showing abnormal fetal position etc.) • Complications of delivery- shoulder dystocia, meconium, nuchal cord • Maternal History- substance abuse history, infections • Was the amniotic fluid clear? Meconium present?
Initial Exam	30 Second intervals for Cardiopulmonary Assessment
Detailed Focused Exam	**HEENT:** Secretions, facial abnormalities **Skin:** Central/Peripheral Color, Cyanosis **Chest:** Symmetrical Breath sounds, bowel sounds in chest, retractions, respiratory effort **Heart:** Murmur **Abdomen:** Number of blood vessels on cord (3 is normal), stump pulsation, abdominal wall defect, diaphragmatic hernia **Musculoskeletal:** Tone **Neuro:** Grimace, Activity
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 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 Gasping initiate BVM as below.
- Monitor Sp02 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**
    - **Check pulse and place on cardiac monitor**
    - **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% 02
        - 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 Guidelines* for effective ventilations
- Assess baby for APGAR scoring [1] at 1 and 5 minutes after recorded time of birth
- Check BGM if altered mental status, any other signs of hypoglycemia, or with any resuscitation. Treat if < 50mg/dl.

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

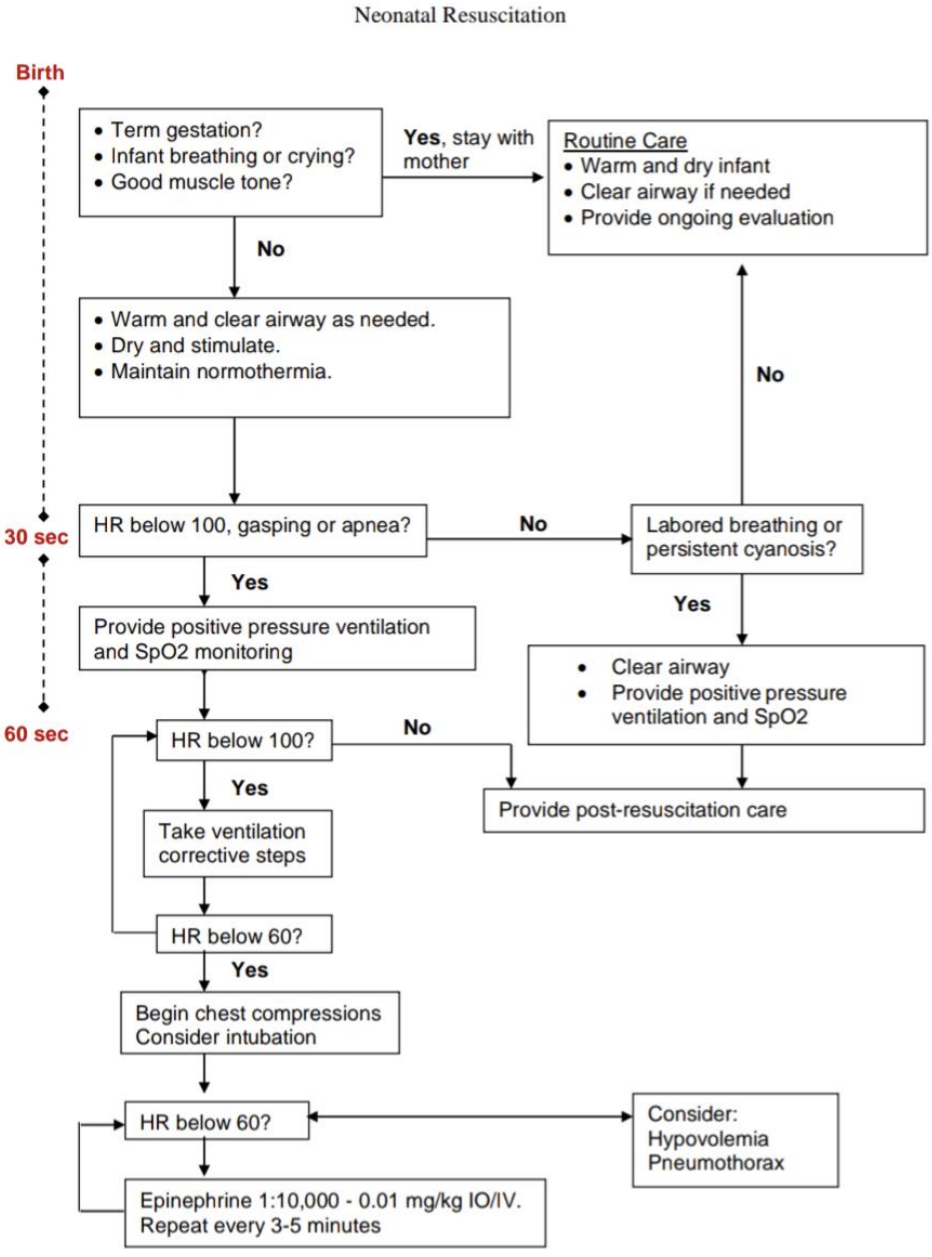
PARAMEDIC

- Consider Intubation when positive pressure ventilation is needed *per Respiratory Distress Guidelines/ Routine Medical Care Guidelines*
    - Use of RSI Medications generally not indicated in neonatal population
- For HR remains < 60 bpm 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*

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



2.22 PAIN MANAGEMENT

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

Priorities	***Assessment Findings***
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/ Pertinent Negatives	Trauma, swelling, discoloration, compare to other extremity 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Writhing in pain, facial grimacing, moaning, screaming or crying? Assess objectively how severe the pain appears to you (mild, moderate or severe). **Skin:** Pale, cool, diaphoretic? **Source of pain (chest, abdomen, back, extremities, etc.):** Swelling, ecchymosis or deformity? Tenderness on palpation? CMS?
Data	SpO_2. 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_2., Etc02

EMERGENCY MEDICAL RESPONDER

- Acknowledge and assess the patient's pain by obtaining a thorough history, description, and rating
- Administer oxygen to keep SpO_2 > 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

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- 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 to max dose of 15mg IV/IM) for mild to moderate pain or in patients with a known history of narcotic abuse and/or treatment or for pain from suspected gallstones or kidney stones.
        - Avoid if other NSAIDS (Ibuprofen, Naprosyn etc.) or Aspirin used within 6 hours
        - Avoid if signs of dehydration, bleeding, or shock
- Consider **Ondansetron (Zofran)** 4 mg IV/IM or ODT for associated nausea/vomiting. May repeat x1 in 15 min.
    - Pediatric dosing is 15kg-26kg: 2mg (if possible), > 27kg: use 4mg.

PARAMEDIC

- 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 25 mg, repeat x 1 in 10 min if indicated)
- Consider high dose **Ketamine** for extreme pain dissociation 1 mg/kg slow IV (max dose 100mg) or 4 mg/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. Assessment at hospital can be done even after pain meds are given.

FOOTNOTES:

[1] Wong-Baker FACES scale:

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 Guidelines.*
- 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-threating 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.

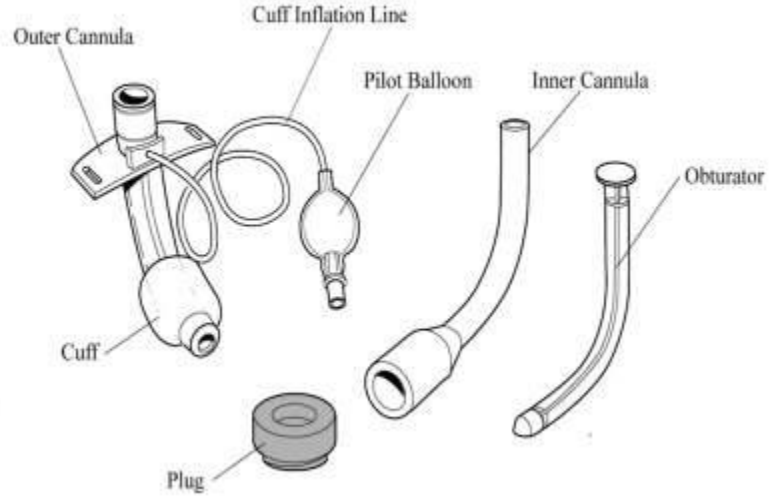


Photo source: https://www.aliem.com/

- 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 guidelines*

Priorities	***Assessment Findings***
Chief Complaint	Provided by patient or a caregiver
OPQRST	Limited information may be available, use verbal or written speech
Associated Symptoms/ 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	**Vital Signs:** HR, RR, SpO_2, Temp, BP, BGM **General Appearance:** Tone, color, activity **Skin:** Cyanosis, pallor, sores, erythema **Chest:** Respiratory effort, Accessory muscle use **Lungs:** Abnormal lung sounds **Heart:** Rate, rhythm, presence of murmur **Musculoskeletal:** Tone (hypertonic/hypotonic) **Neuro:** 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	SpO2, EtCO2, ventilation status, responsiveness

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines* and *Routine Trauma Care Guidelines*.
- Allow/assist the patient to assume a position of comfort, especially if demonstrating tripoding 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 Guidelines*
- 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.
- 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 pneumonic **DOPES** can help you remember the most common causes of hypoxia or deterioration while on mechanical ventilation:
    - **D**isplacement
    - **O**bstruction
    - **P**neumothorax
    - **E**quipment failure
    - **S**tacked breaths
- If anaphylaxis is suspected, see *Allergy & Anaphylaxis Guidelines*
- If wheezing or bronchospastic disease is suspected, consider **Albuterol Sulfate**, see *Asthma/COPD Guidelines*

EMT

- Monitor $EtCO_2$ (Capnography) if possible to assess ventilatory status, confirm advanced airway placement and monitor treatment effectiveness, see *$EtCO_2$ (Capnography) Monitoring Procedure*
- If wheezing or bronchospastic disease is suspected, consider **Albuterol Sulfate** and **Ipratropium Bromide (Atrovent)** as indicated, see *Asthma/COPD Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Confirm airway and effective ventilations with $EtCO_2$
- Consider intubation of stoma for patients in respiratory failure with hypoventilation or persistent hypoxia on high-flow oxygen, see *Respiratory Distress Guidelines*
- 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 ½ the length of ET tube, do NOT use a rigid stylet, inflate ETT cuff and confirm placement via EtO2 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 check breath sounds
- Ventilators may only be adjusted by paramedics approved by EMS Medical Director after completion of specific training. Approved paramedics may only use FiO2, rate, and volume adjustments in assist control (AC) mode
- For severe anxiety, in absence of severe hypoxia, to help relax or improve compliance with assisted ventilations, 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.
- If severe uncontrolled bleeding within 3 hrs, consider TXA 30mg/kg (2 grams max bolus) IV/IO over 20 min
- 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/Patent%20Airway%20Algorithm.pdf*

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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

Priorities	***Assessment Findings***
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/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance**: Tripod positioning; Purse-lipped breathing. Severity of distress [1]? **Neck:** JVD? Tracheostomy? **Skin:** Cool, moist and pale? Warm, dry and flushed? Urticaria? Cyanosis? **Respiratory Effort:** Using accessory muscles, signs of fatigue; two-word sentences? **Lung Sounds:** Wheezes, rales, rhonchi or stridor? **Heart Sounds:** Rate, regularity. **Lower Extremities:** Pitting edema of the ankles? **Neuro:** ALOC, lethargy, somnolence?
Data	$EtCO_2$ with waveform, SpO_2, on room air or home O_2 EKG, if an acute coronary syndrome is suspected 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_2 frequently, and $EtCO_2$ continuously, cardiac rhythm, vitals

EMERGENCY MEDICAL RESPONDER

- *Routine Medical Care Guidelines* or *Routine Trauma Care Guidelines*
- 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_2 > 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 a nasopharyngeal airway
- If unresponsive with no gag reflex, consider oropharyngeal airway or non-visualized airway device (e.g.: i-gel)
- Confirm all advanced airways and document with a minimum of three of the following:
    - $EtCO_2$ (Capnometry [EMR/EMT] or Capnography [EMT/Paramedic]) mandatory
    - Direct Visualization (ETT placement)
    - Lung Auscultation
    - Absence of gastric sounds
    - Misting in the tube
    - Bilateral chest rise
- If patient becomes responsive, remove advanced airway with patient in recovery position and suction ready
- If anaphylaxis is suspected, see *Allergy & Anaphylaxis Guidelines*
- **Albuterol Sulfate** for Asthma, COPD, Reactive Airways Disease, or Bronchospasm, see *Asthma/COPD Guidelines*

EMT

- Monitor $EtCO_2$ (if available) to assess ventilatory status, confirm advanced airway placement and monitor treatment effectiveness, see *$EtCO_2$ (Capnography) Monitoring Procedure*
    - If EtCO2 and advanced airway is in place ventilate and generally attempt to maintain a reading between 35-45mmhg.
- Utilize PEEP if needed to maintain oxygen saturations, monitor blood pressure. See *PEEP Guidelines*
- Consider CPAP Refer to *CPAP Procedure*
- Consider the following medications
    - **Albuterol Sulfate** with **Ipratropium Bromide (Atrovent)** is indicated for Asthma Reactive Airways Disease and Bronchospasm and COPD, see *Asthma/COPD Guidelines*
    - **Aspirin** and prescribed **Nitroglycerine**, see *Chest Pain of Suspected Cardiac Origin Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- If patient is showing signs of CHF, see *CHF Guidelines*
- Confirm all advanced airway and effective ventilations with $EtCO_2$, document
- If a tension pneumothorax is suspected, perform needle decompression on the affected side. See *4.19 Chest Decompression*
- Non RSA intubations are restricted to patients with no gag reflex and need for airway management. Patients needing sedation for ET tube placement shall also receive paralytic. 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 mg (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: 0.3 mg (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

Rapid Sequence Airway

- Indications:
    - Severe respiratory distress or failure
    - Persistent hypoxia after high-flow O_2 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
- Consider MD1 response to scene when RSA is anticipated
- 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, etCO2 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*** to increase pre-intubation SBP>90mhg
    - Optimize pH, hemodynamics and oxygenation
- Pre-Oxygenate:
    - Continuous SPO_2 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 O2 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_2
  - 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 for signs of undersedation such as increased tearing, tachycardia, and/or hypertension, as the paralysis may outlast the sedation.
  - Monitor cardiac rhythm for signs of hyperkalemia.
  - Goal of ventilation is to maintain SpO_2 95-99% and etCO2 35-45mm Hg
    - Note: Patients with metabolic acidosis (e.g.: DKA, ASA/TCA tox, severe sepsis, crush) have EtCO2 goal closer to 30 mmHg, match pre-intubation respiratory rate if tachypneic
  - Provide adequate analgosedation as necessary. Monitor vitals, as adjustment in sedation drugs may be necessary. Avoid Fentanyl and Versed if hypotensive.
    - **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)
            - May help reduce total dosage of sedatives needed

          Or
        - **Versed (0.05-0.1mg/kg IV/IO max 5mg per bolus),** repeat every 10 min if possibility of ongoing seizures or inadequate sedation with other agents
    - Consider nondepolarizing long-acting paralytic on patients at risk of self-extubation, crew safety, or those requiring full muscle paralysis for effective ventilation or avoidance of shivering in hyperthemia. 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
    - If bradycardic, ensure adequate ventilation and recheck tube placement, see *Bradycardic Guidelines*
    - 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 Guidelines*
    - Utilize PEEP if needed to maintain oxygen saturations, monitor blood pressure. See *PEEP guidelines*
    - The pneumonic **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
- 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> approx. 12 y/o], transtracheal jet ventilation, or EMS 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 both actively RSA credentialed and 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.

2.25 ROUTINE MEDICAL CARE

Priorities	***Assessment Findings***
Chief Complaint	Refer to specific guidelines for chief complaints
OPQRST	Location, Onset, Provocation/Palliation, Quality, Radiation, Severity, Time (duration, progression) As an alternative: Use "Onset, Duration, Progression and Severity"
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp
Data	Follow specific guideline. Consider SpO_2, Blood Sugar, EKG, Etc02
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.
    - Suctioning of pharynx, upper airway, or tracheobronchial 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 Guidelines*
        - Confirm all advanced airways (supraglottic, endotracheal intubation, cricothyrotomy) and document with a minimum of three of the following:
            - $EtCO_2$ (Capnometry or Capnography [preferred, if available]) is mandatory
            - Visualization (ETT placement)
            - Auscultation
            - Absence of gastric sounds
            - Misting in the tube
            - Bilateral chest rise
- Breathing Management – Perform the following, if indicated:
    - Check pulse oximetry (SpO_2) and $EtCO_2$
    - Administer oxygen to keep SpO_2 > 94%, if unable to assess SpO_2 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 Guidelines* and *Allergy & Anaphylaxis Guidelines*
- Circulation Management – Perform the following, if indicated:
    - Cardiopulmonary resuscitation (CPR) and defibrillation per and *Cardiac Arrest Guidelines*
    - Place the patient in Trendelenburg Position; see *Hypovolemia & Shock Guidelines*
- After checking ABCs, correct any immediate life threats, if indicated:
    - Assess for and treat hypoglycemia per *Diabetic Emergencies Guidelines*
- Obtain History
- Obtain Vital Signs
    - Blood Pressure (BP), Heart Rate (HR), Respiratory Rate (RR), and Pulse Oximetry (SpO_2). When appropriate, use a digital thermometer to obtain temperature (if available).
- Consider acquisition of a 12-Lead EKG for any signs or symptoms of typical or atypical ACS and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- EMS provider may consider assisting patient with administration of a medication distinctly prescribed to patient by their physician, including indication and dosing, so long as the route of administration is within their scope of practice, only after obtaining approval from Online Medical Control.
- Refer to *Pain Management Guidelines*
- Perform a focused physical exam

EMT

- Airway - Magill Forceps and Laryngoscopy for purposes of removing foreign body
- Initiate additional treatments as directed in specific guidelines
- Generally transport patient secured in the position of comfort unless contraindicated per *Spinal Motion Restriction*

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 2nd IV for critical or potentially critical patients
    - If patient condition warrants or IV access unsuccessful, establish IO access, see *EZ-IO Procedure*
  - Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
  - For all renal failure patients reduce bolus doses by half.
- Flow rates is based on patient conditions

PARAMEDIC

- Airway Management – Perform the following, if indicated:
  - Intubation per *Respiratory Distress Guidelines*
  - Perform a cricothyroidotomy (surgical/needle) if an upper airway obstruction cannot be relieved by non-invasive means
  - RSA; see *Respiratory Distress Guidelines*
- Breathing Management – Perform the following, if indicated:
  - Needle decompression of a tension pneumothorax; see *Respiratory Distress Guidelines*, *Chest Decompression Procedure*
- Circulation Management
  - Consider ***Epinephrine Push Dose and Drip***
- After checking ABCs, correct any immediate life threats, if indicated:
  - Synchronized Cardioversion in unstable patients; see *Wide Complex Tachycardia Guidelines* and *Narrow Complex Tachycardia Guidelines*
  - Transcutaneous Pacing in unstable patients; see *Bradycardia Guidelines*
- After checking ABCs, correct any immediate life threats

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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

Priorities	***Assessment Findings***
Chief Complaint	Various depending on incident. Note Mechanism of Injury
OPQRST	Identify specific cause of traumatic injury
Associated Symptoms/ 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 Trauma Assessment	Check ABC's and correct any immediate life threats. Manual C-spine stabilization. Perform rapid trauma assessment as appropriate.
Detailed Focused Exam	**Vitals:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Unresponsive, pale, diaphoretic? Signs of trauma? **HEENT:** PERRL? Pupils constricted or dilated? Discharge from ears or nose? **Lungs:** Signs of respiratory distress, hypoventilation, diminished or absent lung sounds? **Heart:** Rate and rhythm? Signs of hypoperfusion? **Neuro:** Loss of movement and/or sensation in extremities, Unresponsive? Focal deficits?
Data	Blood Glucose, SpO_2, EKG, EtCO2
Goals of Therapy	Maintain ABC's, restore adequate respiratory and circulatory conditions, reduce pain
Monitoring	SpO_2, Cardiac monitoring, EtCO2, repeat vitals

EMERGENCY MEDICAL RESPONDER/EMT

- Ensure Scene Safety and Body Substance Isolation (BSI) as indicated
- Determine need for additional resources for extrication and transport
- C-Spine: Manual stabilization, apply cervical collar or alternative method if collar does not fit
- Airway Adjuncts: If there is an altered level of consciousness, insert an oropharyngeal, nasopharyngeal, or advanced airway depending on presence of gag reflex, refer to *Respiratory Distress Guidelines*
    - Modified jaw thrust for unconscious patient
    - Oropharyngeal or nasopharyngeal airway (contraindicated in midface trauma)
    - Suctioning of pharynx, upper airway, or tracheobronchial as needed
    - Manage Foreign Body Airway Obstruction per American Heart Association standards.
    - If patient is unresponsive, utilize EMS Medical Director approved appropriately sized supraglottic airway device
        - Confirm all advanced airways and document with a minimum of three of the following:
            - EtCO2 (Capnometry or Capnography [preferred, if available]) is mandatory
            - Visualization (ETT placement)
            - Auscultation
            - Absence of gastric sounds
            - Misting in the tube
            - Bilateral chest rise

- Breathing Management – Perform the following, if indicated:
    - Check pulse oximetry (SpO_2)
    - Administer oxygen to keep SpO_2 > 94% if unable to assess SpO_2 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 an EMS 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*
        - 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*
    - Acquire 12-Lead EKG and transmit to receiving facility.
        - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- Selective Spinal Motion Restriction – In the presence of a mechanism of injury for spinal trauma [1]:
    - Cervical collar application should be performed if any of the following are present:
        - 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
        - altered level of consciousness
        - 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 or car seat consider the use of a 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.
- Refer to *Pain Management Guidelines*
- If there is ALOC
    - Check Blood Glucose
    - Follow *Diabetic Emergencies Guidelines*
    - 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 EMS Medical Director approved pelvic binder for crepitus/movement on exam/suspected pelvic fracture and concern for major hemorrhage. See practical skills section.
        - Consider placement of a pelvic binder on all patients with blunt or blast trauma suffering traumatic arrest with know of suspected pelvic injury
    - Transport patient secured in the position of comfort unless contraindicated per Spinal Motion Restriction guidelines above.

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 2nd 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

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*

- Consider RSA in trauma patients with the following indications in consideration with *Respiratory Distress Guidelines*:
    - 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 patient or 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 EKG interpretation, 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. 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** followed by **Sodium Bicarbonate** for peaked T-waves, widened QRS, or PVCs, refer to Calcium Chloride and Sodium Bicarbonate drug pages for administration guidance.
    - **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 crystalloid at 20ml/kg just prior to extrication
    - Consider **Calcium Chloride** followed by **Sodium Bicarbonate** for peaked T-waves, widened QRS, or PVCs, refer to Calcium Chloride and Sodium Bicarbonate drug pages for administration guidance.
    - **Albuterol** - less than 1 year old: 2.5mg, 1-11 years 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

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]
    - Febrile Seizure is defined as a seizure with a fever >100.4 °F in a child 6mos-6yrs, see pain guidelines for antipyretic dosing when seizure after the seizure has stopped.
    - If the patient is more than 20 weeks pregnant, refer to the *Eclampsia Guidelines*.
- 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]

Priorities	***Assessment Findings***
Chief Complaint	"Seizure" "Unresponsive" "Convulsions"
OPQRST	How long did it last? History of seizures? Fever? Possible contributing factors [1], Trauma
Associated Symptoms/ 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	**Scene size-up:** Is there a significant mechanism of injury? **General Appearance:** Pt. currently seizing? Unresponsive? Postictal? **Vitals:** BP, HR, RR, Temp, SpO2 **HEENT:** Lateral tongue laceration is highly specific for grand mal seizures **Skin:** Flushed, warm **Neuro:** ALOC?, Focal deficits (CVA)
Data	Blood Glucose, SpO_2, Temperature
Goals of Therapy	Prompt cessation of seizure Treat the underline cause Monitor and maintain airway.
Monitoring	Vitals, Cardiac monitoring, SpO_2

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines* and *Routine Trauma Care Guidelines*
- 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_2 > 94%
    - 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 as indicated
- Obtain blood glucose. If < 70mg/dl refer to *Diabetic Emergencies Guidelines*
- 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.
- Consider acquisition of a 12-lead EKG following cessation of seizure in patients without a history of seizures to determine possible cardiac cause, transmit to receiving facility.

- If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

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 Online Medical Control orders additional doses
- 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/Biologics/Overdose Guidelines*

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

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* for Further
    - 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 *WI Stat § 256.155 (2019)*: EMS providers may render any first aid service to the domestic animal before the domestic animal is transferred to a veterinarian for further treatment if the service is in the scope of practice of the license or certification of that emergency medical services practitioner or emergency medical responder when applied to human beings.
    - 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.

Priorities	***Assessment Findings***
Chief Complaint	Any, device malfunction/dislodgement
OPQRST	As indicated
Associated Symptoms/ 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. 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 Guidelines*

Mercyhealth System

Medical Guidelines

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 Online Medical Control 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

Priorities	***Assessment Findings***
Chief Complaint	"Drowning", "Near Drowning"
OPQRST	Onset. Duration of time under water. Water temperature, if known. Bystander CPR performed? AED Used?
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 General Appearance: lifeless Skin: pale, cool, mottled Lungs: wet or clear? Heart: Rate and regularity? Absent heart sounds? Neuro: Unresponsive?
Data	Blood sugar, EKG, SpO_2, water temperature
Goals of Therapy	Return of spontaneous circulation (ROSC)
Monitoring	BP, HR, RR, EKG, SpO_2.

EMERGENCY MEDICAL RESPONDER

- Routine C-spine stabilization of all submersion patients is NOT indicated
- *Routine Medical Care Guidelines* and *Routine Trauma Care Guidelines*
- 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*
- If the patient is pulseless and not breathing, follow the *Cardiac Arrest Guidelines*
  - 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
- Check blood glucose if hypoglycemia is suspected
  - Follow *Diabetic Emergencies Guidelines* if the blood glucose is < 70mg/dl
- Acquire 12-Lead EKG and transmit to receiving facility.
  - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*

EMT

- Utilize PEEP if needed to maintain oxygen saturations, monitor blood pressure. See *PEEP Guidelines*
- Monitor EtCO2 if available
- All submersion patients are to be transported to the hospital

AEMT

- Consider IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
- Warm the IV fluids according to the *Hypothermia & Frostbite Guidelines* if indicated

PARAMEDIC

- Consider endotracheal intubation per *Routine Medical Care Guidelines*.
- Perform cardiac rhythm monitoring, interpretation of 12-Lead EKGs, and treat any dysrhythmias per appropriate Medical Guidelines.

FOOTNOTES:

- Adult Respiratory Distress Syndrome (ARDS) is very common in a near drowning victim. The onset may be life threatening. Monitor ventilation status (SPO2, EtCO2 and lung sounds) often

2.30 SUSPECTED STROKE

Priorities	***Assessment Findings***
Chief Complaint	"Weakness", "Confusion", "Slurred Speech", "Unresponsive"
OPQRST	Last known well time? Was it witnessed?
Associated Symptoms/ 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	**Vital signs:** BP, HR, RR, Temp, SpO2 **General Appearance:** Unresponsive?, noticeable facial droop, drooling, slouched posture **Neuro: G-F-A-S-T** (**G**aze, **F**acial droop, **A**rm drift, **S**peech difficulties, **T**ime 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/EMT

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 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 Guidelines*
- 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.
- 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
- Acquire 12-Lead EKG and transmit to receiving facility.
  - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- For seizures refer to *Seizure Guidelines*

AEMT

- Initiate IV 0.9% NS saline lock or KVO, large bore (20g or larger) in AC is preferred for ED imaging.

- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Perform cardiac rhythm monitoring, interpretation of 12-Lead EKGs, and treat any dysrhythmias per appropriate guidelines
- Consider RSA if indicated; refer to *Respiratory Distress Guidelines*

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
- Common causes of syncope include dehydration and vasovagal reflexes; less commonly syncope may result from 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 cause that cannot be assessed on scene

Priorities	***Assessment Findings***
Chief Complaint	"Passed Out"; "Fainted"
OPQRST	Determine onset, duration and triggering events (e.g., fright, defecation, micturition)
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO2 **General Appearance:** may be normal or ill appearing **Skin:** Pale, cool, diaphoretic **Heart:** Hypotension, tachycardia, weak pulses, poor capillary refill? **Neuro:** 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/EMT

- *Routine Medical Care Guidelines*
- Gently lower the patient to a supine position or Trendelenburg position if hypotensive.
- Oxygen 2-4 LPM via nasal cannula; Maintain SpO2 $\geq$ 94%
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- Check blood sugar if less than 70mg/dl treat per *Diabetic Emergencies Guidelines*

AEMT

- Initiate IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Perform cardiac rhythm monitoring, interpretation of 12-Lead EKGs, and treat any dysrhythmias per appropriate guidelines

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, isoflurophate
    - Antihelminthics – 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 Online Medical Control 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.
- Be familiar with how to request the Strategic National Stockpile (SNS) in your region as a short-term, stopgap buffer when the immediate supply of supplies, medicines, and devices for lifesaving care may not be available or sufficient.
- 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.

Priorities	***Assessment Findings***
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/ 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	**Vitals:** BP, HR, RR, Temp, SpO_2 **General Appearance:** level of alertness, signs of agitation, willingness to cooperate with authorities **Skin:** Cool, pale and diaphoretic? Warm, dry and flushed? **HEENT:** Are the pupils constricted or dilated? Nystagmus? **Lungs:** Wheezes, rales or rhonchi? **Heart:** Rate, regularity, BP, peripheral perfusion? **Neuro:** Signs of intoxication? Ataxia? Slurred speech? **Psych:** 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, EtCO2, temperature

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines*
- Oxygen @ 2-4 LPM per nasal cannula to keep $SpO_2 \geq 94\%$. 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*
    - Consider use of a supraglottic airway.
    - Check blood glucose. If < 70mg/dl, follow the *Diabetic Emergencies Guidelines*
    - 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 SpO2 reading
- Address all other issues with appropriate guidelines
- If opiate overdose, consider **Narcan** 0.5-4mg IN or IM
    - Peds dose 0.1mg/kg, max 0.5 mg dose, to support oxygenation/ventilation**,** remove opioid patches with gloves.

AEMT

- Initiate IV 0.9% NS saline lock or KVO
- If the patient has an altered level of consciousness and a narcotic overdose is suspected, consider **Naloxone (Narcan)** 0.5 -4mg IV/IO/IN/IM (Peds dose 0.1mg/kg, max 0.5 mg dose) up to 4mg. Using lowest doses of Narcan possible is recommended, as the goal is only to increase respirations, not fully awaken patient.

- Initiate a NS 250 ml bolus (PEDS dose 20ml/kg) IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Suspected Cyanide exposure that result in shock not attributed to other causes, respiratory/cardiac arrest or depression should 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:

Class of drugs	***Treatment Indications***	***Specific Treatment(s)***
Amphetamines	Agitation, psychosis, Hypertensive Emergency or ventricular arrhythmias	PARAMEDIC may consider the following medications for sedation or seizures: **Versed:** dosing per *Agitated & Combative Patients Guideline. Seizure Guidelines*
Benzodiazepines (BZD)	Treat signs and symptoms. Be aware for respiratory depression and treat.	Treat arrhythmias according to the appropriate guideline. Treat seizures according to the *Seizure Guidelines*
Beta Blockers	Profound bradycardia, hypotension or conduction defects. Check blood glucose level on all patients but especially on pediatric patients as beta-blockers can cause hypoglycemia in pediatric population	PARAMEDIC consider **Glucagon** 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. *Treat hypoglycemia* per guidelines
Calcium Channel Blockers	Profound bradycardia, hypotension or conduction defects	PARAMEDIC consider **Calcium Chloride**, refer to Calcium Chloride drug page. Consider **Glucagon** 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: **Versed:** Dosing per *Agitated & Combative Patients Guideline* **Sodium Bicarbonate:** 1 mEq/kg up to 50mEq may be given if a wide QRS is noted. May repeat once in discussion with Online 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.	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. **Naloxone (Narcan)** 0.5mg up to 2mg IV/IO/IN/IM per dose (Pediatric 0.1mg/kg) until the patient reaches normal respiratory pattern.
Organophosphate Poisoning (Pesticides and Nerve Agents)	Profound bradycardia, seizures, abnormal (wet) lung sounds The organophosphate toxidrome: **S** – Salivation, Seizures **L** – Lacrimation **U** – Urination **G** – GI vomiting and diarrhea **B** – Bradycardia*, bronchorrhea, bronchospasm **A** – Arrhythmias **M** – Miosis (small pupils) * * Tachycardia and mydriasis (dilated pupils) are also possible Caveat: Organophosphates are highly toxic in very small quantities and pose a significant risk to EMS.	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. Signs of atropinization are the end point of treatment: flushing, pupil dilation, dry mouth, and tachycardia. If seizures develop **Versed** 0.1mg/kg IV/IO/IN (max 5mg bolus) or 0.2mg/kg IM(max 10mg bolus) per seizure guidelines Valium 5 mg IV or 5-10mg IM every 10 minutes for seizures. Peds dosing per Broselow Tape CANA® (Convulsive Antidote Nerve Agent) is a commercially available IM autoinjector that contains 10 mg of diazepam For additional dosing information see [1] below

Tricyclic Antidepressants (TCA)	Decreased level of consciousness; hypotension, seizures, malignant arrhythmias (e.g., *Torsades de Pointes*, VT), prolongation of the QT or QRS intervals. 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 protects 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 *Seizure Guidelines* **Sodium Bicarbonate 8.4%**1 mEq/kg up to 50mEq may be given if a wide QRS is noted. May repeat once in discussion with Online 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 Online Medical Control. If advanced airway in place, hyperventilate to an $EtCO_2$ of 25 – 30.
Hydrofluoric Acid Exposure	An oral or large dermal exposure can result in significant systemic hypocalcemia with possible QT prolongation and cardiovascular collapse. Ensure appropriate PPE	For all patients in whom a hydrofluoric acid exposure is confirmed or suspected: 1) Vigorously irrigate all affected areas with water or normal saline for a minimum of 15 minutes 2) Apply a cardiac monitor for oral or large dermal exposures significant HF exposures, assess for prolonged QT 3) PARAMEDIC: Consider application calcium preparation to exposed external skin by combining 10ml of calcium chloride with 150ml of water soluble lubricant if available, leave in place for at least 20 minutes. Contact Online Medical Control for assistance.

[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
Infant: 0–2 years of age	0.05 mg/kg IM or via auto-injector (i.e., *0.25 and/or 0.5 mg auto-injector(s))*
Child: 3–7 years of age (13–25 kg)	1 mg IM or via auto-injector (i.e., *one 1 mg or two 0.5 mg auto-injectors)*
Child: 8–14 years of age (26–50 kg)	2 mg IM or via auto-injector (i.e., *one 2 mg or two 1 mg auto-injectors)*
Adolescent/Adult	2 mg IM or via auto-injector
Pregnant Patients	2 mg IM or via auto-injector
Geriatric/Frail	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
Infant: 0–2 years of age	0.05 mg/kg IM or via auto-injector (i.e., *0.25 mg and/or 0.5 mg auto-injector)*	15 mg/kg IM
Child: 3–7 years of age (13–25 kg)	1 mg IM or via auto-injector (i.e., *one 1 mg auto-injector or two 0.5 mg auto-injectors)*	15 mg/kg IM **OR** One auto-injector (600 mg)
Child: 8–14 years of age (26–50 kg)	2 mg IM or via auto-injector (i.e., *one 2 mg auto-injector or two 1 mg auto-injectors)*	15 mg/kg IM **OR** One auto-injector (600 mg)
Adolescent/ Adult	2–4 mg IM or via auto-injector	600 mg IM **OR** One auto-injector (600 mg)
Pregnant Patients	2–4 mg IM or via auto-injector	600 mg IM **OR** One auto-injector (600 mg)
Geriatric/Frail	2 mg IM or via auto-injector	10 mg/kg **IM** **OR** 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 we all 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 IM or via 600 mg Auto-injector	Pralidoxime Chloride Dose IM or via Auto-injector
Infant: 0–2 years of age	0.1 mg/kg IM or via auto-injector (i.e., *0.25 mg and/or 0.5 mg auto-injector)*	45 mg/kg **IM**
Child: 3–7 years of age (13–25 kg)	0.1 mg/kg IM **OR** 2 mg via auto-injector (i.e., one 2 mg auto-injector or four 0.5 mg auto-injectors)	45 mg/kg **IM OR** One auto-injector (600 mg)
Child: 8–14 years of age (26–50 kg)	4 mg IM or via auto-injector (i.e., *two 2 mg auto-injectors or four 1 mg auto-injectors)*	45 mg/kg **IM OR** Two auto-injectors (1200 mg)
Adolescent: 14 years of age or older	6 mg IM or via auto-injector (i.e., *three 2 mg auto-injectors)*	Three auto-injectors (1800 mg)
Adult	6 mg IM or via auto-injector (i.e., *three 2 mg auto-injectors)*	Three auto-injectors (1800 mg)
Pregnant Patients	6 mg IM or via auto-injector (i.e., *three 2 mg auto-injectors)*	Three auto-injectors (1800 mg)
Geriatric/Frail	2–4 mg IM or via auto-injector (i.e., *one to two 2 mg auto-injectors)*	25 mg/kg IM **OR** two to three auto-injectors (1200-1800 mg)

2.33 VAGINAL BLEEDING AFTER DELIVERY

Priorities	***Assessment Findings***
Chief Complaint	"Vaginal bleeding after delivery"
OPQRST	Onset. Attempt to quantify the amount of blood lost if possible
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Pain or anxiety-related distress? External Hemorrhage? **Skin:** Pale, cool, and moist? **Chest:** Labored breathing? **Heart:** Rate and Rhythm? **Abdomen:** Internal hemorrhage? Tender? Distended? GU Blood loss?, Uterus Location/Quality **Neuro:** ALOC?
Data	SpO_2
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

- *Routine Medical Care Guidelines*
- Oxygen 2-4 LPN per nasal cannula or higher flow if needed to maintain $SpO_2 > 94\%$
- 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

- Initiate IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Treat for shock as needed refer to *Hypovolemia & Shock Guidelines*
    - **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

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 childbearing 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 a 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.

Priorities	***Assessment Findings***
Chief Complaint	"Vaginal bleeding and pregnant"
OPQRST	Onset. Attempt to quantify the amount of blood lost
Associated Symptoms/ 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	**Vital Signs:** BP, HR, RR, Temp, SpO_2 **General Appearance:** Pain or anxiety-related distress? External Hemorrhage? **Skin:** Pale, cool, and moist? **Chest:** Labored breathing? **Heart:** Rate and Rhythm? **Abdomen:** Internal hemorrhage? Tender? Distended? GU Blood loss? **Neuro:** ALOC?
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

- *Routine Medical Care Guidelines*
- 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

- Initiate IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*
    - Avoid Permissive Hypotension
- May place the patient in left lateral Trendelenburg Position, if possible.

PARAMEDIC

- Monitor closely for any changes in abdominal exam or condition

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 is usually > 120 bpm

Priorities	***Assessment Findings***
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/ Pertinent Negatives	Chest pain, shortness of breath, weakness, anxiety, leg swelling
SAMPLE	• Previous history, history of thyroid disease, CAD, Cardiac Medications • 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. • Obtain history of what medications have been used to treat previous arrhythmias, if known. • Obtain history of any previous complications from previous arrhythmia treatments, if known. • Obtain history of the duration of the current episode of tachycardia, if known.
Initial Exam	Check ABCs and correct any immediate life-threatening problems.
Detailed Focused Exam	Vitals Signs: BP, HR, RR, Temp, SpO_2 General Appearance: Skin: Cool, pale diaphoretic Neck: JVD? Chest: Labored breathing Lungs: Wheezes, rales, rhonchi? Decreased breath sounds? Heart: Regular, rate fast or slow, murmur Legs: Edema Neuro: ALOC?
Data	SpO_2, 12-Lead EKG, Blood Sugar if Diabetic or ALOC
Goals of Therapy	Decrease Rate, treat chest pain, treat CHF
Monitoring	Cardiac Monitoring and SpO_2

EMERGENCY MEDICAL RESPONDER/EMT

- *Routine Medical Care Guidelines*
- Administer oxygen to keep SpO_2 > 94%
- Acquire 12-Lead EKG and transmit to receiving facility.
    - If the EKG reads "***ACUTE MI SUSPECTED***", call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
- If the patient is having difficulty breathing allow them to sit upright, refer to the *Congestive Heart Failure Guidelines*
- If the patient becomes unresponsive, pulseless and non-breathing, refer to the *Cardiac Arrest Guidelines*

AEMT

- Initiate IV 0.9% NS saline lock or KVO
- Initiate a NS 250 ml bolus IV/IO if there are signs of hypotension, hypovolemia, or shock, reassess and repeat as indicated per *Hypovolemia & Shock Guidelines*

PARAMEDIC

- Continuous cardiac monitoring. Interpret 12-Lead EKG or perform if not already done. Consider recording continuous 12-lead 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**
- Wide QRS in a pediatric patient is defined at > 0.09 sec
- For stable [1] patients with regular monomorphic wide complex believed to be SVT with aberrancy consider:
    - **Adenosine** 0.1mg/kg for first dose (max 6mg)
    - **Adenosine** 0.2mg/kg for second dose (max 12mg)
    - Consult Online Medical Control for Amiodarone 2.5mg/kg max 150mg over 10 min
    - Perform continuous EKG during treatments
- For all stable patients with monomorphic VT
    - **Amiodarone** 150mg IV infusion over 10 minutes, may repeat x1
    - If amiodarone unsuccessful, consider **Magnesium Sulfate** 2 gm (peds 50mg/kg) IV infusion (over 10 minutes) or slower to avoid hypotension

- If the patient is hemodynamically or clinically unstable with monomorphic VT or polymorphic VT
    - Prepare to perform synchronized cardioversion
    - Perform first synchronized cardioversion at 150 Joules for adult (PEDS: 1 J/Kg to max 150 J)
    - If first attempt unsuccessful,
        - Adults: increase by 50 joules for each subsequent attempt
        - PEDS: perform at 2 J/Kg for all subsequent attempts
        - Consider **Fentanyl Citrate** 50-100 mcg IV/IO/IN/IM (PEDS dose: 1 mcg/kg IV/IO or 2 mcg/kg IN max dose 100mcg) for pain control or low dose **Versed** 2mg IV/IO/IN/IM (PEDS dose: 0.1 mg/kg slow IVP or 0.2 mg/kg IN/IM, max single dose 2 mg)
            - Do not delay Synchronized cardioversion if immediately needed
    - Reduce adult dose by 50% for smaller framed and elderly
- 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 with QTc > 500 ms/Torsades de pointes
    - **Magnesium** 2 grams (PEDS dose: 50 mg/kg max 2 grams) IV infusion 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** (refer to Calcium Chloride drug page) followed by **Sodium Bicarbonate** 1 mEq/kg IV/IO max 50 meq Dose and **Albuterol** 10 mg 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" tachycardia:

- Hemodynamic Criteria
    - Adults: SBP < 90 mmHg AND Heart Rate > 150 bpm
    - PEDS:
        - Less than 1 year of age: SBP < 60 mmHg and HR > 220 bpm
        - 1–10 years old: [2 x (age in years) + 70 mmHg] and HR > 180 bpm
        - Greater than 10 years old: same as adult
- Clinical Criteria
    - Signs of shock (poor perfusion) are present, including:
        - ALOC, including syncope, weakness, lightheadedness, fatigue
        - Diminished central or distal pulses
        - Pallor and diaphoresis
        - Prolonged capillary refill > 3 sec
    - Signs of pulmonary edema are present, including:
        - Labored breathing, retractions, grunting
        - Rales (wet lungs)
        - Hypoxia (SpO_2 <94%)
    - The patient complains of chest discomfort (angina)

SECTION 3 MERCY EMS PHARMACOLOGY

3.01 Approved Medication List (WI)

EMR	EMT	AEMT	PARA	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
		√	√	Dextrose 10% 250ml bag
			√	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 for IV/IO
√	√	√	√	Epinephrine 1:1000 solution, 1mg/1ml ampule for manual draw
√	√	√	√	Epinephrine (adult and pediatric) pre-loaded auto injector
	√	√	√	Epinephrine (Inhaled/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
			√	Hydroxycobalamin (Cyanokit) 5gram vial for reconstitution
	√	√	√	Ibuprofen (Motrin, Advil) 200mg tablets or 100mg/5ml liquid
	√	√	√	Ipratropium Bromide (Atrovent) 0.5mg/2ml unit dose
√	√	√	√	Isopropyl Alcohol wipe
		√	√	IV fluids (Normal Saline, Lactated Ringers, D10W)
√	√	√	√	Isopropyl Alcohol wipe
			√	Ketamine 500mg/5ml
			√	Ketorolac (Toradol) 30mg/1ml or 60mg/2ml vial
			√	Labetalol 100mg/20ml
			√	Lidocaine Hydrochloride 2% PF 100mg/5ml preloaded syringe
			√	Magnesium Sulfate 50% 5gram/10ml pre-loaded syringe
√	√	√	√	Mark I Kit/Duodote (Atropine & Pam2chloride) pre-loaded auto injector
			√	Methylprednisolone (Solu-Medrol) 125mg/2ml Act-O-Vial
			√	Metoprolol tartrate (Lopressor) 5mg/5ml vial (If labetalol unavailable)
			√	Midazolam Hydrochloride (Versed) 5mg/5ml 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, oral dissolving tab (ODT)
			√	Rocuronium Bromide (Zemuron) 100mg vial (If vecuronium unavailable)
			√	Sodium Bicarbonate 8.4% 50mEq/50ml, preload syringe
			√	Succinylcholine Chloride (Anectine) 200mg/10ml vial
			√	Terbutaline (Brethine) 1mg/1ml vial
			√	Tetracaine 0.5% bottle
			√	Tranexamic Acid (TXA) 1G vial for infusion
			√	Vecuronium Bromide (Norcuron) 10mg vial-powder

Concentrations above are preferred but may require substitution based on availability.

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 tolerated PO in form available (Tablet/Liquid)

PRECAUTIONS:

1. Many prescriptions and over the counter medications are compounded with APAP. 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 given with Ibuprofen.

ADVERSE REACTIONS:

1. Nausea, Vomiting
2. Rash

REFERENCE GUIDELINES:

Routine Medical Care Guidelines
Pain Management Guidelines

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. 2nd or 3rd 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 Online 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 GUIDELINES:

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 GUIDELINES:

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. 2nd or 3rd 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. Coagulation abnormality, hepatic failure, adult respiratory distress syndrome.
3. Visual disturbance, malaise, fatigue, nausea and vomiting

REFERENCE GUIDELINES:

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 tolerated PO in form available and chew

ADMINISTRATION:

1. Administer 324mg orally in the form of 4 chewable aspirin (81mg tablets) commonly called “baby aspirin”.
2. Patients can be prescribed various forms and doses of Aspirin. In these cases, give a supplemental dose up to 324mg chewable if patient took partial chewable dose, another swallowed form, or use was greater than 8 hours prior to EMS contact.

SPECIAL NOTES:

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

REFERENCE GUIDELINES:

Chest Pain of Suspected Cardiac Origin
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 GUIDELINES:

Bradycardia
Respiratory Distress
Toxic Exposure/Biologics/Overdose

3.08 CALCIUM CHLORIDE 10%

INDICATION:

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

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 approx 1ml/min and only in emergency situations (over 2-5min in cardiac arrest), 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, follow Broselow Tape or approved EMS Medical Director product or application for accurate pediatric dosing.
3. Supplied in preloaded syringe containing 1000mg per 10ml (100mg/ml)

SPECIAL NOTES:

REFERENCE GUIDELINES:

Cardiac Arrest
Toxic Exposure/Biologics/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.

REFERENCE GUIDELINES:

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 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 GUIDELINES:

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 Online Medical Control

PRECAUTIONS:

1. Symptomatic hypotension may result. Push slowly over 2-3 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 2 minutes** (max 20mg dose).
3. If inadequate response after 15 minutes, re-bolus with 0.35 mg/kg **over 2 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/Biologics/Overdose Guidelines* if the patient becomes hemodynamically or clinically unstable
2. Optional Medication at the ALS Level

REFERENCE GUIDELINES:

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 caution in patients with 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 or multiple strengths OTC
2. Adults Administer 50mg IV, IM, PO. Pediatric dose is 1 mg/kg to a maximum of 50 mg.

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 GUIDELINES:

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 ml D5W or 800 mg in 500 ml D5W concentrations.)
3. Pediatric dose is the same as adult.
4. Titrate to effect for blood pressure or heart rate or per Online 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.
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.

REFERENCE GUIDELINES:

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 Drip*** can be utilized per section 4.21.
4. For Nebulized dosing see Respiratory Distress Guideline

SPECIAL NOTES:

REFERENCE GUIDELINES:

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 4.21.

REFERENCE GUIDELINES:

Allergy & Anaphylaxis
Asthma & COPD
Cardiac Arrest
Bradycardia
Respiratory Distress
Hypovolemia and Shock

3.16 EPINEPHRINE (INHALED/RACEMIC)

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: 1mg (1 mL of epinephrine 1 mg/1 mL) mixed with 2 mL of normal saline (e.g.: 2mL from a saline flush) in pediatric nebulizer connected to oxygen source at 6 LPM
2. Adult: 0.3mg (3 mL of epinephrine 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 1 mg/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 arrythmia

1. Nervousness/Tremors
2. Palpitations, Arrhythmias, Tachycardia
3. Flushing/Diaphoresis
4. Chest Discomfort
5. Dizziness/Headache

REFERENCE GUIDELINES:

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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15. Kunkel NC, Baker MD. Use of racemic epinephrine, dexamethasone, and mist in the outpatient management of croup. Pediatr Emerg Care. 1996;12(3):156-9

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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 Online Medical Control 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 and your organizational drug control measures and EMS system guidelines should be followed closely.

REFERENCE GUIDELINES:

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 GUIDELINES:

Allergy & Anaphylaxis
Diabetic Emergencies
Toxic Exposure/Biologics/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 GUIDELINES:

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 GUIDELINES:

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 given with acetaminophen

ADVERSE REACTIONS:

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

REFERENCE GUIDELINES:

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 Online 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 GUIDELINES:

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 slow push 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 (max dose 25mg) IV/IM.
2. Adult – extreme agitation/delirium/extreme pain dissociation 4mg/kg IM (max dose 400mg) or 1mg/kg max dose 100mg SLOW IV/IO.
3. RSA adult/peds – 1-2mg/kg (max dose 200mg) IV/IO or 4mg/kg (max dose 400mg) IM. Half the initial dose may be repeated for continued sedation as needed.
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 Online Medical Control is prior to use in pregnancy

REFERENCE GUIDELINES:

Agitated/Combative
Asthma/COPD
Respiratory Distress
Pain Management

3.25 KETOROLAC (TORADOL)

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 GUIDELINES:

Pain Management

3.26 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 Online Medical Control if in doubt.
4. As drip in interfacility

REFERENCE GUIDELINES:

Eclampsia
Hypertensive Crisis
Stroke

3.27 LIDOCAINE HYDROCHLORIDE 2% PF

INDICATION:

1. Reduce pain of EZ-IO infusion.

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 slowly over 1-2 min 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 to maximum dose of 20mg.

SPECIAL NOTES:
1. In known allergy to Amiodarone, can give alternative: Lidocaine 1-1.5mg/kg for initial dose. Subsequent doses of 0.5 to 0.75 mg/kg IV/IO as necessary every 5 min to max total of 3 mg/kg for all doses.

REFERENCE GUIDELINES:

Routine Medical Care
EZ-IO Procedure
Cardiac Arrest

3.28 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.
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.
4. IM dosing for eclampsia up to 8g in 4g injections.

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 treated with Calcium Chloride, refer to Calcium Chloride drug page.
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

3.29 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. Crew members may also need full face protective mask and other PPE to escape toxic environment.

REFERENCE GUIDELINES:

Toxic Exposure/Biologics/Overdose

3.30 METHYLPREDNISOLONE SODIUM SUCCINATE (SOLU-MEDROL)

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

3.31 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 Online 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.
3. Metoprolol is not indicated in pediatric patients.

REFERENCE GUIDELINES:

Eclampsia
Hypertensive Emergency

3.32 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

3.33 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 abuser, may precipitate withdrawal symptoms, miscarriage, pulmonary edema, or premature labor.
2. Very short half-life; monitor patient closely and prepare to re-dose 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 0.5–4 mg IV/IM
   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 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 GUIDELINES:

Altered Level of Consciousness
Pain Management
Toxic Exposure/Biologics/Overdose

3.34 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**
FLOW RATE IN ML/HR (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

3.35 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 (ODT).
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 < 40 kg: 0.15 mg/kg IV dose can be given and may repeat twice.
3. Can be given IM or ODT.
4. EMT Basic may only give ODT. Pediatric dosing is 15kg-26kg: 2mg ODT if scored and able to divide in half, >27kg: use 4mg ODT.

SPECIAL NOTES:

1. Very few side effects noted. If rare extrapyramidal effects are observed, Benadryl can be given.
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 GUIDELINES:

Nausea, Vertigo, & Vomiting
Pain Management

3.36 OXYTOCIN (PITOCIN)

INDICATION:

1. Stimulates post-partum contraction of the uterus to control bleeding

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

SPECIAL NOTES:

Monitor heart rhythm
Check BP frequently; vital sign monitoring recommended
Contact Online Medical Control for any adverse effects
Continue sending facility rate

3.37 ROCURONIUM BROMIDE (ZEMURON)

INDICATION:

1. Facilitation of RSA in RSA qualified teams.
2. Skeletal muscle relaxation.

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 ready for intubation
4. Monitor heart rhythm, pulse oximetry
5. Check BP frequently; vital sign monitoring recommended
6. Administer with analgesia/sedation post intubation
7. Contact Online Medical Control for any adverse effects or concerns

REFERENCE GUIDELINES:

Respiratory Distress

3.38 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 hypernatremia 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 GUIDELINES:

Cardiac Arrest
Toxic Exposure/Biologics/Overdose
Routine Trauma Care

3.39 SUCCINYLCHOLINE CHLORIDE (ANECTINE)

INDICATION:

1. Facilitation of RSA

CONTRAINDICATIONS:

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

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

ADMINISTRATION:

1. Supplied in vial containing 200mg/10ml.
2. Adult dose: 2 mg/kg IV/IO/IM.
3. Pediatric dose: 2 mg/kg IV/IO/IM.
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.

SPECIAL NOTES:

1. Needs to be refrigerated. May store not refrigerated for 90 days
2. Expect possible muscle fasciculations.
3. Depolarizing neuromuscular blockade.
4. Administer oxygen
5. Only give when all equipment and personnel are ready for intubation
6. Monitor heart rhythm, pulse oximetry
7. Check BP frequently; vital sign monitoring recommended
8. Be prepared with analgesia/sedation post intubation
9. Contact Online Medical Control for any adverse effects or concerns

REFERENCE GUIDELINES:

Respiratory Distress

3.40 TERBUTALINE (BRETHINE)

INDICATION:
1. Reversal of bronchospasm

CONTRAINDICATIONS:
1. Known allergy or hypersensitivity to terbutaline
2. Injectable form contraindicated in pregnant women for preventative or prolonged tocolytic treatment
3. Less than 6 years of age

PRECAUTIONS:
1. Cardiovascular Disorders
2. Hyperthyroidism
3. Diabetes
4. Seizure Disorders
5. Kidney Disease
6. Use of MAO inhibitor or tricyclic antidepressant (TCA) within 14 days

ADMINISTRATION:
1. Adult dose (12 years and older): 0.25 mg SC
2. Pediatric dose (6-11 years old): 0.01 mg/kg (max 0.25 mg) SC
3. May repeat in 15 to 30 minutes x1, if needed
4. Max total combined dose is 0.5mg

ADVERSE REACTIONS
1. Nervousness/Tremors
2. Palpitations, Arrhythmias, Tachycardia
3. Flushing/Diaphoresis
4. Chest Discomfort
5. Drowsiness
6. Dizziness/Headache
7. Nausea/Vomiting

REFERENCE GUIDELINE:

Asthma/COPD

3.41 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 x3.

SPECIAL NOTES:

REFERENCE GUIDELINES:

Routine Trauma Care
Eye Irrigation

3.42 TRANEXAMIC ACID (TXA)

INDICATION:

1. Suspected Traumatic Hemorrhage Shock within three hours of injury
2. Suspected Traumatic Intracranial Hemorrhage within three hours of onset
3. Post-partum hemorrhage

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 guidelines for specific dosing.

REFERENCE GUIDELINES:

Patients with Established Tracheostomy or Ventilator
Routine Trauma Care
Vaginal Bleeding After Delivery

3.43 VASOPRESSIN (PITRESSIN)

INDICATION:

1. Shock
2. ACLS

CONTRAINDICATIONS:

1. Hypersensitivity

ADMINISTRATION:

1. Per sending facility

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 GUIDELINES:

Interfacility/Critical Care

3.44 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
5. Check BP frequently; vital sign monitoring recommended
6. Administer with analgesia/sedation post intubation
7. Contact Online Medical Control for any adverse effects or concerns

REFERENCE GUIDELINES:

Respiratory Distress

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_2 (CAPNOGRAPHY) MONITORING

Key Considerations: For EtCO2 to be present metabolism, perfusion, and ventilation must be occurring.

1) EtCO2 value, respiratory rate, and waveform describes airway status.
2) If EtCO2 is low and not related to airway status consider perfusion.

Procedure:

1) Attach the appropriate capnography sensor for a patient with an advanced airway or a spontaneously breathing patient.
2) Note the EtCO2 level, respiratory rate and waveform. (See below for examples)
3) EtCO2 levels:
    a. Normal 35 – 45 mmHg
    b. If EtCO2 is low and not related to airway status think perfusion (shock).
    c. In cardiac arrest EtCO2 may be low due to poor perfusion and /or metabolism. In arrest if EtCO2 is below 10mmhg ensure high quality compressions are being performed.
        i. In an arrest a sudden increase on EtCO2 may indicate ROSC.
    d. In patients with possible increased intracranial pressure attempt to maintain an EtCO2 of approximately 35mmhg
4) When EtCO2 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) EtCO2 should be monitored as any other vital sign when assessing a patient.

CAPNOGRAPHY

EDUCATIONAL SERIES

End-tidal CO_2 ($EtCO_2$) is the measurement of carbon dioxide (CO_2) in the airway at the end of each breath. Capnography provides a numeric reading (amount) of the $EtCO_2$ and a graphic display (waveform) of CO_2 throughout the respiratory cycle.

CO_2, produced by cells, is transported via the vascular system and diffused into the alveoli to be exhaled. $PaCO_2$, the partial pressure of CO_2 in arterial blood, is normally 2–5mmHg higher than $EtCO_2$ in the airway.

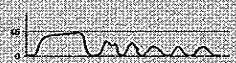
Capnography • Intubated Patient

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:

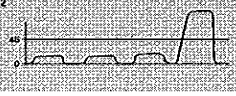
Sudden loss of waveform, $EtCO_2$ near zero
- ET tube disconnected, dislodged, kinked or obstructed
- Loss of circulatory function

Decreasing $EtCO_2$ 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 $EtCO_2$
- Return of spontaneous circulation

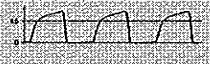


Capnography • Non-intubated Patient

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:

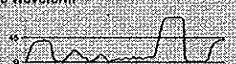
Plateau has curved, "shark-fin" appearance
- Asthma
- COPD



Slow rate with increased $EtCO_2$
- Hypoventilation
- Partial airway obstruction

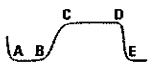
Rapid rate with decreased $EtCO_2$
- Hyperventilation

Decreased $EtCO_2$, variable waveform
- Apnea, inadequate breath
- Sedation

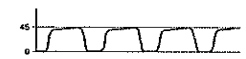


Normal Ranges:
Arterial $PaCO_2$ 38–45mmHg
Airway $EtCO_2$ 35–45mmHg (4–6 Vol. %)

Normal Waveform:



A–B Respiratory baseline
B–C Expiratory upslope
C–D Expiratory plateau
D End-tidal value—peak CO_2 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. $EtCO_2$ monitoring with LIFEPAK defibrillator/monitors may be used on patients of any age.

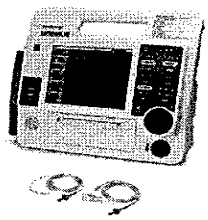
Monitoring and Printing:
Capnography waveforms on the monitor screen are condensed to provide adequate information in the 4-second view. The correct respiratory rate is displayed in breaths per minute (bpm). Printouts of the waveforms are in real time and therefore may differ in duration.

Note:
Examples are illustrations for training purposes. Level of sedation and severity of condition may affect respiratory rate and $EtCO_2$ level in patients.

Troubleshooting Tips for $EtCO_2$ 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_2 FILTERLINE OFF message appears.	FilterLine® disconnected or not securely connected.
CO_2 FILTERLINE BLOCKAGE message appears.	FilterLine is twisted or clogged. Airway adapter clogged.
CO_2 FILTERLINE PURGING message appears.	FilterLine tube twisted or clogged, or rapid altitude change occurred.
$EtCO_2$ values are erratic.	Leak in the tubing. Ventilated patient breathes spontaneously.
$EtCO_2$ values are consistently higher or lower than expected.	Physiological cause. Ventilator malfunction. Improper calibration.
xxx appears in place of $EtCO_2$ value.	CO_2 module not calibrated successfully, or CO_2 module fails.

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_2, N_2O, etc.)



MIN 3203100-000 / CAT. 36500-001563

Medtronic

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 SPO2 <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_2 is >95%)
  - Place the patient on continuous pulse oximetry and $EtCO_2$
  - 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 H2O of PEEP to start and titrate to effect up to 15 cm H2O. 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

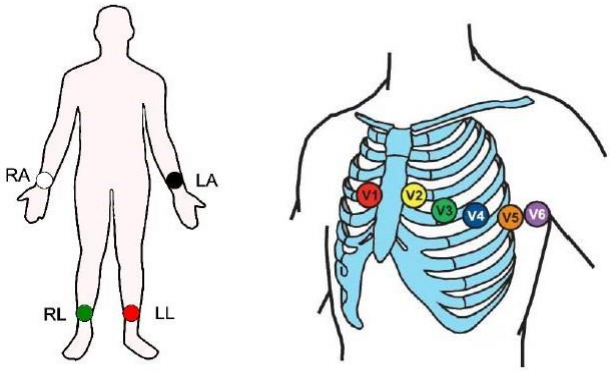
Early prehospital 12-Lead ECGs will decrease the time to percutaneous coronary intervention (PCI) for patients with acute ST segment elevation myocardial infarctions (STEMI). 12-Lead ECGs done by EMTs are a non-diagnostic skill and should be interpreted by Paramedic or transmitted for interpretation.

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** (4th intercostals space) then 1" off center
   b. **V2** same space other side
   c. **V4** (5th 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. Transmit the EKG to receiving facility and
   - If a paramedic is on scene they should interpret the EKG
   - If no paramedic is present and the EKG reads ***ACUTE MI SUSPECTED***, call for ALS and refer to the *Chest Pain of Suspected Cardiac Origin Guidelines*
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 suggests a heart attack, tell the patient they may be having a heart attack and recommend they choose the most appropriate facility for Percutaneous Coronary Intervention.
    - If no ALS available, consider transport to closest appropriate ED.
5. Do not inform patient that they are not having a heart attack if the ECG reads normal.
6. Reduce causes of artifact:
    - Avoid placing electrodes on large muscle mass
    - Avoid placing electrodes on boney prominences
    - Ensure limbs are relaxed resting on firm surface
    - Don't let electrodes dry out
    - Don't press in the center of the electrode, or touch the gel in center
    - Abrade skin by wiping briskly with alcohol and gauze pad
    - Excessive hair may have to be clipped

4.04 CENTRAL IV LINE USE

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. 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 Online 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.

Training:

Each paramedic will be required to attend a training class on the use and care for PICC lines and central lines.

This training will consist of management and care of the PICC and Central Lines and how to recognize a problem including the possible break in the line.

The EMS Medical Director or their approved training person will conduct this class prior to the paramedic being able to manage these lines.

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 over 1-2 minutes 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 very 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
- 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.

  *In the unlikely event that the battery on the Driver fails clinicians may manually finish inserting the EZ-IO Needle Set. Grasp the Needle Set and, rotate arm, while pushing the needle into the intraosseous space. This may take several minutes.

  *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 counterclockwise 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
- If the patient is responsive to pain, prior to bolus of lidocaine, flush the IO line to ensure patency, then give adults 40mg slowly over 1-2 min 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 to maximum dose of 20mg.
- Assess for potential IO complications (e.g.: soft tissue infiltration, instability)
- 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® Nasal (Mucosal Atomization Device)

Intranasal Medication Delivery

MATERIALS

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

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® 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® 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.

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 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 STABLIZATION (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[2][3][4].
- There is no major mechanism for severe injury[2] (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[1,2,3].
- Have no evidence of intoxication or altered mental status[1,2,3,5].
- Have no evidence of a distracting injury[1,3] such as
  - Fractures
  - Major burns
  - Crush injuries
  - Severe or distracting pain
  - Have no midline back or neck pain or tenderness upon palpation[1,2,3].

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[2], no spinal motion restriction is indicated. Document exam findings.

Consider performing spinal motion restriction for anyone >65 y/o regardless of the above criterial 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).

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[2] 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.

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

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

[5] 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?

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.

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

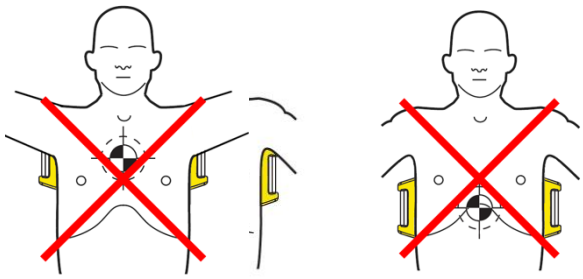
1. Pregnancy: Must lie 10-15° to side to prevent vena cava syndrome after 20 wks
2. Patients who do not fit within the device.

Precautions

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.

Guideline for Placement

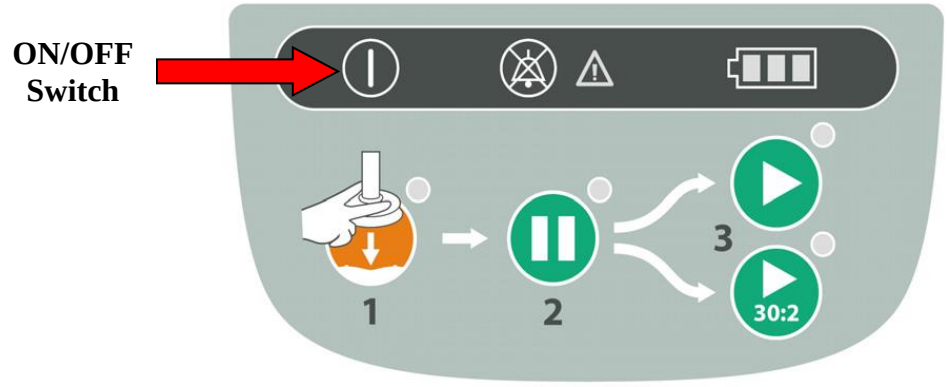
1. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined
2. Initiate resuscitative measures following guidelines
    a. Early defibrillation should be considered and provided as indicated based on clinical presentation.
    b. Manual chest compressions 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.
3. 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

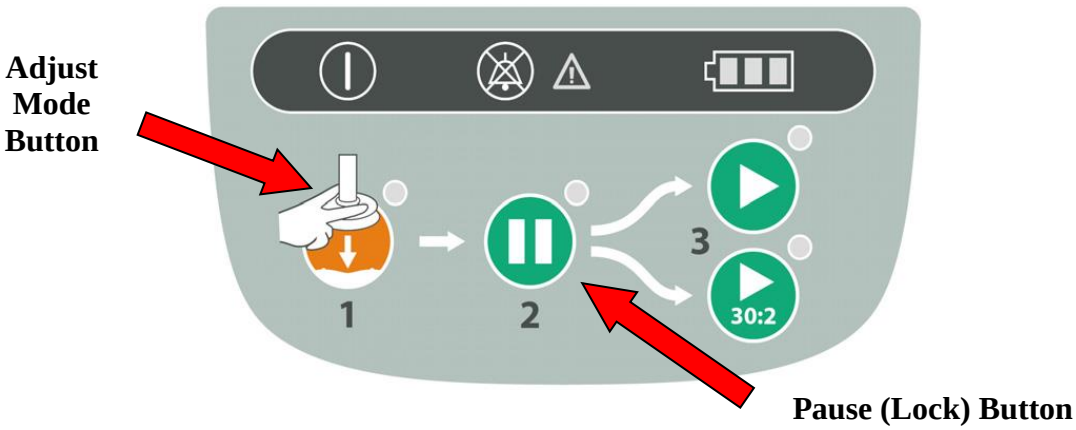
- Turn the LUCAS Device on (the device will perform a 3 second self-test).



- 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).



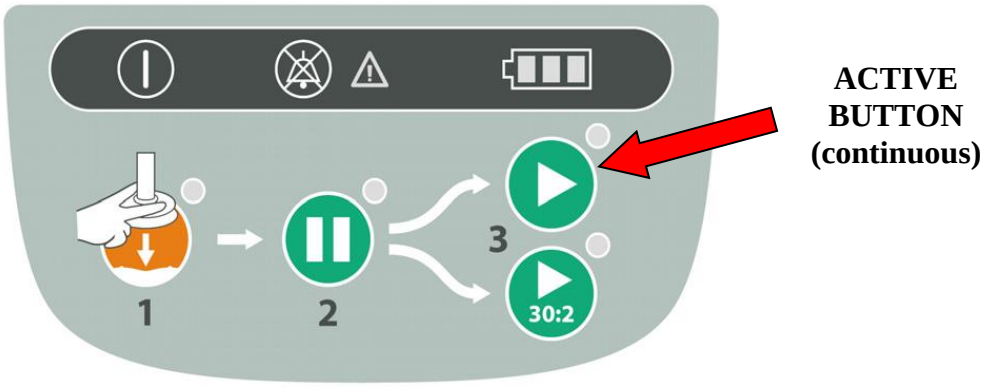
- To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient's chest)

- 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



ACTIVE BUTTON (continuous)

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.

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.

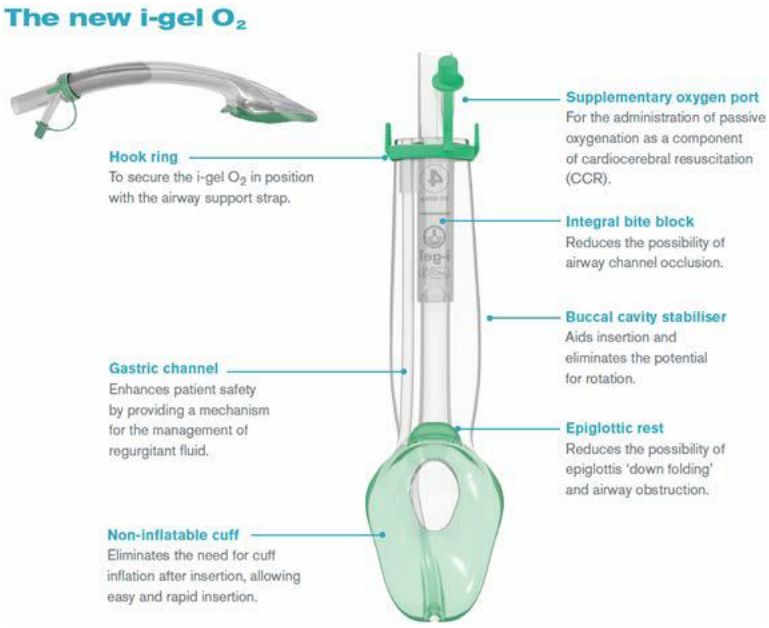
Bloodborne pathogen precautions must always be utilized. After initial venipuncture, either attach a non-flushed extension loop for blood draw, or draw directly off the catheter with appropriate equipment or syringe. Commercial devices should be utilized, and at no time should needles be utilized to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



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: etCO2 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 etCO2 unavailable.
When using the colorimetric capnometry purple should change to Gold if CO2 is present in the exhaled air. This is indicative of correct placement of the ETT in the trachea.

Colorimetric Capnometry

Procedure:

<u>i-gel Airway</u>

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*
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 Airway

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 Airway.
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*
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:

Eye Opening Response	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
Verbal Response	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
Motor Response	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

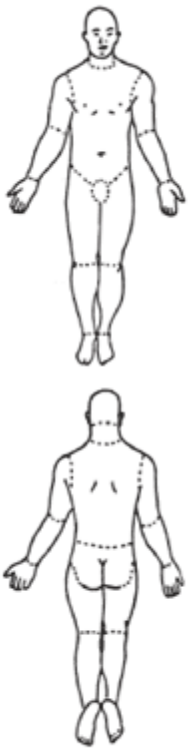
For children under 5, the verbal response criteria are adjusted as follow

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 year*	*1 to 4 years*	*5 to 9 years*	*10 to 14 years*	*15 years*	*Adult*	*2nd**	*3rd**	*TBSA*
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:			

Burn diagram



**—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		
Total Score					

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* 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 is 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 Guidelines*

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 trach 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.
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 EMS 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.
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 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 EMS Medical Director.

4.18 PERICARDIOCENTESIS

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

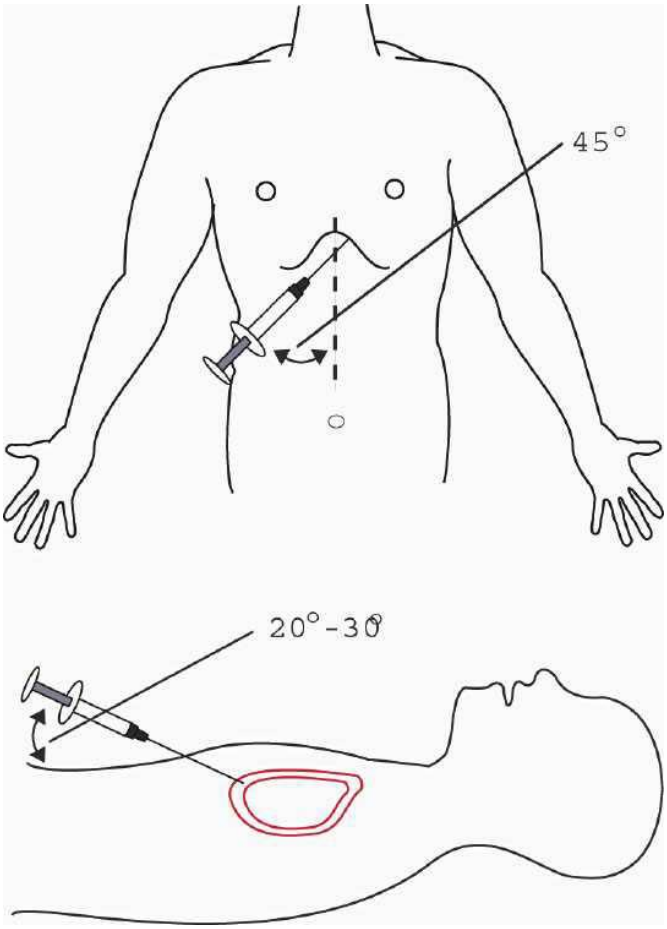
Equipment: 18-gauge spinal needle, 20ml syringe.

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.

Purpose:	Convert tension pneumothorax to an open pneumothorax.
Equipment:	ARS (Air Release System 3.5 inch) needle or 10 or 14 gauge 3.5" angiocath. Pediatrics use 18 gauge 1.88" angiocath.
Pt. Position:	Supine
Landmarks:	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.) 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.
Technique:	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.
Other:	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 EMS Medical Director approval. Approved Paramedic level services may only use FiO2, rate, and volume adjustments in assist control (AC) mode.

The pneumonic **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.

<u>Epi Push Dose:</u>

- Onset: 1 minute
- Duration: 5-10 minutes
- Adult Dose: 2-5 ml every 2-5 minutes with goal to maintain mean arterial pressure (MAP) > 65 mmHg.
- Peds Dose: 0.05-2 mcg/kg (max 50 mcg/dose) every 2-5 minutes, see pediatric goals of resuscitation above.
- Preparation:

1. Assemble 1 mg/10 ml epinephrine syringe and place a double female luer lock adaptor on end
2. Use an empty 20 mL syringe to draw up 2 ml of the 1 mg/10 ml epinephrine
3. With same 20 ml syringe, draw up 18 ml of normal saline to dilute the epinephrine
4. The concentration of epinephrine in the 20mL saline flush syringe is now 10 mcg/mL
5. Label the syringe to avoid medication errors
6. Administer as necessary to maintain blood pressure

<u>Epi Drip:</u>

- In situations where a continuous infusion is needed, an epinephrine drip for adults may be utilized.
- Onset: Immediate
- Duration: Continuous while infused
- Preparation:

1. Draw up 1mg of either 1 mg/1 ml or 1 mg/10 ml epinephrine
2. Inject into a 1 liter bag of Normal Saline
3. The concentration of epinephrine in the 1 liter bag is 1 mcg/mL

4. Label the bag to avoid medication errors
5. Use a 10gtt/ml macrodrip tubing set and piggyback into primary infusing fluid
6. Administer as necessary to maintain goal BP

- Starting Adult Dose (goal to maintain MAP > 65 mmHg):
    - For SBP 80-90 mmHg: 1mcg/min or .001mg/min = 1 drop every 5 seconds
    - For SBP 70-79 mmHg: 20mcg/min or .02mg/min = 4 drops per second
    - For SBP < 70 mmHg: 50mcg/min or .05mg/min = 8 drops per second

- Pediatric: use push dose, as above.

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 x2})
- 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 ETCO2.
- 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.

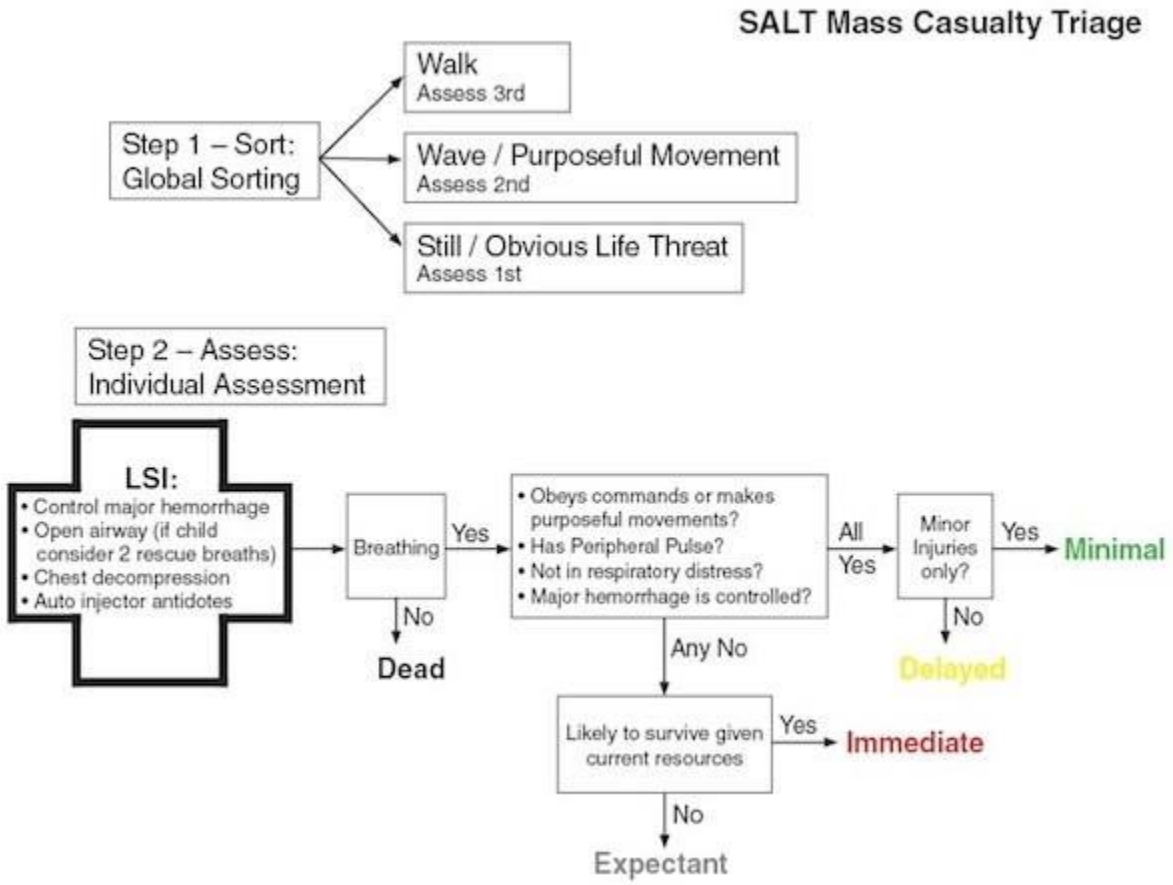
Procedure:
- Connect PEEP valve to exhalation port of BVM or ventilator circuit.
- If CPAP was used prior to mechanical ventilation, set PEEP valve to last CPAP level.
- If no previous CPAP, initially set PEEP valve at 3-5 cmH2O (physiologic PEEP)
- Titrate PEEP in 5 cmH2O increments as needed to achieve SPO2 >93% and reduce adventitious lung sounds. Frequently monitor blood pressure.
- Online Medical Control should be sought when PEEP greater than 10 cmH2O is indicated.

If abrupt decrease in O2 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



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 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 CARDIOVERSION

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 @ 1 J/Kg
        i. If unsuccessful, increase synchronized cardioversion to 2 J/Kg first attempt
7) Press synchronizer switch/button.
8) Assure machine is sensing R-wave.
9) Charge defibrillator.
10) CLEAR patient.
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 $EtCO_2$ 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.

SECTION 5 MERCY EMS TACTICAL EMS GUIDELINES

5.01 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.

5.02 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
Acetaminophen 500mg tablets
Pepto Bismol
Imodium
Pepcid

5.03 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 Supraglottic 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 ETCO2 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 4th/5th intercostal space at the anterior axillary. 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.

5.04 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 adult patient that is hypotensive(SBP<90) or tachycardia(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.

5.05 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.

5.06 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.

5.07 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.

5.08 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.

Place a standard dressing once dry.

Inquire about their Tetanus status. If unsure, advise they contact their primary care physician within 24 hours.

5.09 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.

5.10 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 advice 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.

APPENDIX A REFERENCED FORMS

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.) Date_____/_____/_____

Physician License Number _____ State _____ Specialty_____

EMS Personnel to complete:
Run Number _____ EMT Initials _____

Mercyhealth Prehospital and Emergency Services Mass Refusal Form

Date: / / Location of Call_____
Time: Dispatched: _____Enroute:_____ Arrived:_____ Completed: _____
Agency: Unit#: _____Call-#: _____
Type of incident: _____
_____

Medical Control contacted? _____ M.D./ECRN Name: _____

REFUSAL OF CARE/TRANSPORT AND RELEASE FROM LIABILTY

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 _____

_____ _____
Signature of EMS crew #l **Signature of EMS crew #2**

If School Bus Accident: signature of authorized school designee: _____

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/Out	Vitals Time:	BP	Pulse	Resp	Temp.	SpO_2	SpCO	Dispo / Additional Info
A											
B											
C											
D											
E											
F											
G											
H											
I											