NEW JERSEY EMS CLINICAL PRACTICE PROTOCOLS & GUIDELINES

Advanced Life Support

Basic Life Support

LEGEND	
BLS	EMT Protocols
ALS	Paramedic & MICN Protocols
CF	Paramedic & MICN Communication Failure
A/B	Protocols & Guidelines for ALS & BLS
	Caution Information – Red Flag
	**Contact Medical Command**
	Protocol for a Pediatric Patient

These protocols are a living document originally developed and drafted by the Protocol Committee of Vermont Emergency Medical Services, whose expertise and dedication have been instrumental in their creation. With their permission, New Jersey has adopted this document and refined it to align with New Jersey's EMS standards. Our Mobile Intensive Care Advisory Committee has carefully reviewed and edited the protocols to ensure consistency with our basic and advanced life support clinicians' scope of practice, while preserving the high standards set forth by Vermont's committee.

For visual clarity, trademark and registered symbols have not been included with drug, product, or equipment names. The mention of specific equipment within this document does not constitute an endorsement, nor should any described procedures be interpreted as superseding the manufacturer's recommendations for use of specific equipment. Clinicians must always refer to and follow the guidance provided by the manufacturer, and all agencies are required to comply with the minimum equipment standards outlined in the applicable regulations.

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DISCLAIMER: It is the responsibility of each agency's Medical Director to review, adopt, and verify the accuracy of this document's implementation within their organization. To report a potential error in these protocols, please contact your Agency Chief, EMS Educator, and/or Medical Director.

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PREFACE

Welcome to the New Jersey EMS Clinical Protocols

These protocols represent the collaborative efforts of medical directors, EMS stakeholders, and dedicated professionals across New Jersey, reflecting the ongoing evolution of prehospital medicine in our state. Throughout this process, these protocols have been reviewed and refined based on specific feedback from EMS Medical Directors, EMS Educators, Directors, and other stakeholders to ensure alignment with the latest medical evidence, professional guidelines, and best practices

Every effort has been made to ensure the accuracy of the information contained in these protocols. However, if you identify any typographical or clinical errors, it is your responsibility to immediately contact your EMS Educator, Agency Chief, and/or Medical Director for review and clarification

These protocols are intended for New Jersey EMS organizations and their affiliated personnel operating under medical direction. While EMS Medical Directors may restrict, but not expand, the scope of practice at each provider level, it remains the responsibility of the medical director, agency and the individual clinician to be fully aware of and familiar with their respective protocols, scope of practice, and any updates

All providers functioning within the EMS system must review and understand the protocols relevant to their level of training and licensure. Agency Medical Director's, EMS Educators, and Agency Chiefs are responsible for ensuring that any updates are communicated to personnel, and that necessary education, training, and credentialing occur to maintain compliance with state standards

IMPORTANT CLARIFICATIONS AND EXPLANATIONS

Clinical Judgement

These protocols are based on best practices and regulatory standards. However, no protocol can anticipate each patient's unique condition. Provider judgement is critical in application of these protocols. Clinicians are required to use their best judgement when implementing these protocols and are permitted to deviate from the order of operations in the protocol as indicated by the patient's presentation unless specifically indicated in an individual protocol

Clinical Pearls

These protocols contained detailed reference materials and supplemental information intended to support provider assessment, clinical decision-making, and patient care. These pearls are not essential components of the protocols and should not be considered mandatory unless explicitly stated within a specific protocol

Protocol Implementation

These protocols are written for the National Scope of Practice Model levels (EMT and Paramedic). Once an entire agency has completed training on these protocols, they may begin implementing them

Protocol Labeling

Protocols labeled with '#-A' or '#-P' indicate the adult and pediatric versions, respectively, when applicable. If no designation is provided and the intended population is not obvious (e.g. newborn resuscitation), the protocol applies to both adult and pediatric patients

Standing Orders are Cumulative

Standing orders are treatments that EMS clinicians may initiate at their discretion without contacting on-line medical command. However, clinicians at any credential level are required to consult on-line medical command when treatment beyond standing orders is needed or when physician input is necessary to determine the most appropriate course of care

Paramedic standing orders inherently encompass those authorized for lower credential levels. If a patient's condition changes, any EMS clinician may switch between protocols or combine multiple protocols to best address the patient's evolving clinical needs

Calling for Advanced Life Support

Throughout the protocols, 'Call for ALS intercept' is included any time a paramedic can provide interventions beyond the scope of an EMT. This instruction means EMTs should call for advanced life support based on the patient's condition. The intent is to highlight clinical situations where paramedic-level assessment and interventions may benefit the patient

Transfer of Care

When transferring patient care, EMS clinicians must ensure that the receiving caregiver holds a license at the same or a higher level, unless the patient's condition – and any reasonably anticipated complications – can be safely managed within the scope of practice of a lower-level clinician. For example, a paramedic may transfer patient care of a patient with an uncomplicated ankle injury to an EMT for transport. However, if a patient has received advanced level interventions on scene, care must only be transferred to a clinician at the same or higher level

Out of Scope Procedures

Please note that while medical direction may vary slightly between agencies, no on-line or direct medical control may authorize a clinician to perform procedures outside their defined scope of practice. Under no circumstances shall a clinician request or agree to perform any intervention that exceeds the scope of practice outlined in these protocols

It is the responsibility of each clinician to know and adhere to the limitations of their credential level, regardless of guidance from medical control

Medication and Equipment Options

These protocols may list multiple medication options and various types of medical equipment (e.g., LMA, i-gel, King-LT, different interosseous devices) to provide flexibility for EMS agencies. This approach allows agencies to select the options best suited to their operational needs and supports continuity of care during medication or equipment shortages. This flexibility is not intended to imply that agencies must stock every listed medication or device, Medical Directors, in coordination with their agency leadership, are responsible for determining which options are most appropriate for their respective systems. For example, an agency may choose to carry one benzodiazepine or multiple alternatives, based on local needs and clinical guidance

All agencies, however, are required to maintain the necessary equipment outlined in applicable regulations and must carry at least one authorized and approved medication for each clinical category addressed in these protocols, to ensure the ability to treat all relevant patient presentations

In the event a medication becomes unavailable and there is no documented alternative in these protocols, the agency's leadership or designee must contact the New Jersey Office of EMS (NJOEMS). The NJOEMS

will collaborate with the agency, affiliated hospitals, and other stakeholders to identify and authorize appropriate substitutes to safely implement an alternative treatment plan

Communication Failure

Throughout the document, you will find sections in relevant protocols identified with Communication Failure in blue. These sections are intended to be used in situations where ALS crewmembers are unable to engage in two-way communication with medical command

Incident Command

Incident command shall be structured in accordance with the Incident Command System (ICS) of the National Incident Management System (NIMS)

Off-Duty EMS Personnel

These protocols apply statewide. EMS clinicians that are off duty or outside the response area of their affiliated agency should provide BLS-level care and immediately notify 9-1-1. Once the agency with jurisdiction arrives on scene, care should be transferred to the responding clinicians

Protocol Determination Across State Borders

EMS agencies that are licensed in both New Jersey and a bordering state shall follow protocols of the state in which patient contact is initiated, regardless of the destination

Agencies that are licensed in New Jersey ONLY shall follow these protocols at all times

Continuous Quality Improvement

Quality improvement is a cornerstone of both clinical practice and everyday life. In EMS, each decision we make is rooted in our commitment to achieving better outcomes for our patients, our providers, and the system as a whole. The New Jersey Statewide EMS Protocols are no exception. With each edition, we strive to enhance and refine them, building on evidence, experience, and emerging technologies. These protocols represent a living document, one that will continue to evolve as best practices advance, ensuring we deliver the highest standard of care to those we serve

PATIENT

1. A patient means any person who is ill or injured, living or deceased and with whom a crewmember has established physical or verbal contact

2. Patient contact is established when the EMS clinician makes physical or verbal contact with a patient.

3. A patient-provider relationship is established when an on-duty EMS clinician makes patient contact or takes a verbal report from another healthcare provider regarding the patient's clinical condition. EMS clinician must document all encounters where a patient-provider relationship is established, including but not limited to the assessment, treatment, transport, and other EMS clinician activities, as applicable

4. Team members shall make best efforts to ensure that they locate and treat all patients they encounter or are assigned to treat

5. If team members are unable to locate a patient at the designated time and location for treatment, they should take the following steps to attempt to locate the patient:

    - Verify the location and dispatch information

- Contact the dispatcher for more information and/or a call-back
- Physically search the surrounding area
- Use scene lights and flashlights when necessary
- Force entry with law enforcement and/or fire services as needed

6. EMS clinicians shall fully and completely document their efforts to locate any patient when no patient is located and shall not clear an assignment until they have exhausted all reasonable efforts to locate any potential patient

7. EMS clinicians have an affirmative duty to make every reasonable effort to access potential patients, provided they do not place themselves at undue risk of harm. This responsibility extends to situations where patient access or care is impeded by the presence of law enforcement or fire personnel. In such cases, clinicians should engage law enforcement or fire service officers on scene to address and resolve any barriers to patient identification or access. When necessary, EMS clinicians should also consult with their supervisors, medical command, or other senior healthcare professionals to support timely and appropriate patient care

8. If there are questions about patient care or other scene activity, EMS clinicians should attempt to respectfully and calmly resolve the dispute keeping in mind the core values of responder safety, patient advocacy, equity, and professionalism. As needed, EMS clinicians should seek out the advice of supervisors, medical command personnel, or other senior healthcare providers to resolve issues as they arise

1.0 ROUTINE PATIENT CARE

RESPOND TO SCENE IN A SAFE MANNER

1. Review dispatch information

2. Use lights and sirens and/or preemptive devices when responding as appropriate per emergency medical dispatch information and local guidelines

    - Lights and sirens should only be used when there is an expectation that the time saved during response may be clinically relevant to the patient or patients on the scene

3. Use Incident Management System (IMS) for all responses and scene management

SCENE ARRIVAL AND SIZE-UP

1. Standard precautions, scene safety, environmental hazards assessment, number of patients, need for additional resources, and bystander safety

    - Scene safety is a continuous process and should be always considered

2. Initiate Mass Casualty Incident procedures, as necessary

3. Call for an ALS intercept, if available, for patients presenting with unstable vital signs, respiratory distress or other life-threatening conditions. If a ALS intercept is not available, initiate transport to the closest most appropriate facility based on the patient's condition

PATIENT APPROACH

1. Determine mechanism of injury / nature of illness

2. Patients suffering exsanguinating hemorrhage must have bleeding control interventions initiated immediately, without delay. (X-A-B-C-D as opposed to A-B-C-D) Proceed to "Control Active Bleeding" under Circulation

3. If patient is in cardiac arrest, refer to the Cardiac Arrest - Adult or Cardiac Arrest - Pediatric

4. Determine if DNR/POLST protocol applies (DNR/POLST)

5. Determine if pediatric protocols apply

    - "Neonatal" means the period of time from the moment of birth up to and including the 28th day following birth

    - "Pediatric" means the 29th day following birth up to (not including) a person's 13th birthday

    - Use a weight-based assessment tool (length-based tape or other system) to estimate patient weight and guide medication therapy and adjunct choice

6. Establish responsiveness

AIRWAY AND BREATHING

1. Airway
    - Assess the patient for a patent airway
    - Open the airway using a head-tilt/chin-lift, or a jaw thrust if suspicious of cervical spine injury. Provide cervical spine protection. (Spinal Motion Restriction)
    - Suction the airway as needed
    - Treat foreign body obstruction in accordance with current AHA/ILCOR guidelines.
    - Evaluate need for and place an oropharyngeal or nasopharyngeal airway, if required
    - Provide advanced airway interventions as appropriate, in accordance with the clinician's training, credentialing, and scope of practice
2. Assess breathing: rate, effort, tidal volume, and breath sounds
    - If breathing is inadequate, ventilate with 100% oxygen using bag-valve-mask
    - Administer oxygen to maintain O_2 saturation ≥ 94% (≥ 90% for COPD patient and pediatric patients with cardiac history)
        - ❖ NOTE: Some pediatric patients with a cardiac history may have baseline SpO_2 in the 80's. Utilize parents/care givers as a reference
    - Acquire quantitative/waveform capnography (ie.: $EtCO_2$) and/or CO-oximetry, as appropriate, in accordance with the clinician's training, credentialing, and scope of practice
    - Assess lung sounds and chest

CIRCULATION ASSESSMENT

1. Assess patient's pulse, including rate, rhythm, and quality. If pulseless, initiate CPR
2. Control active bleeding using direct pressure, pressure bandages, tourniquets, and/or hemostatic bandages. See Tourniquet & Hemostatic Agent – Adult & Pediatric
    - Assess patient's skin color, capillary refill, temperature, and moisture

PARAMEDIC & MICN

3. Establish IV access and initiate fluid resuscitation as appropriate for the patient's condition
    - For adult patients, administer fluids to maintain systolic blood pressure per the Shock – Adult
    - For pediatric patients, administer fluids based on physiological signs and therapeutic end-points per the Shock - Pediatric. Administer IV fluid using a volume-controlled device/method such as an inline 3-way stopcock or similar device

DISABILITY ASSESSMENT

1. Assess level of consciousness appropriate for age

2. If altered level of consciousness, see Altered Mental Status-Adult or Altered Mental Status-Pediatric

    - For agencies approved by their medical director and OEMS, consider evaluation of a blood sugar

3. Utilize spinal motion restriction, if indicated by assessment: See Spinal Assessment 

4. For additional pediatric transport guidance, See Pediatric Transportation

5. For patients experiencing neurological distress/deficit; See Stroke

ADVANCED LIFE SUPPORT OR ALS INTERCEPT

1. When indicated in protocol, call for ALS intercept. If ALS intercept is unavailable, or the transport time to the closest appropriate facility is less than the ALS intercept, initiate transport to the closest most appropriate facility

TRANSPORT DECISION

1. In general, patients should be transported to the closest appropriate hospital. Operational needs and/or patient preference should be considered

2. The destination hospital and mode of transport shall be determined by the EMS clinician with the highest level of medical licensure or certification actively providing patient care. These decisions should not be influenced by other emergency responders or bystanders, but rather based on the patient's clinical condition, established protocols, and system guidelines

3. Regionalized systems of care for STEMI, stroke and trauma patients may necessitate transport to a hospital beyond the closest facility

4. Notify the receiving facility as early as possible

5. The use of lights and sirens carries inherent risk to EMS clinicians, patients, and the general public. Their use should be reserved for situations where immediate medical intervention is necessary and exceeds the capabilities of the ambulance using available equipment and resources

    - Lights and sirens should only be used when there is an expectation that the time saved during response may be clinically relevant to the patient or patients on the scene

    - Use of lights and sirens should be documented on the patient care report

6. Determine the need for aeromedical transportation based on the patient's acuity and the estimated ground transport time.

    - Refer to: Air Medical Transport and Trauma Triage and Transport Decision as necessary 

    - For additional pediatric transport guidance, see Pediatric Transportation

SECONDARY/FOCUSED ASSESSMENT AND TREATMENT

1. Obtain chief complaint, history of present illness, and prior medical history

2. Complete a physical assessment as appropriate for the patient's presentation

3. Refer to the appropriate protocol(s) for further treatment options

4. Determine the patient's level of pain. Pain Management-Adult or Pain Management-Pediatric

5. Consider field diagnostic tests including cardiac monitoring, obtain and transmit 12-lead ECG, blood glucose (if available), temperature, stroke assessment, pulse oximetry, quantitative waveform capnography, etc

6. Dress and bandage lacerations and abrasions

7. Cover an evisceration with a saline-moistened sterile dressing

8. Maintain normal body temperature

9. Stabilize impaled objects

    - Do not remove an impaled object unless it interferes with CPR or your ability to maintain the patient's airway

10. Monitor vital signs at least every 15 minutes for the stable patient and every 5 minutes for the unstable patient. At minimum, 2 sets of vital signs should be obtained

11. For pediatric and geriatric patients, who present with injuries or conditions consistent with suspected abuse, see Abuse and Neglect Assessment and Management

MAJOR MULTISYSTEM TRAUMA

1. Patients that meet trauma criteria must be expeditiously transported to a trauma center to maximize the likelihood of survival. (See Trauma Triage and Transport Decision Protocol)

2. Minimize on-scene time to less than 10 minutes post-extrication

3. On-scene medical treatment and assessment should be limited to the primary assessment, rapid trauma assessment, hemorrhage control, CPR, placement of a cervical collar, spinal motion restriction, and rapid extrication if indicated, airway maneuvers, and chest injury management

    - Other treatments and assessments should be performed while enroute to the hospital

CIRCUMSTANCES NOT COVERED UNDER STATEWIDE EMS PROTOCOLS

1. Contact on-line Medical Command, in situations where the patient's best interest is not clearly addressed by existing protocols, or when clinical judgement indicates the need for physician input beyond the scope of standing orders

2. Medical Command may not direct or authorize clinicians to perform procedures outside their defined scope of practice. Similarly, clinicians should not request to perform interventions that exceed the scope of practice established within these protocols

1.2 COMMUNICATION FAILURE GUIDELINES – ALS ONLY

In the event of a communications failure with Medical Command, whether due to equipment malfunction (e.g. cell phone, landline, radio) or limitations related to the incident location the following procedures shall apply:

1. ALS clinicians may perform any necessary procedures outlined in these protocols, provided they are within the scope of their level of licensure or certification

2. Procedures performed under these circumstances shall be limited to those minimally necessary to prevent loss of life or significant deterioration or f the patient's condition

3. All procedures performed under this provision, as well as the circumstances leading to the communication failure, shall be thoroughly documented in the patient care report

4. Effort to re-establish contact with medical command shall be initiated as soon as possible, and communication failure protocols should be followed accordingly

5. The EMS clinician shall submit a written report through the department's designated reporting system detailing the communication failure. This report shall include a description of the event, the patient's condition, the treatment provided, and a reference to the patient care report. It shall be submitted to the EMS medical director, EMS educator, and OEMS within 24 hours of the incident

- **Paralytics, buprenorphine, ketamine and sedation contained in the RSI/RSA/DSI/DSA and Precipitated Withdrawal protocols are <u>NOT</u> authorized for administration under any circumstance when exercising Communication Failure procedure**

1.3 CRASHING MEDICAL PATIENT IN EXTREMIS

PARAMEDIC & MICN

General Guideline:

1. The timeframes referenced in these protocols are approximate and intended to convey a sense of urgency and help prioritize clinical actions
2. Actions should be performed simultaneously when possible and are not intended to be followed in a strict sequence
3. Provider safety remains the highest priority and must be maintained throughout the call
4. Stabilizing the patient prior to movement to the ambulance should take precedence whenever possible

Criteria:

A. Patient exhibiting signs of impending cardiac or respiratory arrest

B. Patient presenting in extremis, as determined by provider impression, including but not limited to: new onset altered mental status, airway compromise, severe respiratory distress or failure, and signs of shock or poor perfusion

Exclusion Criteria:

A. Life-threatening trauma

Goals: EMS clinicians frequently encounter patients in extremis who may rapidly deteriorate to cardiac arrest, frequently during packaging and loading. It is crucial to promptly recognize the deteriorating patient and initiate immediate, goal-directed interventions at the point of contact to stabilize the patient before transport. The following timeline outlines the prioritized treatments aimed at stabilizing the patient and preventing further decline.

A. Immediate Actions (within First 5 Minutes)

1. Airway

a) Insert Nasopharyngeal (or OP) Airway as indicated/tolerated if not following commands (GCS motor <6) or no response to verbal stimuli.

2. Breathing

a) If in respiratory failure or distress, sit the patient up, if tolerated

b) Provide high-flow oxygen:

i. Have a low threshold for CPAP/BiPAP applications if significant respiratory distress/hypoxia.

ii. If respirations are inadequate, give positive pressure ventilation with BVM + oxygen at 15 lpm. Two-Person technique is most effective.

iii. Respirations can be assisted with BVM in seated position, if patient tolerates.

iv. Set PEEP-valve to 5-10 cm

3. Monitoring – ECG, SpO_2, $EtCO_2$ (if nasal prong adapter is available), NIBP

B. Actions within First 10 Minutes

1. Circulation

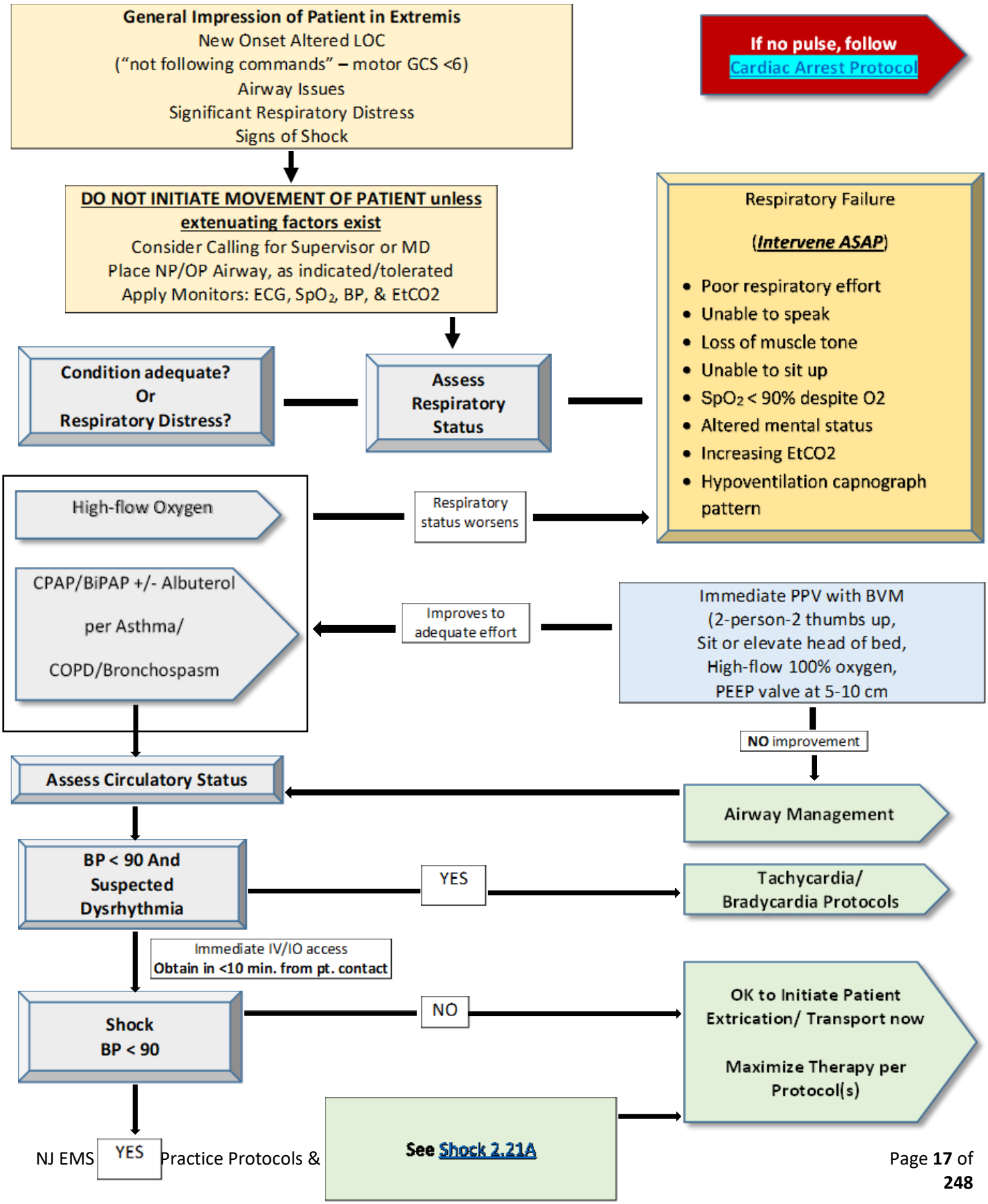
a) See Congestive Heart Failure (Pulmonary Edema)-Adult

b) See Bradycardia-Adult, or Bradycardia-Pediatric

c) See Shock-Adult, or Shock-Pediatric

C. Once critical actions have been completed, move the patient to ambulance for transport

1.3 CRASHING MEDICAL PATIENT IN EXTREMIS



2.0A ABDOMINAL PAIN (NON-TRAUMATIC) - ADULT

EMT

1. Obtain abdominal history and perform physical exam
2. Keep the patient NPO (nothing by mouth)
3. Allow the patient to assume a position of comfort
4. Minimize scene time
5. If the patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

6. Establish vascular access, if indicated
7. Acquire 12-lead ECG for patients' age ≥ 35
8. See Nausea/Vomiting – Adult & Pediatric
9. If patient is hypotensive, see Shock – Adult
10. See Pain Management – Adult
11. Assess and monitor the cardiac rhythm, treat as indicated

PEARLS

Obtain complete abdominal history

- History of pain (OPQRST)
- History of nausea/vomiting (color, bloody, coffee grounds)
- History of urine output (painful, dark, bloody)
- History of acute onset of back pain
- History of recent trauma
- History of bowel movement (last BM, diarrhea, bloody, tarry)
- History of prior abdominal surgery
- History of anticoagulant medication
- SAMPLE history

Abdominal physical assessment

- Ask the patient to point to the area of pain (palpate this area last)

- Gently palpate for tenderness, rebound tenderness, distention, rigidity, guarding, and pulsatile masses. Also palpate the flank for CVA (costovertebral angle) tenderness

- An acute abdomen is rigid with guarding, distension, and diffuse tenderness and may indicate a surgical emergency. An acute abdomen can be caused by many things including appendicitis, cholecystitis, ulcer perforation, diverticulitis, abdominal aortic aneurysm, kidney infection, urinary tract infection, kidney stone, ectopic pregnancy, pelvic inflammatory disease or pancreatitis

2.0P ABDOMINAL PAIN (NON-TRAUMATIC) - PEDIATRIC

EMT

1. Obtain abdominal history and perform physical exam
2. Keep the patient NPO (nothing by mouth)
3. Allow the patient to assume a position of comfort
4. Minimize scene time
5. If the patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to most appropriate facility

PARAMEDIC & MICN

6. Establish vascular access if indicated
7. If patient is hypotensive, see Shock – Pediatric 
8. See Pain Management – Pediatric 
9. See Nausea/Vomiting – Adult & Pediatric 

PEARLS

Obtain complete abdominal history

- History of pain (OPQRST)
- History of nausea/vomiting (color, bloody, coffee grounds)
- History of urine output (painful, dark, bloody)
- History of acute onset of back pain
- History of recent trauma
- History of bowel movement (last BM, diarrhea, bloody, tarry)
- History of prior abdominal surgery
- History of anticoagulant medication
- SAMPLE history

Abdominal physical assessment

- Ask the patient to point to the area of pain (palpate this area last)

– Gently palpate for tenderness, rebound tenderness, distention, rigidity, guarding, and pulsatile masses. Also palpate the flank for CVA (costovertebral angle) tenderness

– An acute abdomen is rigid with guarding, distension, and diffuse tenderness and may indicate a surgical emergency. An acute abdomen can be caused by many things including appendicitis, cholecystitis, ulcer perforation, diverticulitis, abdominal aortic aneurysm, kidney infection, urinary tract infection, kidney stone, ectopic pregnancy, pelvic inflammatory disease or pancreatitis

2.1 ADRENAL INSUFFICIENCY – ADULT & PEDIATRIC

EMT

1. Obtain history of underlying condition

2. Call for ALS intercept, if available. If not available, initiate transport to appropriate facility

PARAMEDIC & MICN

3. Establish vascular access

COMMUNICATION FAILURE – ALS ONLY

4. Assist the patient/caregiver in giving the patient his or her own medications, as prescribed

5. Patients with the following signs and symptoms may need a stress-dose steroid:

    - Nausea, vomiting, weakness, dizzy, abdominal pain, muscle pain, dehydration, hypotension, tachycardia, fever, mental status changes

6. Administer stress dose steroids to the patient that meets criteria:

    - Adult: History of adrenal insufficiency

        - Methylprednisolone 80-125 mg IV/IO/IM

          OR

        - Dexamethasone 10 mg IV/IO/IM

    - Pediatric: History of adrenal insufficiency; The child's care provider should have an appropriate stress-dose of hydrocortisone (2 mg/kg IV/IM (max 100 mg); administer this dose

        - If hydrocortisone is not available, use the following alternative:

            - Methylprednisolone: 2 mg/kg IV/IM (maximum dose 125 mg)

              OR

            - Dexamethasone 0.6 mg/kg IV/IM (maximum dose 16 mg)

7. If symptoms continue after administration of the initial stress-dose steroid, administer an additional dose:

    - Adult:

        - Methylprednisolone 80-125 mg IV/IO/IM OR

        - Dexamethasone 10 mg IV/IO/IM

    - Pediatric: Repeat the initial stress-dose steroid that was administered

8. Additional Considerations:

    - Aggressive volume replacement therapy
        - Administer 10-20 mL/kg crystalloid solution IV/IO
    - Vasopressors may be needed to treat refractory hypotension, see Shock – Adult or Shock – Pediatric
    - Treat for hypoglycemia; see Diabetic Emergencies (Hypoglycemia) – Adult or Diabetic Emergencies (Hypoglycemia) – Pediatric
    - Normalize body temperature

PEARLS

A stress dose" of steroids should be given to patients with known chronic adrenal insufficiency who have the following illnesses/injuries:

- Shock (any cause)
- Fever >100.4°F and ill appearing
- Multi-system trauma
- Submersion injury
- Environmental hyperthermia or hypothermia
- Multiple long bone fractures
- Dehydration associated with vomiting/diarrhea
- Respiratory distress
- 2nd or 3rd degree burns >5% BSA
- Etomidate may precipitate adrenal crisis

Adrenal insufficiency results when the body does not produce the essential life-sustaining hormones cortisol and aldosterone, which are vital to maintaining blood pressure, cardiac contractility and water/salt balance.

A number of conditions can cause chronic adrenal insufficiency:

- Congenital or acquired disorders of the adrenal gland
- Congenital or acquired disorders of the pituitary gland
- Long-term use of steroids (COPD, asthma, rheumatoid arthritis, and transplant patients)

– Acute adrenal insufficiency can result in refractory shock or death in patients on a maintenance dose of steroids who experience illness or trauma and are not given a stress dose and, as necessary, supplemental doses

2.2 ALLERGIC REACTION - ADULT

EMT

1. Initiate oxygen therapy as needed
2. Do not delay transport as an allergic reaction can progress to anaphylaxis
3. Consider ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

4. Establish vascular access
5. Administer Diphenhydramine 25 – 50 mg IM/IV/IO to treat pruritus/hives

2.2 ANAPHYLAXIS – ADULT

EMT

1. For anaphylaxis administer: (anterolateral thigh is the preferred administration site)
    - Adult epinephrine auto-injector 0.3 mg IM
    - For repeat dosing **Contact Medical Command** 
2. **DO NOT DELAY TRANSPORT.** (Patients receiving epinephrine should be transported. Consider contacting medical command for patients refusing epinephrine) 
3. Call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

4. Administer Epinephrine 0.3 mg IM. May repeat every 5 - 15 min as needed for continued symptoms (maximum 3 doses)
5. Establish vascular access
6. If systolic blood pressure < 90 mm Hg, refer to Shock-Adult
7. For bronchospasm, administer:
    - Albuterol 2.5 mg via nebulizer. May repeat every 5 minutes for continued symptoms

      OR
    - Ipratropium 0.5 mg and albuterol 2.5 mg via nebulizer. May repeat every 5 minutes (maximum 3 doses)
8. Administer Diphenhydramine 50 mg IM/IV/IO
9. Administer Methylprednisolone 40-125 mg IV

COMMUNICATION FAILURE – ALS ONLY

10. For anaphylaxis refractory to IM epinephrine, administer epinephrine infusion 2 – 10 mcg/min, titrated to effect (infusion pump required)

- CAUTION: Epinephrine is available in different routes and concentrations. Providers are advised to re-check the dosing and concentration prior to administration
- In anaphylaxis, epinephrine should not be delayed administering second-line medications such as diphenhydramine

PEARLS

– Known/likely allergen exposure AND hypotension or respiratory compromise, OR

- Systemic allergic reaction (multi-system), including two or more of the following:
    - Respiratory distress
    - Airway compromise/impending airway compromise
        - Wheezing/stridor
        - Swelling of lips, tongue, or any airway structures
        - Throat tightness
        - Difficulty or inability swallowing
    - Widespread hives, itching, swelling, flushing
    - Gastrointestinal symptoms: vomiting, abdominal pain
    - Altered mental status, syncope, cyanosis, delayed capillary refill or decreased level of consciousness associated with known or suspected allergic reaction
    - Signs of shock see Shock – Adult
    - Do not delay transport except for epinephrine administration
    - Patients can present with anaphylaxis without a prior history of allergy
    - Wheezing may be caused by anaphylaxis but it is not the only sign
    - Consider patients with history of asthma as having a high risk of anaphylaxis

2.2P ALLERGIC REACTION – PEDIATRIC

EMT

1. Administer oxygen as patient condition indicates
2. Maintain normal body temperature
3. **DO NOT DELAY TRANSPORT.** (Patients who receive epinephrine must be transported)
4. Call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

5. For urticaria or pruritus, administer diphenhydramine 1mg/kg, up to a max dose of 50 mg IM, IV

2.2P ANAPHYLAXIS – PEDIATRIC

EMT

1. For anaphylaxis, administer epinephrine auto-injector: (anterolateral thigh preferred administration site)
   - For patients between 15 and 30 kg (33 - 66 lbs., White/Blue/Orange on weight-based tape), use appropriate 0.15mg epinephrine auto-injector
   - For patients 30 kg or heavier (> 66 lbs., Green or above on weight-based tape), use 0.3mg epinephrine auto-injector
   - For patients less than 15 kg (33 lbs.), **Contact Medical Command**
2. Do not delay transport. (Patients who receive epinephrine should be encouraged to consent to transport.)
3. Call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

4. Epinephrine (1:1,000) (1 mg/mL): Administer 0.01 mg/kg (0.01 mL/kg) IM (max single dose 0.3 mg)
   - May repeat epinephrine every 5 – 15 min as needed for continued symptoms
5. For bronchospasm, administer:
   - Albuterol 2.5 mg via nebulizer (maximum 3 doses)

     OR
   - Ipratropium 0.5 mg and albuterol 2.5 mg via nebulizer
     - May repeat every 5 – 15 minutes (maximum 3 doses)
6. Establish vascular access
7. Administer 20 mL/kg bolus isotonic crystalloid solution if hypotension is present. May repeat x 2 as needed
8. Diphenhydramine 1 mg/kg PO/IV/IM/IO to treat pruritis (maximum dose 50 mg)
9. Methylprednisolone 2 mg/kg IV (max 125 mg)

COMMUNICATION FAILURE – ALS ONLY

Consider an epinephrine IV drip (0.5 mcg/kg/minute) when cardiovascular collapse (hypotension with altered mental status, pallor, diaphoresis and/or delayed capillary refill) is present despite repeated IM doses of epinephrine in conjunction with at least 60 mL/kg isotonic crystalloid solution boluses

- CAUTION: Epinephrine is available in different routes and concentrations. Providers are advised to re-check the dosing and concentration prior to administration

- In anaphylaxis, epinephrine should not be delayed administering second-line medications such as diphenhydramine

Anaphylaxis is characterized by acute onset of symptoms involving:

10. The skin(urticaria) and/or mucosa with any of the following:
    - Respiratory compromise; or
    - Decreased blood pressure; or
    - Signs of end-organ dysfunction/hypoperfusion

    OR

11. Hypotension after known exposure to a known allergen (defined by using the Pediatric Vital Signs)

    OR

12. Involvement of two or more body systems occurring rapidly after exposure to a known allergen (described, but not limited to those listed below)
    - Skin and/or mucosal involvement (urticaria, itchy, swollen tongue/lips)
        - Skin involvement may be ABSENT in up to 40% of cases of anaphylaxis
    - Respiratory compromise (dyspnea, wheeze, stridor, hypoxemia)
    - Persistent gastrointestinal symptoms (vomiting, abdominal pain)

Non-anaphylactic Allergic Reaction

13. Signs involving only one organ system (e.g., localized angioedema that does not compromise the airway, or not associated with vomiting; hives alone)

PEARLS

– Known/likely allergen exposure AND hypotension or respiratory compromise, OR

– Systemic allergic reaction (multi-system), including two or more of the following:
    - Respiratory distress
    - Airway compromise/impending airway compromise
        - Wheezing/stridor
        - Swelling of lips, tongue, or any airway structures
        - Throat tightness
        - Difficulty or inability swallowing

- Widespread hives, itching, swelling, flushing
- Gastrointestinal symptoms: vomiting, abdominal pain
- Altered mental status, syncope, cyanosis, delayed capillary refill or decreased level of consciousness associated with known or suspected allergic reaction
- Signs of shock, see Shock – Pediatric

– Do not delay transport except for epinephrine administration

– Patients can present with anaphylaxis without a prior history of allergy

– Wheezing may be caused by anaphylaxis but it is not the only sign

– Consider patients with history of asthma as having a high risk of anaphylaxis

2.3A ALTERED MENTAL STATUS (UNKNOWN ETIOLOGY) – ADULT

EMT

1. Administer oxygen to maintain O_2 saturation ≥ 94%

2. If the patient's mental status and respiratory effort are severely depressed, and opiate overdose is suspected:

    - Begin manual ventilation via BVM with 100% oxygen and nasopharyngeal airway
    - Formulation 1: A single spray of naloxone nasal spray (4mg) into one nostril.

      OR

    - Formulation 2: Naloxone 1 mg (1 mL) per nostril via atomizer for a maximum of 4 mg.
        - May repeat initial dose after 5 minutes

    ➢ Patients given naloxone should be transported to the emergency department for further evaluation.

3. Obtain blood glucose level via glucometer

    - If blood glucose < 60, as reported from bystanders, with associated altered mental status, refer to Diabetic Emergencies (Hypoglycemia) – Adult

4. If trauma is suspected, see Spinal Assessment

5. Perform stroke assessment. Refer to Stroke – Adult as indicated

6. If the patient has unstable vital signs, or additional hypoxia of unknown etiology, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

7. For suspected opiate overdose with severe respiratory depression, administer naloxone 0.4 – 2 mg IV/IM/IO/intranasal. Refer to Poisoning/Substance Abuse/Overdose - Adult

    - Titrate to response
    - If no response, may repeat initial dose of naloxone every 3 – 5 minutes to a max total of 8 mg

8. Obtain blood glucose level

    - If hypoglycemic, administer dextrose. See Diabetic Emergencies (Hypoglycemia) – Adult
    - If hyperglycemic, give 500 mL bolus crystalloid solution IV/IO. See Diabetic Emergencies (Hyperglycemia) – Adult

9. If respiratory arrest, See Airway Management - Adult

10. Assess and monitor cardiac rhythm. Treat as indicated per appropriate protocol

11. If suspected toxidrome, refer to Poisoning/Substance Abuse/Overdose - Adult

12. If hypotensive (SBP <90) see: Shock – Adult

13. If the patient is violent or agitated: See Behavioral Emergencies Including Suicide Attempts & Threats

PEARLS

- Altered mental status may be caused by many factors including the following: stroke, drug overdose, infection, hypoglycemia, hyperglycemia or trauma
- Ensure patient is ventilated between naloxone doses
- Paramedic may titrate use of naloxone to prevent precipitated withdrawal
- Use appropriate discretion regarding immediate intubation of patients who may quickly regain consciousness, such as hypoglycemic patients after administration of dextrose or opiate overdose patients after administration of naloxone

2.3P ALTERED MENTAL STATUS (UNKNOWN ETIOLOGY) – PEDIATRIC

EMT

1. Administer oxygen to maintain O_2 saturation ≥ 94%
    - For children with a cardiac history, maintain a baseline SPO_2 90%
    - NOTE: Some pediatric patients with a cardiac history may have baseline SpO_2in the 80's. Utilize parents/care givers as a reference
2. Assist inadequate ventilations with BVM (bag-valve-mask ventilation) with oral or nasal pharyngeal airway
3. Anticipate and avoid aspiration
4. If the patient's mental status and respiratory effort are severely depressed and opiate overdose is suspected:
    - Formulation 1: Administer naloxone Nasal Spray (4mg formulary) as follows:
        - >11 years old and/or >40 kg: naloxone 4 mg (may repeat x1 q 3-5 min.)
        - <11 years old and/or <40 kg: **Contact Medical Command**
    - Formulation 2: Administer naloxone (2 mg formulary) as follows:
        - >5 years old and/or >20 kg: naloxone 1 mg (1 mL) per nostril for a total of 2 mg. (may repeat x1 q 3-5 min.)
    - <5 years old and/or <20 kg: **Contact Medical Command**

    ➢ Patients given naloxone should be transported to emergency department for further evaluation
5. Obtain blood glucose level. (if approved by Agency Medical Director and NJ OEMS)
    - If blood glucose < 60, refer to Diabetic Emergencies (Hypoglycemia) – Pediatric
6. If trauma can be excluded, see Spinal Assessment
7. If the patient has unstable vital signs or additional hypoxia of unknown etiology, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

8. Obtain blood glucose level
    - If hypoglycemic, administer dextrose. See Diabetic Emergencies (Hypoglycemia) – Pediatric
    - If hyperglycemic, administer 10 mL/kg bolus of isotonic crystalloid solution IV/IO. See Diabetic Emergencies (Hyperglycemia) – Pediatric
9. For respiratory depression, administer naloxone 0.1 mg/kg IV/IO/IM/intranasal, max single dose 2 mg
    - If no response, may repeat initial dose every 3 – 5 minutes

10. If respiratory arrest, manage airway with OPA/NPA and maintain oxygenation and ventilations with BVM (bag-valve-mask ventilation). Initiate advanced airway management as indicated. See Airway Management-Pediatric 

11. If hypotensive per age-based tables, administer fluid bolus 20 mL/kg isotonic crystalloid solution IV/IO. May repeat x2

12. If hypotension persists after 60 mL/kg fluid bolus, administer vasopressors as needed. See Shock – Pediatric 

13. Assess and monitor cardiac rhythm. Treat as indicated per appropriate protocol

14. If toxidrome is suspected, refer to Poisoning/Substance Abuse/Overdose – Pediatric 

15. If the patient is violent or agitated, determine need for sedation. See Behavior Emergencies Including Suicide Attempts & Threats

PEARLS

– Altered mental status may be caused by many factors including the following: stroke, drug overdose, infection, hypoglycemia, hyperglycemia or trauma

– Ensure patient is ventilated between naloxone doses

– The Paramedic or MICN may titrate use of naloxone in patients with respiratory depression to avoid transition to combative behavior by the patient

– Use appropriate discretion regarding immediate intubation of patients who may quickly regain consciousness, such as hypoglycemic patients after administration of dextrose or opiate overdose patients after administration of naloxone

2.4A ASTHMA/COPD/REACTIVE AIRWAY DISEASE – ADULT

EMT

1. Place the patient in a position of comfort. They may prefer to sit up. Supine may worsen condition
2. Attempt to keep oxygen saturation ≥ 94% (90% in COPD); increase the oxygen rate with caution and observe for fatigue, decreased mentation, and respiratory failure
3. If rales are noted and history/exam are consistent with pulmonary edema, proceed to protocol Cardiac CHF
4. If wheezing is noted and history/exam is consistent with asthma or COPD:
    - Albuterol 2.5 mg via nebulizer. May repeat every 5 minutes, for a maximum of 3 doses, for continued symptoms. (Agency must be approved by medical director and OEMS) OR
    - Assist the patient with their metered dose inhaler (MDI):
        - Determine number of puffs that make one dose per physician order
        - Administer the prescribed dose
            - May repeat every 5 minutes (max 3 doses)
    - **Contact Medical Command**  for additional dosing
        - MDI must contain either albuterol, levalbuterol, a combination of albuterol/ipratropium bromide or another bronchodilator/rescue inhaler.
5. If worsening or severe respiratory distress, provide CPAP with PEEP of 5 mmHg
6. Call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

7. Administer:
    - Ipratropium bromide 0.5 mg and albuterol 2.5 mg (DuoNeb)via nebulizer. May repeat every 5 minutes for continued symptoms (maximum 3 doses)

      OR
    - Albuterol 2.5 mg via nebulizer after 3 DuoNeb administrations. May repeat every 5 minutes for continued symptoms
8. Establish vascular access
9. For patients who do not respond to treatments or for impending respiratory failure
    - CPAP/BiPAP up to a maximum of 10 cm H2O pressure support. See CPAP/BiPAP
    - Magnesium sulfate 2 g in 50-100 mL crystalloid solution IV/IO over 10 minutes

- Magnesium sulfate should not be administered to patients with COPD

10. For asthmatic patients who do not respond to treatment with impending respiratory failure, administer epinephrine (1:1,000) (1 mg/mL) 0.3 mg (0.3 mL) IM

    Do not administer Epinephrine to patients with COPD; utilize Terbutaline 0.25 mg SQ

11. Administer steroid:

    - Methylprednisolone 40-125 mg IV/IO/IM

      OR

    - Dexamethasone 10 mg IM/IV/IO

PEARLS

– Remember that not all wheezing is caused by asthma and that not all asthmatics wheeze

– Patients with congestive heart failure (CHF) may present with lung sounds that mimic asthma ("cardiac wheeze")

– Whether a patient is ventilated manually with a BVM or intubated and on a mechanical ventilator, take care to ensure a full exhalation is allowed between ventilations to prevent ventilator-induced dynamic hyperinflation or "breath stacking"

– "Breath stacking" is the gradual increase of residual volume and pressure within the lungs and chest, putting the patient at risk for barotrauma, cardiovascular collapse, and cardiac arrest that can occur with increased intrathoracic pressure

Albuterol

– Indications

– Dyspnea and signs of respiratory distress associated with bronchospasm

Contraindications

– Allergy to albuterol

– BLS: Diastolic BP >120 mmHg (may be given if approved after discussion with on-line medical command)

– Concern for CHF, discuss with medical command before proceeding

Dosing

– 1 ampule of Albuterol Sulfate 0.083% 2.5mg/3mL (2.5mg)

– May repeat in 5-10 minutes if symptoms persist

Side Effects

- Common side effects include tachycardia, anxiety, tremors, and headache
- Severe side effects are rare and likely limited to those with allergy to the parent medication or additives

CPAP/BiPAP

Indications

- Dyspnea and signs of respiratory distress associated with acute pulmonary edema (APE; i.e. CHF, Sepsis, Drowning, Inhalation injury) or severe distress associated with bronchospasm from Asthma and/or COPD

Relative Contraindications

- Altered Mental Status; is not a definitive contraindication and may still be considered
- Nausea/Vomiting
- Hypotension or hypovolemia (defined as SBP <100)

Contraindications/General Cautions: (Refer to manufacturers recommendations)

- Suspected or known pneumothorax
- Obvious chest trauma
- Severe facial or laryngeal injury or deformity
- Tracheostomy
- Respiratory depression or respiratory arrest
- Recent Gastric Surgery
- Basilar Skull Fracture
- Emphysematous Bullae
- GI Bleed
- Esophageal Anastomosis

Dosing

- Suspected APE: PEEP 10 mmHg
- Suspected COPD/Asthma: PEEP 5 mmHg

- Undifferentiated: 5 mmHg

Side Effects

- Hypotension
- Claustrophobia
- Anxiety (initial application, should improve as symptoms improve)

2.4P BRONCHOSPASM/ASTHMA – PEDIATRIC

EMT

1. Give supplemental oxygen. Escalate from a nasal cannula to a non-rebreather mask (NRB) as needed to maintain normal oxygenation. Observe for fatigue, decreased mentation, or respiratory failure

2. Suction the nose and/or mouth if excessive secretions are present

3. Maintain normal body temperature

4. If wheezes are noted and history/exam are consistent with bronchospasm/asthma; and **approved by Agency Medical Director and NJ OEMS**:

    - Albuterol 2.5 mg via nebulizer. May repeat every 5 minutes, for a maximum of 3 doses, for continued symptoms

        - Transport should not be significantly delayed by bronchodilator administration

5. If the patient has unstable vital signs, all for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

12. Assess and secure airway; administer oxygen as needed

13. Maintain normal body temperature

14. Administer albuterol 2.5 mg via nebulizer (maximum 3 doses)

    OR

15. Administer Ipratropium bromide 0.5 mg and albuterol 2.5 mg via nebulizer. May repeat every 5 minutes for continued symptoms (maximum 3 doses)

For Moderate to Severe cases:

16. Establish vascular access with a crystalloid solution at a KVO rate and administer 20 ml/kg bolus

17. See Shock – Pediatric 2.21P

18. Administer Methylprednisolone 2 mg/kg IV/IO to a max dose of 125 mg

19. Administer Magnesium Sulfate 40 mg/ kg IV/IO over 10 minutes, Maximum single dose 2 g.

If patient condition becomes unstable:

20. Administer epinephrine 0.01 mg/kg (0.1 ml) of a 1: 1,000 solution to a maximum of 0.3 mg via IM route (Lateral thigh preferred)

- Respiratory distress in children must be promptly recognized and aggressively treated. Respiratory arrest is the most common cause of cardiac arrest in children

- Child with a “silent chest” may have severe bronchospasm with impending respiratory failure

2.4P BRONCHIOLITIS – PEDIATRIC

Bronchiolitis: Viral respiratory infection resulting in inflammation of the small airways in patients less than 2 years old that presents with diffuse rhonchi/wheezing, rhinorrhea, cough, fever, tachypnea, and/or respiratory distress

EMT

1. Give supplemental oxygen
    - Escalate from a nasal cannula to a non-rebreather mask as needed, in order to maintain normal oxygenation
    - Observe for fatigue, decreased mentation, or respiratory failure
2. Bag-valve-mask Ventilation should be utilized in children with respiratory failure
3. Suction the nose and/or mouth if excessive secretions are present
4. Maintain normal body temperature
5. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

6. Suction as required
7. For patients who do not respond to suctioning or for impending respiratory failure, administer epinephrine (1:1,000) (1 mg/mL) 5 mg (5 mL) via nebulizer

2.4P CROUP – PEDIATRIC

EMT

1. Give supplemental oxygen via non-rebreather mask
    - Observe for fatigue, decreased mentation, and respiratory failure
2. Maintain normal body temperature and position of comfort
3. Mild to moderate distress (barking cough):
    - Cool humidified oxygen
4. Moderate to severe distress (stridor at rest, retractions, tripoding, and accessory muscle use):
    - Request ALS intercept, If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

Mild to moderate distress (barking cough):

5. Administer 3 cc normal saline via nebulizer with simple mask
6. Administer dexamethasone 0.6 mg/kg (maximum 16 mg) PO/IV/IM

Moderate to severe distress (stridor at rest, retractions, tripoding, and accessory muscle use):

7. Administer epinephrine 5 mg (5 ml) 1:1,000 solution via nebulizer

    OR

8. Administer racepinephrine 13.5 mg (0.5 ml) via nebulizer
9. Administer dexamethasone 0.6 mg/kg (maximum 16 mg) PO/IV/IM
10. Establish IV access in children with respiratory distress, clinical concerns for dehydration, or when administering IV medications

PEARLS

- The IV formulation of dexamethasone may be given by mouth

Croup

- Incidence peaks in children over age 6 months
- Signs and symptoms include hoarseness, barking cough, inspiratory stridor, signs of respiratory distress
- Avoid procedures that will distress child with severe croup and stridor at rest

Consider differential diagnosis

- Asthma
- Pneumonia (See CPAP/BiPAP for respiratory failure)
- Bronchiolitis 
- Anaphylaxis (See Anaphylaxis-Pediatric)
- Croup 
- Sepsis (See Sepsis Shock)
- Foreign body airway obstruction

2.5 BEHAVIORAL EMERGENCIES INCLUDING SUICIDE ATTEMPTS & THREATS

EMT, PARAMEDIC & MICN

1. Approach patient using the SAFER Model
2. Observe and record the patient's behavior
3. Consider associated domestic violence or child abuse
4. Determine if patient is under the care of mental health professionals and record contact information
5. Assess for risk to self and others. Ask patient directly if he/she is thinking about hurting self or others
6. A patient who is a danger to self or others may not refuse care. If patient refuses care and requires medical care or is danger to self or others, contact police and, if available, the local mental health crisis agency
7. If the patient does not appear to be an immediate threat to self or others and refuses transport:
8. Encourage patient to seek mental health evaluation
9. Avoid leaving the patient alone, if possible. Assist in contacting responsible family/friend
10. For patients who are agitated and/or displaying violent behavior:
11. See Restraint Procedure
12. See Sedation Procedure
13. Treat hyperthermia, see Hyperthermia (Environmental) 
14. Monitor cardiac activity (Paramedic only) and oxygen levels

AT NO TIME SHALL A PATIENT BE PLACED IN THE PRONE POSITION

15. Establish an airway, maintain and/or suction as needed
16. Treat other injuries and illnesses. Should it appear that the patient would not be transported, **Contact Medical Command** 

S A F E R Model

S Stabilize the situation by lowering stimuli, including voice

A Assess and acknowledge crisis by validating patient's feelings and not minimizing them

F Facilitate identification and activation of resources (clergy, family, friends, or police)

E Encourage patient to use resources and take actions in his/her best interest

R Recovery/referral - leave patient in the care of a responsible person, professional or transport appropriate medical facility

Do not leave the patient alone when EMS clears the scene

- Severe life-threatening agitation: characterized by multiple of the following: violent destructive mania, hyperthermia, tachycardia, hallucinations, disorientation, bizarre behavior, insensitivity to pain, naked or under-clothed and/or increased strength. These patients may be considered at risk for imminent autonomic collapse
- Medications should be administered cautiously in frail or debilitated patients; lower doses should be considered
- Monitor airway and vital signs closely

PEARLS

Consider all possible medical/trauma causes for behavior and treat appropriately

- Poisoning
- Hypoglycemia
- Infection
- Hypoxia
- Head injury, stroke, seizure postictal

2.6 BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

EMT, PARAMEDIC & MICN

1. Obtain a history of present illness
2. History of circumstances and symptoms before, during, and after the event including duration, interventions performed, and patient color, tone, breathing, feeding, position, location, activity, level of consciousness
3. Other concurrent symptoms including fever, congestion, cough, rhinorrhea, vomiting, diarrhea, rash, labored breathing, fussy, less active, poor sleep, poor feeding
4. Prior history of BRUE
5. Past medical history including prematurity, prenatal/birth complications, gastric reflux, congenital heart disease, developmental delay, airway abnormalities, breathing problems, prior hospitalizations, surgeries, or injuries
6. Family history of sudden unexplained death or cardiac arrhythmia in other children or young adults
7. Social history including who lives at home, recent household stressors, exposure to toxins/ drugs, contact with anyone ill
8. Considerations for possible abuse such as multiple/changing versions of the story; reported mechanism of injury doesn't seem plausible, especially for child developmental stage
9. Perform Physical Exam
10. Full set of vital signs (per Routine Patient Care; Pediatric Vital Signs)
11. Signs of respiratory distress (grunting, nasal flaring, retracting)
12. Color (pallor, cyanosis, and normal)
13. Mental status (alert, tired, lethargic, unresponsive, irritability)
14. Physical exam for external signs of trauma
15. Monitor pulse oximetry if available
16. Airway:
    - Give supplemental oxygen for signs of respiratory distress or hypoxemia. Escalate from a nasal cannula to a simple face mask to a non-rebreather mask as needed to maintain normal oxygenation
    - Suction the nose and/or mouth if excessive secretions are present
17. Consider need for ALS intervention
18. **Contact Medical Command** for guidance

PEARLS

Suspected BRUE: An event in an infant less than 1 year old reported by a bystander as sudden, brief (less than 1 minute), unexplained, and completely resolved upon EMS arrival that includes one or more of the following:

- Breathing change (absent, decreased, or irregular)
- Color change (central cyanosis or pallor)
- Marked change in muscle tone (hyper- or hypotonia)
- Altered level of responsiveness (increased, irritability, or decreased)

Note: Although children who experience BRUE may have a normal physical exam upon assessment by prehospital personnel, they should be transported to the emergency department for further assessment and treatment as they often may have a serious underlying condition

Consider transport to a facility with pediatric critical care capability for patients with high-risk criteria:

- Less than 2 months of age,
- History of prematurity (less than or equal to 32 weeks gestation)
- More than 1 BRUE; now or in the past
- Event duration greater than 1 minute
- CPR or resuscitation by caregivers or trained rescuers

Assume history provided by the family/witness is accurate

2.7A DIABETIC EMERGENCIES (HYPERGLYCEMIA) ADULT

Hyperglycemic emergency is defined as blood glucose ≥ 250mg/dL AND associated signs and symptoms, such as altered mental status, increased respiratory rate, abdominal pain, vomiting, or dehydration.

EMT

1. Obtain blood glucose level via glucometer **(If approved by Agency Medical Director and OEMS)**
2. If patient has unstable vital signs, call for ALS intercept. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

3. Obtain blood glucose level
4. Establish vascular access
5. Administer 1,000 mL bolus of isotonic crystalloid solution IV/IO
    - Reassess and administer 1,000 mL of crystalloid solution IV/IO, if indicated
6. For nausea/vomiting, see Nausea/Vomiting – Adult & Pediatric 

PEARLS

- Diabetic ketoacidosis is a life-threatening emergency defined as uncontrolled hyperglycemia with signs and symptoms of ketoacidosis
    - Signs and symptoms of diabetic ketoacidosis include blood glucose greater than 250 mg/dL, weakness, altered mental status, abdominal pain, nausea, vomiting, polyuria (excessive urination), polydipsia (excessive thirst), a fruity odor on the breath (from ketones), and tachypnea
    - Common causes of diabetic ketoacidosis include infection, acute coronary syndrome and medication non-compliance
- Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHNK/HHS) is characterized by blood glucose levels greater than 600 mg/dL and profound dehydration with significant neurologic deficits (e.g. coma, altered mental status)
    - Hyperglycemia may be detrimental to patients at risk for cerebral ischemia such as victims of stroke, cardiac arrest and head trauma

2.7P DIABETIC EMERGENCIES (HYPERGLYCEMIA) – PEDIATRIC

Hyperglycemic emergency is defined as blood glucose ≥ 250mg/dL AND associated signs and symptoms, such as altered mental status, increased respiratory rate, abdominal pain, vomiting, or dehydration

EMT

1. Obtain blood glucose level via glucometer **(If approved by Agency Medical Director and OEMS)**
2. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

3. Obtain blood glucose level
4. Establish vascular access
5. Administer 10 mL/kg bolus of isotonic crystalloid solution IV/IO
6. For nausea/vomiting, see Nausea/Vomiting – Adult & Pediatric

COMMUNICATION FAILURE – ALS ONLY

7. Oral fluids: if the patient is not vomiting, provide oral hydration with water
    - Patient must be alert enough to swallow and protect airway

PEARLS

- Use 10 mL/kg fluid bolus to avoid potential risk of cerebral edema
- Diabetic ketoacidosis is a life-threatening emergency defined as uncontrolled hyperglycemia with signs and symptoms of ketoacidosis
    - Signs and symptoms of diabetic ketoacidosis include blood glucose greater than 250 mg/dL, weakness, altered mental status, abdominal pain, nausea, vomiting, polyuria (excessive urination), polydipsia (excessive thirst), a fruity odor on the breath (from ketones), and tachypnea
    - Common causes of diabetic ketoacidosis include infection, acute coronary syndrome and medication non- compliance
- Hyperglycemic Hyperosmolar Nonketotic Syndrome (HHNK/HHS) is characterized by blood glucose levels greater than 600 mg/dL and profound dehydration with significant neurologic deficits (e.g. coma, altered mental status)
- Hyperglycemia may be detrimental to patients at risk for cerebral ischemia such as victims of stroke, cardiac arrest and head trauma

2.8A DIABETIC EMERGENCIES (HYPOGLYCEMIA) – ADULT

Hypoglycemic emergency is defined as blood glucose < 60 mg/dl **AND/OR** associated symptoms including shaking/tremors, tachycardia, diaphoresis, pallor, drowsiness, weakness, dizziness, unsteady gait, altered mental status, loss of unconscious, or seizure

EMT

1. Obtain blood glucose level via glucometer **(If approved by Agency Medical Director and OEMS)**
2. Oral glucose: administer 1 – 2 tubes of commercially prepared glucose gel. Patient must be alert enough to swallow and protect airway
3. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility
4. For patients with an insulin pump who are hypoglycemic with associated altered mental status (GCS<15):
    - Have patient, family member, or familiar bystander stop the pump
5. **Contact Medical Command**  as required by medical director

PARAMEDIC & MICN

6. Obtain blood glucose level
7. Establish vascular access. If unable to establish IV
8. Administer up to 25 g dextrose 10% (preferred), 25% or 50% IV. Recheck glucose 5 minutes after administration
    - May repeat up to 25 g dextrose 10%, 25% or 50% IV if glucose level is <60 mg/dl with continued altered mental status
9. If unable to establish IV access, administer glucagon 1 mg IM. Recheck glucose 15 minutes after administration of glucagon
    - May repeat glucagon 1 mg IV/IM if glucose level is <60 mg/dl with continued altered mental status.
10. **Contact Medical Command**  as required by medical director

Dextrose 10% is the preferred formulation for administration. A sterile IV bag containing 250 mL of D10W will deliver the standard dose of 25 g of glucose IV. Bolus up to the entire 250 mL bag as quickly as possible, stopping when patient's mental status returns to baseline and glucose level is ≥ 60 mg/dl. Often, only 100 – 200 mL of dextrose 10% is necessary

PEARLS

– There are no statistically significant differences in the median recovery time to a GCS score of 15 following administration of D10% versus D50%. D10% could benefit patients in controlling their post-treatment high blood sugar levels

- Causes of hypoglycemia include medication misuse or overdose, missed meal, infection, cardiovascular insults (e.g., myocardial infarction, arrhythmia), or changes in activity (e.g., exercise)

- Diabetics are not the only persons who become hypoglycemic. Alcoholics, some poisoned patients, and others may develop problems of glucose metabolism

- Sulfonylureas (e.g., glyburide, glipizide) toxicity can last up to 72 hours. Patients with corrected hypoglycemia who are taking these agents are at particular risk for recurrent hypoglycemia and frequently require hospital admission. These patients should be evaluated in the Emergency Department

- When administering dextrose, monitor IV site for signs of extravasation

2.8P DIABETIC EMERGENCIES (HYPOGLYCEMIA) – PEDIATRIC

Hypoglycemic emergency is defined as blood glucose < 60 mg/dl AND/OR associated symptoms including shaking/tremors, tachycardia, diaphoresis, pallor, drowsiness, weakness, dizziness, unsteady gait, altered mental status, loss of unconscious, or seizure

EMT

1. Obtain blood glucose level via glucometer **(If approved by Agency Medical Director and OEMS)**
2. Oral glucose: administer 0.5 g/kg of commercially prepared glucose gel. Patient must be alert enough to swallow and protect airway
3. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility
4. For patients with an insulin pump who are hypoglycemic with associated altered mental status (GCS<15):
    - Have patient, family member, or familiar bystander stop the pump

➢ Do not treat and release hypoglycemic patients without contacting **Medical Command** to discuss cause of hypoglycemic episode, interventions performed and plan for follow-up

PARAMEDIC & MICN

5. Obtain blood glucose level
6. Establish vascular access
7. Administer dextrose 10% 0.5 g/kg IV/IO

   OR
8. Administer dextrose 25% 0.5 g/kg IV/IO
    - Recheck glucose 5 minutes after administration
        - May repeat dextrose if glucose level is <60 mg/dl with continued altered mental status
9. If unable to establish IV/IO access, administer glucagon. (Recheck glucose 15 minutes after administration of glucagon)
    - Patients <20 kg (44 lb.), give glucagon 0.5 mg IM or IN
    - Patients >20 kg (44 lb.), give glucagon 1 mg IM or IN

PEARLS

– Causes of hypoglycemia include medication misuse or overdose, missed meal, infection, cardiovascular insults, trauma, traumatic brain injury, hypothermia, adrenal insufficiency, or changes in activity (e.g., exercise)

– When administering dextrose, monitor IV site for signs of extravasation

2.9 HYPERTHERMIA (ENVIRONMENTAL) ADULT & PEDIATRIC

EMT

1. Initial treatment should be provided on scene if cooling system is available
2. Move victim to a cool area and shield from the sun or any external heat source
3. Remove as much clothing as is practical and loosen any restrictive garments
4. If alert and oriented, give small sips of cool liquids
5. Diagnosis of hyperthermia is based on clinical signs. Determine patient's core temperature, if possible
6. Monitor and record vital signs and level of consciousness
7. If temperature is >40°C (104°F) or if altered mental status is present, begin active cooling by:
    - Continually misting the exposed skin with tepid water while fanning the victim
    - Utilize ice bath, if available
    - Sheets soaked in Ice Water
    - Truncal or axillary ice packs may be used but are less effective than evaporative cooling
    - Discontinue active cooling if shivering occurs and cannot be managed by paramedics (see below), or temperature < 38.9°C (102°F)
8. Obtain blood glucose level via glucometer (if approved by medical director and OEMS)
    - If blood glucose < 60, or low as reported from bystanders, with associated altered mental status, refer to Diabetic Emergencies (Hypoglycemia) – Adult or Diabetic Emergencies (Hypoglycemia) Pediatric
9. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

ADULT

10. Administer 500 ml crystalloid solution IV fluid bolus for dehydration even if vital signs are normal
11. If uncontrolled shivering occurs during cooling:
    - Midazolam 2.5 mg IV/IN, may repeat once in 5 minutes OR 5 mg IM may repeat once in 10 minutes

      OR
    - Lorazepam 1 mg IV, may repeat once in 5 minutes OR 2 mg IM, may repeat once in 10 minutes

OR

- Diazepam 2 mg IV may repeat once in 5 minutes

PEDIATRIC

1. Administer 20 mL/kg crystalloid solution IV fluid bolus for dehydration, even if vital signs are normal

2. If uncontrolled shivering occurs during cooling:

    - Midazolam 0.1 mg/kg IV (max dose 2 mg) or 0.2 mg/kg IN/IM (max dose 10 mg)
      (Note: a 5 mg/mL concentration is recommended for intranasal administration)

      OR

    - Lorazepam 0.1 mg/kg IV (max dose 1 mg) or 0.2 mg/kg IM (max dose 2 mg)

      OR

    - Diazepam 0.1 mg/kg IV (max dose 2 mg) or 0.2 mg/kg PR (max dose 10 mg)

Hyperthermia:

- Oral and other non-core thermometers may be inaccurate when the temperature is outside the normal range
- Elevated temperature may be due to environmental exposure, pharmacologic agents, or hyperactive delirium with agitated features. See also Behavioral Emergencies Including Suicide Attempts & Threats – Adult & Pediatric, Sepsis, Sepsis - Pediatric, Poisoning/Substance Abuse/Overdose – Adult or Poisoning/Substance Abuse/Overdose – Pediatric
- Mortality and morbidity are directly related to the length of time the victim is subject to the heat stress
- Sweating (or lack of sweating) is an unreliable indicator of the severity of heat illness
- The patient's vital signs and mental status are the primary concern
- The patient's baseline health status and medications greatly determine the likelihood of developing and recovering from heat illness
- The very young and very old are at greatest risk of heat illness
- For events with high risk of hyperthermia, consider having an ice bath available on scene

2.10 HYPOTHERMIA (ENVIRONMENTAL) ADULT & PEDIATRIC

EMT

1. Classify hypothermia clinically based on vital signs, level of consciousness and intensity of shivering. Core temperature, if available, provides additional information (see chart)
2. Handle patient gently. Maintain patient in horizontal position. Continue rewarming during transport
3. Warm ambulance to 24°C (75.2°F) if possible
4. Prevent further heat loss using insulation and vapor barrier. Move to a warm, sheltered environment
5. Gently remove (cut off) wet clothing and dry patient
6. Obtain blood glucose if available (if approved by medical director and OEMS)
7. Support shivering with calorie replacement if alert and able to swallow
8. Mildly hypothermic patients should not be allowed to stand or walk for 30 minutes, while being kept as warm as possible with calorie replacement and shelter
9. Patients with moderate to severe hypothermia require active external rewarming with chemical, electrical, or forced-air heating packs/blankets. Active rewarming is also beneficial for mild hypothermia
10. Assess patient for signs of life and pulse carefully for a minimum of 60 seconds to confirm respiratory arrest or cardiac arrest
11. If pulse and breathing are present, continue rewarming techniques
12. If pulse and breathing are absent, see Cardiac Arrest-Adult or Cardiac Arrest-Pediatric
13. Transport patient to closest appropriate hospital

PARAMEDIC & MICN

14. Administer crystalloid solution IV 40°C - 42°C (104°F - 107.6°F):
    - Adults: 500 ml
    - Pediatric: 20 ml/kg bolus
15. Provide airway management as indicated. With advanced airway, ventilate at half-standard rate. See Airway Management Adult. Airway Management Pediatric
16. Administer dextrose IV/IO if hypoglycemic. Diabetic-Hypoglycemia (Adult) 2.8A; Diabetic-Hypoglycemia (Pedi) 2.8P
17. Continue CPR if indicated:

- If < 30°C, and VT or VF, or AED advises shock: one shock at maximum power
- Warm 1-2°C or > 30°C prior to additional shocks
- No vasoactive drugs until 30°C or above. From 30-35°C, increase dosing interval to twice as long as normal. Administer epinephrine 1 mg IV/IO, up to 3 doses

PEARLS

- Patients with prehospital cardiac instability (systolic blood pressure < 90 mm Hg or ventricular arrhythmias), core temperature < 28°C (82°F), and those in cardiac arrest consider transport directly to a center capable of providing cardiopulmonary bypass (CPB) or extracorporeal membrane oxygenation (ECMO), if feasible. Hypothermic patients are often significantly dehydrated and may require repeat fluid boluses
- Absence of vital signs, rigor mortis, dependent lividity or fixed and dilated pupils may be present in patients with reversible hypothermia and are not a contraindication to CPR. Assume that a hypothermic patient can be resuscitated even if there is an absence of vital signs, any sign of life, rigor mortis, or fixed and dilated pupils
- Detecting a pulse in a patient with hypothermia may be difficult. Signs of life and pulse should be checked carefully for 60 seconds. Persistent breathing or movement by the patient should prompt a strategy of watchful waiting, but if no signs of life are detected, then cardiopulmonary resuscitation (CPR) should be started. Since metabolic needs are so low in severely hypothermic patients, a rate of only a few beats per minute is enough to provide adequate perfusion to vital organs. In such cases, it is better to attempt to maintain effective cardiac activity than to start CPR and cause VF
- A rapid assessment of the patient's core temperature may be performed by placing a warm ungloved hand against the skin of a patient's back, or chest. If the skin feels warm, hypothermia is unlikely. Measure core temperature. Utilize a rectal thermometer if available (after patient removed from cold environment), epitympanic thermometer designed for field use. Oral thermometers should only rule out hypothermia
- Owing to the decrease in cerebral oxygen, requirements with cooling, survival without neurologic impairment may be possible even when it is necessary to perform CPR for hours. Transportation to CPB/ECMO capable facilities with continuing CPR may be justified if hypothermia is present or suspected. Contact destination hospital in advance to ensure availability of CPB/ECMO
- Immediate continuous CPR is recommended for cardiac arrest due to primary severe hypothermia; interruptions in CPR should be avoided. If this is not possible, CPR can be delayed or performed intermittently. Based on available data, a patient with a core temperature <28◦ C or unknown with unequivocal hypothermic cardiac arrest, evidence supports alternating 5 min CPR and ≤5 min without CPR. With core temperature <20◦ C, current evidence supports alternating 5 min CPR and ≤ 10 min without CPR. If field conditions are not amenable to the safe administration of delayed or intermittent CPR, **Contact Medical Command** to consider Termination of Resuscitation (TOR)
- If a patient with cardiac arrest due to hypothermia is rewarmed to a core body temperature that is higher than 32°C and asystole persists, irreversible cardiac arrest is very likely, and termination of CPR should be considered

– A hypothermic patient should be assessed for coexisting injuries or illnesses that may mimic or conceal the signs and symptoms of hypothermia. The use of vital signs, mental status and presence or absence of shivering may be unreliable if the patient has another condition that coexists with hypothermia. Many conditions such as hypoglycemia, alcohol intoxication and exhaustion can cause altered mental status and can decrease or abolish shivering. A heart rate higher than expected for a given level of hypothermia may be due to another cause such as traumatic blood loss

Clinical Presentation	Approximate Core Temperature	Ability to rewarm without external methods	Classification
Cold Sensation Shivering	>35°C (95°F)	Good	Not hypothermic
	35° - 32°C (95° - 90°F)	Good	Mild
Altered Mental Status <30°C (86°F) Shivering stops Loss of consciousness	32° - 28°C (90° - 82°F)	Limited	Moderate
Vital signs reduced Severe risk of VF with rough handling	<28°C (82°F)	Unable	Severe
Vital signs usually absent Spontaneous VF or cardiac arrest (asystole)	<24°C (77°F)	Unable	Severe

2.11 NAUSEA/VOMITING – ADULT & PEDIATRIC

EMT

1. Isopropyl alcohol wipe: inhale vapor from wipe 3 times q 15 min

PARAMEDIC & MICN

2. Establish vascular access if patient appears dehydrated
3. Administer crystalloid solution IV bolus for dehydration:
    - Adult: 500 ml
        - May repeat 250 mL IV bolus if transport exceeds 15 minutes and patient's condition has not improved
    - Pediatric: 20 ml/kg
4. Ondansetron (Adult)
    - 4 mg IV/IM
        - May repeat once after 10 minutes if nausea/vomiting persists. Maximum dose 8 mg

    OR
    - 4 mg PO/ODT (oral dissolving tablets).
        - May repeat once after 10 minutes if nausea/vomiting persists. Maximum dose 8 mg
5. Ondansetron (Pediatric)
    - 2 mg ODT for patient 8-20 kg, 4 mg ODT patient ≥ 20 kg

    OR
    - 0.15 mg/kg IV (maximum single dose 4mg)
6. For motion sickness administer diphenhydramine:
    - Adult: 25 – 50 mg IV
    - Pediatric: 1 mg/ kg IV/IM/PO (max dose 50 mg)

PEARLS

– Consider other causes of nausea such as: cardiac, GI bleeding, pregnancy, toxicologic, diabetes

– Ondansetron should be used with caution in patients with known or suspected prolonged QT intervals

2.12A NERVE AGENTS/ORGANOPHOSPHATE POISONING – ADULT

EMT

1. **Contact Poison Control at (800) 222-1222** as soon as practical for consultation
2. Assess for SLUDGEM (Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis, Muscle twitching, miosis) and KILLER B's (Bradycardia, Bronchorrhea, Bronchospasm)
3. Evacuate to cold zone after decontamination and monitor for symptoms

PARAMEDIC & MICN

4. Antidotal therapy should be started as soon as symptoms appear
5. All antidote auto-injections must be administered IM
6. Determine dosing according to the following symptom assessment and guidelines

Category	Description/Example	Auto-injector Dose
Mild	If TWO (2) or more of the following are present: Blurred vision/ miosis (pupil constriction), excessive teary eyes, excessive runny nose, increased salivation, chest tightness/dyspnea, tremors/ twitching, nausea/vomiting, wheezing/coughing/secretions, acute stomach cramps, tachycardia, bradycardia	1 DuoDote (or MARK I kit) Monitor patient every 10 minutes
Worsening	If at any time after the first dose the patient develops any additional symptoms, or if symptoms worsen	2 DuoDotes (or 2 Mark I kits) Monitor patient every 10 minutes
Severe	If ANY of the following are present: Strange/confused behavior, severe difficulty breathing/copious airway secretions, severe muscle twitching, involuntary urination/defecation, convulsions, loss of consciousness, respiratory arrest	3 DuoDotes (or 3 Mark I kits) AND 1 diazepam 10 mg auto-injector

7. If symptoms persist after the administration of 3 DuoDote kits (or MARK I kits) and field conditions permit:
    - Initiate cardiac monitoring
    - Establish IV/IO access
    - Atropine 2 mg IV/IO; repeat every 3 - 5 minutes until excess respiratory secretions cease.
        - Each subsequent atropine dose should be doubled (2nd dose = 4 mg; 3rd dose = 8 mg)
    - Pralidoxime 1 – 2 g IV if available
        - Reconstitute pralidoxime 1 g vial with 20 mL sterile water for injection
        - Dilute reconstituted pralidoxime 1 g in 100 mL of 0.9% NaCl (may dilute 1-2 g in this manner)
        - Infuse over 5 minutes (1 g dose) to 10 minutes (2 g dose)
    - Diazepam
        - 5 mg IV every 5 minutes

OR

- 10 mg IM auto-injector every 10 minutes, as needed

8. If diazepam is unavailable, may use either:
    - Lorazepam 1 mg IV/IO every 5 minutes OR 2 mg IM every 10 minutes

      OR
    - Midazolam 2.5 mg IV/IN every 5 minutes OR 5 mg IM every 10 minutes as needed.

COMMUNICATION FAILURE – ALS ONLY

9. Pralidoxime maintenance infusion:
    - Reconstitute pralidoxime 1 g vial with 20 mL of sterile water for injection (SWFI) or 0.9% NaCl
    - Dilute reconstituted pralidoxime 1 g in 100 mL of 0.9% NaCl
10. Infuse 1 g over 15-30 minutes. Maximum of 12 g/day

2.12P NERVE AGENTS/ORGANOPHOSPHATE POISONING – PEDIATRIC

EMT

1. **Contact Poison Control at (800) 222-1222** as soon as practical for consultation
2. Assess for SLUDGEM (Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis, Muscle twitching, miosis) and KILLER B's (Bradycardia, Bronchorrhea, Bronchospasm)
3. Evacuate to cold zone after decontamination and monitor for symptoms

PARAMEDIC & MICN

4. Antidotal therapy should be started as soon as symptoms appear
5. All antidote auto-injections must be administered IM
6. Determine dosing according to the following symptom assessment and guidelines

Length (cm)	Weight (kg)	Color (age)	Atropine Dose (MILD & SEVERE)	Pralidoxime Dose (MILD)	Pralidoxime Dose (SEVERE)
<59.5	3 to 5	Gray (0-3 months)	0.25mg IM	60mg IM	Give 3 MILD doses in rapid succession IM. If symptoms persist, may repeat series 1 hour after last IM injection
59.5 – 66.5	6 to 7	Pink (3-6 months)		100mg IM	
66.5 – 74	8 to 9	Red (7-10 months)	0.5mg IM	125mg IM	
74 – 84.5	10 to 11	Purple (11-18 months)		150mg IM	
84.5 – 97.5	12 to 14	Yellow (19-35 months)		200mg IM	
97.5 – 110	15 to 18	White (3-4 years)		250mg IM	
110 – 122	19 to 22	Blue (5-6 years)	1mg IM	300mg IM	
122 – 137	24 to 30	Orange (7-9 years)		400mg IM	
137 – 150	30 to 40	Green (10-12 years)		500mg IM	

❖ **DuoDote (or MARK I kit) may be used for pediatric patients < 1 year old in a life-threatening situation with exposure symptoms when no pediatric doses of atropine or pralidoxime chloride are available**

7. In the unlikely event that field conditions permit, follow weight-based dosing and treatment guidelines:
   - Initiate cardiac monitoring
   - Establish IV/IO access
   - Atropine 0.05 – 0.1 mg/kg IV or IM (minimum dose of 0.1 mg, maximum single dose 5mg); repeat every 2 – 5 minutes as needed
   - Pralidoxime 25 – 50 mg/kg IV (maximum dose 1 g) or IM (maximum dose of 2 g), may repeat within 30 – 60 minutes as needed, then again, every hour for 1 – 2 doses as needed
8. Diazepam 0.1 mg/kg IV (0.5 mg/kg per rectum) (maximum dose 10 mg), repeat every 5 – 10 minutes as needed

   Instead of diazepam, may use either:

- Lorazepam 0.1 mg/kg IV/IM (maximum dose 4 mg), repeat every 5 – 10 minutes as needed

  OR
- Midazolam 0.2 mg/kg IM/intranasal/IV, repeat every 5 – 10 minutes as needed

COMMUNICATION FAILURE – ALS ONLY

9. Pralidoxime maintenance infusion:
   - Reconstitute pralidoxime 1 g vial with 20 mL of sterile water for injection (SWFI) or 0.9% NaCl
   - Dilute reconstituted pralidoxime 1 g in 100 mL of 0.9% NaCl
   - Infuse 1 g over 15-30 minutes. Maximum of 12 g/day

2.13 NEWBORN CARE

EMT, PARAMEDIC, & MICN

1. For newborns requiring resuscitation, see Newborn Resuscitation
2. Dry, warm, position, stimulate.
3. Assess airway by positioning and clearing secretions (only if needed):
    - Place the newborn on back or side with head in a neutral or slightly extended position.
    - Routine suctioning is discouraged even in the presence of meconium-stained amniotic fluid
    - Suction oropharynx then nares only if the patient exhibits respiratory depression and/or obstruction, see Newborn Resuscitation
4. Clamp and cut the umbilical cord
    - After initial assessment and after the cord stops pulsating but no less than 1 minute
    - Place the umbilical clamps approximately 8 and 10 inches from the baby
    - Cut between the clamps
5. Prevent heat loss by rapidly drying and warming:
    - Remove wet linen, wrap newborn in blankets or silver swaddler (preferred) and cover newborn's head
    - Place newborn skin-to-skin on the mother's chest or abdomen initially
6. Assess breathing and stimulate by providing tactile stimulation:
    - Flick soles of feet and/or rub the newborn's back
    - If newborn is apneic or has gasping respirations, nasal flaring, or grunting, proceed to Newborn Resuscitation
7. Assess circulation, heart rate, and skin color:
    - Evaluate heart rate by one of several methods:
        - Auscultate apical beat with a stethoscope
        - Palpate the pulse by lightly grasping the base of the umbilical cord
    - If the pulse is <100 bpm and not increasing, proceed to Newborn Resuscitation
    - Assess skin color; examine trunk, face, and mucus membranes.
8. Record APGAR score at 1 minute and 5 minutes (see chart) only if newborn does not require resuscitation. APGAR score is less important than assessment and intervention
9. See Pediatric Vital Signs
10. Transport newborn in child safety seat. See Pediatric Transportation

APGAR SCALE	Feature Evaluated	2 Points	1 Point	0 Points
	Activity (Muscle Tone)	Active Movement	Arms & legs flexed (Weak, some movement)	Limp or flaccid
	Pulse	Over 100 bpm	Below 100 bpm	Absent
	Grimace (Irritability/reflexes)	Cry, sneeze, cough, active movement	Grimace (some flexion of extremities)	No reflexes
	Appearance (Skin Color)	Completely pink	Body pink, Extremities blue	Blue, pale
	Respiration	Vigorous cry Full breaths	Slow, irregular, or gasping breaths, weak cry	Absent

PEARLS

- Newborn infants are prone to hypothermia which may lead to hypoglycemia, hypoxia and lethargy.
- Aggressive warming techniques should be initiated including drying, swaddling, and warm blankets covering body and head.
    - Utilize caution to avoid causing skin-tears/abrasions related to drying
- Raise temperature in ambulance patient compartment.

2. 14 NEWBORN RESUSCITATION

EMT

1. Routine Patient Care—Initial steps identified in Newborn Care
2. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility
3. For premature infants, initiate additional warming techniques, including newborn heating pad or wrapping the torso and extremities of the baby in food-grade or medical-grade plastic wrap
4. If the mouth or nose is obstructed or heavy secretions are present, suction oropharynx then nares using a bulb syringe or mechanical suction using the lowest pressure that effectively removes the secretions, not to exceed 120 mm Hg
5. If ventilations are inadequate, the chest fails to rise, or the heart rate is less than 100, initiate positive pressure (bag-valve-mask) ventilations at 40 – 60 breaths per minute
    - Note: Resuscitation should be initiated with room air. Use oxygen if newborn is premature or low birth weight. If no response to resuscitation after 90 seconds, supplement with 100% oxygen
    - Inflation pressures should be individualized to achieve an increase in heart rate or movement of the chest with each breath. Be aware that bag-valve-mask pop-off valves may deliver inconsistent results
6. After 30 seconds of ventilations, assess heart rate:
    - Auscultate apical beat with a stethoscope or palpate the pulse by lightly grasping the base of the umbilical cord
7. For heart rate <100, reassess ventilatory technique and continue ventilations
8. For heart rate <60 after attempts to correct ventilations:
    - Initiate CPR at a 3:1 ratio (for a rate of 120 compressions/minute and 30 ventilations/minute)
9. Minimize interruptions. Reassess every 60 seconds; if not improving, continue CPR with 100% oxygen until recovery of a normal heart rate, then resume room air

PARAMEDIC & MICN

10. If bag valve mask ventilation is inadequate or chest compressions are indicated, intubate the infant:
    - 3.0 mm cuffed endotracheal tube
    - 2.5 mm cuffed endotracheal tube (For an infant born before 28 weeks gestation)
        - Meconium aspiration may be indicated if airway is obstructed
        - Direct visualization, improvement in heart rate and $EtCO_2$ are the best indicators of whether the tube is properly placed in the trachea
11. Establish vascular access. Obtain blood glucose
    - If hypovolemia is suspected, administer 10 mL/kg bolus crystalloid solution over 5 – 10 minutes
    - If the heart rate fails to improve with chest compressions, administer epinephrine (1:10,000) (0.1 mg/mL) 0.01 IV (0.1 mL/kg)

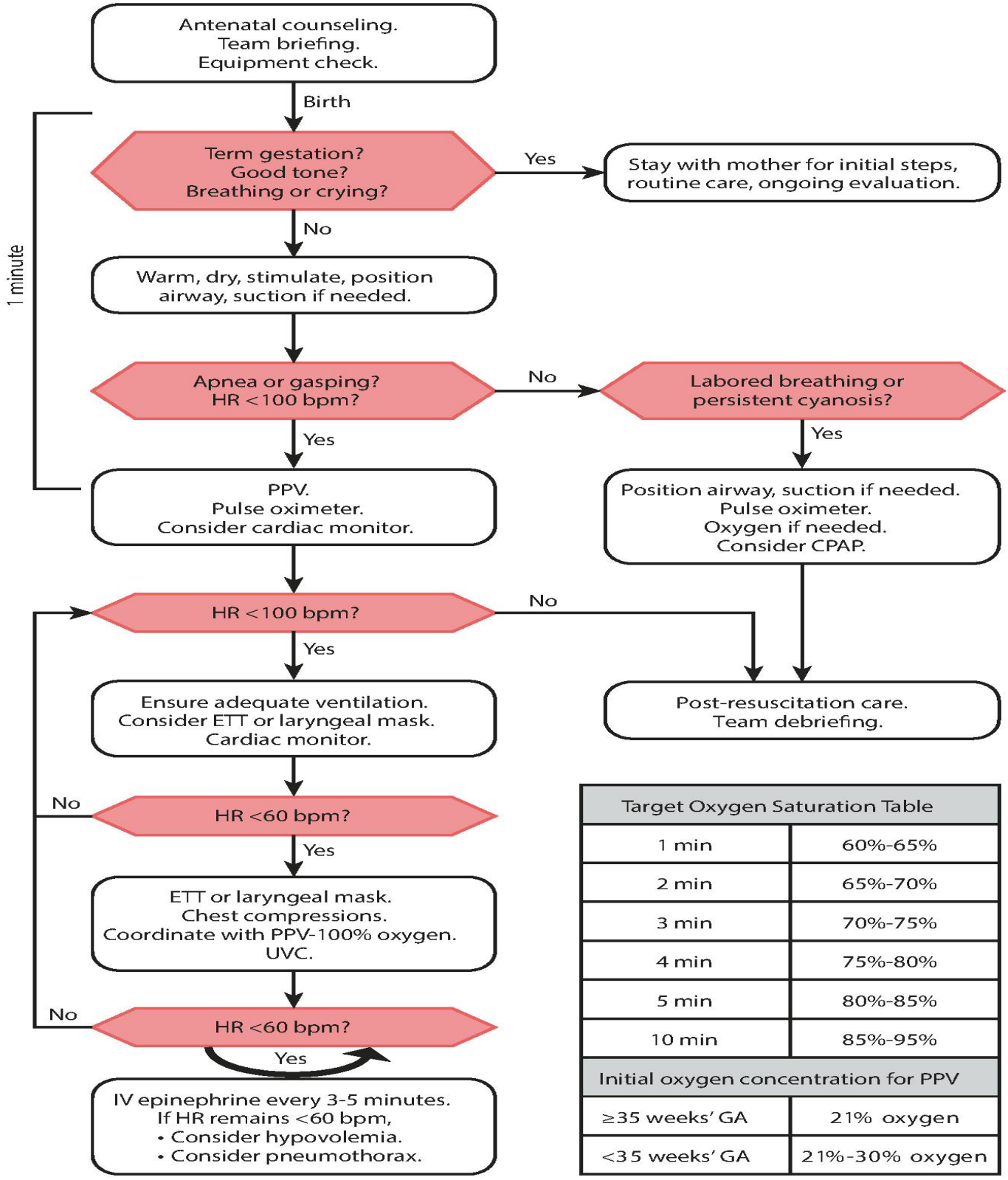
- IV/IO is preferred route for epinephrine—if there is a delay in establishing access, may administer via ETT 0.1 mg/kg (1:10,000) (0.1 mg/mL)

PEARLS

– ALS NOTES: Flush all meds with 0.5 to 1.0 mL crystalloid solution

– Follow all ETT meds with positive-pressure ventilation.

Neonatal Resuscitation Program® 8th Edition Algorithm



Target Oxygen Saturation Table	
1 min	60%-65%
2 min	65%-70%
3 min	70%-75%
4 min	75%-80%
5 min	80%-85%
10 min	85%-95%
Initial oxygen concentration for PPV	
≥35 weeks' GA	21% oxygen
<35 weeks' GA	21%-30% oxygen

2.15 NORMAL LABOR & DELIVERY

EMT, PARAMEDIC & MICN

1. This protocol should be used for an imminent delivery prior to arrival at the hospital. Imminent delivery is evidenced by crowning at the vaginal opening
2. Routine Patient Care. Obtain OB history
3. Check for crowning. If there are no signs of crowning, proceed with transport
4. If crowning is present, prepare for delivery. Notify receiving facility
5. Uncomplicated labor and delivery does not require emergent transport
6. Place the mother in a comfortable, supine position. Place sterile drapes about the perineum
7. Prepare the OB kit and pediatric resuscitation equipment
8. Gently and carefully assist expulsion of the newborn from the birth canal in its natural descent. Do not pull or push the newborn. Prevent explosive delivery of the baby's head by placing your gloved hand on the baby's head
9. Upon complete presentation of newborn's head:
    - Instruct the mother to stop pushing
    - Support the head. Bulb-suction the mouth then nostrils if obstructed
    - Check to be certain the umbilical cord is not wrapped about the neck
        - Unwrap if necessary or if unable to remove apply two umbilical clamps and cut between the clamps to release the cord
    - Once the newborn's airway is clear and the cord is free from around its neck, instruct the mother to push on her next contraction to complete delivery
10. For care of newborn, see Newborn Care
11. For newborns requiring resuscitation, see Newborn Resuscitation
12. Following delivery of the newborn, the mother's vagina may continue to ooze blood. Do not pull on the umbilical cord
13. Apply firm continuous massage manually to the mother's lower abdomen (uterine fundus) to help reduce postpartum hemorrhage. Encourage breastfeeding if the mother prefers, as this will aid in the contraction of the uterus which will help stop the bleeding and facilitate delivery of the placenta
14. Do not attempt to examine the patient internally. Never pack the vagina to stop bleeding. Apply a sanitary napkin to the vaginal opening

15. If the placenta does deliver, preserve it in a plastic bag and transport it with the mother. Do not delay transport to wait for the placenta to deliver
16. For transport of the newborn and mother, refer to Pediatric Transportation

PEARLS

- OB assessment:
  - Length of pregnancy
  - History of prenatal medical problems:
  - Gestational diabetes, hypertension, etc
  - Number of pregnancies
  - Number of viable births
  - Number of non-viable births
  - Last menstrual period
  - Due date
  - Prenatal care
  - Number of expected babies
  - Stimulant or depressant drug use
- Signs of imminent delivery:
  - Membrane rupture or bloody show
  - Urge to move bowels
  - Urge to push

2.16 OBSTETRICAL EMERGENCIES

RECOGNITION

- 3rd trimester bleeding: vaginal bleeding occurring ≥ 28 weeks of gestation.
- Preterm labor: onset of labor/contractions prior to the 37th week of gestation
- Malpresentation: presentation of the fetal buttocks or limbs.
- Prolapsed umbilical cord: umbilical cord precedes the fetus.
- Shoulder dystocia: failure of the fetal shoulder to deliver shortly after delivery of the head.
- Postpartum hemorrhage: active bleeding after uterine massage.
- Pre-eclampsia/Eclampsia: BP > 160/100, severe headache, visual disturbances, edema, RUQ pain, seizures

EMT

- Do not delay transport for patients with obstetrical emergencies, provide early notification to the receiving facility
- If gestational age is known to be < 20 weeks, transport to closest hospital
- If gestational age is known to be > 20 weeks or fundus is palpable at or above the umbilicus, Follow local operational protocol/procedure

For third trimester bleeding

1. Suspect placenta previa (placenta is implanted in the lower uterine segment)
2. Suspect placental abruption (placenta is separated from the uterine wall before delivery); because hemorrhage may occur into the pelvic cavity, shock can develop despite relatively little vaginal bleeding.
3. Do not perform digital examination
4. Place patient in the left lateral position
5. Monitor hemodynamic stability (see Shock-Adult)

For breech birth (presentation of buttock):

1. Do not pull-on newborn. Support newborn and allow delivery to proceed normally
2. If the legs have delivered, gently elevate the trunk and legs to aid delivery of the head
3. If the head is not delivered within 30 seconds of the legs, place two fingers into the vagina to locate the infant's mouth. Press the vaginal wall away from the infant's mouth to maintain the fetal airway

For limb presentation

1. Place mother in knee-chest or Trendelenberg position
2. Do not attempt delivery; transport emergently as surgery is likely

For prolapsed cord

1. Discourage pushing by the mother
2. Place mother in knee-chest or Trendelenberg position
3. Place a gloved hand into the mother's vagina and decompress elevating the presenting fetal part off of the cord
4. Wrap cord in warm, sterile saline soaked dressing

For shoulder dystocia

1. Suspect if newborn's head delivers normally and then retracts back into perineum because shoulders are trapped
2. Discourage pushing by the mother
3. Support the baby's head, do not pull on it
4. Suction the nasopharynx and oropharynx, as needed
5. Position mother with buttocks dropped off end of stretcher and thighs flexed upward (McRobert's position). Apply firm pressure with an open hand immediately above pubic symphysis (McRobert's maneuver)
6. If the above method is unsuccessful, consider rolling the patient to the all-fours position

For postpartum hemorrhage

1. Vigorously massage fundus until uterus is firm
2. If possible, initiate breast feeding

For cardiac arrest in the pregnant patient (regardless of etiology)

1. See Cardiac Arrest-Adult
2. For patient ≥ 20-week gestation or if the fundus is palpable at or above the level of the umbilicus, apply left lateral uterine displacement (LUD) with the patient in the supine position to decrease aortocaval compression. LUD should be maintained during CPR. If ROSC is achieved, the patient should be placed in the left lateral position
3. Transport to nearest emergency department

PARAMEDIC & MICN

1. In the presence of seizures, or if the patient is post-ictal, administer magnesium sulfate, 4 g slow IV push over 5 minutes
    - See Seizures – Adult 2.19A
2. For severe postpartum hemorrhage after placental delivery, administer:
    - Tranexamic Acid (if available) 2 g Bolus

COMMUNICATION FAILURE

3. For severe postpartum hemorrhage after placental delivery, administer:
    - Oxytocin 10 units Intramuscular

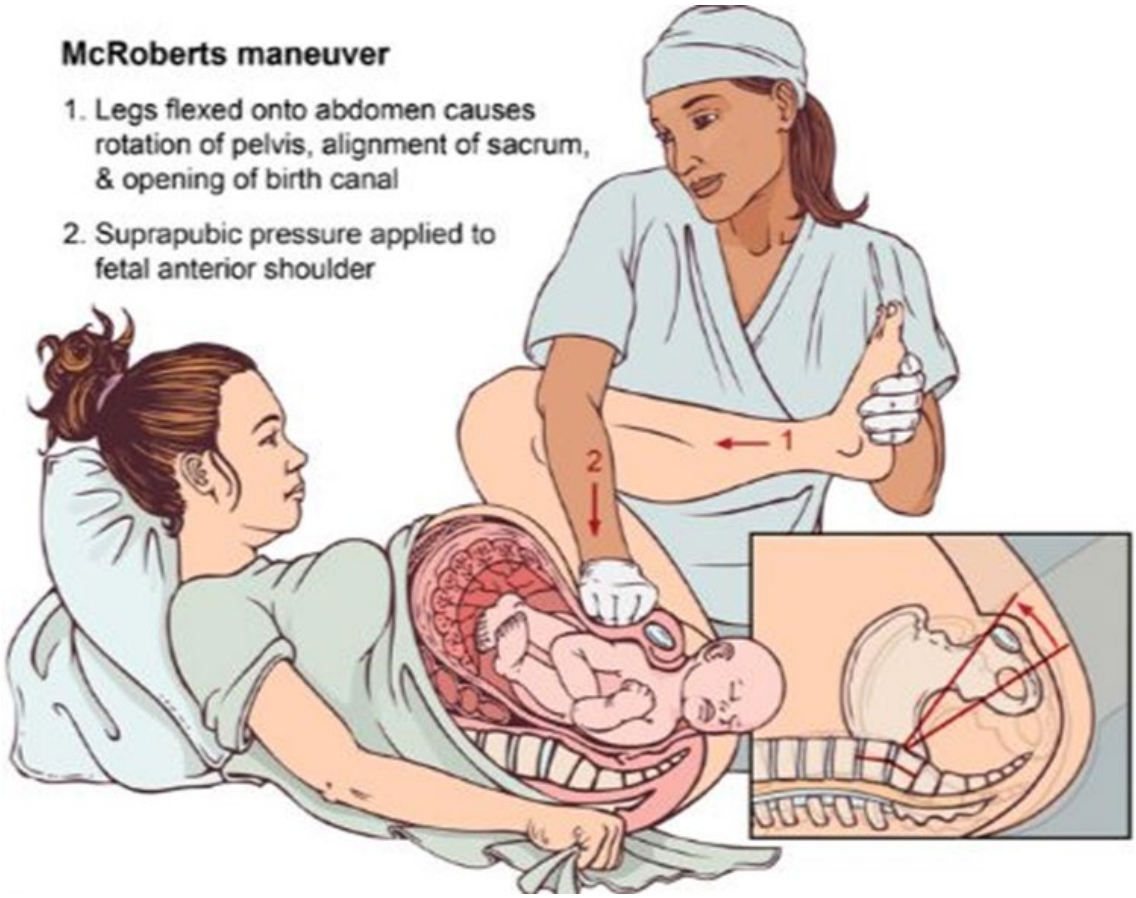
4. For systolic BP >160 mmHg and/or diastolic BP >110 mmHg, consider labetalol 20-40 mg every 10 minutes. (May repeat once for max of 2-doses)

CONTACT MEDICAL COMMAND FOR THE FOLLOWING CONDITIONS:

- Prepartum hemorrhage
- Postpartum hemorrhage
- Breech presentation
- Cardiac arrest of mother
- Limb presentation
- Nuchal cord
- Prolapsed cord

PEARLS

- Signs of preeclampsia:
  - Hypertension
  - Headache
  - Nausea
  - Vomiting
  - Visual changes
  - Edema
- When resuscitating pregnant patients, manual left uterine displacement should be used during CPR as this technique is the most compatible with high-quality CPR


McRoberts maneuver
1. Legs flexed onto abdomen causes rotation of pelvis, alignment of sacrum, & opening of birth canal
2. Suprapubic pressure applied to fetal anterior shoulder
1
2

2.17A PAIN MANAGEMENT - ADULT

EMT

1. Assess for cause of pain
2. Have the patient rate his/her pain from 0 to 10 or use another appropriate pain scale. Document value each time pain is assessed
3. Non-pharmacological pain control: Splinting; use ample padding when splinting musculoskeletal injuries; Ice; apply cold pack for 30 minutes; Elevation, Discussion/Distraction Techniques

PARAMEDIC & MICN

4. For mild or moderate pain, consider one of the following for pain control:
    - Acetaminophen IV
        - 1000 mg IV infused over 15 minutes (max dose 1000 mg)

    OR

    - Ketorolac (if available) 15 mg IV or 30 mg IM (no repeat)
        - See contraindications
        - Administer as first-line agent for suspected renal colic

Contraindications to ketorolac: patients with NSAID allergy, aspirin-sensitive asthma, renal insufficiency, pregnancy, or known peptic ulcer disease. Women who are pregnant or could be pregnant. Patients currently taking anticoagulants such as Coumadin.

5. For severe pain, consider one of the following: (Maintain SBP ≥ 100)
    - Fentanyl (preferred first-line narcotic agent):
        - 1 mcg/kg IM or slow IV push, every 5-10 minutes for a maximum total of 200 mcg titrated to pain relief

    OR

    - Morphine:
        - 0.1 mg/kg IV/IO/IM (max initial IV/IO dose 10 mg; max initial IM dose 15 mg)

Contraindications to narcotics: hypotension SBP <100, SpO_2 <90% on 15L O2, hypoventilation, allergic to narcotics, or condition preventing administration (blocked nose or no IV). If no contraindications and pain scale ≥ 4, may administer narcotics

Antidote: For hypoventilation from opiate administration by EMS personnel, assist ventilations and administer naloxone 0.4 to 2.0 mg /IV/IO/IM or 2.0 – 4.0 intranasal as needed

OR

- Ketamine:
    - 0.25 mg/kg IV infusion (in 100 mL bag 0.9% NaCl over 15 minutes)

- Administer 0.15 mg/kg dose for frail or elderly patients

Antidote: For dysphoria (emergence reaction) caused by ketamine administer midazolam 1 - 2 mg IV/IM every 5 minutes as needed.

- Consider nitrous oxide if available:
  - Appropriate for patients with pain from isolated extremity injuries (suspected fractures) or global soft tissue injuries (i.e., burns or road rash)
  - See contraindications
  - The patient must be able to self-administer this medication
- For nausea: see Nausea/Vomiting

COMMUNICATION FAILURE – ALS ONLY

Nebulized ketamine may only be used with a breath actuated nebulizer and cannot be repeated for a second dose. Pain scores should be recorded before and after treatment

Indications

1. Patients in moderate to severe traumatic or non-traumatic pain who traditionally would have received IV fentanyl or morphine but in whom opioids are refused or contraindicated
2. Clinician and Medical Command Physician both in agreement that patient would be better treated with ketamine
3. Patient is alert, oriented x 3 and can hold the nebulizer during treatment
4. Age over 18 years
5. Patient agrees to treatment with nebulized ketamine

Contraindications

1. History of psychosis
2. Acute intoxication
3. Altered mental status or agitation
4. Contraindications
5. History of psychosis
6. Acute intoxication
7. Altered mental status or agitation

Potential Side Effects

1. Fatigue

2. Dizziness
3. Headache
4. Contraindications
5. History of psychosis
6. Acute intoxication
7. Altered mental status or agitation

Procedure:

1. Attach patient to cardiac monitor and pulse oximetry
2. Ensure patient meets appropriate indications
3. **Contact Medical Command** for orders
4. Ensure patient agrees to receive sub-dissociate ketamine
5. Draw up 1 mg / kg of ketamine (maximum dose of 100mg)
6. Prepare breath actuated nebulizer with an exhalation filter in place
7. Place ketamine into breath actuated nebulizer chamber
8. Add enough 0.9% normal saline to the chamber to make a total fluid amount of 5 mL (see table)
9. Attach nebulizer to oxygen source at 8LPM
10. Explain how the nebulizer works to the patient and have them hold it during the treatment. Patient can take slow breaths in and out while holding the nebulizer in their mouth, similar to other nebulized medications
11. Monitor the patient during and following treatment
12. Reassess pain and consider rescue analgesia if needed
13. Discontinue on transfer of care in the ED
14. Use a syringe to withdraw the unused medication from the nebulizer and using the chart and formula below calculate the amount the patient received. Waste medication as per the controlled substance policy
15. Document appropriately, including amount administered, amount wasted, any complications, and the pre-administration and post-administration pain scores

- Medications should be administered cautiously in frail, debilitated, or patients over 65 years of age; lower doses should be considered
- Use caution for altered mental status, hypoventilation, hypotension, or allergy

Nebulized Ketamine Dose Reference: Initial concentration 500mg/5mL				
Pt Weight (kg)	Amount of Ketamine to add	Volume of Ketamine to add	mL of saline to add	Concentration of Ketamine after saline added
100 kg	100 mg	1 mL	4 mL	20 mg/mL
90 kg	90 mg	0.9 mL	4.1 mL	18 mg/mL
80 kg	80 mg	0.8 mL	4.2 mL	16 mg/mL
70 kg	70 mg	0.7 mL	4.3 mL	14 mg/mL
60 kg	60 mg	0.6 mL	4.4 mL	12 mg/mL
50 kg	50 mg	0.5 mL	4.5 mL	10 mg/mL
40 kg	40 mg	0.4 mL	4.6 mL	8 mg/mL

- Ketamine should be administered in patients with severe pain, hemodynamic compromise, pain refractory to opiates, patients on chronic opiate treatment, patients unresponsive to other medications, or patients with history of substance use disorder and receiving medication assisted treatment (e.g. methadone, buprenorphine)
- Ketamine is contraindicated in patients:
    - with known schizophrenia
    - unable to tolerate hyperdynamic states such as those with known or suspected aortic dissection, myocardial infarction, or aortic aneurysm.
- Ketamine may cause appearance of intoxication at higher doses. Dysphoria (emergence reaction) may occur as the medication effects wear off

- Nitrous oxide is contraindicated for the following patients and conditions:
    - Any altered mental status/inability to follow instructions
    - Pneumothorax
    - Head injury, including concussion
    - Pregnancy

    - Head or facial trauma preventing proper seal
    - Abdominal pain
    - Chest/thoracic trauma
    - Chest pain
    - Abdominal trauma
    - Headache/migraine

    - Diving injury
- Nitrous oxide may only be used if the patient has not received an opiate or ketamine.
- Use of Nitrous oxide requires approval of **on-line Medical Command**, additional training, use of scavenger/ventilation fan and an open compartment window.

PEARLS

– Place the patient in a position of comfort, if possible

– Give reassurance, psychological support, and distraction

- Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 – 10, where 0 is no pain at all and 10 is the worst pain they have ever experienced. See Baker Wong Scale or FLACC Pain Scale
- Reassess and document the patient's pain level and vital signs every 5 minutes
- Narcotics are not recommended for first-line treatment of headache. **Contact Medical Command**
- EMS professionals should not attempt to differentiate between pain and drug-seeking behavior, which could lead to under-treatment of pain
- Utilize caution in administration of analgesic to non-traumatic etiologies such as headache, chest pain or abdominal pain

2.17P PAIN MANAGEMENT - PEDIATRIC

EMT

1. Assess pain severity. Consider all patients as candidates for pain management regardless of transport time
2. Have the patient rate his/her pain from 0 to 10, or
    - Wong-Baker “faces” scale (appropriate for children ages 4-12):
    - FLACC Scale (appropriate for children <4 years or developmentally delayed)
3. Non-pharmacological pain control: Splinting; use ample padding when splinting musculoskeletal injuries; Ice; apply cold pack for 30 minutes; Elevation, Discussion/Distraction Techniques
4. Document pain scale value each time assessed

PARAMEDIC

5. Establish vascular access if necessary
6. Assess patient for contraindications to analgesic administration:
    - GCS < 15 or mentation not appropriate for age, hypotension, SpO_2 < 90 % on 15L O2, hypoventilation, allergic to narcotics, condition preventing administration (blocked nose or no IV), Pain of non-traumatic origin (not headache, abdominal or chest pain)
    - If no contraindications may administer:
        - Acetaminophen 15mg/kg IV administered over 15 minutes

          OR
        - Fentanyl 1 mcg/kg IV/IM/IO; 1.5 mcg/Kg IN (maximum initial dose 50 mcg). Administer slow over 2-3 minutes.

          OR
        - Morphine 0.1 mg/kg IM/IV/IO (max single dose 4 mg)

          OR
        - Ketamine 0.25 mg/kg IV/IM/IO (maximum dose 25 mg)

          OR
        - Ketamine 0.5 mg/kg IN (maximum dose 25 mg)
    - Reassess patient every 5 minutes. If no contraindications and patient still in moderate to severe pain may re-dose at 5 – 10-minute intervals at half the original dose for one additional dose
7. For nausea: see Nausea/Vomiting
8. **Contact Medical Command** for guidance for:
    - Patients under the age of 13 who do not meet any other contraindications

For intranasal route of pain medications:

1. Use of both nostrils to double the absorptive mucosal surface
2. Use of atomizer to enhance absorption
3. Use of concentrated form to allow for small volume (0.2 - 0.3ml per nostril)
4. Volumes more than 1 ml per nostril not reliable absorption – mucosal saturation & run-off
5. Requires higher dosing compared to IV

Instructions for utilization of the FLACC Scale:

Patients who are awake

1. Observe for at lease 1 – 2 minutes
2. Observe legs and body uncovered
3. Reposition patient or observe activity, assess body for tenseness and tone
4. Initiate consoling interventions, if needed

Patients who are asleep

1. Observe for at least 2 minutes or longer
2. Observe body and legs uncovered
3. If possible, reposition the patient
4. Touch the body and assess for tenseness and tone

FLACC Scale[2]	0	1	2
1 Face	No particular expression or smile.	Occasional grimace or frown, withdrawn, disinterested.	Frequent to constant frown, clenched jaw, quivering chin.
2 Legs	Normal position or relaxed.	Uneasy, restless, tense.	Kicking, or legs drawn up.
3 Activity	Lying quietly, normal position, moves easily.	Squirming, shifting back and forth, tense.	Arched, rigid or jerking.
4 Cry	No crying (awake or asleep).	Moans or whimpers; occasional complaint.	Crying steadily, screams or sobs, frequent complaints.
5 Consolability	Content, relaxed.	Reassured by occasional touching, hugging or being talked to, distractible.	Difficult to console or comfort.

2.18A POISONING/SUBSTANCE ABUSE/OVERDOSE - ADULT

EMT

1. For suspected opioid overdose with severe respiratory depression:
    - Begin manual ventilation via BVM with 100% oxygen and nasopharyngeal airway
    - Administer naloxone:
        - Naloxone nasal spray (4mg) into one nostril
            - May repeat every 3-5 minutes if no response, or if patient relapses, to a maximum of 2 doses (8 mg)
        - Naloxone 1 mg (1 mL) per nostril via atomizer for a total of 2 mg
            - May repeat every 3 – 5 minutes if no response to a maximum of 2 doses (4 mg)
2. For suspected isolated cyanide poisoning, see Smoke Inhalation - Adult
3. For hypoglycemia, see Diabetic Emergencies (Hypoglycemia) - Adult
4. For seizures, see Seizure - Adult
5. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility
6. **Contact Medical Command**  or **Poison Control** 

at (800) 222-1222 as soon as practical for consultation

PARAMEDIC

7. For severe respiratory depression secondary to suspected opiate overdose, administer naloxone 0.4 – 2 mg IV/IM/IN
    - Establish vascular access
    - Titrate to response
    - If no response, may repeat initial dose every 3 – 5 minutes to a maximum of 8 mg
    - See Altered Mental Status – Adult

Suggested Treatments

1. Beta Blocker and Ca Channel Blocker, see Bradycardia – Adult
2. Dystonic Reaction:
    - Diphenhydramine 50 mg IV/IM
3. Organophosphates see Nerve Agent/Organophosphate – Adult
4. For severe agitation, See Sedation
5. For seizures, See Seizures - Adult

6. For hyperthermia: Hyperthermia

7. Ingested Poison: **Contact Medical Command** to discuss possible treatments for specific exposure

COMMUNICATION FAILURE – ALS ONLY

1. Tricyclic overdose with symptomatic dysrhythmias, (e.g., tachycardia and wide QRS > 110): Sodium bicarbonate 1 to 2 mEq/kg IV/IO

This protocol is designed to provide general guidelines for treatment. Specific treatments or antidotes may be appropriate as directed by on-line medical command. Consultation with Poison Control is encouraged

Signs & Symptoms

- **Acetaminophen**: Initially normal or nausea/vomiting. If not detected and treated, may cause irreversible liver failure
- **Anticholinergic**: Tachycardia, fever, dilated pupils, mental status changes
- **Aspirin**: Abdominal pain, vomiting, pulmonary edema, tachypnea, fever, tinnitus and/or altered mental status. Renal dysfunction, liver failure, and/or cerebral edema among other things can take place later. Consider in elderly with altered mental status
- **Cardiac Medications**: Dysrhythmias altered mental status, hypotension, hypoglycemia
- **Sedatives/Depressants**: Bradycardia, hypotension, decreased temperature, decreased respirations, pinpoint (miosis) or non-specific pupils
- **Dystonic Reaction**: Neurological movement disorder, in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide
- **Akathisia**: May consist of feelings of anxiety, agitation, and jitteriness, as well as inability to sit still /pacing. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide
- **Opioids**: Respiratory arrest or hypoventilation, evidence of opiate use (bystander report, drug paraphernalia, opioid prescription bottles, “track marks”), depressed mental status, miosis
- **Organophosphates**: Bradycardia, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils, SLUDGEM, BBB. See Nerve Agent/Organophosphate Poisoning – Adult 2.12A
- **Solvents**: Nausea, coughing, vomiting, and mental status change
- **Sympathomimetic/Stimulants**: Tachycardia, hypertension, increased temperature, dilated pupils, anxiety, paranoia, diaphoresis. Examples are bath salts, cocaine, caffeine, methamphetamine, ecstasy, ADHD drugs, thyroid meds (rarely), albuterol
- **Tricyclic Antidepressants** (**TCA**): Seizures, dysrhythmias, hypotension, decreased mental status or coma

PEARLS

- If possible, and not a risk to EMS crew members, bring container/bottles, and/or contents
- Pulse oximetry may NOT be accurate for toxic inhalational patients.

- Route, time, quantity and substance(s)
- Reason, if known: intentional or accidental
- Ask bystanders what medications are present/accessible

2.18A PRECIPITATED WITHDRAWAL

PARAMEDIC & MICN

1. This procedure may only be performed by ALS providers who have completed buprenorphine administration training. This MAY be performed if only one paramedic on scene has been trained
2. For patients in naloxone-induced or abstinence-induced opiate withdrawal:
    - Assess patient for any exclusion criteria
        - Altered mental status/ no capacity
        - Unwilling to give name and DOB
        - Taken any methadone within the past 72 hours/Currently enrolled in a methadone program
        - Not a daily opiate user
        - Age <16

***If any of the above are present, patient is **NOT** eligible for buprenorphine, continue with Overdose protocol

- Calculate a Clinical Opiate Withdrawal Scale (COWS) score (Below)
    - Score must be calculated from three or more sign categories
- For patients with naloxone induced opiate withdrawal with a COWS > or equal to 5

  OR
- For patients with abstinence induced opiate withdrawal with a COWS > or equal to 8
    - Counsel patient regarding buprenorphine treatment for withdrawal
    - Assess desire to initiate treatment
    - If patient DECLINES, patient is NOT eligible for buprenorphine

3. Patient agreeable to buprenorphine treatment
    - Give water to moisten mucous membranes
    - Administer 16 mg SL buprenorphine
    - Reassess COWS score after 5-10min
        - If improved, proceed to referral process
        - If COWS worsened or not improved, can give additional 8 mg SL buprenorphine
        - If nausea continues, see Nausea/Vomiting 2.11
    - COWS should be recorded at a minimum once prior to buprenorphine administration and again prior to ending patient contact/encounter
4. REFERRAL
    - Provide patient with referral information to schedule the earliest appointment/meeting for next dose

- FOLLOW LOCAL PROTOCOL FOR REFERRAL
- Offer to leave the patient with a dose of naloxone consistent with the “Leave Behind Narcan” program

CLINICAL OPIATE WITHDRAWL SCALE (COWS)

Sign or Symptom	Score	
Heart Rate	0	< 80
	1	81 – 100
	2	101 – 120
	4	> 120
Sweating	0	None
	1	Subjective Report
	2	Flushed or moist face
	3	Beads of sweat on face
	4	Sweat streaming on face
Restlessness	0	Able to be still
	1	Subjective report of restlessness
	3	Frequent shifting or extraneous movements
	5	Unable to sit still for longer than a few seconds
Pupil Size	0	Normal or small
	1	Pupils possibly larger than appropriate
	2	Pupils moderately dilated
	5	Pupils so dilated only rim of Iris is visible
Bone or Joint Aches	0	None
	1	Mild diffuse discomfort
	2	Subjective report
	4	Actively rubbing joints or muscles
Rhinorrhea or Lacrimation	0	None
	1	Congestion or moist eyes
	2	Rhinorrhea or lacrimation
	4	Nose is constantly running or tears streaming
Yawning	0	None
	1	Yawning 1 – 2 times
	2	Yawning > 3 times
	4	Yawning several times a minute
Anxiety or Irritability	0	None
	1	Subjective report
	2	Patient appears anxious
	4	So irritable that cannot participate in assessment
Gooseflesh	0	None
	3	Piloerection can be felt
	5	Prominent piloerection
GI Upset (over last ½ hour)	0	None
	1	Stomach cramps
	2	Nausea or loose stool
	3	Vomiting or diarrhea
	5	Multiple episodes of vomiting or diarrhea
Tremors of Outstretched Hands	0	No tremors
	1	Tremor felt, but not observed
	2	Slight tremor observed
	4	Gross tremor or muscle twitching

2.18P POISONING/SUBSTANCE ABUSE/OVERDOSE – PEDIATRIC

EMT

1. For suspected opioid overdose with severe respiratory depression:
    - Begin manual ventilation via BVM with 100% oxygen and nasopharyngeal airway
    - Administer naloxone nasal spray (4mg) as follows:
        - >11 years old and/or >40kg: naloxone 4 mg (may repeat x1 q3-5 min.)
        - <11 years old and/or <40kg: **Contact Medical Command**
    - Administer naloxone (2 mg formulary) as follows:
        - >5 years old and/or >20kg: Naloxone 1 mg (1 mL) per nostril for a total of 2 mg (may repeat x1 q3-5 min.).
        - 5 years old and/or <20kg: **Contact Medical Command**
    - Patients given naloxone should be transported to emergency department for further evaluation
2. For suspected isolated cyanide poisoning, see Smoke Inhalation - Pediatric
3. For decontamination/hazardous materials exposure, see Hazardous Materials Exposure
4. For hypoglycemia, see Diabetic Emergencies (Hypoglycemia) - Pediatric
5. For seizures, see Seizure - Pediatric
6. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility
7. **Contact Poison Control** at **(800) 222-1222** as soon as practical for consultation.

PARAMEDIC & MICN

8. Establish vascular access
9. For severe respiratory depression, administer naloxone 0.1 mg/kg IV/IM/IN
    - Initial dose 0.4 mg-2 mg
        - If no response, may repeat initial dose every 3 – 5 minutes to a maximum of 3 doses
    - Utilize restraints as appropriate. See Restraint

Suggested Treatments

10. Beta Blocker and Ca Channel Blocker, see Bradycardia – Pediatric
11. Dystonic Reaction
    - Diphenhydramine 1 mg/kg IV/IM up to maximum dose 50 mg
12. Organophosphates; see Nerve Agent/Organophosphate – Pediatric
13. For severe agitation, seizures or hyperthermia

- Midazolam 0.2 mg/kg IM or IN (single maximum dose 10 mg) (Note: a 5 mg/mL concentration is recommended for IM/IN administration)

  OR

- Midazolam 0.1 mg/kg IV/IO (single maximum dose 4 mg)

  OR

- Lorazepam 0.1 mg/kg IV/IO (single maximum dose 4 mg)

  OR

- Diazepam 0.1 mg/kg IV/IO (single maximum dose 4 mg).

14. Ingested Poison: **Contact Medical Command**  to discuss possible treatments for specific exposure

COMMUNICATION FAILURE – ALS ONLY

1. Tricyclic overdose with symptomatic dysrhythmias, (e.g., tachycardia and wide QRS > 110): Sodium bicarbonate 1 mEq/kg IV/IO

This protocol is designed to provide general guidelines for treatment. Specific treatments or antidotes may be appropriate as directed by on-line medical command. Consultation with Poison Control is encouraged

Signs & Symptoms

- **Acetaminophen**: Initially normal or nausea/vomiting. If not detected and treated, may cause irreversible liver failure
- **Anticholinergic**: Tachycardia, fever, dilated pupils, mental status changes
- **Aspirin**: Abdominal pain, vomiting, pulmonary edema, tachypnea, fever, tinnitus and/or altered mental status. Renal dysfunction, liver failure, and/or cerebral edema among other things can take place later. Consider in elderly with altered mental status
- **Cardiac Medications**: Dysrhythmias altered mental status, hypotension, hypoglycemia
- **Sedatives/Depressants**: Bradycardia, hypotension, decreased temperature, decreased respirations, pinpoint (miosis) or non-specific pupils
- **Dystonic Reaction**: Neurological movement disorder, in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide
- **Akathisia**: May consist of feelings of anxiety, agitation, and jitteriness, as well as inability to sit still /pacing. This may be induced by antipsychotics, such as haloperidol, or anti-emetics such as prochlorperazine or metoclopramide
- **Opioids**: Respiratory arrest or hypoventilation, evidence of opiate use (bystander report, drug paraphernalia, opioid prescription bottles, “track marks”), depressed mental status, miosis
- **Organophosphates**: Bradycardia, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils, SLUDGEM, BBB. See Nerve Agent/Organophosphate Poisoning – Adult
- **Solvents**: Nausea, coughing, vomiting, and mental status change

- **Sympathomimetic/Stimulants**: Tachycardia, hypertension, increased temperature, dilated pupils, anxiety, paranoia, diaphoresis. Examples are bath salts, cocaine, caffeine, methamphetamine, ecstasy, ADHD drugs, thyroid meds (rarely), albuterol
- **Tricyclic Antidepressants** (**TCA**): Seizures, dysrhythmias, hypotension, decreased mental status or coma

PEARLS

- Pulse oximetry may NOT be accurate for toxic inhalational patients
- Route, time, quantity and substance(s)
- Reason if known: intentional or accidental
- Ask bystanders what medications are present/accessible

2.19A SEIZURE – ADULT

EMT

1. Provide ventilatory support as required
2. Obtain blood glucose level via glucometer (if approved by medical director and OEMS)
    - If blood glucose < 60, or low as reported from bystanders, with associated altered mental status, refer to Diabetic Emergencies (Hypoglycemia) – Adult
3. Call for ALS intercept, if available for the following patients
    - First time seizure
    - Seizure lasting greater than 2-minutes
    - Multiple seizures

PARAMEDIC & MICN

4. Do not delay administration of medications to establish vascular access
5. Check blood glucose. If the blood glucose reading is < 60 mg/dl, see Diabetic Emergencies (Hypoglycemia) – Adult
6. Establish vascular access
7. For seizure lasting > 2 minutes or recurrent seizures without return to baseline mental state, administer:
    - Midazolam 5 mg IM or IN; (Note: a 5 mg/mL concentration is recommended for IM/ intranasal administration.);

      OR
    - Midazolam 5 mg IV;

      OR
    - Lorazepam 2 mg IV;

      OR
    - Diazepam 5 mg IV (max cumulative dose 10 mg)

    ❖ May repeat benzodiazepine dose q 5 minutes, for a max total 3-doses, for active seizure
8. After benzodiazepine has been administered, consider:
    - levetiracetam (e.g. Keppra) 2-4 gm IV push administered over 2-5 minutes
9. For suspected eclampsia (seizures in the third trimester of pregnancy or up to 6-weeks postpartum)
    - Administer magnesium sulfate, 4 g (mixed in crystalloid solution) IV push over 5 minutes

- If the patient has an implanted vagus nerve stimulator (VNS), suggest that family use the VNS magnet to activate the VNS and assist if required
- To activate the VNS, move the magnet across the skin directly on the VNS device 2-3 times, and then remove the magnet. If unsuccessful, repeat every 3 – 5 minutes for a total of 3 times

PEARLS

– Do not attempt to restrain the patient; protect the patient from injury

– History preceding a seizure is very important. Find out what precipitated the seizure (e.g., medication non-compliance, active infection, seizure history, trauma, hypoglycemia, alcohol/substance abuse, third-trimester pregnancy or post partum)

– Consider tricyclic antidepressant overdose as etiology for seizure. Poisoning/Substance Abuse/Overdose – Adult

– Post partum patients may experience eclamptic seizures up to several weeks after giving birth

– Status epilepticus is defined a continuous seizure lasting more than 30 min, or two or more seizures without full recovery of consciousness between any of them. This is a true emergency requiring airway monitoring, treatment (including benzodiazepines), and transport

– Any seizure still present upon EMS arrival and/or lasting more than 2 minutes should be treated with benzodiazepines

– Diazepam and lorazepam are not effective when administered IM and should be given IV

– The preferred initial dose of benzodiazepine is midazolam IM/IN. After initial dose, establish an IV in case additional medication doses are needed. If an IV is already established, administer benzodiazepine IV

– Providers should utilize caution to avoid misidentifying conditions such as Parkinson's, chills, etc. as seizures

2.19P SEIZURE – PEDIATRIC

EMT

1. Provide ventilatory support as required

2. Obtain blood glucose level via glucometer (**if approved by Agency Medical Director and OEMS**)

    - If blood glucose < 60, or low as reported from bystanders, with associated altered mental status, refer to Diabetic Emergencies (Hypoglycemia) – Pediatric

3. May obtain the patient's temperature for suspected febrile seizure (rectal route preferred, as appropriate) if available

4. If patient has unstable vital signs, first time, non-febrile seizure, seizure lasting 2-minutes or greater, or multiple seizures, call for ALS intercept. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

5. Do not delay administration of medications to establish vascular access

6. Check blood glucose. If the blood glucose reading is < 60 mg/dl, see Diabetic Emergencies (Hypoglycemia) – Pediatric

7. For seizure lasting > 2 minutes administer:

    - Midazolam 0.2 mg/kg IM or IN (single maximum dose 10 mg) (Note: a 5 mg/mL concentration is recommended for IM/IN administration)

      OR

    - Midazolam 0.1 mg/kg IV/IO (single maximum dose 4 mg)

      OR

    - Lorazepam 0.1 mg/kg IV/IO (single maximum dose 4 mg)

      OR

    - Diazepam 0.1 mg/kg IV/IO (single maximum dose 4 mg)

8. **Contact Medical Command** if additional dosing is required

COMMUNICATION FAILURE – ALS ONLY

9. For continued seizure activity, any of the above medications may be repeated once after 5 minutes

- If the patient has an implanted vagus nerve stimulator (VNS), suggest that family use the VNS magnet to activate the VNS and assist if required
- To activate the VNS, move the magnet across the skin directly on the VNS device 2-3 times, and then remove the magnet. If unsuccessful, repeat every 3 – 5 minutes for a total of 3 times

PEARLS

- Do not attempt to restrain the patient; protect the patient from injury

- History preceding a seizure is very important. Find out what precipitated the seizure (e.g., medication non-compliance, active infection, seizure history, trauma, hypoglycemia, alcohol/substance abuse, third-trimester pregnancy or post partum)

- Status epilepticus is defined a continuous seizure lasting more than 30 min, or two or more seizures without full recovery of consciousness between any of them. This is a true emergency requiring airway monitoring, treatment (including benzodiazepines), and transport

- Any seizure still present upon EMS arrival and/or lasting more than 2 minutes should be treated with benzodiazepines

- Diazepam and lorazepam are not effective when administered IM and should be given IV

- The preferred initial dose of benzodiazepine is midazolam IM/IN. After initial dose, establish an IV in case additional medication doses are needed. If an IV is already established, administer benzodiazepine IV

2.20A SEPSIS – ADULT

SCREENING AND IDENTIFYING POSSIBLE SEPSIS:

– Suspected infection AND two of the following:

  - Temperature < 36°C or > 38°C (< 96.8°F or > 101°F)
  - Heart rate > 90 bpm
  - Respiratory rate > 20 bpm
  - Systolic blood pressure (SBP) < 90 mmHg OR Mean Arterial Pressure (MAP) < 65mmHg
  - New onset altered mental status OR increasing mental status change with previously altered mental status
  - Lactate ≥ 2 If available

– IF SEPSIS SCREENING IS POSITIVE, Follow local protocol for notification

EMT

1. Administer oxygen at a rate to keep oxygen saturation ≥ 94%
2. Do not delay transport
3. Obtain blood glucose level via glucometer (if approved by medical director and OEMS)
   - If blood glucose < 60, or low as reported from bystanders, with associated altered mental status, refer to Diabetic Emergencies (Hypoglycemia) – Adult
4. If patient has unstable vital signs or has a positive Sepsis screen, call for ALS intercept. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

5. Establish vascular access. Do not delay transport to start IV
6. Check finger stick glucose
7. For suspected Sepsis, may administer crystalloid solution 500 mL bolus
8. For patients with a systolic blood pressure of less than 90 mmHg, or a shock index > 1, see Shock – Adult
9. Obtain serum lactate level (if available)

PEARLS

– Sepsis is a systemic inflammatory response syndrome due to infection, often resulting in significant morbidity and mortality. Septic shock is diagnosed if there is refractory hypotension that does not respond to fluid therapy.

– Severe septic shock has a 50% mortality rate and must be treated aggressively

- Suspect infection in patients with cough, an indwelling catheter, open wounds, paralysis, recent antibiotic use, or bedridden/immuno-compromised individuals.

- Early goal directed therapy consisting of IV fluid administration and early antibiotics reduces mortality in septic patients.

- Notifying Emergency Departments of patients with possible septic shock will improve early initiation of goal directed therapy.

- When administering vasopressors, monitor IV site for signs of extravasation.

- ETCO2 generally correlates with Sepsis

Shock Index (SI) = Heart Rate/ Systolic Blood Pressure

Shock index been studied in patients experiencing shock from a variety of causes: trauma, hemorrhage, myocardial infarction, pulmonary embolism, sepsis, and ruptured ectopic pregnancy. While HR and SBP have traditionally been used to characterize shock in these patients, they often appear normal in the compensatory phase of shock and can be confounded by factors such as medications administered during RSI

SI > 1 has been widely found to predict post-intubation hypotension and increased risk of mortality and other markers of morbidity

2.20P SEPSIS – PEDIATRIC

SCREENING AND IDENTIFYING POSSIBLE SEPSIS:

– Suspected infection – YES

– Temperature < 36 °C or > 38°C (< 96.8°F or > 100.4°F)

– Heart rate and respiratory rate will be outside of normal rage for each age group. Pediatric Vital Signs

AND at least one of the following indications of end organ dysfunction:

- Altered mental status
- Capillary refill time < 1 second (flash) or > 3 seconds
- Mottled cool extremities
- Hypoxia
- Hypotension or poor perfusion
- Decreased urine output
- Lactate ≥ 2 if available

IF SEPSIS SCREENING IS POSITIVE, follow local protocol for notification

EMT

1. Monitor and maintain airway and breathing as these may change precipitously
2. Administer oxygen at a rate to keep oxygen saturation ≥94%
3. Do not delay transport
4. If patient has unstable vital signs or has a positive Sepsis screen, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

5. Establish vascular access. Do not delay transport to start IV.
6. Check blood sugar.
7. IV fluids should be titrated to attaining normal capillary refill, peripheral pulses, and level of consciousness:
   - Administer fluid bolus of crystalloid solution 20 mL/kg of by syringe push method; reassess patient immediately after completion of bolus.
   - If inadequate response to initial fluid bolus, administer a second bolus of crystalloid solution 20 mL/kg bolus of by syringe push method; reassess patient immediately after completion of bolus.
   - If inadequate response to second fluid bolus, administer a third bolus of crystalloid solution 20 mL/kg bolus of by syringe push method; reassess patient immediately after completion of bolus.

Note: Reassess patient between each bolus for improving clinical signs and signs of fluid overload (rales, increased work of breathing, or increased oxygen requirements)

8. Obtain serum lactate level (if available and trained) 
9. If there is no response after 3 fluid boluses (60 ml/kg), administer; (see Shock – Pediatric)
    - Norepinephrine 0.05 mcg/kg/min via pump, titrated to effect (preferred), maximum dose of 2 mcg/kg/min

      OR
    - Epinephrine 0.05 mcg/kg/min via pump, titrated to effect: maximum dose 0.3 mcg/kg/min

PEARLS

- Sepsis is a systemic inflammatory response syndrome due to infection. Frequent causes of septic shock include urinary, respiratory, or gastrointestinal infections and complications from catheters and feeding tubes. Patients who are immuno-compromised are also susceptible to sepsis
- Septic shock has a high mortality and is one of the leading causes of pediatric mortality
- Aggressive IV fluid therapy and early antibiotics significantly reduces mortality
- When administering vasopressors, monitor IV site for signs of extravasation

2.21A SHOCK – ADULT

Any patient with signs, symptoms, and history suggesting inadequate tissue perfusion should be considered to be in shock.

Make every effort to determine and treat the underlying cause. Regardless of etiology, shock patients should be transported immediately to the nearest appropriate facility for definitive care. Provide advanced notification to hospitals on all patients with suspected shock.

Etiology of Shock

- **Cardiogenic Shock**: History of cardiac surgery, rhythm disturbances, or post cardiac arrest. Assess for acute MI and pulmonary edema
    - Signs & Symptoms of cardiogenic shock: chest pain, shortness of breath, crackles, JVD, hypotension, tachycardia, diaphoresis
- **Distributive Shock**: Anaphylaxis, see Allergic Reaction/Anaphylaxis – Adult, neurogenic shock, sepsis, see Sepsis. Assess for fever and signs of infection
    - Signs & Symptoms of neurogenic shock: sensory and/or motor loss, hypotension, bradycardia versus normal heart rate, warm, dry skin
- **Hypovolemic Shock**: Dehydration, volume loss, or hemorrhagic shock
    - Signs & Symptoms of hypovolemic shock: tachycardia, tachypnea, hypotension, diaphoresis, cool skin, pallor, flat neck veins
- **Obstructive Shock**: Determine tension pneumothorax, pulmonary embolism, and cardiac tamponade

Signs and symptoms of tension pneumothorax: asymmetric or absent breath sounds, respiratory distress or hypoxia, signs of shock including tachycardia and hypotension, JVD, possible tracheal deviation upon palpation above the sternal notch (late sign)

EMT

1. Keep the patient supine. Do not elevate feet
2. Prevent heat loss by covering with warm blankets if available and if the patient is not febrile

CARDIOGENIC SHOCK

3. Assess for pulmonary edema and/or congestive heart failure (CHF)
    - If CHF is suspected, request ALS Intercept

DISTRIBUTIVE SHOCK

3. If patient has history of adrenal insufficiency, refer to Adrenal Insufficiency
4. If neurogenic shock is suspected, utilize spinal motion restriction

HYPOVOLEMIC SHOCK

3. Control active bleeding using direct pressure, pressure bandages, tourniquets (commercial tourniquets preferred), or hemostatic bandage
    - Refer to Tourniquet & Hemostatic Agent

3. Administer warm crystalloid solution, if feasible
4. Obtain serum lactate level (if available and trained)

HYPOVOLEMIC SHOCK (Hemorrhagic)

5. See Blood Administration 4.9
6. Administer crystalloid solution to maintain adequate mental status, peripheral perfusion and to maintain systolic blood pressure >90 mm Hg in 500 mL boluses
    - Total volume should not exceed 1,000 mL
    - **Contact Medical Command**  after first 1,000 mL

CARDIOGENIC SHOCK (Medical Etiology)

5. Assess for signs of pulmonary edema, if present
    - CPAP/BiPAP
6. Administer push dose medications for short transport times or as bridge to infusion
    - Epinephrine: administer 5-20 mcg IV/IO every 2-5 minutes to maintain SBP >90

      OR
    - Norepinephrine 16-32 mcg IV/IO

      THEN start infusion
    - Norepinephrine IV/IO via infusion pump 1 – 30 mcg/min

      OR
    - Epinephrine IV/IO via infusion pump 2 – 10 mcg/min titrated to effect

DISTRIBUTIVE SHOCK

5. Administer crystalloid solution to maintain systolic blood pressure >90 mm Hg in 500 mL boluses.
    - Total volume should not exceed 2,000 mL
6. For suspected Sepsis
    - Administer push dose medications for short transport times or as bridge to infusion:
        - Epinephrine: administer 5-20 mcg IV/IO every 2-5 minutes to maintain SBP >90

          OR
        - Norepinephrine 16-32 mcg IV/IO

          OR
        - Phenylephrine: administer 50-200 mcg IV/IO every 2-5 minutes to maintain SBP >90

          THEN Start infusion:

- Norepinephrine IV/IO via infusion pump 1 – 30 mcg/min (preferred agent)

  OR

- Epinephrine IV/IO via infusion pump 2 – 10 mcg/min titrated to effect

OBSTRUCTIVE SHOCK

5. If tension pneumothorax suspected:
   - Needle decompression. See Needle Thoracostomy

PEARLS

For patients with uncontrolled hemorrhagic or penetrating torso injuries:

– Restrict IV fluids to maintain BP of 80-90 systolic. Delaying aggressive fluid resuscitation until operative intervention may improve the outcome. Operative intervention must be available within 30-45 minutes to utilize this strategy

– Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur

– Several mechanisms for worse outcomes associated with IV fluid administration have been suggested, including dislodgement of clot formation, dilution of clotting factors, and acceleration of hemorrhage caused by elevated blood pressure

2.21P SHOCK – PEDIATRIC

Any patient with signs, symptoms, and history suggesting inadequate tissue perfusion should be considered to be in shock

Make every effort to determine and treat the underlying cause. Regardless of etiology, shock patients should be transported immediately to the nearest appropriate facility for definitive care. Provide advanced notification to hospitals on all patients with suspected shock

Etiology of Shock

- **Cardiogenic Shock**: History of cardiac surgery, rhythm disturbances, or post cardiac arrest. Assess for acute MI and pulmonary edema
    - Signs & Symptoms of cardiogenic shock: chest pain, shortness of breath, crackles, JVD, hypotension, tachycardia, diaphoresis
- **Distributive Shock**: Anaphylaxis, see Allergic Reaction/Anaphylaxis – Pediatric, neuro-genic shock, sepsis, see Sepsis. Assess for fever and signs of infection
    - Signs & Symptoms of neurogenic shock: sensory and/or motor loss, hypotension, bradycardia versus normal heart rate, warm, dry skin
- **Hypovolemic Shock**: Dehydration, volume loss, or hemorrhagic shock
    - Signs & Symptoms of hypovolemic shock: tachycardia, tachypnea, hypotension, diaphoresis, cool skin, pallor, flat neck veins
- **Obstructive Shock**: Determine tension pneumothorax, pulmonary embolism, and cardiac tamponade.
    - Signs and symptoms of tension pneumothorax: asymmetric or absent breath sounds, respiratory distress or hypoxia, signs of shock including tachycardia and hypotension, JVD, possible tracheal deviation upon palpation above the sternal notch (late sign)

EMT

1. Keep the patient supine. Do not elevate feet
2. Prevent heat loss by covering with warm blankets if available and if the patient is not febrile

CARDIOGENIC SHOCK

3. Assess for pulmonary edema and/or congestive heart failure (CHF)
4. If CHF is suspected, request ALS
5. Provide 15l oxygen NRB

DISTRIBUTIVE SHOCK

3. If patient has history of adrenal insufficiency, refer to Adrenal Insufficiency
4. If anaphylaxis is suspected, refer to Allergic Reaction/Anaphylaxis
5. If septic shock is suspected, refer to Sepsis
6. If neurogenic shock is suspected, utilize spinal motion restriction

HYPOVOLEMIC SHOCK

3. Control active bleeding using direct pressure, pressure bandages, tourniquets (commercial tourniquets preferred), or hemostatic bandage
4. Refer to Tourniquet & Hemostatic Agent

PEARLS

For patients with uncontrolled hemorrhagic or penetrating torso injuries:

- **Contact Medical Command** to discuss restriction of IV fluids.
  - Delaying aggressive fluid resuscitation until operative intervention may improve the outcome. Operative intervention must be available within 30-45 minutes to utilize this strategy. In rural areas with longer transport times, restricting fluid may result in exsanguination and irreversible shock
- Patients should be reassessed frequently, with special attention given to the lung examination to ensure volume overload does not occur
- Several mechanisms for worse outcomes associated with IV fluid administration have been suggested, including dislodgement of clot formation, dilution of clotting factors, and acceleration of hemorrhage caused by elevated blood pressure

PARAMEDIC & MICN

3. Administer warm crystalloid solution, if feasible. Crystalloid solution administration should be based on physiologic signs rather than routine IV fluid administration in all patients
   - Physiologic, therapeutic end points (in order of importance) are:
     - Normal mental status
     - Capillary refill
     - Normal pulses and heart rate
     - No difference between peripheral and central pulses
     - Warm extremities, and
     - THEN normal blood pressure, see, Pediatric Vital Signs
   - Consider crystalloid solution administration via infusion pump Obtain serum lactate level (if available and trained)

HYPOVOLEMIC SHOCK

4. Administer ***crystalloid solution*** in 20 mL/kg bolus over < 15 min to improve clinical condition
   - May repeat to a maximum 60 mL/kg

CARDIOGENIC SHOCK

4. Establish IV/IO to keep vein open
5. Administer crystalloid solution in 10 mL/kg bolus over < 15 min and repeat as tolerated

- Evaluate lung sounds after each fluid bolus to ensure the absence of pulmonary edema
- If Hypotensive administer:
  - Norepinephrine IV/IO via infusion pump 0.05 mcg/kg/min titrated to effect

    OR
  - Epinephrine IV/IO via infusion pump 0.05 mcg/kg/min titrated to effect

DISTRIBUTIVE SHOCK

4. Administer crystalloid solution in 20 mL/kg bolus over < 15 min to improve clinical condition.
   - May repeat to a maximum 60 mL/kg.
     - Refer to therapeutic endpoints above
   - If still hypotensive:
     - Norepinephrine IV/IO via infusion pump 0.05 mcg/kg/min titrated to effect

       OR
     - Epinephrine IV/IO via infusion pump 0.05 mcg/kg/min titrated to effect
5. For suspected Anaphylaxis, see Anaphylaxis
6. For suspected Sepsis: Sepsis
7. For patient with history of adrenal insufficiency, assist the patient/caregiver in giving the patient his or her own medications, as prescribed
   - Refer to Adrenal Insufficiency

OBSTRUCTIVE SHOCK

6. If tension pneumothorax suspected:
   - Needle decompression. See Needle Thoracostomy

2.22A SMOKE INHALATION – ADULT

EMT

1. Oxygen 100% via non-rebreather mask or BVM
2. Decontamination concurrent with initial resuscitation
3. If a carbon monoxide (CO) oximeter is available, obtain carbon monoxide levels
4. If a measuring device is available, obtain atmospheric levels of carbon monoxide (CO) and cyanide (CN)
5. If altered mental status, check blood sugar if available
6. See Burn/Electrocution/Lightening – Adult & Pediatric 
7. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC

8. Consider early advanced airway control in patients with suspected upper or lower airway burns or severe smoke inhalation. See Airway Management – Adult
9. If you have a patient with a history of smoke exposure and an altered level of consciousness and/or hemodynamic or respiratory compromise, establish IV access and administer, if available:
    - Hydroxocobalamin via use of Cyanokit (if available):
        - Obtain labs prior to administration if allowed per local protocol
        - Reconstitute: Place the vial of hydroxocobalamin in an upright position; add 0.9% NaCl to the vial (200 mL for 5 g vial or 100 mL for 2.5 g vial) using the transfer spike. Fill to the line
        - Rock vial for at least 60 seconds (do not shake)
        - Using vented intravenous tubing, administer IV over 15 minutes
        - Depending on clinical response, a second dose may be required

- Oxygen saturation may be inaccurate in patients exposed to carbon monoxide or cyanide
- CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital, based on their presenting signs and symptoms
- Do not administer other drugs concurrently in same IV as hydroxocobalamin

PEARLS

– Smoke is a dangerous mixture of toxic gases and suspended chemicals resulting from combustion. Smoke inhalation is the result of inhaling these heated components. While it may be impossible to predict exactly what components of combustion are inhaled, cyanide (CN) and carbon monoxide (CO) are common elements found in smoke and should be suspected in all smoke inhalation victims

– Cyanide exposure should be strongly considered in the smoke inhalation patient

- Symptoms: headache, confusion, dyspnea, chest tightness, nausea

- Signs: soot in the nose or mouth, change in level of consciousness, seizure, dilated pupils, coughing, tachypnea and hypertension (early), bradypnea and hypotension (late), shock, vomiting

2.22P SMOKE INHALATION – PEDIATRIC

EMT

1. Oxygen 100% via non-rebreather mask or BVM
2. Decontamination concurrent with initial resuscitation
3. If a carbon monoxide (CO) oximeter is available, obtain carbon monoxide levels
4. If a measuring device is available, obtain atmospheric levels of carbon monoxide (CO) and cyanide (CN)
5. If altered mental status, see Altered Mental Status – Pediatric
6. See Burn/Electrocution/Lightening – Adult & Pediatric
7. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC

8. Consider early advanced airway control in patients with suspected upper or lower airway burns or severe smoke inhalation. See Airway Management – Pediatric
    - Administer epinephrine 5 mg (5 mL) in 3 mL 0.9% NaCl via nebulizer for symptomatic patients, especially if unable to obtain advanced airway
9. If you have a patient with a history of smoke exposure and an altered level of consciousness and/or hemodynamic or respiratory compromise, establish IV access and administer, if available:
    - Hydroxocobalamin via use of Cyanokit (if available):
        - Obtain labs prior to administration if allowed per local protocol
        - Reconstitute: Place the vial of hydroxocobalamin in an upright position; add 0.9% NaCl to the vial (200 mL for 5 g vial or 100 mL for 2.5 g vial) using the transfer spike. Fill to the line
        - Rock vial for at least 60 seconds (do not shake)
        - Using vented intravenous tubing, infuse 70 mg/kg as per Pediatric Vital Signs over 15 minutes
        - Depending on clinical response, a second dose may be required

- Oxygen saturation may be inaccurate in patients exposed to carbon monoxide or cyanide
- CO oximeter devices may yield inaccurate low/normal results for patients with CO poisoning. All patients with probable or suspected CO poisoning should be transported to the nearest appropriate hospital, based on their presenting signs and symptoms

- Do not administer other drugs concurrently in same IV as hydroxocobalamin

PEARLS

- Smoke is a dangerous mixture of toxic gases and suspended chemicals resulting from combustion. Smoke inhalation is the result of inhaling these heated components. While it may be impossible to predict exactly what components of combustion are inhaled, cyanide (CN) and carbon monoxide (CO) are common elements found in smoke and should be suspected in all smoke inhalation victims
- Cyanide exposure should be strongly considered in the smoke inhalation patient
- Symptoms: headache, confusion, dyspnea, chest tightness, nausea
- Signs: soot in the nose or mouth, change in level of consciousness, seizure, dilated pupils, coughing, tachypnea and hypertension (early), bradypnea and hypotension (late), shock, vomiting

2.23 STROKE – ADULT & PEDIATRIC

EMT

1. Perform Stroke Assessment
    - B.E. F.A.S.T.
2. If positive, perform R.A.C.E. Scale evaluation for *Large Vessel Occlusion*

For R.A.C.E. score > 5, consider transporting patient directly to a Comprehensive Stroke Center based on local protocol

3. Establish Stroke Alert Criteria and notify receiving hospital of "Stroke Alert and Time Last Known Well" if indicated
4. For symptomatic patients:
    - Administer oxygen to maintain SPO^2 between 94% - 99%
    - Check blood glucose level. (if approved by Agency Medical Director and NJ OEMS)
        - If glucose if < 60 mg/dl. See Diabetic Emergencies (Hypoglycemia) – Adult or Diabetic Emergencies (Hypoglycemia) – Pediatric
    - Elevate head of stretcher to 30° (unless patient requires spinal motion restriction);
    - Minimize on-scene time. Do not delay for ALS intercept
    - Rapid transport to the most appropriate facility based on regional transport agreements
5. Try to obtain a phone number for the patient's family and/or witness to the event
6. Call for ALS intercept

PARAMEDIC & MICN

7. Establish vascular access enroute to stroke center when possible
    - Check blood glucose level. Correct glucose if < 60 mg/dl. See Diabetic Emergencies (Hypoglycemia) – Adult or Diabetic Emergencies (Hypoglycemia) – Pediatric
8. If time permits, Obtain 12-leag ECG
9. If time permits, start thrombolytic questionnaire
10. If time permits, collect lab specimens based on local procedures
11. Ensure "Stroke Alert" has been reported to receiving facility

PEARLS

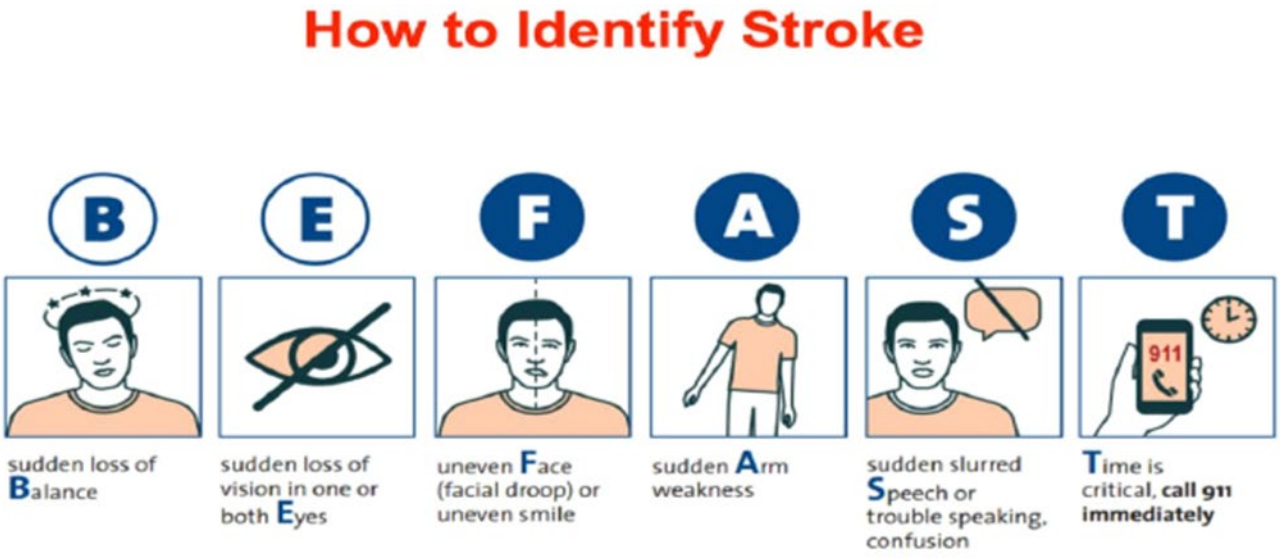
– Consider transporting a witness, family member or caregiver with the patient to verify the time of the onset of stroke symptoms

– For wake up stroke, check if the patient had gotten up an been at baseline during the night

– Suspect stroke in patients with any of the following new symptoms or complaints:

- Acute visual disturbance
- Altered mental status
- Difficulty with balance or coordination
- Difficulty with speech or understanding
- Severe headache
- Weakness/numbness left or right

– Determine stroke mimics including
  - Hypoglycemia
  - Intoxication
  - Seizure
  - Sepsis
  - Migraine



American Heart Association.
Mission:Lifeline®
Stroke

Instructions & Scoring:

Rapid Arterial oCclusion Evaluation (RACE) Stroke Severity Scale

Stroke is a leading cause of serious long-term disability and the fifth leading cause of death in the United States. **Learning to recognize stroke, rate its severity, and transport a patient to the proper hospital is a fundamental contribution EMS can make in stroke management.** Several stroke severity scales have been developed to help EMS do just this.

If a prehospital stroke screen is positive, EMS providers should assess severity by using a stroke severity scale. The RACE Stroke Severity Scale is one of several nationally recognized stroke severity scale options. Like all stroke severity scales, **the purpose of the RACE Scale is to help EMS identify patients whose symptoms may be due to a Large Vessel Occlusion (LVO), and may benefit from mechanical thrombectomy – an endovascular therapy shown to improve outcomes for select LVO patients.**

Item	Instruction	Result	Score
Facial Palsy	Ask the patient to show his or her teeth, or to smile.	Absent facial palsy (Facial movement symmetrical) Mild facial palsy (Facial movement slightly asymmetrical) Moderate/severe facial palsy (Facial movement completely asymmetrical)	0 1 2
Arm Motor Function	Patient extends his or her arms, to 90 degrees if sitting or 45 degrees if lying on his or her back*.	Normal/mild arm motor dysfunction (Upholds both arms ≥10 seconds) Moderate arm motor dysfunction (Upholds either arm <10 seconds) Severe arm motor dysfunction (Unable to raise either arm against gravity)	0 1 2
Leg Motor Function	Patient separately raises his or her legs 30 degrees from the supine (lying on back) position*.	Normal/mild leg motor dysfunction (Upholds each leg ≥5 seconds) Moderate leg motor dysfunction (Upholds either leg <5 seconds) Severe leg motor dysfunction (Unable to raise either leg against gravity)	0 1 2
Head & Gaze Deviation	Ask the patient to look to the left, then to the right.	Absent: head & gaze deviation absent (Eye movement to both sides w/o head deviation) Present: head & gaze deviation present (Patient's eyes or head deviate to one side)	0 1
Aphasia (if right hemiparesis) -OR- Agnosia (if left hemiparesis)	<u>If right hemiparesis or without motor impairment:</u> First ask the patient to close his or her eyes; Second ask the patient to make a fist with his or her left hand. -OR- <u>If left hemiparesis:</u> First show the patient his or her left arm and ask, "Whose arm is this?"; Second ask the patient, "Can you move your arms and clap your hands?"	Absent aphasia (Performs both tasks correctly) Moderate aphasia (Performs one of two tasks correctly) Severe aphasia (Unable to perform either task correctly) -OR- Absent agnosia (Recognizes arm and attempts to move weakened arm) Moderate agnosia (Does not recognize arm <u>or</u> is unaware of arm weakness) Severe agnosia (Does not recognize arm <u>and</u> is unaware of arm weakness)	0 1 2 -OR- 0 1 2
Total Score			**= Sum of items**

*If the patient cannot lift his or her limbs, raise his or her limbs. Score according to the time the patient can maintain his or her limbs against gravity, without touching the bed or surface.

Pérez de la Ossa N, Carrera D, Gorchs M, et al. Design and validation of a prehospital stroke scale to predict large arterial occlusion: The Rapid Arterial Occlusion Evaluation Scale. Stroke. 2014; 45: 87-91.

3.0 ACUTE CORONARY SYNDROME - ADULT

All patients with complaints of chest pain should not automatically be treated with aspirin and nitrates. Determine the likelihood of ACS based on the nature of the symptoms, the patient's age, cardiac risk factors, past medical history, etc

EMT

1. Administer oxygen only to patients with dyspnea, hypoxia (O2 saturation <94%), or signs of heart failure at a rate to keep O2 saturation ≥ 94%
2. Administer aspirin 324 mg PO (chewable). (Note: If patient has taken a partial dose, 81 mg, administer remaining 243 mg. Total dose taken should be 324 mg)
3. Facilitate administration of the patient's own nitroglycerin every 3-5 minutes while symptoms persist and systolic BP remains ≥100 mmHg, to a total of 3 doses
4. Call for ALS intercept, if available
    - If ALS in unavailable, transport to an interventional cardiac catheterization capable hospital if greater than 10-minutes

PARAMEDIC

5. Monitor ECG rhythm and obtain 12-lead ECG
6. Consider Nitroglycerin 0.4 mg SL every 3-5 minutes while symptoms persist and if systolic BP remains ≥100 mmHg
7. Treat dysrhythmias as needed; refer to the appropriate protocol
8. Notify receiving facility if "STEMI" is confirmed

COMMUNICATION FAILURE

9. For chest discomfort unresponsive to nitrates, administer analgesia: Pain Management - Adult
10. Consider IV nitroglycerin at 10 mcg/min if symptoms persist after 3rd SL nitroglycerin and SBP > 100 (it is recommended two (2) IV lines or equivalent in place and the IV nitroglycerin must be on an infusion pump)

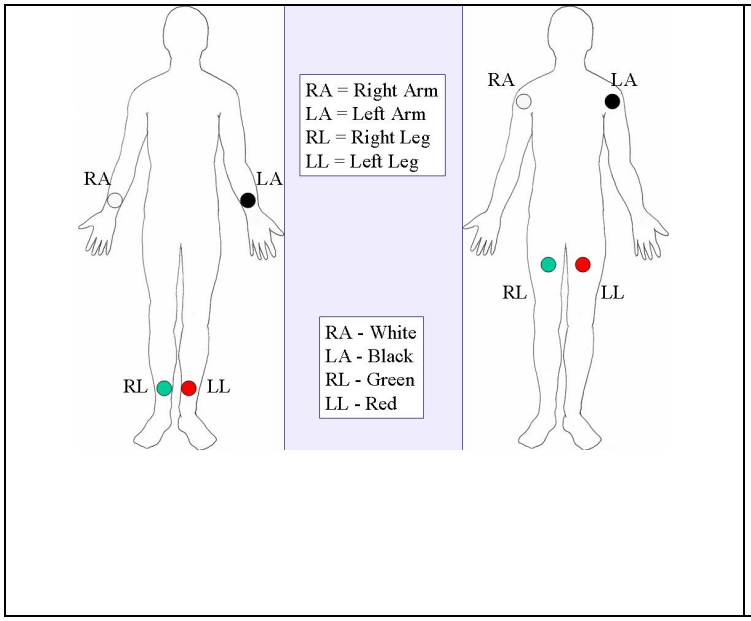
- Avoid nitroglycerin in any patient who has used a phosphodiesterase inhibitor for erectile dysfunction and pulmonary hypertension, such as sildenafil (Viagra, Revatio) or vardenafil (Levitra, Staxyn) within 24 hours, or tadalafil (Cialis, Adcirca) within 48 hours. Also avoid use in patients receiving intravenous prostacyclins for pulmonary hypertension
- Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement because these patients require adequate RV preload

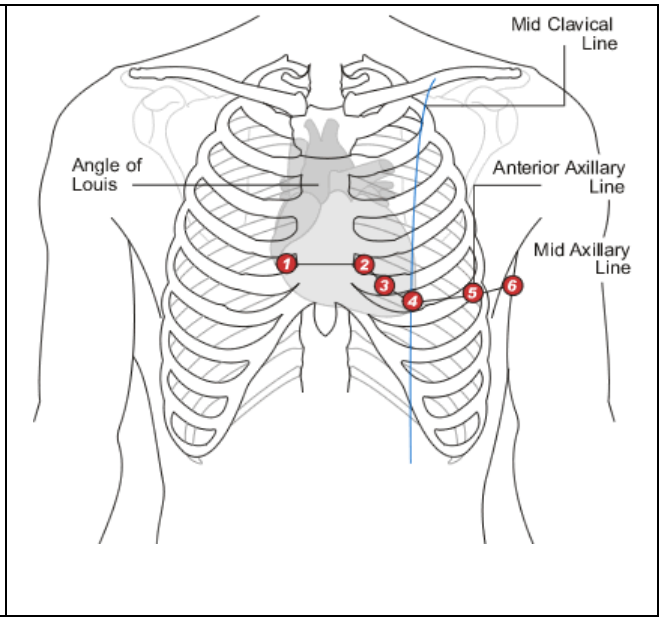
PEARLS

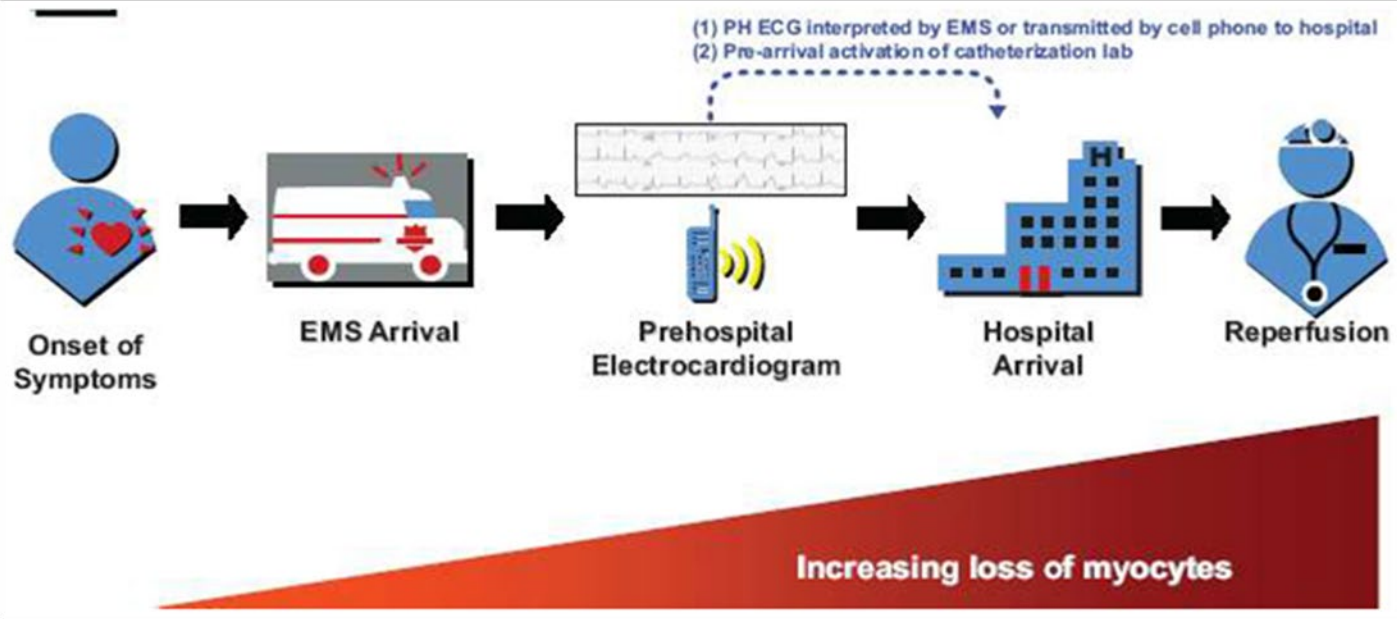
– Transmission of 12-lead ECG and/or communication with receiving facility is critical to the activation of a STEMI system

– If Paramedic or medical command interpretation, or automated interpretation states: "Acute MI" or "Meets ST Elevation MI Criteria," notify the receiving facility of a "STEMI ALERT"

– Administration of aspirin has been shown to decrease mortality in Acute Coronary Syndrome
  – Administer aspirin to every patient with suspected acute coronary syndrome unless they have:
  – History of anaphylaxis to aspirin or NSAIDs, OR
  – Evidence of active gastrointestinal or other internal bleeding
  – Patients with acute coronary syndrome (especially women, patients with a history of diabetes, and the elderly) may present with signs and symptoms other than chest pain including diaphoresis, shortness of breath, weakness, syncope and nausea
  – Consider obtaining serial 12-lead EKG's to monitor for changes or progression
  – The benefits of nitroglycerin are much less significant in ACS as compared to CHF and Pulmonary Edema







- Special caution must be utilized when administering sedatives or analgesics to hypotensive patients
- Close hemodynamic monitoring is required
- For calcium chloride administration, ensure IV patency and do not exceed 1 mL per minute. Flush with crystalloid solution before and after administration. **Contact Medical Command**

3.1A BRADYCARDIA – ADULT

EMT

1. Determine the underlying causes of bradycardia (e.g., hypoxia, hypoglycemia, toxicologic and hypothermia)
2. Call for ALS intercept if serious signs or symptoms (hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort, or acute heart failure). Do not delay transport

PARAMEDIC & MICN

3. A precipitously decreasing heart rate is often secondary to respiratory failure - if suspected see Routine Patient Care; Airway and Breathing or Crashing Medical Patient in Extremis
4. Monitor ECG rhythm and obtain 12-lead ECG
5. Establish vascular access
6. Treat hypovolemia. Administer 500 mL crystalloid solution bolus
7. If serious signs or symptoms (hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort, or acute heart failure):
    - Administer atropine 1 mg IV/IO every 3-5 minutes to a maximum of 3 mg
8. If atropine is ineffective:
    - Initiate transcutaneous pacing
        - Administer anxiolysis: See Sedation

          OR
        - Administer analgesia prior to or during transcutaneous pacing, if feasible: See Sedation
        - Monitor $ETCO_2$ for all administered analgesics and sedatives

COMMUNICATION FAILURE – ALS ONLY

9. If pacing is ineffective, administer epinephrine infusion at 2-10 mcg/min IV/IO, titrated to effect
10. Other Causes:
    - For symptomatic beta-blocker or calcium channel blocker overdose, administer glucagon 2 mg IV/IO over 3 -5 minutes. May repeat up to 10 mg: if effective, place on infusion 1-5 mg/hr IV/IO via pump
    - For symptomatic calcium channel blocker overdose, beta-blocker toxicity or hyperkalemia/renal failure, administer calcium chloride 500-1,000 mg (5-10 mL of a 10% solution) IV/IO over 10 minutes
        - May repeat as needed

3.1P BRADYCARDIA – PEDIATRIC

EMT

1. Administer 100% oxygen.
2. Treat the underlying causes of bradycardia (e.g., hypoxia, hypoglycemia and hypothermia).
    - Bradycardia is often secondary to respiratory distress/hypoxia in pediatrics
3. Begin/continue CPR if heart rate is <60 bpm **AND** the child shows signs of poor systemic perfusion with hypoperfusion despite adequate ventilation and oxygenation.
4. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC

For Bradycardia with Serious Signs and Symptoms:

5. Check blood sugar
    - If low, proceed to: Hypoglycemia
6. Establish IV/IO access via most expedient route
7. Treat hypovolemia. Administer 20 mL/kg crystalloid solution bolus
    - If child has a cardiac history, administer crystalloid solution 10 ml/kg
8. Epinephrine 0.01 mg/kg IV/IO slow push (0.1 mL/kg of 1:10,000) every 3-5 minutes (max single dose 1 mL). If no IV/IO access, may give Epinephrine ET dose 0.1 mg/kg (0.1 mL/kg of 1:1,000)
9. Administer *atropine* 0.02 mg/kg IV/IO for increased vagal tone or AV blocks, may repeat once (minimum dose 0.1mg; maximum single dose 0.5 mg)
11. If atropine is ineffective:
    - Initiate transcutaneous pacing.
        - Administer anxiolysis: See Sedation

          OR
        - Administer analgesia prior to or during transcutaneous pacing, if feasible: See Sedation
        - Monitor $ETCO_2$ for all administered analgesics and sedatives

PEARLS

– In children, bradycardia almost always reflects hypoxia, rather than a primary cardiac problem. It is a pre-arrest rhythm, and the prognosis is poor if left untreated. Immediate delivery of high-flow oxygen and assisted ventilation are essential. Untreated bradycardia will quickly cause shock, hypotension and death

– Combine age-specific heart rates with signs of respiratory failure and shock while assessing. If child is asymptomatic, consider supportive treatment

– Special caution must be utilized when administering sedatives or analgesics to hypotensive patients

3.2A CARDIAC ARREST – ADULT

EMT

1. Focus on high-quality CPR. Administer 100% oxygen
2. Immediate chest compressions (high quality CPR with minimal interruptions)
3. Apply AED and use as soon as possible (with minimum interruption of chest compressions)
4. If Return of Spontaneous Circulation occurs, see Post Resuscitative Care – Adult
5. Consider termination of efforts or not attempting resuscitation (see POLST Orders and/or Resuscitation Initiation and Termination
6. For traumatic arrest, all interventions beyond CPR and spinal motion restriction should be performed enroute to receiving facility. Minimize scene time
7. Call for ALS intercept, if available
8. After 10 minutes of BLS resuscitation, if ALS has not arrived, begin preparations for patient transport
    - If ALS has not arrived once patient is secured for transport; initiate transport

PARAMEDIC & MICN

9. Do not interrupt chest compressions for advanced airway, IV/IO placement or epinephrine administration
    - May place supraglottic airway as this will not interrupt compressions
10. Establish IV/IO access. Administer 500 mL bolus *crystalloid solution* IV/IO in the absence of pulmonary edema
11. Monitor quantitative waveform capnography throughout resuscitation, if available, to assess and monitor airway placement and CPR quality, and to monitor for signs of Return of Spontaneous Circulation
12. Identify and correct treatable causes: hypoxia, overdose/poisoning, hypothermia and hypovolemia and hypoglycemia - treat as per specific protocol
13. After first rhythm check, AED shock or no-shock advisory, administer *epinephrine* (1:10,000) (0.1 mg/mL) 1 mg IV/IO; repeat every 3 to 5 minutes
14. Continue CPR for 2 minutes between interventions; stop only for rhythm check or Return of Spontaneous Circulation
15. Placement of an advanced airway during cardiac arrest should not interrupt chest compressions. In this setting, supraglottic airways and ETTs are considered equivalent

For ventricular fibrillation (VF)/pulseless ventricular tachycardia (VT):

16. Defibrillation at 360 joules when available, with minimum interruption in chest compressions, or manufacturer's suggested biphasic equivalent. Continue CPR for 2 minutes; then rhythm check; then:
17. Administer epinephrine (1:10,000) (0.1 mg/mL) 1 mg IV/IO; repeat every 3 – 5 minutes

18. Continue CPR for 2 minutes between interventions; do not stop for rhythm check or Return of Spontaneous Circulation for 2 minutes

19. If no response after second defibrillation, administer:

    - Lidocaine 0.75-1.5 mg/kg IV/IO, repeat dose 0.5-0.75 mg/kg (maximum total dose 3 mg/kg).

      OR

    - Amiodarone 300 mg IV/IO, repeat dose 150 mg as needed

    - For Torsades de Pointes: Magnesium sulfate 2 g IV/IO over 1 – 2 minutes

For refractory ventricular fibrillation:

- After 3 defibrillation attempts, including those provided by BLS providers or bystanders, change pad placement from anterior-apex to anterior-posterior or from anterior-posterior to anterior-apex

20. If unsuccessful after 4th shock, initiate Double Sequential Defibrillation Procedure if approved by agency medical director

    - Ensure defibrillation pads do not overlap/touch

For hypothermic Cardiac Arrest

21. If pulse and breathing are absent, Start CPR unless contraindications to CPR exist

    - Contraindications to CPR in the hypothermic patient include obvious signs of irreversible death, non-compressible chest wall (frozen), a valid DNR order, avalanche burial > 35 minutes and airway packed with snow, or rescuers exhausted or in danger

    - Rigor mortis is NOT contraindication to CPR in hypothermia

22. Hypothermic patients without contraindications to CPR should have continued CPR and should not be considered for Termination of Resuscitation (TOR) until the core temperature has been rewarmed to 32°C (90°F) with no ROSC

    Contraindications to prolonged CPR include patients who are thought to have cardiac arrest before cooling (temperature is thought to have been above 32°C (90°F) at the time of cardiac arrest). Causes of cardiac arrest before cooling include major trauma, witnessed normothermic arrest and avalanche burial < 35 min. and submersion

For asystole or pulseless electrical activity (PEA):

21. Continue CPR for 5 cycles (2 minutes), then rhythm check

22. Administer epinephrine (1:10,000) (0.1 mg/mL) 1 mg IV/IO, repeat every 3 to 5 minutes

23. Continue CPR for 2 minutes between interventions; don't stop for rhythm check or Return of Spontaneous Circulation for 2 minutes

24. Evaluate for tension pneumothorax and treat with needle decompression if indicated. See Needle Thoracostomy

25. For suspected or known hyperkalemia (renal failure/dialysis patient), known tricyclic antidepressant overdose, administer sodium bicarbonate 1 mEq/kg

    - IV/IO. Do not use routinely in cardiac arrest

- Administer 0.9% NaCl flush before and after sodium bicarbonate. See Poisoning/Substance Abuse/Overdose – Adult

26. For known or suspected hyperkalemia (dialysis patient/renal failure) or as an antidote for toxic effects (hypotension and arrhythmias) from calcium channel blocker or B-blocker overdose administer calcium chloride 500 to 1,000 mg (5 to 10 mL of a 10% solution) slow IV/IO. May repeat as needed
    - Do not mix with or infuse immediately before or after sodium bicarbonate. Do not use routinely in cardiac arrest. See Poisoning/Substance Abuse/Overdose – Adult
27. For transient consciousness during resuscitation efforts, **Contact Medical Command** to discuss sedation and paralytic

Transiently induced consciousness secondary to CPR can interfere with resuscitation and airway management, in these cases consider calling command to discuss utilization of a paralytic without an induction agent

PEARLS

- High quality CPR and early defibrillation are the most effective therapies for cardiac arrest care
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain
- The recommended chest compression rate is 100 to 120/min
- Integrated teams of highly trained rescuers may use a choreographed approach that accomplishes multiple steps and assessments simultaneously rather than the sequential manner used by individual rescuers
- Switch compressors at least every two minutes to minimize fatigue. Check rhythm and pulse during switch to avoid excessive interruptions in CPR
- Compress when charging and resume compressions immediately after the shock is delivered to minimize interruptions to CPR
- Do not hyperventilate as it increases intrathoracic pressure and decreases blood return to the heart. Ventilate at a rate of 8 – 10 breaths per minutes, with enough volume to produce adequate chest rise
- Mechanical CPR devices are acceptable with appropriate training. Interruption in CPR to apply device should be limited to 10 seconds or less

3.2P CARDIAC ARREST – PEDIATRIC

EMT

1. Administer 100% oxygen
2. Immediate chest compressions (high quality CPR with minimal interruptions)
3. Apply AED and use as soon as possible (with minimum interruption of chest compressions)
    - From birth to age 8 years, use pediatric AED pads
    - If pediatric AED pads are unavailable, providers may use adult AED pads, provided the pads do not overlap
4. If Return of Spontaneous Circulation occurs, see Post Resuscitative Care – Pediatric
5. Consider termination of efforts or not attempting resuscitation (see DNR/POLST Orders and/or Resuscitation Initiation and Termination
6. For traumatic arrest, all interventions beyond CPR and spinal motion restriction should be performed enroute to receiving facility. Minimize scene time
7. Call for ALS intercept, if available

PARAMEDIC & MICN

8. Do not interrupt chest compressions for advanced airway or IV/IO placement
9. Establish vascular access
10. BVM ventilation is the preferred method of ventilation for pediatric population. However, if unsuccessful, place of supraglottic airway
11. Monitor quantitative waveform capnography throughout resuscitation, if available, to assess and monitor airway placement and CPR quality, and to monitor for signs of Return of Spontaneous Circulation
12. Correct treatable causes:
    - Hypoxia
    - Overdose/poisoning; See Poisoning/Substance Abuse/Overdose – Pediatric
    - Hypothermia: See Hypothermia (Environmental) – Adult & Pediatric
    - Hypoglycemia; See Diabetic Emergencies (Hypoglycemia) – Pediatric
    - Hypovolemia: See Shock - Pediatric
13. Administer crystalloid solution 20 mL/kg fluid bolus IV/IO
14. If ventilation is adequate with BVM, routine placement of advanced airway can be delayed. Consider advanced airway management as applicable
15. Placement of an advanced airway during cardiac arrest should not interrupt chest compressions
    - In this setting, supraglottic airways and ETTs are considered equivalent. ETT placement, if used, should be limited to 1 attempt of 10 seconds or less, as long as BVM or alternate airway provides adequate chest rise

16. For suspected pre-arrest or known hyperkalemia (dialysis patient), or known tricyclic antidepressant overdose, administer sodium bicarbonate 1 mEq/kg IV/IO. Do not mix with any resuscitation drugs

17. Flush IV tubing with 0.9% NaCl before and after drug administration. Do not use routinely in cardiac arrest

18. For known or suspected hyperkalemia (renal failure) or as an antidote for toxic effects (hypotension and arrhythmias) from calcium channel blocker or B-blocker overdose administer calcium chloride 20 mg/kg (0.2 mL/kg) slow IV/IO push. Do not mix with or infuse immediately before or after sodium bicarbonate without intervening flush. Do not use routinely in cardiac arrest

19. Evaluate for tension pneumothorax and treat with needle decompression if indicated. See Needle Thoracostomy

For Ventricular Fibrillation (VF)/Pulseless Ventricular Tachycardia (VT):

20. Use manufacturer's recommendations for joule settings
    - In general, defibrillate at 2 J/kg; perform CPR for 2 minutes and recheck rhythm
    - if still a shockable rhythm, defibrillate at 4 J/kg; perform CPR for 2 minutes
    - Reassess every 2 minutes and continue to defibrillate at 4 J/kg

21. If no response after first defibrillation, administer
    - epinephrine (1:10,000) (0.1 mg/mL) 0.01 mg/kg (0.1 mL/kg) IV/IO

      OR
    - epinephrine 0.1 mg/kg (1:1,000; 0.1 mL/kg) via ETT
    - Repeat every 3 – 5 minutes

Ventricular Fibrillation (VF)/Pulseless Ventricular Tachycardia (VT) continued:

22. If no response after second defibrillation, administer:
    - Amiodarone 5mg/kg (maximum 300 mg) IV/IO. May repeat up to 2 times for refractory VF/VT

      OR
    - Lidocaine 1 mg/kg IV/IO (maximum dose 100 mg). Maintenance: 20 – 50 mcg/kg/min infusion
    - Repeat bolus dose if infusion initiated ≥ 15 minutes after initial bolus therapy

For Torsades de Pointes:

23. Magnesium sulfate 25 – 50 mg/kg (maximum 2 g) IV/IO over 1 – 2 minutes

For Asystole or Pulseless Electrical Activity (PEA):

24. Administer Epinephrine (1:10,000) (0.1 mg/mL) 0.01 mg/kg (0.1 mL/kg) IV/IO

      OR
    - Epinephrine 0.1 mg/kg (1:1,000) (1 mg/mL) 0.1 mL/kg via ETT; repeat every 3 – 5 minutes

25. Give 2 minutes of CPR, then check rhythm:
    - If asystole or PEA, continue epinephrine and 2 minutes of CPR until:

- Pulse obtained

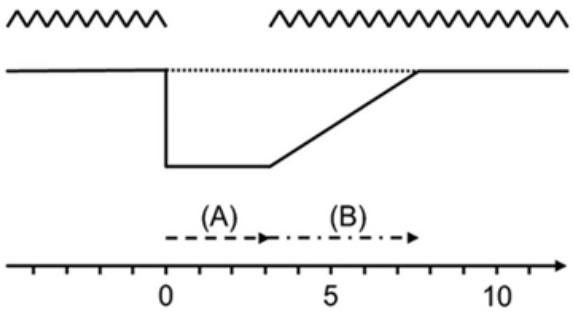
  OR

- Shockable rhythm obtained

  OR

- Decision made to terminate resuscitation efforts

EFFECT OF INTERUPTIONS TO CPR ON CORONARY PERFUSION PRESSURE



COMPRESSIONS

Coronary perfusion pressure:
note the interval of interruption [A] as well as the interval until the restoration of coronary perfusion pressure [A+B]

TIME IN SECONDS

PEARLS

- Optimize oxygenation, ventilation and volume status. Cardiac arrest in children typically results from progressive deterioration in respiratory or cardiovascular function
- Minimize interruptions in chest compression, as pauses rapidly return the blood pressure to zero and stop perfusion to the heart and brain
- Switch compressors at least every two minutes to minimize fatigue. Check rhythm and pulse during switch to avoid excessive interruptions in CPR
- Compress when charging and resume compressions immediately after the shock is delivered to minimize interruptions to CPR
- Avoid excessive ventilation
- Do not use mechanical CPR devices on children

3.3 CONGESTIVE HEART FAILURE (PULMONARY EDEMA) - ADULT

EMT

1. Place the patient in a semi-sitting or full sitting position.
2. Provide CPAP with maximum 10 cm H2O pressure support. See CPAP/BiPAP
    - For patients with moderate to severe respiratory distress concurrent with the following signs and symptoms:
        - Oxygen saturation < 94%
        - Respiratory rate > 25/minute
        - Retractions or accessory muscle use
    - SBP must be ≥100 mmHg to utilize CPAP/BiPAP
3. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

4. Establish vascular access.
5. Acquire 12-lead EKG.
6. For respiratory distress, administer nitroglycerin
    - 0.4 mg SL every 3-5 minutes while symptoms persist and if the systolic BP is ≥110 mmHg

      OR
    - Push-dose nitroglycerin: 400-500 mcg IV every 3 minutes for respiratory distress and systolic BP>140
    - May transition to nitroglycerin drip after any SL or IV push-dose administrations. Titrate until symptomatic improvement or systolic BP of 140 mmHg:
        - For systolic BP of 140 – 160 mmHg: IV nitroglycerin start at 50 mcg/min
        - For systolic BP of 160 – 200 mmHg: IV nitroglycerin start at 100 mcg/min
        - For systolic BP > 200 mmHg: nitroglycerin start at 200 mcg/min

❖ Note: It is recommended two (2) IV lines in place and the IV nitroglycerin must be on an infusion pump. Maximum dose of 400 mcg/min

- Avoid nitroglycerin in any patient who has used a phosphodiesterase inhibitor for erectile dysfunction and pulmonary hypertension, such as: sildenafil (Viagra, Revatio) or vardenafil (Levitra, Staxyn) within 24 hours, or tadalafil (Cialis, Adcirca) within 48 hours. Also avoid use in patients receiving intravenous prostacyclins for pulmonary hypertension
- Administer nitrates with extreme caution, if at all, to patients with inferior-wall STEMI or suspected right ventricular (RV) involvement because these patients require adequate RV preload

PEARLS

- Nitroglycerin is the first-line medication for pulmonary edema caused by congestive heart failure
- Furosemide and narcotics have NOT been shown to improve the outcomes of EMS patients with pulmonary edema. Even though this historically has been a mainstay of EMS treatment, it is no longer recommended
- If patient has taken home nitroglycerin without relief, consider loss of potency of the medication due to age
- Allow the patient to be in their position of comfort to optimize their breathing effort

3.4A POST RESUSCITATIVE CARE – ADULT

EMT

1. Optimize ventilation and oxygenation
2. Initial ventilation rate of 10 - 12 BPM
    - Maintain oxygen saturation at ≥ 94%
3. Obtain, and continuously monitor blood pressure

PARAMEDIC & MICN

4. Stabilize post arrest patient on scene as necessary
5. Anticipate hemodynamic compromise

For Post-Resuscitation Hypotension:

6. Maintain systolic blood pressure of ≥90 mmHg. See Shock Adult
7. If SBP < 90 mmHg administer crystalloid solution 500 mL fluid bolus IV/IO. Total volume should not exceed 2,000 mL
8. Administer: (An infusion pump is required for the use of these pressor agents)
    - Norepinephrine infusion 1 to 30 mcg/min IV/IO titrated to effect (preferred agent)

      OR
    - Epinephrine infusion 2-10 mcg/min IV/IO titrated to effect

      OR
    - Epinephrine push dose (10 mcg/mL). Administer 10-20 mcg IV/IO every 2 – 5 minutes (0.5 – 2 ml).

If cardiac arrest was the result of VF or VT, manage as follows:

- If lidocaine / amiodarone was administered during resuscitation, do not administer additional doses. However, if the patient is having frequent PVCs or runs of VT, or if the transport time will exceed 30 minutes, start an antidysrhythmic:
    - Lidocaine maintenance infusion 1 – 4 mg/min IV/IO (30 – 50 mcg/kg/min)

      OR
    - Amiodarone maintenance infusion of 1 mg/min IV/IO

9. Obtain a 12-lead EKG; transmit as required
10. Secure advanced airway if indicated
11. Insert nasogastric or orogastric tube. See Nasal/Oral Gastric Tube Insertion

PEARLS

- Stabilization interventions above should be accomplished on scene whenever possible including multiple sets of vital signs to help ensure hemodynamic stability
- Recognition and treatment of a STEMI are critical in the post-cardiac arrest patient. Transport patient to the most appropriate facility in accordance with local STEMI guidelines/agreements. Notify receiving facility of a “STEMI ALERT”. See Acute Coronary Syndrome – Adult
- Avoid hyperventilation as it increases intrathoracic pressures, potentially worsening hemodynamic instability. Hyperventilation may also cause hypocarbia and elevated arterial oxygen levels (hyperoxia) and increased hospital mortality post-resuscitation from cardiac arrest
- Monitor patient closely for recurrent cardiac arrest
- Monitor for decreases in $ETCO_2$

3.4P POST RESUSCITATIVE CARE – PEDIATRIC

EMT

1. Optimize ventilation and oxygenation
2. Initial ventilation at appropriate age-related rate. Pediatric Vital Signs
3. Maintain oxygen saturation at ≥ 94%
4. Obtain, and continuously monitor perfusion status

PARAMEDIC & MICN

5. When feasible, titrate FiO2 to minimum necessary to achieve SpO_2 ≥ 94%
6. Secure advanced airway if indicated

For Post-Resuscitation Hypotension:

7. Maintain appropriate SBP for age: Pediatric Vital Signs. See Shock – Pediatric
8. If SBP remains hypotensive for patients' age; administer bolus of crystalloid solution 20 mL/kg IV/IO (may repeat x 1)
9. If still hypotensive after max fluid bolus, administer: (An infusion pump is required for the use of these vasopressors)
    - Epinephrine infusion 0.05mcg/kg/min IV/IO to maintain age appropriate SBP

      OR (Pediatric Vital Signs)
    - Norepinephrine infusion 0.05 mcg/kg/min IV/IO to maintain age appropriate SBP.

If cardiac arrest was the result of VF or VT, manage the patient as follows:

10. If lidocaine / amiodarone was administered during resuscitation, do not administer additional doses
11. However, if the patient is having frequent PVCs or runs of VT, or if the transport time will exceed 30 minutes, start an antidysrhythmic:
    - Lidocaine 20 – 50 mcg/kg/min IV/IO via pump

      OR
    - Amiodarone maintenance infusion of 0.005 – 0.01 mg/kg/min IV/IO via pump
12. Insert nasogastric or orogastric tube for the intubated patient. See Nasal/Oral Gastric Tube Insertion

PEARLS

- Avoid hyperventilation as it increases intrathoracic pressures, potentially worsening hemodynamic instability. Hyperventilation may also cause hypocarbia and elevated arterial oxygen levels (hyperoxia) and increased hospital mortality post-resuscitation from cardiac arrest
- Monitor patient closely for recurrent cardiac arrest
- Monitor for decreases in ETCO2

3.5A TACHYCARDIA – ADULT

EMT

1. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC

2. Establish vascular access
3. Search for underlying causes

For hemodynamically unstable narrow complex tachycardia:

4. Perform synchronized cardioversion:
    - Utilize energy setting from local protocol and manufacturer
    - Consider anxiolysis prior to or during cardioversion, if feasible. See Sedation
        - Do not delay cardioversion

For hemodynamically stable narrow complex tachycardia:

4. Attempt vagal maneuvers, for regular rhythms >150 BPM
5. If vagal maneuvers fail and the rhythm is probable SVT
    - Adenosine 6 mg rapid IV/IO, followed by rapid flush
        - May repeat at dose of 12 mg if no conversion
        - May repeat successful dose if rhythm recurs after conversion
6. If irregular rhythm >140, to control ventricular rate:
    - Diltiazem 0.25 mg/kg IV/IO (maximum dose 20 mg) over 2 minutes. (Administer 10 mg maximum dose for elderly patients or patients with Systolic BP <90)
        - May repeat dose in 15 minutes at 0.35 mg/kg (maximum dose 25 mg), if necessary
        - Administer maintenance infusion at 5 – 15 mg/hr IV/IO

    OR

    - Metoprolol 5 mg IV/IO over 2 – 5 minutes
        - May repeat every five minutes to a maximum of 15 mg as needed to achieve a ventricular rate of 90 – 100 BPM

    OR

    - Verapamil 5-10 mg IV over 2 minutes
        - Repeat once, if necessary, in 15 minutes

For hemodynamically unstable wide complex:

4. Consider anxiolysis (as listed above) prior to, or during cardioversion, if feasible. Do not delay cardioversion
5. Perform synchronized cardioversion:
    - Utilize energy setting from local protocol and manufacturer.
6. If rhythm converts: (Ensure to rule out Wolff-Parkinson White syndrome)
    - Lidocaine maintenance infusion 1 - 4 mg/min IV/IO (30 – 50 mcg/kg/min)

      OR
    - Amiodarone maintenance infusion of 1 mg/min IV/IO

      OR
    - Procainamide maintenance infusion 1 - 4 mg/min IV/IO

For hemodynamically stable wide complex:

4. Regular rhythm with monomorphic QRS; Ensure to rule out Wolff-Parkinson White syndrome
    - Amiodarone 150 mg IV/IO mixed in 100 ml crystalloid solution over 10 minutes
        - May repeat once in 10 minutes
        - If successful, administer maintenance infusion of 1 mg/min

      OR
    - Lidocaine 1 mg/kg IV/IO
        - May repeat every 5 minutes to a max of 3 mg/kg (total of 3 doses)
        - If successful, administer a maintenance infusion 1-4 mg/min IV/IO

      OR
    - Procainamide 20-50 mg/min until:
        - Rhythm is suppressed
        - Hypotension ensues
        - QRS complex widens by 50%
        - Total of 17 mg/kg has been administered

For polymorphic ventricular tachycardia/Torsades de Pointes:

4. Defibrillate 120 – 200 J biphasic or 360 J monophasic
5. If pulse is present, administer magnesium sulfate 2 g IV/IO diluted in 50-100 ml crystalloid solution over 10 minutes

For Wolff-Parkinson White Syndrome:

4. **Contact Medical Command**

- Diltiazem, metoprolol, amiodarone and adenosine are contraindicated in patients with a history of or suspected Wolff-Parkinson-White (WPW) syndrome
- Medications should be administered cautiously in frail or debilitated patients; lower doses should be considered
- Be cautious in rate controlling patients in rapid atrial fibrillation (A Fib) who may be compensating for another disease process such as sepsis or pulmonary embolism.

PEARLS

- Treat potential underlying causes e.g., hypoxemia, dehydration, fever
    - Some rhythms such as atrial fibrillation with rapid ventricular response respond by treating the underlying cause rather than the rate
- Wide complex tachycardia should be considered Ventricular Tachycardia until proven otherwise
- Do not administer Diltiazem to wide complex tachycardia
- Signs and symptoms of hemodynamic instability:
    - Hypotension
    - Acutely altered mental status
    - Signs of shock
    - Signs of acute heart failure
    - Ischemic chest pain
- If ventricular rate is >150/min, prepare for immediate cardioversion. May give brief trial of medications based on specific arrhythmias. Immediate cardioversion is generally not needed if heart rate is ≤150
- Adenosine should be administered rapidly though a proximal (e.g., antecubital) vein site followed by a rapid saline flush
- Utilize the Modified Valsalva maneuver for greatest success: start with patient's head of bed elevated by 30 degrees. While patient performs vagal maneuver sustained over 15 seconds, lay the patient flat and elevate their legs
- Carotid massage should not be attempted in the prehospital setting
- In the unlikely event the monitor is unable to synchronize the rhythm for cardioversion, an unsynchronized defibrillation may be delivered

3.5P TACHYCARDIA – PEDIATRIC

EMT

1. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

2. Establish vascular access
3. Search for underlying causes

For hemodynamically unstable narrow complex/probable SVT:

4. Perform synchronized cardioversion:
    - 0.5 – 1J/kg; if unsuccessful, increase to 2J/kg
    - Provide anxiolysis analgesia prior to or during cardioversion, if feasible: See Sedation

For hemodynamically stable narrow complex/probable SVT:

4. Attempt vagal maneuvers
    - Cover face with an icepack for up to 30 seconds
    - Have child blow through occluded straw/syringe
5. If vagal maneuvers fail and the rhythm is regular:
    - Adenosine 0.1 mg/kg IV/IO not to exceed 6mg (first dose)
        - May repeat once at 0.2 mg/kg IV/IO not to exceed 12 mg (subsequent dose)

For hemodynamically unstable wide complex:

5. Perform synchronized cardioversion:
    - 0.5 – 1 J/kg: if unsuccessful, increase to 2 J/Kg

For hemodynamically stable wide complex:

- Lidocaine 1 mg/kg IV/IO bolus (maximum 100 mg)

  OR
- Amiodarone 5 mg/kg IV/IO (maximum 150 mg) over 10 minutes

  OR
- Procainamide 15 mg/kg IV/IO via pump over 30-60 minutes

For polymorphic ventricular tachycardia/Torsades de Pointes

- Magnesium sulfate 25-50 mg/kg IV/IO over 10-20 minutes (maximum dose 2 g)

For Wolff-Parkinson White Syndrome

5. **Contact Medical Command**

PEARLS

- Treat potential underlying causes, e.g., hypoxemia, dehydration, fever
- Probable Supraventricular Tachycardia
    - Compatible history (vague, nonspecific); history of abrupt onset / rate changes
    - P waves absent / abnormal
    - Heart rate is NOT variable
    - Infants: rate usually >220/min
    - Children: rate usually >180/min
    - Adenosine should be administered rapidly though a proximal (e.g., antecubital) vein site followed by a rapid saline flush
- Probable Sinus Tachycardia
    - Compatible history consistent with known cause
    - P waves are present and normal
    - Variable R-R and constant P-R interval
    - Infants: rate usually <220/min
    - Children: rate usually <180/min
- Signs and symptoms of hemodynamic instability:
- Hypotension
- Acutely altered mental status
- Signs of shock

4.0 BURNS/ELECTROCUTION/LIGHTNING – ADULT & PEDIATRIC

EMT

1. Determine need for transport to a burn center. Refer to Burn Center Transport
    - Determine need for aeromedical transport. See Air Medical Transport
2. Assess for evidence of smoke inhalation or burns; soot around mouth or nostrils, singed hair, carbonaceous sputum
3. If the patient has respiratory difficulty, altered level of consciousness and /or hemodynamic compromise, see Airway Management - Adult or Airway Management - Pediatric and Smoke Inhalation - Adult or Smoke Inhalation - Pediatric
4. Determine extent of the burn using Rule of Nines
5. Determine depth of injury
6. Do not include 1st degree burns in burn surface area (BSA) percentage
7. If a partial thickness, 2nd degree is < 10% body surface area
8. Apply room-temperature water to burned area for a maximum of 15 minutes. Prolonged cooling may result in hypothermia

Thermal Burn

9. Stop burning process with tepid water or normal saline
10. Cut/remove non-adherent clothing and jewelry. Do not remove skin or tissue
11. To protect from infection, cover burns with clean dry sterile dressing or sheets
12. Keep patient warm and prevent hypothermia due to large thermal injuries

Chemical Burn

9. Identify agent(s) and need for HAZMAT intervention, if indicated. See Hazardous Material Exposure
10. **Contact Poison Control at 800-222-1222** POISON Help 1-800-222-1222
11. Decontaminate the patient as appropriate
    - Brush off dry powders if present, before washing
    - Scrape viscous material off with rigid device, i.e., tongue depressor
    - Flush with copious amounts of clean water or sterile saline for 10 – 15 minutes, unless contraindicated by type of chemical agent (i.e., sodium, potassium or dry lime and/or phenols)

Electrical/Lightning Burn

9. Ensure your own safety; disconnect power source
10. For MCI associated with lightning, cardiac arrest patients should receive first priority
11. Provide spinal motion restriction for burns due to electric flow across the body

PARAMEDIC & MICN

1. Establish vascular access
    - Adults: Administer up to 2000 ml *crystalloid solution* IV/IO
    - Pediatric: if patient presents in a shock state: see Shock – Pediatric
2. Refer to: Airway Management – Adult or Airway Management – Pediatric
3. Refer to: Pain Management – Adult or Pain Management – Pediatric

PEARLS

– Apnea may last longer than asystole in lightning injuries. Provide ventilatory support.

– Electrocution/lightning burns can occur anywhere along the path a current travels through the body. Evident surface burns may only comprise a small portion of the overall burn injury, and an injury's full extent may not be immediately apparent.

– Chemical burns: If 0.9% NaCl or sterile water is not readily available, do not delay, use tap water for flushing the affected area. Flush the area as soon as possible with copious amounts of the cleanest readily available water.

- Expert burn center opinion recommends limiting prehospital IV fluids based on concerns for fluid overload and development of compartment syndrome. In cases where burn patients are in shock, IV fluid administration should be based on use of the Shock-Adult or Shock – Pediatric
- An IO device can be inserted through burned skin if the underlying bone has not been compromised
- An IV may be placed through burnt skin if necessary

Burn Center Transport:

– Determine need for air medical transport for major burns with greater than 20% BSA and/or inhalation injury with risk of airway compromise

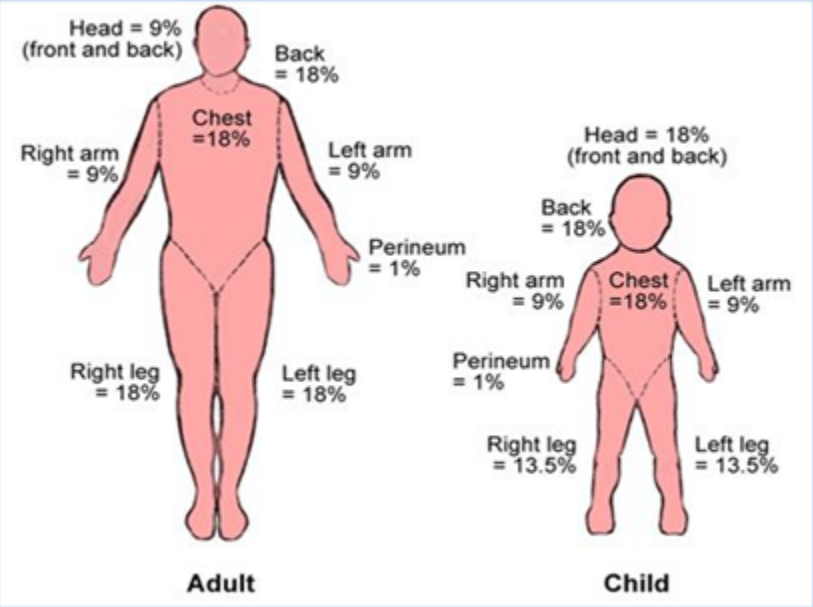
– Prioritize transport to a Trauma Center for patients suffering associated traumatic or blast injury

– Transport to a burn center is recommended for patients suffering partial or full thickness burns for:

- >10% Total Body Surface Area
- Burns to hands, feet, genitals, face, major joints or circumferential burns
- Third degree burns in any age group
- Electrical burns, including lightning injury
- Chemical burns
- Smoke Inhalation (airway compromise should be transported to closest hospital without delay)
- Burns in patients with preexisting medical conditions
- Burns requiring long-term rehab and/or social support

Rule of Nines

	Adult	Pediatric
Head & Neck	9%	18%
Left arm	9%	9%
Right arm	9%	9%
Chest	9%	9%
Abdomen	9%	9%
Upper back	9%	9%
Lower back	9%	9%
Left leg	18%	13.5%
Right leg	18%	13.5%
Genital region	1%	1%



4.1 DROWNING/SUBMERSION INJURIES – ADULT & PEDIATRIC

EMT

1. Assume C-spine injury and stabilize C-spine. See Spinal Assessment Procedure and Spinal Motion Restriction
2. Obtain specific history: time, temperature, associated trauma, etc
3. Consider hypothermia
4. Remove wet clothes and warm the patient
5. All patients with history of submersion should be transported to the hospital
6. Reassure anxious patient
7. If water temperature cannot be estimated, initiate full resuscitation
8. If patient submerged in water
    - Less than 90 minutes: Initiate full resuscitation
    - Greater than 90 minutes: Consider not initiating resuscitation or termination of efforts.
    - **Contact Medical Command**
9. If patient has unstable vital signs, call for ALS intercept, if available. If not available, initiate transport to closest appropriate facility

PARAMEDIC & MICN

10. Administer CPAP/BiPAP to supplement the patient's own spontaneous respiratory effort as required and tolerated
11. Provide airway management as required. See Airway Management - Adult or Airway Management - Pediatric

- Do not attempt water rescues unless properly trained and equipped. When operating on scenes involving water, use extreme caution and wear a PFD.

PEARLS

– SCUBA diving related injuries: for patients presenting with suspected diving-related emergencies, a thorough assessment should include obtaining the patient's dive computer and/or dive plan. The major types of dive-related illnesses include Pulmonary Over-Pressurization Syndromes (POPS) and Decompression Sickness (DCS). Seriously ill patients may present with any combination of altered mental status, respiratory distress or shock. After recognition of a suspected diving related emergency, treatment should focus on supplemental oxygen and rapid transport. ED staff should be fully briefed on the patient's dive history

4.2 EYE INJURIES – ADULT & PEDIATRIC

EMT

1. Obtain visual history (e.g., use of corrective lenses, surgeries, use of protective equipment)
2. Assist patient with the removal of contact lens, if applicable
3. Chemical irritants, including pepper spray, alkali, acid or other chemical exposure:
    - Flush with copious amounts of water or 0.9% NaCl for a minimum of 20 minutes
    - **Contact Poison Control at (800) 222-1222** as soon as practical
4. Thermal burns to eyelids: patch both eyes with cool saline compress
5. Impaled object: immobilize object and patch both eyes. Do not apply pressure. Do not attempt to remove object
6. Puncture wound: place rigid protective device over both eyes (e.g., eye shield). Do not apply pressure
7. Foreign body: Minor foreign objects like dust or grit may be flushed with water or 0.9% NaCl
8. Patch both eyes
    - If the patient cannot close their eyelids, keep their eye moist with a sterile saline dressing

PARAMEDIC & MICN

9. Refer to Pain Management – Adult or Pain Management – Pediatric
10. Refer to the Nausea/Vomiting – Adult & Pediatric

PEARLS

- For chemical exposure to eye position patient with the affected eye downward so irrigation does not run into the unaffected eye
- For patients with suspected globe injury, consider administration of ondansetron as prophylaxis to vomiting, to prevent increase in intraocular pressure

4.3 DENTAL INJURIES – ADULT & PEDIATRIC

EMT, PARAMEDIC, & MICN

1. Dental avulsions should be placed in an obviously labeled container with saline-soaked dressing, milk, or cell-culture medium (example: Save-a-tooth®)
    - Do not clean avulsed tooth/teeth
    - Do not place in tap water.

4.4 MUSCULOSKELETAL INJURIES – ADULT & PEDIATRIC

EMT

1. Manually stabilize the injury
2. For open fractures, control bleeding and treat for shock. See Tourniquet & Hemostatic Agent – Adult & Pediatric, Shock – Adult or Shock – Pediatric. Remove obvious debris, irrigate open wounds with saline solution, and cover with moist sterile dressing
3. For angulated fractures with circulatory compromise, attempt to reposition to anatomical position of function. In absence of circulatory compromise, splint in position of comfort
4. Assess Circulatory, Sensation, and Motor function distal to injury before and frequently after immobilization
    - Splint extremity as required
    - Consider Traction splinting for isolated adult and pediatric mid-shaft femur fractures
        - Do not apply traction splints to proximal (hip) or distal femur fractures, partial amputations, or if lower leg or ankle injury. Do not delay transport to apply a traction splint in the multi-trauma patient. Traction splinting may be used for open fractures if no contraindications
5. All patients that have a mechanism of injury that could cause a spinal injury, including high risk or questionable injury mechanisms, should have an advanced spinal assessment and spinal motion restriction if indicated. See Spinal Motion Restriction and Spinal Assessment
6. Stabilize suspected pelvic fractures with commercial device (preferred) or bed sheet
7. It is preferable to use a scoop stretcher rather than to log-roll a patient with a suspected pelvic fracture
8. Amputations should be dressed with moist sterile gauze covered with a bulky dressing. The amputated part should be placed in a plastic bag and transported to the hospital with the patient
9. See Trauma Triage and Transport Decision Policy and Pain Management – Adult or Pain Management – Pediatric

PARAMEDIC & MICN

10. Assess pain level and provide pain control measures: Pain Management – Adult or Pain Management – Pediatric

PEARLS

– Use ample padding when splinting possible fractures, dislocations, sprains, and strains. Remove and secure all jewelry. Elevate injured extremities, if possible. Consider the application of a cold pack for 30 minutes

– Musculoskeletal injuries can occur from blunt and penetrating trauma. Fractures of the humerus, pelvis and femur, as well as fractures or dislocations involving circulatory or neurological deficits, take priority over other musculoskeletal injuries

– Hip dislocations, pelvic, knee, and elbow fractures / dislocations have a high incidence of vascular compromise

– Do not manipulate pelvis once fracture is suspected. Repeated manipulation can increase internal hemorrhage

4.5 SPINAL MOTION RESTRICTION

EMT, PARAMEDIC, & MICN

1. Patients suffering isolated penetrating trauma DO NOT require Spinal Motion Restriction
2. Perform advanced spinal assessment (See Spinal Assessment) to determine if patient requires spinal motion restriction
3. Maintain manual in-line stabilization during assessment, unless patient is alert and spontaneously moving neck
4. Minimize spinal movement during assessment and extrication
5. A long backboard, scoop stretcher, vacuum mattress, or other appropriate full length extrication device may be used for extrication if needed. Do not use short board or KED device, except for vertical extrication or other special situations
6. Apply adequate padding to prevent tissue ischemia and minimize discomfort

If patient requires Spinal Motion Restriction:

7. Apply a rigid cervical collar
8. Self-extrication by patient is allowable if patient is capable
9. Allow ambulatory patients to sit on stretcher
10. Longboard can be removed as long as patient's condition is not compromised, and transport is not delayed
11. Position back boarded patient on stretcher then remove backboard by using log roll or lift-and-slide technique
12. Patient should be placed in a position to ensure comfort and maintain appropriate respiratory function
13. If patient poorly tolerates collar (e.g., due to anxiety, shortness of breath, torticollis), replace with towel roll and/or padding
14. Patients with nausea or vomiting may be placed in a lateral recumbent position. Maintain neutral head position with manual stabilization, padding/pillows, and/or the patient's arm. See also Nausea/Vomiting 2.11

Pediatric Patients Requiring a Child Safety Seat 

15. For pediatric patients requiring spinal motion restriction, transport in a child safety seat per Pediatric Transportation Policy 
16. Apply padding and cervical collar as tolerated to minimize the motion of the child's spine. Rolled towels may be used for very young children or those who do not tolerate a collar
17. Patient may remain in own safety seat after motor vehicle crash if it has a self-contained harness with a high back and two belt paths and is undamaged. If all criteria are not met, use ambulance's safety seat

If the patient requires significant care (e.g. airway management) that cannot be adequately performed in a car seat, remove the patient and secure him/her directly to the stretcher

- Long backboards do not have a role for patients being transported between facilities. If the sending facility has the patient on a long backboard or is asking EMS to use a long backboard

for transport, EMS providers should discuss not using a long backboard with the sending facility physician before transporting a patient. If a long backboard is used, it should be padded to minimize patient discomfort

- Patients with isolated penetrating trauma do not require spinal motion restriction

- Caution should be exercised in older patients (e.g. 65 years or older) and in young patients (e.g. less than 3 years of age), as spinal assessment may be less sensitive in discerning spinal fractures in these populations

4.6 THORACIC & ABDOMINAL INJURIES – ADULT & PEDIATRIC

EMT

1. If patient is in shock, see Shock – Adult or Shock - Pediatric
2. Initiate rapid transport
3. Impaled objects:
    - Do not attempt to remove an impaled object; instead, stabilize/support it with a bulky dressing or other means. If the impaled object is very large or unwieldy, attempt to cut object, if possible, to no less than 6 inches from the patient
4. Open chest wound/penetrating injuries to chest or upper back:
    - Cover with an occlusive dressing or use a commercial device. If the patient's condition deteriorates, remove the dressing momentarily, then reapply. Monitor for tension pneumothorax
5. Flail segment with paradoxical movement with respiratory distress:
    - Consider positive-pressure ventilation for severe distress
    - Apply no weight to flail segment. Do not splint the chest
6. Abdominal penetrating injuries
    - Apply an occlusive dressing
    - For evisceration, cover the organs with a saline-soaked sterile dressing and then cover it with an occlusive dressing. Do not attempt to put the organs back into the abdomen
7. Minimize scene time
8. See Trauma Triage and Transport Decision Policy

PARAMEDIC & MICN

9. Consider pain management; see Pain Management – Adult or Pain Management – Pediatric
10. In presence of tension pneumothorax, perform needle decompression on the affected side
11. See Needle Thoracostomy
12. For massive flail chest with severe respiratory compromise, consider endotracheal intubation for assisted ventilations

SIGNS AND SYMPTOMS OF TENSION PNEUMOTHORAX:

- Increasing respiratory distress or hypoxia, AND
- Increasing signs of shock including tachycardia or hypotension AND one or more of the following:
    - Diminished or absent unilateral breath sounds
    - JVD (neck vein distension)

- Possible tracheal deviation above the sternal notch away from the side of the injury (late sign)
- Tympany (hyperresonance) to percussion on the affected side

PEARLS

- Open chest wounds occur when the chest wall is penetrated by some object or the broken end of a fractured rib
- Chest pain due to blunt trauma may be an indication of underlying injury
- Blunt injuries such as pulmonary contusion and cardiac contusion may cause respiratory insufficiency and/or myocardial infarction. While enroute, acquire and transmit 12-lead ECG, if available
- If occlusive dressing is not available, consider using a bulky dressing to seal open chest wounds

4.7A TRANEXAMIC ACID (TXA) – ADULT

PARAMEDIC & MICN

1. Any patient who requires TXA administration should have transport initiated without delay
2. TXA should be administered enroute to a Trauma Center

INDICATIONS:

1. Evidence of significant blunt or penetrating trauma (e.g. ejection from automobile, fall > 20 feet, pedestrian struck, penetrating injury to neck, torso, etc.)

   AND

2. Evidence or concern for severe external and/or internal hemorrhage (bleeding requiring tourniquet, amputation proximal to wrist or ankle, unstable pelvis, two or more long bone fractures, concern for significant intra-thoracic or intra-abdominal injury, etc.)

   AND

3. Presence of one or more markers of hemodynamic instability:
   - Sustained BP $\leq$ 90
   - Sustained HR $\geq$ 110
   - Shock Index $\geq$ 1

   AND

4. Injury must have occurred within the past 3 hours

CONTRAINDICATIONS:

1. Previous allergic reaction to TXA
2. Injury > 3 hours old
3. Patients who have received or will receive prothrombin complex concentrate (PCCs), factor VIIa, or factor IX complex concentrates
4. Women who are known or suspected to be pregnant with a fetus of viable gestational age. (> 24 weeks)

PROCEDURE:

1. Prepare 2 g of TXA. Infuse over approximately 2 minutes IV/IO. Notify receiving facility of TXA administration prior to arriving
2. If shock Index is $\geq$1, See Blood Administration

PEARLS

- The greatest benefit is seen when TXA is administered to patients within 1 hour of injury
- Rapid IV push may cause hypotension
- If there is a new onset of hypotension, slow the TXA infusion

- Protect patient from extremes in temperatures
- Good documentation of time of injury and time of TXA administration is necessary

4.8 TRAUMATIC BRAIN INJURY – ADULT & PEDIATRIC

EMT

1. For immobilization concern, see Spinal Assessment and Spinal Motion Restriction
2. If breathing is inadequate, ventilate with 100% oxygen utilizing normal ventilation parameters, maintaining SpO2 >94%. See Pediatric Vital Signs 1.0 for pediatric values
    - For pediatric patients with cardiac history, and patients with COPD, the baseline goal is >90%. NOTE: Some pediatric patients with a cardiac history may have baseline SpO_2 in the 80's. Utilize parents/care givers as a reference
3. Assess and document pupillary response and Glasgow Coma Scale every 5 min
4. Elevate the head of the stretcher 30° (12 to 18 inches), if possible
5. Obtain blood glucose level via glucometer, enroute to hospital/trauma center. (if approved by OEMS)
    - If blood glucose < 60, or low as reported from bystanders, with associated altered mental status, refer to, Diabetic Emergencies (Hypoglycemia) – Adult or Diabetic Emergencies (Hypoglycemia) – Pediatric
6. See Trauma Triage and Transport Decision Policy

PARAMEDIC & MICN

7. Ensure transport has been initiated
8. Avoid hypotension, maintain systolic BP
    - Adult – maintain SBP:
        - Age > 10 years: ≥ 110 mmHg
    - Pediatric - maintain SBP: Pediatric Vital Signs
        - Age < 1 month: > 60 mmHg
        - Age 1 – 12 months: > 70 mmHg
        - Age 1 – 10 years: > 70 + 2x age in years
9. If hypotensive, administer:
    - Adult: See Shock – Adult 2.21A
    - Child and Infant: Fluid bolus 20 mL/kg crystalloid solution IV. See Shock - Pediatric
        - Administer 20 mL/kg crystalloid solution IV fluid bolus in a pediatric patient with normal systolic blood pressure and who has other signs of decreased perfusion including tachycardia, loss of peripheral pulses, and delayed capillary filling time of >2 seconds. See Shock - Pediatric
10. For active seizure, see Seizure - Adult, or Seizure - Pediatric
11. Avoid hypoxia. For respiratory failure, see Airway Management – Adult or Airway Management – Pediatric
12. For patient who require sedation; see Sedation

Most patients with severe head injury retain airway reflexes. Rapid transport to hospital without intubation is appropriate when possible

PEARLS

- Prevention of hypoxia and hypotension are imperative to prevent secondary brain injury
- Intubation should be approached with extreme caution as it has been associated with worse outcomes when performed in the out-of-hospital environment for patients with traumatic brain injury
- Both hypoxia and hyperoxia (too little or too much oxygen) have been associated with increased mortality and worse discharge GCS scores in TBI (traumatic brain injury) patients
- Hyperventilation causes a decrease in the cerebral blood flow by vasoconstriction as a result of decreased levels of C02 (which is a vasodilator)

4.9A BLOOD ADMINISTRATION – ADULT

PARAMEDIC & MICN

Any patient that requires blood product administration should have transport initiated without delay. Blood products should be administered enroute to a Trauma Center. Only those providers trained and credentialed in prehospital transfusion by their agency may use this protocol

INDICATIONS:

1. Evidence of significant blunt or penetrating trauma (e.g. ejection from automobile, fall > 20 feet, pedestrian struck, penetrating injury to neck, torso, etc.)

   AND

2. Evidence or concern for severe external and/or internal hemorrhage as the cause of the patient's shock state (bleeding requiring tourniquet, amputation proximal to wrist or ankle, unstable pelvis, two or more long bone fractures, concern for significant intra-thoracic or intra-abdominal injury, etc.)

   AND

3. SBP ≤ 90 OR Shock Index ≥ 1

CONTRAINDICATIONS:

4. < 13 years old (see pediatric protocol) 
5. Patient with a religious or other objection to receiving blood products
6. Unwitnessed cardiac arrest or isolated head trauma

PROCEDURE:

7. Attempt to obtain verbal consent for administration
8. Transfuse Blood Products (use agency approved warming device if available)
   - Low Titer O+ Whole Blood (LTOWB) 2 Units IV / IO (IV preferred)

     OR

   - Packed Red Blood Cells (pRBC's) 2 Units IV / IO (IV preferred)
9. Administer Calcium Chloride (1-2g) or Calcium Gluconate (3-6g) IV / IO
10. Consider Tranexamic Acid (TXA) (see TXA Protocol 4.7) if patient eligible
11. Save the blood product bags and leave with receiving facility staff

- Clinicians must ensure IV is adequately patent
  - Calcium chloride is irritating to veins and must not be injected into tissues, since severe necrosis and sloughing may occur
- Administer slowly, taking great care to avoid extravasation or accidental injection into perivascular tissues

PEARLS

- Treat reversible causes of shock first
    - Control hemorrhage
    - Perform needle decompression for tension pneumothorax if indicated
    - Place a pelvic binder for suspected unstable pelvic fracture
- Blood transfusion should occur while transporting the patient to the hospital and should not delay transport
- Document vital signs before and after transfusion, as well as the blood product unit number in the chart
- Pause the transfusion if there are signs and symptoms of a severe allergic reaction / anaphylaxis and treat per protocol Allergic Reaction / Anaphylaxis - Adult
- For calcium chloride administration, ensure IV patency and administer slowly. Flush with crystalloid solution before and after administration
- Do not use a lower extremity IO if a femur or pelvic fracture is suspected

4.9P BLOOD ADMINISTRATION - PEDIATRIC

PARAMEDIC & MICN

Any patient that requires blood product administration should have transport initiated without delay. Blood products should be administered enroute to a Trauma Center. Only those providers trained and credentialed in prehospital transfusion by their agency may use this protocol

INDICATIONS:

1. Evidence of significant blunt or penetrating trauma (e.g. ejection from automobile, fall > 20 feet, pedestrian struck, penetrating injury to neck, torso, etc.)

   AND

2. Evidence or concern for severe external and/or internal hemorrhage as the cause of the patient's shock state (bleeding requiring tourniquet, amputation proximal to wrist or ankle, unstable pelvis, two or more long bone fractures, concern for significant intra-thoracic or intra-abdominal injury, etc.)

   AND

3. Age specific hypotension AND tachycardia, see Pediatric Vital Signs

CONTRAINDICATIONS:

4. Unwitnessed cardiac arrest or isolated head trauma
5. Age < 1 year - **Contact Medical Control**

PROCEDURE:

6. Transfuse Blood Products (use agency approved warming device if available)
   - Low Titer O+ Whole Blood (LTOWB) 10 mL / kg IV / IO (IV preferred)

     OR
   - Packed Red Blood Cells (pRBC's) 10 mL / kg IV / IO (IV preferred)
   - May repeat infusion x 1 PRN
7. Administer Calcium Chloride or Calcium Gluconate 20mg / kg IV / IO
8. Save the blood product bags and leave with receiving facility staff

PEARLS

- Treat reversible causes of shock first
  - Control hemorrhage
  - Perform needle decompression for tension pneumothorax if indicated
  - Place a pelvic binder for suspected unstable pelvic fracture
- Blood transfusion should occur while transporting the patient to the hospital and should not delay transport

- Document vital signs before and after transfusion, as well as the blood product unit number in the chart.
- Pause the transfusion if there are signs and symptoms of a se  e allergic reaction / anaphylaxis and treat per protocol Allergic Reaction / Anaphylaxis – Pediatric
- For calcium chloride administration, ensure IV patency and administer slowly. Flush with crystalloid solution before and after administration
- Do not use a lower extremity IO if a femur or pelvic fracture is suspected

4.10 OPEN FRACTURES – IV ANTIBIOTIC ADMINISTRATION

PARAMEDIC & MICN

Antibiotic treatment in open fractures should not delay routine trauma care and transportation

INDICATIONS:

1. Open fractures
2. Open fractures with gross contamination

CONTRAINDICATIONS:

3. Previous allergic reaction to the indicated antibiotic agent

PROCEDURE:

4. Provide routine care of musculoskeletal injuries. See Musculoskeletal Injuries – Adult & Pediatric 

Adult

5. Open fractures (without or with gross contamination (dirt, leaves, etc.):
    - Cephalosporin per your hospital's guidelines:
6. For allergic reaction, see Allergic Reaction/Anaphylaxis - Adult

Pediatric

5. Open fractures (without or with gross contamination (dirt, leaves, etc.):
    - Cephalosporin per your hospital's guidelines:
6. For allergic reaction, see Allergic Reaction/Anaphylaxis - Pediatric 

5.0 AIRWAY MANAGEMENT GUIDELINES

ASSESSMENT

Each patient presents unique problems that cannot be fully outlined in any algorithm. As such, the provider must rely on thorough assessment techniques and consider each of the following:

1. **Airway Patency**: Assess for airway obstruction or risk of impending obstruction due to facial injuries, mass, foreign body, swelling, etc

2. **Ventilatory Status**: Assess for adequate respiratory effort and impending fatigue/failure/apnea. Assess for accessory muscle use, tripod positioning, the ability of the patient to speak in full sentences. If available, assess quantitative waveform capnography

3. **Oxygenation**: Any oxygen saturation <90% represents relatively severe hypoxia and should be considered an important warning sign. In some pediatric cases, SPO_2 is only minimally valuable. In addition to oxygen saturation, assess for additional signs of hypoxia: cyanosis, altered mental state, bradycardia, etc

4. **Hemodynamics**: The blood pressure and heart rate should be factored into the decision making regarding the airway intervention. Resuscitation of the patient's hemodynamics should be performed while concomitantly addressing the oxygenation

5. **Airway Anatomy**: Before attempting airway maneuvers or endotracheal intubation, especially with the use of RSI, assess patient anatomy to predict the probability of success and the need for backup device or technique
    - First, assess for difficulty of mask seal. Patients with facial hair, facial fractures, obesity, extremes of age, and pathologically stiff lungs (COPD, acute respiratory distress syndrome, etc.) may require special mask techniques or alternatives
    - Next, assess for difficulty of intubation. Patients with a short neck, the inability to open their mouth at least three finger widths (or other oral issues such as a large tongue or high arched palate), less than three finger-widths of thyromental distance (or a receding jaw), reduced atlanto-occipital movement (such as in suspected c-spine injury), obesity or evidence of obstruction (such as drooling or stridor) may be difficult to intubate
    - Evaluation of Mallampati: a simple scoring system that relates the amount of mouth opening to the size of the tongue and provides an estimate of space available for oral intubation by direct laryngoscopy. According to the Mallampati scale:
        - class I is present when the soft palate, uvula, and pillars are visible
        - class II when the soft palate and the uvula are visible
        - class III when only the soft palate and base of the uvula are visible; and
        - class IV when only the hard palate is visible

DEVISE A PLAN

1. Each patient will present unique challenges to airway management. Therefore, before any intervention is attempted, the provider should contemplate a plan of action that addresses the needs of the patient and anticipates complications and how to manage them

2. Airway management is a continuum of interventions, not an “all or none” treatment. Frequently patients may only need airway positioning or a nasal or oral airway to achieve adequate ventilation and oxygenation. Others will require more invasive procedures. The provider should choose the least invasive method that can be employed to achieve adequate ventilation and oxygenation
3. Continually reassess the efficacy of the plan and change the plan of action as the patient’s needs dictate
4. In children, a graded approach to airway management is recommended. Basic airway maneuvers and basic adjuncts followed by bag-valve-mask (BVM) ventilation are usually effective

BASIC SKILLS

Mastery of basic airway skills is paramount to the successful management of a patient with respiratory compromise. Ensure a patent airway with the use of:

- Chin-lift/jaw-thrust
- Nasal airway (contraindicated in head or facial trauma)
- Oral airway
- Suction
- Removal of foreign body.
- Infants/Children: Elevate head of bed, or place padding to ensure ear canal is at equal level to sternum

Provide ventilation with a bag-valve-mask (BVM)

1. Strongly Consider using BVM with PEEP valve at 5 cmH2O
2. Strongly Consider using 2-Rescuer ventilation technique
    - Proper use of the BVM includes appropriate mask selection and positioning to ensure a good seal. If possible, utilization of the BVM is best accomplished with two people: one person uses both hands to seal the mask and position the airway, while the other person provides ventilation. If the patient has some respiratory effort, synchronize ventilations with the patient’s own inhalation effort, when possible. Use of PEEP valve can be especially helpful when patient is difficult to ventilate. Only provide enough volume to ensure chest rise
3. NIV: Non-invasive ventilation with continuous positive airway pressure (CPAP/BiPAP) or high-flow nasal cannula has been shown to be effective in reducing the need for intubation and in decreasing mortality in properly- selected patients with acute respiratory distress

ADVANCED AIRWAY SKILLS

Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used. Procedures documenting the use of each device/technique listed below are found elsewhere in this manual

- Supraglottic Airways: Utilization of supraglottic airways is an acceptable alternative to endotracheal intubation as both a primary device or a back-up device when previous attempt(s) at ETT placement have failed. Each device has its own set of advantages/disadvantages and requires a unique insertion technique. Providers should have access to, and intimate knowledge of, at least one supraglotticairway.
    - Examples include:

- i-gel
- King LT
- LMA

- ETT: The endotracheal tube was once considered the optimal method or “gold standard” for airway management. It is now clear, however, that the incidence of complications is unacceptably high when intubation is performed by inexperienced providers or monitoring of tube placement is inadequate. The optimal method for managing an airway will, therefore, vary based on provider experience, emergency medical services (EMS) or healthcare system characteristics, and the patient’s condition

- Bougie: All providers who attempt ETT placement should become intimately familiar with the use of a Bougie. It is the device used most often by anesthesiologists and emergency physicians for helping guide placement when a difficult airway is encountered

DOCUMENTATION

All efforts toward airway management should be clearly documented and, at the minimum, should include the following:

1. Pre/post intervention vital signs including oxygen saturation as well as capnography
2. Procedures performed/attempted, including number of failed attempts and who performed each attempt/ procedure
3. Size of device(s) placed, depth of placement (if applicable)
4. Placement confirmation: methods should include auscultation, symmetrical chest wall rise, and quantitative waveform capnography

5.1A AIRWAY MANAGEMENT - ADULT

EMT

1. Establish airway patency
    - Open and maintain the airway
    - Suctioning as needed
    - Clear foreign body obstructions
2. Administer oxygen to maintain oxygen saturation ≥ 94%
3. Insert an oropharyngeal or nasopharyngeal airway adjunct as required and tolerated
4. If patient has a tracheostomy tube, follow the procedure for Tracheostomy Care Procedure – Adult & Pediatric 
5. Assist ventilations with a bag-valve-mask device and supplemental oxygen as needed
6. For apnea or hypoventilation and decreased level of consciousness with possible narcotic overdose, administer naloxone. See Poisoning/Substance Abuse/Overdose – Adult

PARAMEDIC & MICN

1. In cardiac arrest, consider insertion of a supraglottic airway per local SGA protocol
2. For severe respiratory distress secondary to pulmonary edema, COPD, asthma, pneumonia, near drowning or undifferentiated respiratory distress, consider use of CPAP/BiPAP. See CPAP/BiPAP
3. For apnea/respiratory failure or impending respiratory failure with impaired or absent gag reflex: consider need for advanced airway placement. See Orotracheal Intubation
4. For severe airway compromise where respiratory arrest is imminent and other methods of airway management are ineffective: consider Rapid Sequence Airway. See Rapid Sequence Airway Procedure; Delayed Sequence Airway
    - Whenever possible, resuscitate and address the hemodynamics of the patient prior to advanced airway intervention

5.1P AIRWAY MANAGEMENT – PEDIATRIC

EMT

1. Establish airway patency
    - Open and maintain the airway
    - Suctioning as needed
    - Clear foreign body obstructions
    - Insert an oropharyngeal or nasopharyngeal airway adjunct as required and tolerated
2. Administer oxygen to maintain oxygen saturation ≥ 94%
3. If patient has a tracheostomy tube, follow the procedure for Tracheostomy Care Procedure – Adult & Pediatric
4. For respiratory distress:
    - Administer high concentration oxygen (preferably humidified) via mask positioned on face or if child resists, held near face
    - Attempt to keep oxygen saturation ≥ 94%; increase the oxygen rate with caution and observe for fatigue, decreased mentation, and respiratory failure
    - For children with chronic lung disease or congenital heart disease, ask caregivers about patient's history, including home oxygen level or patient's target oxygen saturation. Maintain target saturation

Note: Pulse oximetry is difficult to obtain in children. Do not rely exclusively on pulse oximetry. If child continues to exhibit signs of respiratory distress despite high oxygen saturation levels, continue oxygen administration

5. For respiratory failure or for distress that does not improve with oxygen administration:
    - Assist ventilations with BVM at rate appropriate for child's age. Reference Pediatric Vital Signs
    - If unable to maintain an open airway through positioning, consider placing an oropharyngeal or nasopharyngeal airway
6. Determine if child's respiratory distress/failure is caused by a preexisting condition:
    - For Allergic Reaction/Anaphylaxis, refer to the Allergic Reaction/Anaphylaxis Protocol – Pediatric
7. For Asthma/Reactive Airway Disease/Croup, refer to the Asthma/Bronchiolitis/Croup/RAD Protocol – Pediatric

PARAMEDIC & MICN

8. For respiratory failure, use most appropriate/least invasive method
9. BVM ventilation is the preferred method of ventilation for pediatric population. However, if unsuccessful, consider placement of supraglottic airway
    - In cardiac arrest: consider insertion of a supraglottic airway such as an i-gel, King LT, or LMA
10. Consider an endotracheal tube if airway cannot be maintained with a supraglottic airway

11. Prolonged transport time alone should not warrant more invasive interventions

12. See CPAP/BiPAP 5.3, Orotracheal Intubation

RESPIRATORY DISTRESS:

- Alert, irritable, anxious
- Stridor
- Audible wheezing/grunting
- Respiratory rate outside normal range for child's age
- Sniffing position
- Nasal flaring
- Head bobbing
- Neck muscle use
- Intercostal retractions
- Central cyanosis that resolves with oxygen administration
- Mild tachycardia

RESPIRATORY FAILURE:

- Sleepy, intermittently combative or agitated
- Respiratory rate < 10 breaths per minute
- Absent or shallow respirations with poor air movement
- Severe intercostal retractions
- Paradoxical breathing
- Limp muscle tone
- Inability to sit up
- Cyanosis and/or mottled skin
- Bradycardia

5.2 TRANSPORT VENTILATOR

PARAMEDIC & MICN

Male Tidal Volume					
Height	Inches	PBW/IDW	6 mL/KG	7 mL/KG	8 mL/KG
4'6"	54	36.2	220	250	290
4'7"	55	38.5	230	270	310
4'8"	56	40.8	250	290	330
4'9"	57	43.1	260	300	350
4'10"	58	45.4	270	320	370
4'11"	59	47.7	290	330	380
5'0"	60	50	300	350	400
5'1"	61	52.3	320	370	420
5'2"	62	54.6	330	380	440
5'3"	63	56.9	340	400	460
5'4"	64	59.2	360	420	480
5'5"	65	61.5	370	430	490
5'6"	66	63.8	390	450	510
5'7"	67	66.1	400	460	530
5'8"	68	68.4	410	480	550
5'9"	69	70.7	430	500	570
5'10"	70	73	440	510	590
5'11"	71	75.3	450	530	600
6'0"	72	77.6	470	540	620
6'1"	73	79.9	480	560	640
6'2"	74	82.2	500	580	660
6'3"	75	84.5	510	610	680
6'4"	76	86.8	520	620	700
PBW/IDW: Predictable Body Weight/Ideal Body Weight					

Female Tidal Volume					
Height	Inches	PBW/IDW	6 mL/KG	7 mL/KG	8 mL/KG
4'6"	54	31.7	190	220	260
4'7"	55	34	210	240	270
4'8"	56	36.3	220	260	290
4'9"	57	38.6	230	270	310
4'10"	58	40.9	250	290	330
4'11"	59	43.2	260	300	350
5'0"	60	45.5	280	320	370
5'1"	61	47.8	290	340	380
5'2"	62	50.1	300	350	400
5'3"	63	52.4	320	370	420
5'4"	64	54.7	330	380	440
5'5"	65	57	340	400	460
5'6"	66	59.3	360	420	480
5'7"	67	61.6	370	430	500
5'8"	68	63.9	390	450	510
5'9"	69	66.2	400	460	530
5'10"	70	68.5	410	480	550
5'11"	71	70.8	430	500	570
6'0"	72	73.1	440	510	590
6'1"	73	75.4	450	530	610
6'2"	74	77.7	470	540	620
6'3"	75	80	480	560	640
6'4"	76	82.3	500	580	660
PBW/IDW: Predictable Body Weight/Ideal Body Weight					

5.3 CONTINUOUS/BI-LEVEL POSITIVE AIRWAY PRESSURE (CPAP/BiPAP)

EMT

INDICATIONS

1. CPAP is the only approved adjunct for BLS
2. Spontaneously breathing patient in moderate to severe respiratory distress due to congestive heart failure/pulmonary edema, asthma/COPD, pneumonia, submersion injury or undifferentiated respiratory distress, concurrent with the following signs and symptoms:
    - Oxygen saturation < 94%
    - Retractions or accessory muscle use
    - Adult respiratory rate > 25

CONTRAINDICATIONS

1. Cardiac or respiratory arrest/apnea
2. Unable to maintain their own airway
3. Vomiting and/or active GI bleed
4. Respiratory distress secondary to trauma
5. Suspicion of pneumothorax
6. Agitated or combative behavior and unable to tolerate mask
7. Facial trauma or impossible face seal
8. Hypotension with SBP < 100 mmHg

PROCEDURE

1. Ensure adequate oxygen supply for CPAP device
2. Explain procedure to patient. Be prepared to coach patient for claustrophobia or anxiety
3. Place patient in upright position; apply pulse oximetry
4. Choose appropriately sized device mask for patient, assemble the CPAP device, attach to oxygen supply and ensure oxygen is flowing (follow manufacturer's directions for preparation for your particular device). May attach additional oxygen to port on mask as needed to maintain appropriate SpO_2
5. Place mask over face and secure with straps until minimal air leak
6. Adjust pressure to 5 – 10 cm H2O to effect for patient condition
7. Recheck mask for leaks and adjust straps as needed to minimize air leaks

8. Reassure anxious patient
9. Monitor vital signs, pulse oximetry and symptoms
10. If patient improves, maintain CPAP for duration of transport and notify receiving hospital to prepare for a CPAP patient
11. If patient begins to deteriorate, discontinue CPAP and assist respirations by BVM
12. Document CPAP procedure, including time and provider. Document serial pulse oximetry readings to demonstrate effects

PARAMEDIC & MICN

13. ALS providers may administer CPAP/BiPAP to a non-vomiting patient with a decreased level of consciousness
    - CPAP/BiPAP is often effective for tachypneic respiratory distress and failure.
14. Airway must be constantly monitored.
15. For patients experiencing hypoxic anxiety, to facilitate compliance with CPAP device, see: Sedation

5.4 FOREIGN BODY AIRWAY OBSTRUCTION

EMT

INDICATIONS

1. Sudden onset of respiratory distress often with coughing, wheezing, gagging or stridor due to a foreign-body obstruction of the upper airway

PROCEDURE

1. Routine Patient Care
    - Assess the degree of foreign body obstruction
    - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing
    - In severe foreign body obstructions, the patient may not be able to make any sound. The victim may clutch his/her neck in the universal choking sign
2. **For an infant**: Deliver 5 back blows followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive
3. **For a child**: Perform subdiaphragmatic abdominal thrusts (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive
4. **For adults**: A combination of maneuvers may be required
    - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved
    - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign body is visible, remove
6. Do not perform blind finger sweeps in the mouth and posterior pharynx. This may push the object farther into the airway

PARAMEDIC & MICN

1. In unresponsive patients, visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign body using Magill forceps
2. If unable to remove object, or if obstruction is secondary to trauma or edema, or if uncontrollable bleeding into the airway causes life-threatening ventilation impairment, perform endotracheal intubation. See Orotracheal Intubation 5.10
3. If unable to intubate and the patient cannot be adequately ventilated by other means, perform cricothyrotomy. See Cricothyrotomy: Percutaneous; Surgical; Control Cric ™

PEARLS

– If air exchange is adequate with a partial airway obstruction, do not interfere; instead, encourage the patient to cough up the obstruction. Continue to monitor the patient for adequacy of air exchange. If air exchange becomes inadequate, continue with the protocol

5.5 GUM ELASTIC BOUGIE TUBE INTRODUCER

PARAMEDIC & MICN

PROCEDURE

1. Choose appropriately sized Bougie: adult, pediatric or neonatal

2. Lubricate Bougie with water-based lubricant

3. Using a laryngoscope (Macintosh or Miller blade) and standard ETT intubation techniques, attempt to visualize the vocal cords

4. If the vocal cords are partially visualized, pass the Bougie through the cords while attempting to feel the signs of tracheal placement (see below). The Bougie is advanced until the black line on the Bougie reaches the lip line

5. If the vocal cords are not visualized, pass the Bougie behind the epiglottis, guiding the tip of the Bougie anteriorly towards the trachea, and assess for signs of tracheal placement (see below)

6. With the laryngoscope still in place, have an assistant load the ETT over the Bougie and slide it to the level of the lip line

7. Advance the ETT over the Bougie, rotating the ETT about 1/4 turn counterclockwise so that the bevel is oriented vertically as the ETT passes through the vocal cords. This maneuver allows the bevel to gently spread the arytenoids with a minimum of force, thus avoiding injury. If resistance is felt, withdraw the ETT, rotating it in a slightly more counterclockwise direction, and advance the tube again. Advance the tube to a lip-line of 24 cm in an adult male, and 22 cm in an adult female

    - CAUTION: Pediatric patients have soft cartilage with an increased susceptibility to perforation. Excessive force should not be utilized during placement

8. Holding the ETT firmly in place, have an assistant remove the Bougie

9. Remove the laryngoscope

10. Inflate the cuff with 5 – 10 mL of air

11. Follow the procedures outlined in Orotracheal Intubation 5.10 to confirm placement, secure the ETT, monitor and document placement of the ETT

SIGNS OF TRACHEAL PLACEMENT

– The Bougie is felt to stop or get “caught up” as the airway narrows and is unable to be advanced further. This is the most reliable sign of proper Bougie placement. If the Bougie enters the esophagus, it will continue to advance without resistance

– It may be possible to feel the tactile sensation of “clicking” as the Bougie tip is advanced downward over the rigid cartilaginous tracheal rings

- Pediatric patients have soft cartilage which can make feeling tracheal rings difficult to detect as the Bougie is advanced

– The Bougie can be felt to rotate as it enters a mainstem bronchus. Usually, it is a clockwise rotation as the Bougie enters the right mainstem bronchus, but occasionally it will rotate counterclockwise if the Bougie enters the left mainstem bronchus

5.6 OROTRACHEAL INTUBATION

PARAMEDIC & MICN

GOAL: For maintenance of oxygenation, ventilation and airway patency while minimizing potential negative effects from interventions

INDICATIONS

1. Apnea/respiratory failure
2. Impending respiratory failure
3. Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used

CONTRAINDICATION

1. Epiglottitis
2. Facial or neck injuries that prohibit visualization of airway anatomy (relative)

CAUTIONS

1. Clinicians should be prepared to manage patient with a BVM/SGA prior to intubation
2. Patients with CHF should be managed with trial of CPAP/BiPAP and nitrates if possible
3. Avoid intubating patients with severe TBI and asthmatics, if possible

PROCEDURE

1. Prepare all equipment. Have suction and Bougie ready
2. Pre-oxygenate the patient with high-concentration oxygen. Three-minute minimum of BVM ventilation or if patient is breathing, assuring 8 vital capacity breaths with NRB. Apply continuous nasal cannula at 15 LPM
3. Assess for airway difficulty based on patient anatomy (e.g., short neck, obesity, decreased hyromental distance and Class III or IV oropharyngeal views on observation). Have fallback plan and equipment ready
4. Open the patient's airway. While holding the laryngoscope in the left hand, insert the blade into the right side of the patient's mouth, sweeping the tongue to the left. Use video laryngoscopy, if available and trained
5. Utilize the laryngoscope blade of choice appropriately to maximize view
6. Once the glottic opening is visualized, insert the tube through the vocal cords and continue to visualize while passing the cuff through the cords
7. Remove the laryngoscope and then the stylet from the ETT
8. Inflate the cuff with 5 – 10 mL of air, or appropriate volume of air for patient/tube size
9. Confirm appropriate proper placement with quantitative waveform capnography and also document symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask

10. Secure the ETT with a commercial device. Consider applying a cervical collar to minimize head and neck motion during movement and transport
11. Reassess tube placement frequently, especially after movement of the patient
12. Ongoing monitoring of ETT placement and ventilation status using waveform capnography is required for all patients
13. Document each attempt as a separate procedure so it can be time stamped in the ePCR. An attempt is defined as placement of the blade into the patient's mouth. For each attempt, document the time, provider, placement success, pre-oxygenation, airway grade, ETT size, placement depth, placement landmark (e.g. cm at the patient's lip), and confirmation of tube placement including chest rise, bilateral, equal breath sounds, absence of epigastric sounds and end-tidal CO2 readings
14. If intubation attempt is unsuccessful, ETT placement cannot be verified or ETT becomes dislodged:
    - Remove ETT
    - Monitor oxygen saturation and end-tidal CO2 AND
    - Ventilate the patient with 100% oxygen via a BVM until ready to attempt intubation again.
15. If continued intubation attempts are unsuccessful (maximum of 3 attempts for cardiac arrest) or BVM ventilation is not adequate, consider placing a supraglottic airway

POST INTUBATION CARE

1. Sedation:
    - Ketamine*:*
        - Adult*:* 0.5 - 1.5 mg/Kg IV/IO; every 5-10 minutes as needed (single max dose 400 mg)
        - Pediatric*:* 1 mg/Kg IV/IO; every 5-10 minutes as needed (single max dose 50 mg)

      OR
    - Midazolam:
        - Adult*:* 2.5 - 5 mg IV/IO; every 5-10 minutes as needed (single max dose 10 mg)
        - Pediatric*:* 0.1 mg/kg IV/IO; every 5-10 minutes as needed (single max dose 4 mg)

      AND
    - Fentanyl:
        - Adult*:* 50 - 100 mcg slow IV/IO push; every 5-10 minutes as needed (single max dose 200 mcg)
        - Pediatric*:* 1 mcg/kg IV/IO; every 5-10 minutes as needed (single max dose 50 mcg)

      OR
    - Lorazepam:
        - Adult*:* 1 - 2 mg IV/IO; every 5-10 minutes as needed (single max dose 10 mg)
        - Pediatric*:* 0.1 mg/kg IV/IO; every 5-10 minutes as needed (single max dose 4 mg)

      AND

- Fentanyl:

  - Adult*:* 50 - 100 mcg slow IV/IO push; every 5-10 minutes as needed (single max dose 200 mcg)
  - Pediatric*:* 1 mcg/kg; every 5-10 minutes as needed (single max max dose 50 mcg)
  - Additional analgesia if needed:
- Fentanyl:

  - Adult*:* 50-200 mcg slow IV/IO; every 5-10 minutes as needed
  - Pediatric*:* 1 mcg/kg; every 5-10 minutes as needed (single max dose 50 mcg)

PEARLS

– Video-laryngoscopy, If available to trained providers, has been shown to have better success rates than direct laryngoscopy

– Video laryngoscopy should be utilized as the primary method for endotracheal intubation

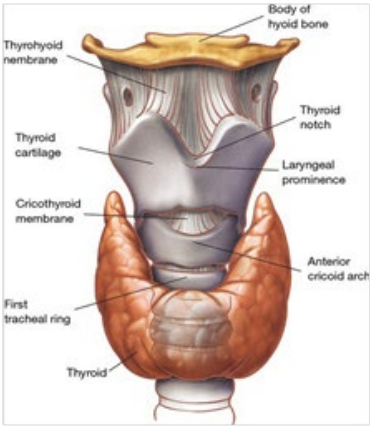
– Resuscitate prior to intubation; utilize pressors according to shock protocol

5.7 CRICOTHYROTOMY – PERCUTANEOUS

PARAMEDIC & MICN

INDICATIONS

1. Failed airway: Viable patient who cannot be ventilated by any other means available
2. All other methods to ventilate have been deemed unable to be successful
3. Massive mid-face trauma precluding use of BVM, obstruction, trismus (clenching)
4. Inability to control the airway using less invasive measures
5. All other airway management techniques have failed. Unable to ventilate or oxygenate patient



PROCEDURE

1. Choose appropriately sized device
2. Pre-oxygenate patient when possible
3. Assemble all available additional personnel
4. Locate cricothyroid membrane at the inferior portion of the thyroid cartilage (with head in neutral position, membrane is approximately 3 finger widths above the sternal notch) May be difficult to locate in obese patients
5. Hold skin taut over membrane and locate the midline
6. Prep area, preferably with betadine
7. Hold the needle bevel up at a 90-degree angle, aimed inferiorly as you approach the skin
8. Puncture the skin with the needle and continue with firm, steady pressure while aspirating for air with the syringe
9. As soon as air is aspirated freely, stop advancing the needle/airway assembly
10. Modify the angle to 60 degrees from the head and advance to level of the stopper
11. Remove the stopper while holding the needle/airway assembly firmly in place
12. Do not advance the needle further. (NOTE: if the patient is obese and no air can be aspirated with the stopper in place, you may remove the stopper and continue advancing until air is aspirated. Be aware that without the stopper, risk of perforating the posterior aspect of the trachea is greatly increased)
13. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe
14. Secure the cannula with the neck strap
15. Apply the $EtCO_2$ detector, then the connecting tube to the $EtCO_2$ detector and connect the other end to the BVM. Confirm placement with the use of breath sounds, pulse ox, $EtCO_2$ and waveform capnography
16. Ensure 100% FiO_2 to BVM via supplemental O_2

5.7 CRICOTHYROTOMY – SURGICAL

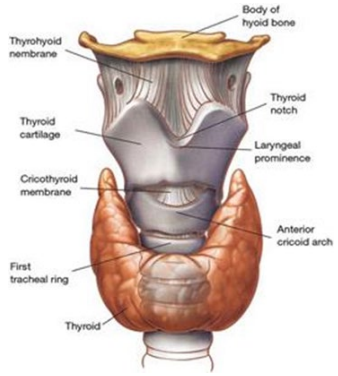
PARAMEDIC & MICN

INDICATIONS

1. Failed airway: Viable patient who cannot be ventilated by any other means available
2. All other methods to ventilate have been deemed unable to be successful
3. Massive mid-face trauma precluding use of BVM, obstruction, trismus (clenching)
4. Inability to control the airway using less invasive measures
5. All other airway management techniques have failed. Unable to ventilate or oxygenate patient

EQUIPMENT

- Chlorhexidine or other antiseptic solution
- #10 blade scalpel
- Elastic bougie
- 6.0mm endotracheal tube (ETT)
- 10mL syringe
- BVM
- Waveform $ETCO_2$



PROCEDURE

1. Position patient supine and extend the neck as needed to improve anatomic view
2. Clean neck with antiseptic solution
3. Utilizing the non-dominant hand, stabilize the larynx and identify the cricothyroid membrane, which lies between the thyroid and cricoid cartilages (refer to image)
4. Make a 3 – 5 cm vertical incision, approximately 0.5cm deep, through the skin and fascia, using a finger to dissect the tissue to locate the cricothyroid membrane
5. Make a horizontal incision, no more than 2cm, through the cricothyroid membrane
6. Exercise caution as not to incise too deep to prevent laceration to esophagus
7. Perform blunt dilation of the incision in the cricothyroid membrane to maintain the opening in the cricothyroid membrane (ie. utilizing a finger or blunt end of scalpel)
8. Insert the bougie, curved tip first, through the incision and angled towards the patient's feet
9. Advance the bougie, feeling for tracheal rings, until no further advancement is possible (suggesting positioning near the carina)
10. Advance a 6.0mm ETT over the bougie and into the tracheal lumen

11. Remove the bougie, being careful to not dislodge the ETT. Inflate the ETT cuff

12. Confirm appropriate airway placement by symmetric chest wall rise, auscultation of equal and bilateral breath sounds, absence of breath sounds over the epigastrium, and quantitative $ETCO_2$

13. Secure the ETT

Relative Contraindications

- Neck swelling that obscure anatomic landmarks
- Damage to larynx, cricoid cartilage, trachea, and neck, including trauma and burns
- Anatomic anomalies/distortion of larynx and/or trachea, including evidence of prior neck surgery, hematoma, evidence of previous radiation to the neck, and obesity

5.7 CRICOTHYROTOMY - CONTROL-CRIC™

PARAMEDIC & MICN

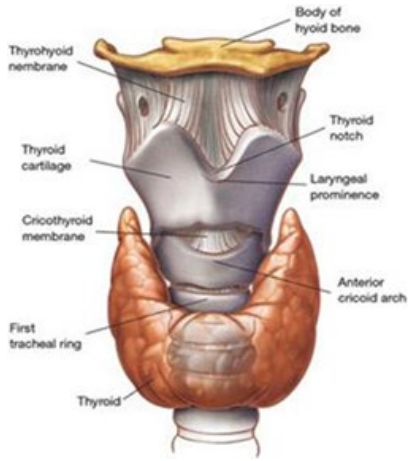
INDICATIONS

1. Failed airway: Viable patient who cannot be ventilated by any other means available
2. All other methods to ventilate have been deemed unable to be successful
3. Massive mid-face trauma precluding use of BVM, obstruction, trismus (clenching)
4. Inability to control the airway using less invasive measures
5. All other airway management techniques have failed. Unable to ventilate or oxygenate patient

AGE: Must be over the age of 13

EQUIPMENT

- Chlorhexidine or other antiseptic solution
- 1 Cric-Key introducer tube
- 1 Cric-Knife with tracheal hook
- 1 Stabilizing strap
- 1 Inflation syringe
- 1 Wedge
- 1 Extension tube
- BVM
- Waveform $ETCO_2$



PROCEDURE

1. Position patient supine and identify the cricothyroid membrane. Stabilize the larynx with thumb and middle finger with non-dominant hand
2. Use the Cric-Knife to incise skin. A vertical skin incision from mid-thyroid cartilage to the cricoid cartilage is recommended (usually about 2 finger breadths)
    - In Patients with a thick neck a longer incision may be needed. A horizontal skin incision may be used when landmarks are evident
3. After palpating the cricothyroid membrane, turn the Cric-knife to a horizontal position over the cricothyroid membrane. Push the blade downward, perpendicular to the trachea, until the blade is fully inserted and the airway is entered
4. While maintaining downward force, slide the tracheal hook down the handle with your thumb until the hook is felt to enter the trachea, and it disengages from the handle. Grab the tracheal hook with the non-dominant hand, lifting up on the thyroid cartilage
5. Insert Cric-Key through incision. Confirm placement by moving the device along anterior wall of trachea to feel for tracheal rings

- Indicators of incorrect placement could be: tenting of the skin, difficulty advancing the Cric-key tube, or lack of tactile feedback from the tracheal rings

6. Once placement has been confirmed, advance Cric-key tube to the flange. Stabilize the Cric-key tube and pivot the tracheal hook toward the patients shoulder to remove from airway
7. While stabilizing the Cric-key tube, remove the Cric-key introducer. Inflate the cuff until resistance is met
8. Confirm placement and secure with stabilizing strap
9. Attach manual BVM. Ventilate and auscultate lung fields. Reassess

Relative Contraindications

- Neck swelling that obscure anatomic landmarks
- Damage to larynx, cricoid cartilage, trachea, and neck, including trauma and burns
- Anatomic anomalies/distortion of larynx and/or trachea, including evidence of prior neck surgery, hematoma, evidence of previous radiation to the neck, and obesity

5.8 SUCTIONING OF INSERTED ADVANCED AIRWAY

PARAMEDIC & MICN

INDICATIONS

1. Obstruction of the airway (secondary to secretions, blood, and/or any other substance) in a patient currently being assisted by an inserted airway such as an endotracheal tube, King LTD or i-gel

CONTRAINDICATIONS

1. None

PROCEDURE

1. Ensure the suction device is operable
2. Pre-oxygenate the patient
3. While maintaining aseptic technique, attach the suction catheter to the suction unit
4. If applicable, remove ventilation device from the airway
5. Insert the sterile end of the suction catheter into the tube without suction. Insert to proper depth so that suction catheter does not extend past the tube/device
6. Once the desired depth is met, apply suction by occluding the port of the suction catheter and slowly remove the catheter from the tube using a twisting motion
7. Suctioning duration should not exceed 10 seconds, using lowest pressure that effectively removes secretions
8. Saline flush may be used to help loosen secretions and facilitate suctioning
9. Re-attach the ventilation device to the patient

5.9 TRACHEOSTOMY CARE – ADULT & PEDIATRIC

EMT

INDICATIONS

1. An adult or pediatric patient with an established tracheostomy in respiratory distress or failure

PROCEDURE

1. Consult with the patient's caregivers for assistance
2. Assess tracheostomy tube. Look for possible and correctable causes of distress such as; Dislodged tube, Obstructed tube/airway, Pneumothorax, Equipment failure, Stacked breaths
3. If the patient's breathing is adequate but exhibits continued signs of respiratory distress, administer high-flow oxygen via non-rebreather mask or blow-by, as tolerated, over the tracheostomy
4. If patient's breathing is inadequate, assist ventilations using bag-valve-mask device with high-flow oxygen
5. If on a ventilator, remove the patient from the ventilator prior to using bag valve mask device as there may be a problem with the ventilator or oxygen source
6. Suction if unable to ventilate via tracheostomy or if respiratory distress continues

PARAMEDIC & MICN

INDICATIONS

1. An adult or pediatric patient with an established tracheostomy, in respiratory distress or failure where EMT tracheostomy interventions have been unsuccessful
2. Dislodged tracheostomy tube

CONTRAINDICATIONS

1. None

PROCEDURE

1. If the tracheostomy tube has a cannula, remove it prior to suctioning
2. Determine proper suction catheter length by measuring the obturator
3. If the obturator is unavailable, insert the suction catheter approximately 2 – 3 inches into the tracheostomy tube. **Do not use force!**
4. 2 – 3 mL of saline may be used to help loosen secretions
5. If the patient remains in severe distress, continue ventilation attempts using bag valve mask with high-flow oxygen via the tracheostomy. Consider underlying reasons for respiratory distress and refer to the appropriate protocol for intervention
6. If the patient remains in severe respiratory distress, remove tracheostomy tube and attempt bag valve mask ventilation
    - If BVM is applied to mouth, stoma must be sealed for ventilation to be effective
    - If mask is applied to stoma, a pediatric mask will provide the most effective seal

7. If another tube is available from caregivers, insert into stoma and resume ventilation (a standard endotracheal tube may be used or the used tracheostomy tube, after being cleaned)
8. If unable to replace tube with another tracheostomy tube or endotracheal tube, assist ventilations with bag valve mask and high-flow oxygen

PEARLS

- Total laryngectomy patients have no connection between oropharynx and airway as it has been surgically removed
- These patients can only be oxygenated via tracheostomy

5.10 NEEDLE THORACOSTOMY

PARAMEDIC & MICN

INDICATIONS

1. SIGNS AND SYMPTOMS HIGHLY SUGGESTIVE OF TENSION PNEUMOTHORAX:
    - Increasing respiratory distress or hypoxia despite the administration of high-flow oxygen

      AND
    - Increasing signs of shock including tachycardia or hypotension

      AND one or more of the following:
        - Diminished or absent unilateral breath sounds
        - JVD (neck vein distension)
        - Possible tracheal deviation above the sternal notch away from the side of the injury (late sign)
        - Tympany (hyperresonance) to percussion on the affected side
2. Traumatic cardiac arrest with associated chest or abdominal injuries
    - Bilateral needle thoracostomies should be performed
3. This procedure if for TENSION Pneumothorax, not simple pneumothorax

CONTRAINDICATIONS

1. None in the life-threatening presentation

PROCEDURE

1. For patients presenting with sign/symptoms of tension pneumothorax:
2. Select and identify insertion site
    - Fourth or fifth intercostal space in the mid-axillary line
        - Abduct arm on affected side, (raise the arm on affected side up over the patients head)
            - In males, the fifth intercostal space is approximately at the level of the nipple at the mid-axillary line
            - In females, the breast can displace the nipple inferiorly. If displaced, the fifth intercostal space will be located just superior to the mammary fold/ crease
    - Second intercostal space (ICS) midclavicular line(MCL)
        - The second ICS is between the second and third rib
        - The MCL is the midpoint on the clavicle (measured from the jugular notch to the distal clavicle)
        - The intersection of the MCL and the second ICS is the location for needle decompression
3. Prep the area with alcohol or chlorhexidine

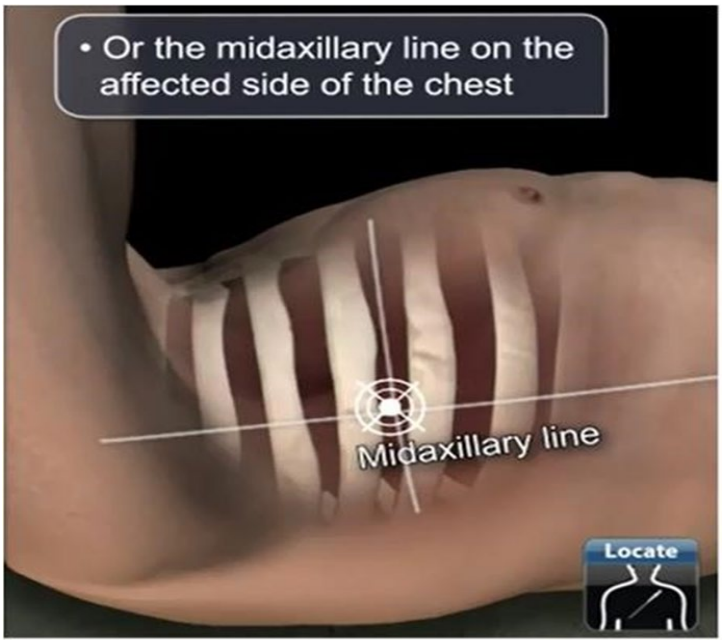
4. If possible, attach a 10 ml syringe partially filled with saline or water to the end of their angiocatheter/needle set
5. Insert the 14-16 gauge angiocatheter with the needle placed just above the rib, perpendicular to the skin
6. As the needle enters the chest wall, aspirate and observe for the presence of air bubbles in the syringe
7. Insert the needle approximately ¼ inch further then deploy the catheter
8. Remove the needle and leave the catheter in place
9. Place a one way valve chest seal over the catheter (if available)
10. Re-evaluate the patient to ensure a positive clinical effect

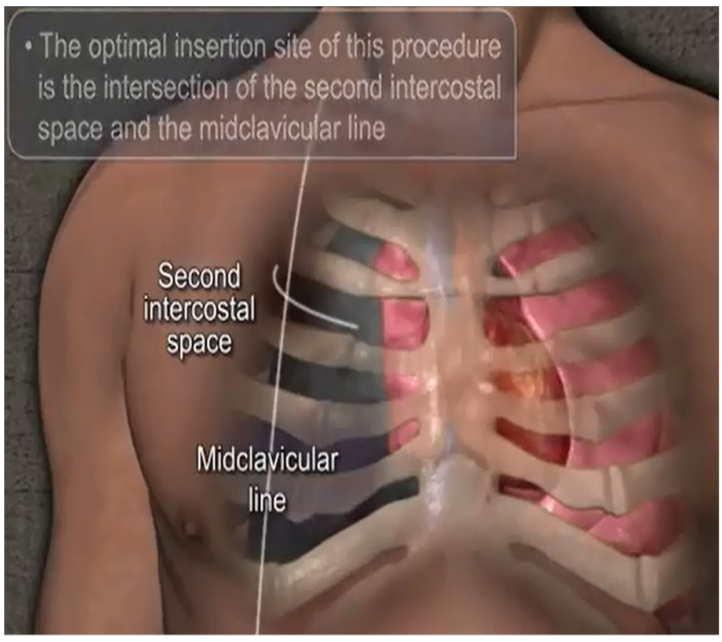
Pediatric Procedure Considerations:

1. Second intercostal space, mid-clavicular line (2nd ICS-MCL)
2. Fourth intercostal space, anterior axillary line (4th ICS, AAL)
3. A standard length 14-16 gauge catheter, which is 1.5 inches (3.8cm) long, would be adequate for all children <13 years old, unless morbidly obese

Broselow/Handtevy color (height)

1. Chest Wall Thickness (CWT) 2nd ICS-MCL; CWT 4th ICS-AAL
    - **Gray** / **Pink** (<68cm); 1.57cm; 1.67cm
    - **Red** / **Purple** (68.1-90cm), 1.96cm; 1.73cm
    - **Yellow** / **White** (90.1-115cm), 2.12cm; 1.91cm
    - **Blue** / **Orange** / **Green** (>115.1cm), 2.45cm; 2.19cm





5.15 POSITIVE END EXPIRATORY PRESSURE (PEEP) VALUE

The addition of a Positive End-Expiratory Pressure (PEEP) valve to a bag-valve mask is a non-invasive means of increasing oxygenation in patients who are in significant respiratory distress or respiratory arrest where assisted ventilations are not able to maintain oxygen saturation. It maintains air pressure in the alveoli, "splinting" them open to increase the surface area involved in gas exchange

EMT, PARAMEDIC, & MICN

INDICATIONS

1. Patients who remain hypoxemic (SpO2 < 90%) despite good bag-valve mask ventilation techniques and airway management; it can be combined with high-flow nasal cannula oxygenation to maximize oxygen delivery

CONTRAINDICATIONS

1. Patients in cardiac arrest
2. Patients over 12 years of age: Systolic blood pressure ≤ 90 mmHg
3. Patients under 12 years of age: Systolic blood pressure ≤ lower limit for age range as per pediatric vital signs
4. Known or suspected pneumothorax
5. Traumatic cause of respiratory arrest

PROCEDURE

1. Attach the PEEP valve to the exhaust port on the bag-valve mask
2. Set the dial on the PEEP valve to 5 cmH2O
3. Establish and maintain a good mask seal. Begin ventilating at an appropriate rate, usually no more than 8-10 breaths per minute
4. Monitor oxygen saturation and blood pressure for changes
5. PEEP may be increased in increments of 2.5 cmH2O to a maximum of 10 cmH2O
6. **Contact Medical Command** as required if patients remain hypoxemic despite maximal oxygen therapy
7. Continue with medications as appropriate to correct cause of respiratory distress or arrest

To be effective, PEEP requires a complete mask seal (the "closed circuit"). Removing the mask from the patient's face will release the end-expiratory pressure and allow alveoli to collapse

For critically ill patients, providers should seek to minimize the amount of time the mask is not firmly sealed to the patient's face

Discontinue PEEP if any of the following occur:

- The patient's systolic blood pressure drops below 90 mmHg
- Any contraindication arises
- Equipment failure or concerns

6.0 SPINAL ASSESSMENT

EMT

PURPOSE

This protocol provides guidance regarding the assessment and care of patients who have a possible spinal injury, utilizing spinal motion restriction. Spinal motion restriction is defined as application of a cervical collar and maintenance of the spine in neutral alignment. Determination that immobilization devices should be used should be made by the highest-level EMS provider. All steps of spinal assessment algorithm below must be documented in the ePCR

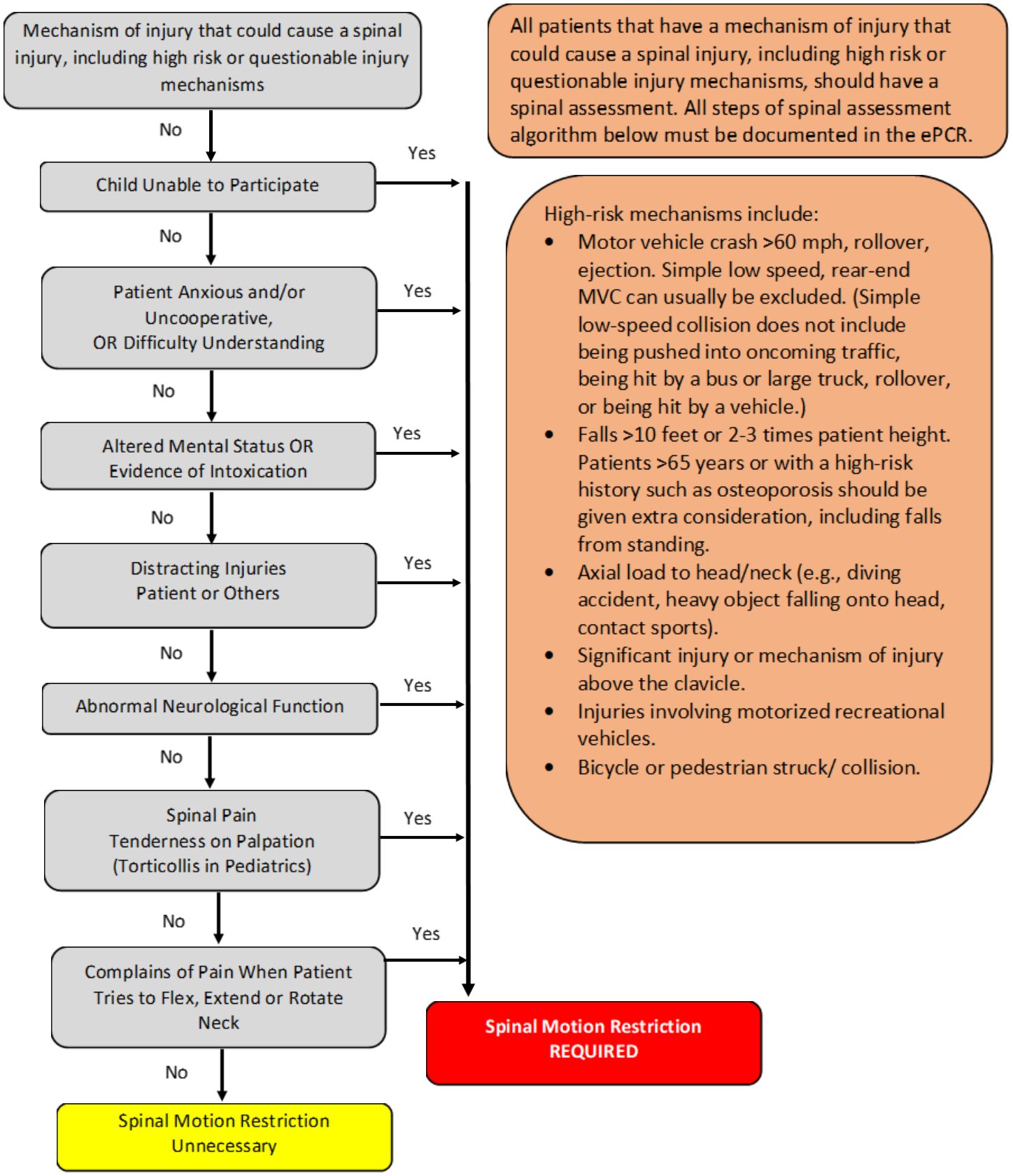
All patients that have a mechanism of injury that could cause a spinal injury, including high risk or questionable injury mechanisms, should have a spinal assessment

1. Spinal Assessment: Spinal motion restriction is required when ANY of the following conditions apply: See Spinal Motion Restriction
2. Unreliable patient:
    - Child who cannot participate in assessment
    - Anxious and/or uncooperative
    - Communication barriers (e.g., deafness, hard of hearing, language, understanding)
    - Altered mental status (not alert and oriented x 3)
    - Evidence of alcohol or drug intoxication
    - Distracted by circumstances or injuries to self or others (ie, any other injury capable of producing significant pain in this patient)
3. Any abnormal neurological function in extremities (check all 4 extremities):
    - Numbness or tingling (paresthesia)
    - Motor strength not full and symmetrical
    - Sensation not intact and symmetrical
4. Torticollis: neck disorders that exhibit flexion, extension, or twisting of muscles of the neck beyond their normal position
5. Midline tenderness on palpation:
    - Explain to the patient the actions that you are going to take. Ask the patient to immediately report any pain, and to answer questions with a “yes” or “no” rather than shaking the head
    - With the patient’s spine supported to limit movement, begin palpation at the base of the skull at the midline of the spine
    - Palpate the vertebrae individually from the base of the skull to the bottom of the sacrum
    - On palpation of each vertebral body, look for evidence of pain and ask the patient if they are experiencing pain. If evidence of pain along the spinal column is encountered, utilize spinal motion restriction

6. Pain with movement of neck (cervical flexion, extension and rotation)
    - Inquire as to the existence of pain when patient moved neck prior to EMS assessment
    - Do not assist patient in attempts to rotate neck

High-risk mechanisms include:

- Motor vehicle crash >60 mph, rollover, ejection. Simple low speed, rear-end MVC can usually be excluded. (Simple low-speed collision does not include being pushed into oncoming traffic, being hit by a bus or large truck, rollover, or being hit by a high-speed vehicle)
- Falls >10 feet or 2-3 times patient height. Patients >65 years or with a high-risk history such as osteoporosis should be given extra consideration, including falls from standing
- Axial load to head/neck (e.g., diving accident, heavy object falling onto head, contact sports)
- Significant injury or mechanism of injury above the clavicle
- Injuries involving motorized recreational vehicles
- Bicycle or pedestrian struck/collision


Mechanism of injury that could cause a spinal injury, including high risk or questionable injury mechanisms
No
Yes
Child Unable to Participate
No
Patient Anxious and/or Uncooperative, OR Difficulty Understanding
Yes
No
Altered Mental Status OR Evidence of Intoxication
Yes
No
Distracting Injuries Patient or Others
Yes
No
Abnormal Neurological Function
Yes
No
Spinal Pain Tenderness on Palpation (Torticollis in Pediatrics)
Yes
No
Complains of Pain When Patient Tries to Flex, Extend or Rotate Neck
Yes
No
Spinal Motion Restriction Unnecessary
Spinal Motion Restriction REQUIRED
All patients that have a mechanism of injury that could cause a spinal injury, including high risk or questionable injury mechanisms, should have a spinal assessment. All steps of spinal assessment algorithm below must be documented in the ePCR.
High-risk mechanisms include:
• Motor vehicle crash >60 mph, rollover, ejection. Simple low speed, rear-end MVC can usually be excluded. (Simple low-speed collision does not include being pushed into oncoming traffic, being hit by a bus or large truck, rollover, or being hit by a vehicle.)
• Falls >10 feet or 2-3 times patient height. Patients >65 years or with a high-risk history such as osteoporosis should be given extra consideration, including falls from standing.
• Axial load to head/neck (e.g., diving accident, heavy object falling onto head, contact sports).
• Significant injury or mechanism of injury above the clavicle.
• Injuries involving motorized recreational vehicles.
• Bicycle or pedestrian struck/ collision.

6.1 DOUBLE SEQUENTIAL DEFIBRILLATION – ADULT

PARAMEDIC & MICN

Approval of Agency Medical Director and OEMS is required

INDICATION

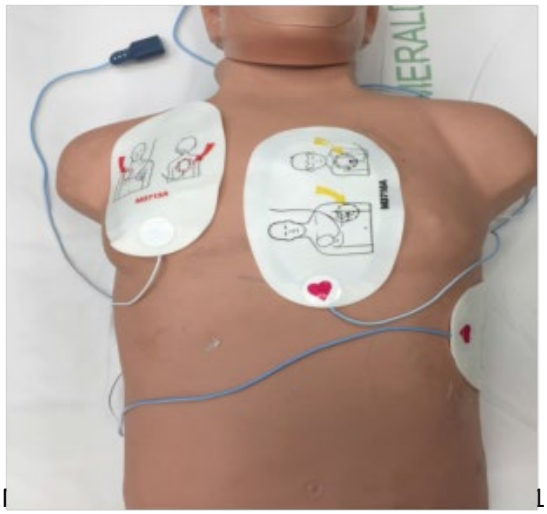
1. Refractory Ventricular Fibrillation / Tachycardia after 4 unsuccessful shocks (3 regular and 1 with vector change. This includes those by AED), and a second manual defibrillator is available

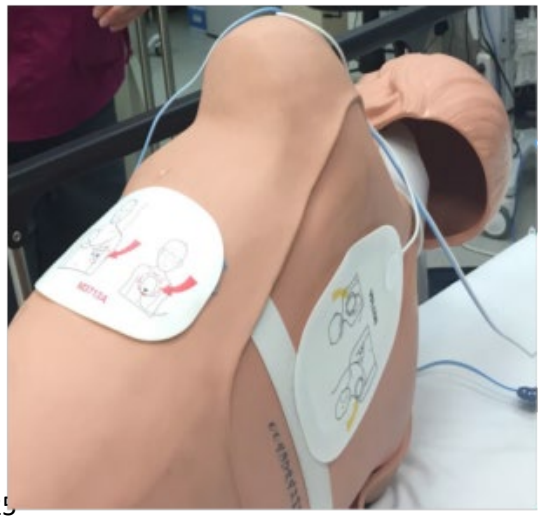
Recurrent ventricular fibrillation/tachycardia is defined as SUCCESSFULLY CONVERTED by standard defibrillation techniques but subsequently returns. It should NOT be treated by double sequential external defibrillation. It is managed by treatment of correctable causes and use of anti-arrhythmic medications in addition to standard defibrillation

Refractory ventricular fibrillation/tachycardia is defined as NOT CONVERTED by standard defibrillation. It is initially managed by treating correctable causes and with antiarrhythmic medications. If these methods fail to produce a response, double sequential external defibrillation may be beneficial

PROCEDURE:

1. Prior to attempting Double Sequential Defibrillation, at least one shock should be given using a different vector. Change pad placement from anterior-apex to anterior-posterior or from anterior-posterior to anterior-apex
2. Ensure quality CPR and minimally interrupted chest compressions during pad application and procedure
3. Apply a new set of external defibrillation pads adjacent to, but not touching the pad set currently in use
4. Assure that controls for the second manual defibrillator are accessible to the team leader
5. Verify that both cardiac manual defibrillators are attached to the patient, that all pads are well adhered, and simultaneously charge both manual defibrillators
6. When both monitors are charged to maximum energy settings and all persons are clear, push “Shock” buttons in rapid sequence (less than 1-second, but NOT simultaneous)
7. May repeat procedure every 2 minutes as indicated if refractory ventricular fibrillation/ tachycardia persists





PEARLS

- Continue compressions when defibrillators are charging
- During interruptions compressor's hands should hover over chest
- Pre-charge manual defibrillators prior to rhythm check to ensure rapid defibrillation if a shockable rhythm is present. If no shock is indicated, disarm the device (dump the charge)
- Depending on local hospital resources, some refractory ventricular fibrillation patients may benefit from emergent cardiac catheterization. For this small patient population, transportation (ideally with a mechanical CPR device) may be indicated. Transporting these patients directly to the Cath lab should be done in collaboration with on-line Medical Command and interventional cardiology
- If using a manual defibrillator and an AED, the AED should be 1st and then the manual defibrillator

6.2 ECG ACQUISITION, TRANSMISSION, AND INTERPRETATION

PARAMEDIC & MICN

1. Obtain 12-lead ECG with baseline vitals within 10 minutes if practical and transmit per indicators

INDICATIONS

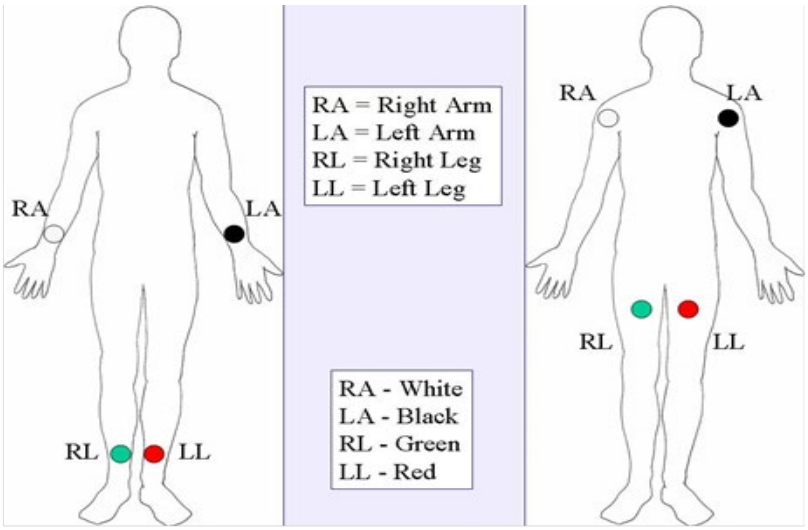
1. A pre-hospital 12-Lead ECG will be acquired on all patients age ≥ 35, presenting with the following symptoms:
    - Chest discomfort of any kind, including atypical presentations such as sharp, stabbing pain, “indigestion,” epigastric pain, pleuritic, reproducible or positional discomfort, or discomfort relieved by antacids
    - Dyspnea or pulmonary edema
    - Syncope/near syncope/dizziness
    - Syncope in any pediatric patient
    - Palpitations
    - Diaphoresis unexplained by ambient temperature, nausea or vomiting, or “flu-like” symptoms
    - Discomfort in the arms, neck, jaw, shoulders, or between the shoulder blades
    - Thoracic back pain without trauma
    - Diabetic Ketoacidosis/hyperglycemia
    - Feeling of impending doom, anguish or non-specific fear/anxiety
    - Overdose on substance known to cause cardiac dysrhythmias (e.g. cocaine, tricyclics)
    - Patient with preexisting cardiovascular disease
    - Further exploration of an identified arrhythmia or new-onset bundle branch block.

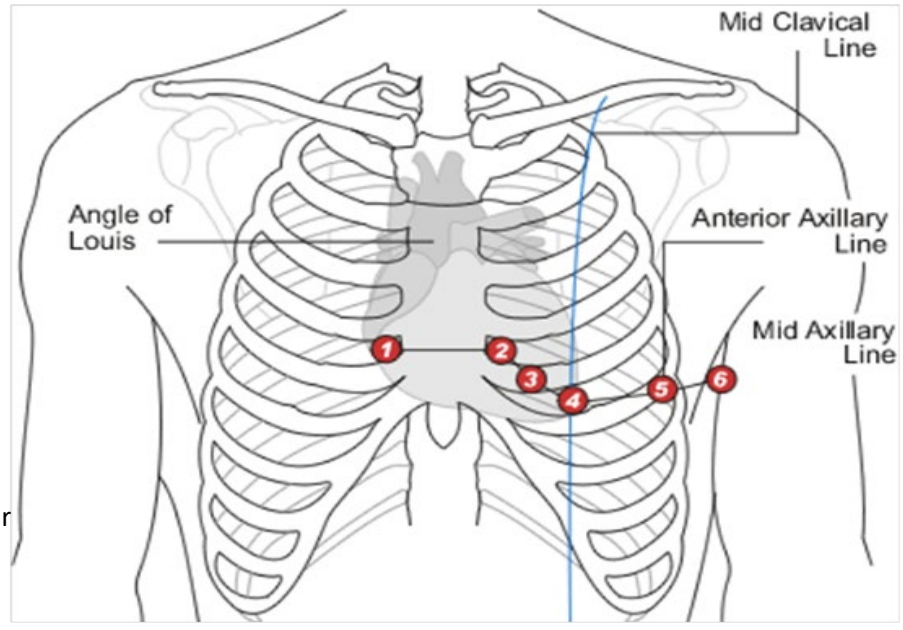
PROCEDURE

1. Prepare ECG Monitor and connect cable with electrodes
2. Properly position the patient (supine or semi-reclined)
3. Enter patient information (e.g. age, gender) into monitor
4. Prep chest as necessary, (e.g. hair removal, skin prep pads)
5. Apply chest and extremity leads using recommended landmarks:
    - RA – Right arm or shoulder
    - LA – Left arm or shoulder
    - RL – Right leg or hip
    - LL – Left leg or hip
    - V1 – 4TH intercostal space at the right sternal border

- V2 – 4TH intercostal space at the left sternal border
- V3 – Directly between V2 and V4
- V4 – 5TH intercostal space midclavicular line
- V5 – Level with V4 at left anterior axillary line
- V6 – Level with V5 at left midaxillary line
  - See Diagram

6. Instruct patient to remain still
7. Obtain the 12-lead ECG and transmit to Medical Command if required/requested
8. If ECG is interpreted to be an acute ST-elevation myocardial infarction (STEMI), transport patient to the most appropriate facility in accordance with local STEMI guidelines/agreements and notify receiving facility of a "STEMI ALERT"
9. For patients with continued symptoms consistent with acute coronary syndrome, perform repeat ECGs during transport to evaluate for evolving STEMI
10. Copies of 12-lead ECG labeled with the patient's name and date of birth should be left with the receiving hospital and incorporated into the patient's record





6.3 INTRAOSSEOUS ACCESS

PARAMEDIC & MICN

DEFINITION

Intraosseous insertion establishes access in a critically ill patient where venous access cannot be rapidly obtained. The bone marrow space is non-collapsible and provides access to the general circulation for the administration of fluids and resuscitation medications. This protocol applies to all appropriate IO insertion sites

INDICATIONS

1. Medication or fluid resuscitation of a patient in profound shock or other critical illness and in need of immediate life-saving intervention and unable to rapidly obtain peripheral IV access

CONTRAINDICATIONS

1. Placement in or distal to a fractured bone
2. Placement at an infected site
3. Placement at site where IO was already attempted
4. Placement at site near joint replacement

COMPLICATIONS

1. Infusion rate may not be adequate for resuscitation of ongoing hemorrhage or severe shock, extravasation of fluid

EQUIPMENT

- 15 – 19-gauge bone marrow needle or FDA-approved commercial intraosseous infusion device
- Gloves and povidone-iodine, chlorhexidine solution or alcohol wipes
- Primed IV tubing, IV stopcock
- 10 mL syringe with 0.9% NaCl
- Pressure pump/bag or 60 mL syringe for volume infusion or slow push
- One vial of 2% lidocaine (preservative free)
- 5 mL syringe

PROCEDURE When using an FDA-approved commercial IO device, follow manufacturer's instructions

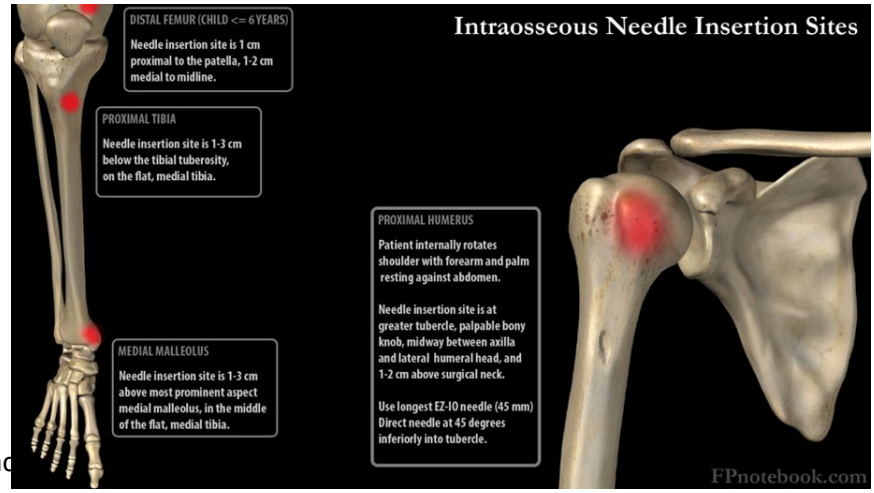
1. Place the patient in a supine position
2. Identify the bony landmarks as appropriate for device
3. Choose correct needle size: 45 mm proximal humerus, 25 mm anterior tibia, 15 mm anterior tibia
    - Utilize a length based/color chart for appropriate pediatric IO needle size
4. Prep the site. Scrub site with alcohol wipe or other cleaning solution and allow drying
5. Insert IO needle. Follow manufacturer's instructions for preferred sites

6. Needle is appropriately placed if the following are present:
    - If appropriate, aspiration with syringe yields blood with marrow particulate matter
    - Infusion of saline does not result in infiltration at the site
    - Needle stands without support
7. Attach IV tubing, with or without stopcock
8. Prior to IO syringe bolus (flush) or continuous infusion in alert patients:
    - Ensure that the patient has no allergies or sensitivity to lidocaine
    - SLOWLY administer lidocaine 2% (preservative free) through the IO device catheter
    - Allow 2 – 5 minutes for anesthetic effects, if possible:
        - Adult: 40 mg 2% lidocaine
        - Pediatric: 0.5 mg/kg 2% lidocaine (maximum 40 mg)
9. Flush with 10 mL of 0.9% NaCl rapid bolus prior to use: For pediatric patients, flush with 2-5 ml
    - Recommend use of a stop cock in line with syringe for bolus infusions
    - Use a pressure bag for continuous crystalloid solution infusions
    - Infuse emergent pressors using an IV pump
10. Stabilize needle:
    - Utilize a commercially available stabilization device as recommended by the manufacturer OR
    - Stabilize needle on both sides with sterile gauze and secure with tape (avoid tension on needle)
11. Apply ID bracelet to indicate patient has had an IO placed or attempted

May only attempt one IO needle per site. Notify ED of missed sites

PEARLS

– Any fluid or medication that can be administered through an IV may be administered through an appropriately-placed IO device



Proximal Humerus – infant/child

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient's shoulder anteriorly
    - The area that feels like a "ball" under your palm is the general target area
    - You should be able to feel this ball, even on obese patients, by pushing deeply
3. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally
4. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus
5. Palpate deeply up the humerus to the surgical neck. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck. The insertion site is above the surgical neck, on the most prominent aspect of the greater tubercle

Distal Femur – infant/child

1. Secure the leg outstretched to ensure the knee does not bend. Identify the patella by palpation
2. The insertion site is approximately 1 cm proximal to the superior border of the patella and approximately 1-2 cm medial to midline

Proximal tibia – infant/child

1. Extend the leg
2. Insertion site is approximately 1 cm medial to the tibial tuberosity, or just below the patella (approximately 1 cm) and slightly medial (approximately 1 cm), along the flat aspect of the tibia
3. Pinch the tibia between your fingers to identify the medial and lateral borders of the tibia

6.4 QUANTITATIVE WAVEFORM CAPNOGRAPHY

PARAMEDIC & MICN

INDICATIONS

1. Confirmation of endotracheal tube placement (required). See Orotracheal Intubation 5.10
2. Confirmation of supraglottic airway placement
3. Routine use of $ETCO_2$ for monitoring ventilation status is appropriate including:
    - BVM ventilation of patients with advanced airway in place
    - Monitoring patients who have received sedatives and/or analgesic medications
    - CPAP/BiPAP
    - Suspected metabolic abnormalities/shock
    - Confirming advanced airway placement after each patient movement
4. Monitoring of CPR quality and for signs of return of spontaneous circulation in cardiac arrest patients

PROCEDURE

1. Attach capnography sensor to endotracheal tube, supraglottic airway, BVM or oxygen delivery device
2. Observe $ETCO_2$ level and waveform morphology changes. This should be documented for patients undergoing airway management, cardiac arrest, altered mental status and respiratory distress
3. Printed waveform preferred for evaluating waveform morphology
4. $ETCO_2$ should remain in place with the airway and be monitored until transfer of care in hospital
5. Any loss of $ETCO_2$ detection or waveform may indicate an airway problem and should be immediately addressed

NOTES

– There are three determinants of quantitative waveform capnography which may include:
    - Alveolar ventilation
    - Pulmonary/vascular perfusion
    - Metabolism
– For sudden loss of quantitative waveform capnography, evaluate for the following:
    - Tube dislodged
    - Circuit disconnected/obstructed
    - Apnea (patients being monitored after receiving analgesia or sedation)
– High levels of CO2 (> 45 mmHg):
    - Hypoventilation

- CO2 retention

– Low CO2 (< 25 mmHg):
  - Hyperventilation
  - Low perfusion: shock, pulmonary embolus, sepsis

– Cardiac Arrest: In low-pulmonary blood flow states, such as cardiac arrest, the primary determinant of quantitative waveform capnography is blood flow. Capnography levels are a good indicator of CPR quality
  - If capnography levels are dropping, the CPR quality may be poor, consider changing chest compressors
  - A sudden rise in $ETCO_2$ level to 40 mmHg or greater indicates substantial improvement in blood flow and likely return of spontaneous circulation (ROSC)
  - An $ETCO_2$ level of 10 mmHg or less measured 20 minutes after the initiation of advanced cardiac life support accurately predicts death in patients with cardiac arrest. See Resuscitation Initiation and Termination Policy 8.12

6.5 RESTRAINTS

EMT, PARAMEDIC, & MICN

Physical behavioral restraints shall not be of a type, or utilized in a manner that causes undue physical discomfort, harm, or pain to a patient. Hard restraints, such as handcuffs, are specifically prohibited unless the law enforcement officer who applied the hard restraints or handcuffs personally accompanies the patient

INDICATIONS

1. Patients shall **NOT** be placed and/or transported in physical restraints unless:
    - A physician or court has authorized the placement of restraints
    - The patient is in the custody of a law enforcement officer; or
    - The medical condition of the patient mandates transportation to, and treatment at, a health care facility, and the patient manifests such a degree of behavior that he or she:
        - Poses serious physical danger to himself or herself or others; or
        - Causes serious disruption to ongoing medical treatment that is necessary to sustain his or her life or to prevent disability
2. Restraint should be used solely to prevent injury and ensure safe treatment and transport
3. Restraint should ONLY be used when all other de-escalation efforts and options have been exhausted
4. Restraints shall be applied in a humane and respectful manner

PROCEDURE

1. Maintain patient, scene and EMS crew safety as the highest priority
2. Attempt less restrictive means of managing the patient, including verbal de- escalation
3. Request law enforcement assistance, as necessary
4. Ensure that there are sufficient personnel available to physically restrain the patient safely
5. Restrain the patient in a lateral or supine position. Devices such as backboards, splints, or other medical equipment **SHALL NOT** be placed on top of the patient
    - **NEVER hog-tie a patient**.
    - **Under NO circumstances shall a patient be placed in the prone (face-down) position**
6. The patient must always be under constant observation by the EMS crew
7. The extremities that are restrained must have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible
8. Documentation in the ePCR should include the reason for the use of restraints, the type of restraints used, the time restraints were placed, circulation checks, and any injuries resulting from restraints

9. If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel cannot remove, a law enforcement officer **MUST** accompany the patient to the hospital in the patient compartment of the transporting ambulance
    - Handcuffed patients being transported in an ambulance should either be secured to the stretcher or have their hands cuffed together in front. **NEVER transport a patient with their hands cuffed behind their back**
    - Hands cuffed behind the back can impede access in the event of a medical emergency and cause injury to the patient
    - EMS clinicians should request law enforcement use the positioning techniques outlined above to ensure both safety and clinician access
10. Once applied, restraint should not be removed in the field unless medically necessary to provide care. However, a patient shall not remain restrained for a period greater than one hour unless:
    - A physician or court has authorized the utilization of the restraints for longer than one hour; or
    - The patient is personally accompanied by a law enforcement officer

PEARLS

- Causes of combativeness may be due to comorbid medical conditions or due to hypoxia, hypoglycemia, drug and/or alcohol intoxication, drug overdose, or traumatic brain injury
- Struggling against restraints may lead to hyperkalemia, rhabdomyolysis, and/or cardiac arrest
- Verbal de-escalation is the safest method and should be delivered in an honest, straightforward, friendly tone avoiding direct eye contact and encroachment of personal space

6.6 TASER (CONDUCTED ELECTRICAL WEAPON) PROBE REMOVAL & ASSESSMENT

State and local law enforcement may use a conducted electrical weapon (CEW), also called a taser. This device is a tool that can be deployed in either a drive stun (sensory nervous system) or dart (sensory & motor nervous systems that causes neuro-muscular incapacitation) mode. In the dart mode, two probes with attached wires are discharged from the CEW. The probes are #8 straightened fishhooks that penetrate the suspect's skin a maximum of ¼ inch. Each trigger pull discharges an electric charge for a 5-second cycle. The electric charge is high voltage (generally 12,000 volts) and low amperes (generally 0.0036 amp). Current medical literature does not support routine medical evaluation for an individual after a CEW application. In most circumstances probes can be removed by law enforcement without further EMS or other medical intervention

EMT, PARAMEDIC, & MICN

EMS can be activated and transport the patient following Taser application in the following circumstances:

- The probe is embedded in the eye, genitals, or bone
- Seizure is witnessed after CEW application
- There is excessive bleeding from probe site after probe removal
- Cardiac arrest, complaints of chest pain, palpitations
- Respiratory distress
- Altered mental status
- Pregnancy
- Developmental or physical disability and unable to assess the above

INDICATIONS FOR REMOVAL

1. Patient with uncomplicated conducted electrical weapon (Taser) probes embedded subcutaneously in non-vulnerable areas of skin

CONTRAINDICATIONS TO REMOVAL

1. Patients with probe penetration in vulnerable areas of the body as mentioned below should be transported for further evaluation and probe removal
2. Genitalia, female breast, or skin above level of clavicles
3. Suspicion that probe might be embedded in bone, blood vessel, or other sensitive structure
4. Any condition listed above that requires transport to the emergency department

PROCEDURE

1. Ensure wires are disconnected from weapon
2. Stabilize skin around probe using non-dominant hand
3. Grasp probe by metal body using dominant hand
4. Remove probe by pulling straight out in a single quick motion

5. Ensure that the probes and barbs are intact
6. Removed probes should be handled and disposed of like contaminated sharps in a designated sharps container, unless requested as evidence by police
7. Rinse wound with sterile water or saline and apply dressing
8. If last tetanus immunization was greater than 5 years, advise the patient that they may need one
9. Obtain a refusal of care for patients refusing transport

6.7 TOURNIQUET & HEMOSTATIC AGENT – ADULT & PEDIATRIC

EMT

CLINICAL INDICATIONS

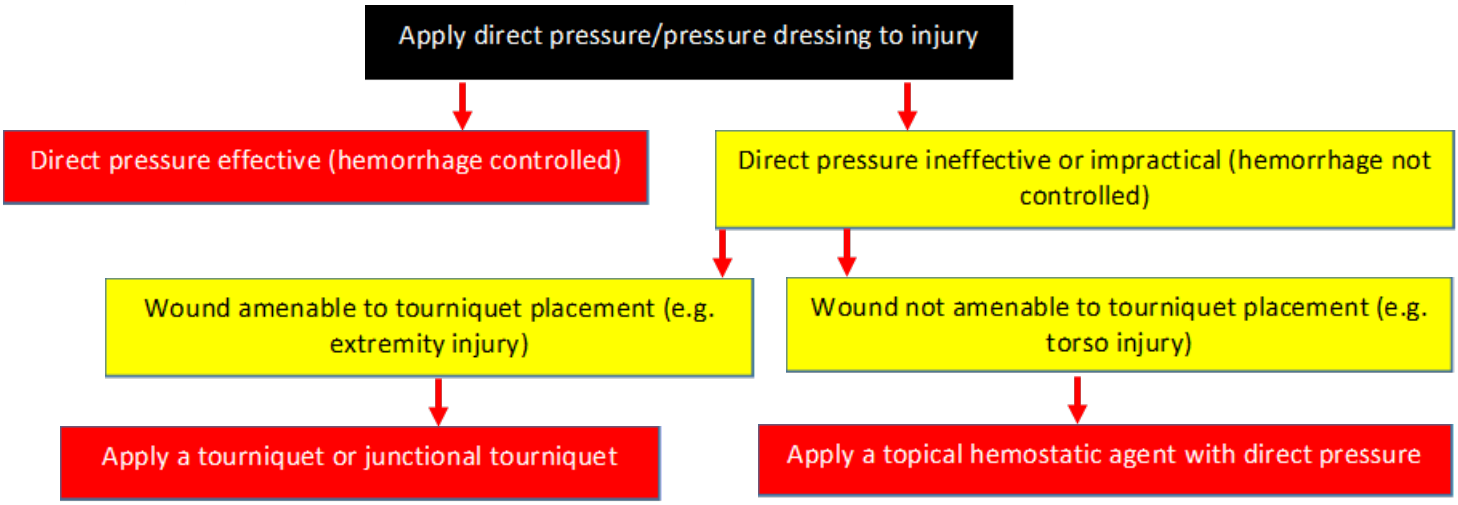
1. Life threatening hemorrhage that cannot be controlled by other means (direct pressure)
2. Serious or life-threatening hemorrhage and operational considerations that prevent the use of standard hemorrhage control techniques

PROCEDURE

1. Routine Patient Care
2. Attempt to control hemorrhage with direct pressure
3. If direct pressure ineffective or impractical and hemorrhage not controlled, apply tourniquet or hemostatic agent as indicated
4. Refer to Shock Protocol – Adult or Shock Protocol – Pediatric
5. Minimize scene time
6. See Trauma Triage and Transport Decision Protocol
7. Apply tourniquet for wound amenable to tourniquet placement (e.g., extremity injury). Use a commercially produced, windlass, pneumatic, or ratcheting device, which has been demonstrated to occlude arterial flow and avoid narrow, elastic, or bungee-type devices. Utilize improvised tourniquets only if no commercial device is available. Place tourniquet at least 2 - 3" proximal to wound
    - Tighten per manufacturer instructions until hemorrhage stops and distal pulses in affected extremity disappear
    - Secure tourniquet per manufacturer instructions
    - Note time of tourniquet application and communicate this to receiving providers
    - Dress wounds per standard wound care protocol
    - Do not release a properly applied tourniquet until the patient reaches definitive care
    - If delayed or prolonged transport and tourniquet application time ≥ 5 hours **Contact Medical Command**
    - Consider application of a second tourniquet just proximal to the first for failure to control bleeding
8. Ensure the second tourniquet is placed “high” (proximal) and “tight” to occlude distal pulses
9. Apply a topical hemostatic bandage, in combination with direct pressure, for wounds in junctional areas where tourniquets cannot be applied and sustained direct pressure alone is ineffective or impractical. (Junctional/torso injury or proximal extremity location where tourniquet application is not practical.)
    - Only apply topical hemostatic agents in a gauze format that supports wound packing
    - Only utilize topical hemostatic bandage which have been determined to be effective and safe in a standardized laboratory injury model

PARAMEDIC/MICN

1. If patient presentation is consistent with hypovolemia, refer to Shock Protocol – Adult or Shock Protocol – Pediatric



6.8 VASCULAR ACCESS VIA PRE-EXISTING CENTRAL CATHETERS

PARAMEDIC & MICN

INDICATIONS

1. In the presence of a life-threatening condition, a patient with a pre-existing central catheter with clear indications for immediate use of medication or fluid bolus. (Not for prophylactic IV access)

CONTRAINDICATIONS

1. Suspected infection at skin site
2. Inability to yield a blood return when aspirating as placement in vessel cannot be confirmed

PROCEDURE

1. Determine the type of catheter present: PICC, Broviac, Hickman, Groshong, Mediport, etc.

Peripherally Inserted Central Catheter (Cook, Neo-PICC, Etc.) and Tunneled Catheter (Broviac, Hickman, Groshong, Etc.)

2. Prepare all necessary equipment:
    - 10 mL syringe (empty)
    - 10 mL syringe 0.9% NaCl, and
    - Sterile gloves (if available)
3. If more than one lumen is available (PICCs and Boviacs can have one, two, or three lumens), select the largest lumen available
4. Vigorously prep the cap of the lumen with chlorhexidine
5. Unclamp the catheter lumen and using a 10 mL syringe, (after unclamping the lumen) aspirate 3 – 5 mL of blood with the syringe and discard. If unable to aspirate blood, re-clamp the lumen and attempt to use another lumen (if present). If clots are present, **Contact Medical Command**  before proceeding
6. Flush the lumen with 3 – 5 mL 0.9% NaCl using a 10 mL syringe. If catheter does not flush easily (note that a PICC line will generally flush more slowly and with greater resistance than a typical intravenous catheter), re-clamp the selected lumen and attempt to use another lumen (if present)
7. Attach IV administration set and observe for free flow of IV fluid
8. Allow titrate fluid to run at rate of 10 mL/hour to prevent the central line from clotting

Implanted Catheter (Port-a-Cath, P.A.S. Port, Medi-port)

2. Prepare all necessary equipment:
    - Non-coring, right angle (Huber/Haberman) needle specific for implanted vascular access ports
    - 10 mL syringe (empty)
    - Two 10 mL syringes 0.9% NaCl, and
    - Sterile gloves (if available)

3. Identify the access site, usually located in the chest
4. Clean the access site with chlorhexidine solution
5. Prime the non-coring needle tubing with saline
6. Palpate the port to determine the size and center of the device. If not utilizing sterile gloves, re-clean the skin
7. Secure the access point port firmly between two fingers and firmly insert the non -coring needle into the port, entering at a direct 90° angle. Attach a 10 mL syringe to Haberman/Huber needle
8. Aspirate 3 – 5 mL of blood with the syringe. If unable to aspirate blood, re-clamp the catheter and do not attempt further use. If clots are present, **Contact Medical Command** before proceeding
9. Flush the catheter with 3 – 5 mL 0.9% NaCl using a 10 mL syringe. If catheter does not flush easily, do not attempt further use
10. Attach IV administration set and observe for free flow of IV fluid
11. If shock is not present, allow fluid to run at rate of KVO to prevent the central line from clotting

- The maximum flow rates for a PICC line are 125 mL/hour for < 2.0 Fr sized catheter and 250 mL/hour for > 2.0 Fr sized catheters
- **Note:** Avoid taking a blood pressure reading in the same arm as the PICC
- Priming the tubing of the non-coring needle is essential to prevent air embolism
- In case of cardiac arrest, implanted ports may be accessed with a standard needle, if a non-coring needle is unavailable

6.9 SEDATION

PARAMEDIC & MICN

Sedation is a continuum of drug-induced states for facilitating the evaluation and/or treatment of a patient's underlying condition. The minimal amount required to accomplish the task should be used with frequent reassessments and monitoring of the patient's hemodynamic parameters. Sedatives should not be pushed rapidly. The clinician should be ready to resuscitate the patient in case of inadvertent changes in respiratory or hemodynamic status. Patients MUST be continuously monitored, with all available adjuncts as soon as possible, including HR, 3-4 lead ECG, RR, SpO2, BP, ETCO2, perfusion state, mental state. Provide detailed documentation of any delay to monitoring

Analgesia: See Pain Management-Adult or Pain Management-Pediatric 

Minimal Sedation

For Anxiolysis (e.g. Cardioversion, Transcutaneous Pacing, CPAP/BiPAP)

- Midazolam:
  - Adult: 1-2.5 mg IV/IO over 2-3 minutes; every 5 - 10 minutes as needed
  - Pediatric: 0.1 mg/kg IV/IO over 2-3 minutes; every 5 - 10 minutes as needed (max 4 mg) 

  OR
- Lorazepam:
  - Adult: 0.5-1 mg slow IV/IO, may repeat every 15 minutes as needed (max 4 mg)
  - Pediatric: 0.1 mg/kg IV/IO; every 5 - 10 minutes as needed; (max 2 mg) 

Sedation for mild to moderate agitation

For patients who do not represent an immediate danger to themselves, lack the capacity to refuse transport, and require sedation to facilitate treatment and transport, consider:

Dual Agent Therapy:

- Adult: Haloperidol 5 mg AND Midazolam 5 mg IM
  - May repeat once in 5-minutes
- Pediatric: (6-12 yo): Haloperidol 1-3 mg AND Midazolam 0.1 mg/kg IM 
  - Haldol max dose 0.15 mg/kg / Midazolam max dose 5 mg

  OR
- Adult: Haloperidol 5 mg AND Lorazepam 2 mg IM
  - May combine and administer Benzodiazepine and Haloperidol in one syringe

OR

Single Agent Therapy

- Droperidol 5-10 mg IM

- All patients receiving any level of sedation should be monitored continuously with continuous waveform ETCO2 and SPO2 ASAP
- Haloperidol can lower the seizure threshold and should be used with caution. Consider lower doses of haloperidol in the elderly or frail

PEARLS

- Sedation is never to be utilized for controlling behavior for the purpose of law enforcement initiatives or assistance
- The utilization of medications, for the purpose of chemical restraint, is strictly prohibited
- Vital signs must be monitored continuously following sedation and documented on your PCR at least every 5 minutes and immediately after any intervention
- Documentation should include an explanation for why monitoring is not taking place every minute after sedation is administered

ONLINE MEDICAL COMMAND ORDER REQUIRED

Sedation for severe life-threatening delirium with agitation

Characterized by multiple of the following: violent destructive mania, hyperthermia, tachycardia, hallucinations, disorientation, bizarre behavior, insensitivity to pain, naked or under-clothed and/or increased strength. These patients may be considered at risk for imminent autonomic collapse

1. Ensure that law enforcement and adequate assistance are present
2. Use verbal calming and de-escalating techniques whenever possible
    - Speak calmly to patient
    - Attempt to obtain cooperation
    - Ask if they will sit or lie down
    - Allow the patient to correct inappropriate behavior whenever possible
3. Evaluate for other causes of acute agitated delirium (AEIOU-TIPS) and treat as per appropriate standing orders
    - A – Alcohol
    - E – Endocrine, Encephalopathy, Electrolytes
    - I – Insulin (hypoglycemia)
    - O – Oxygen (hypoxia), Opiates (drugs of abuse)
    - U – Uremia
    - T – Toxins, Trauma, Temperature
    - I – Infection
    - P – Psychiatric
    - S – Stroke, Shock, Subarachnoid hemorrhage, Space-Occupying CNS lesions

4. Use minimum physical restraint necessary while ensuring patient safety. See Restraints 6.5
5. Assess patient as soon as possible, and obtain vital signs, pulse oximetry, ECG, skin temperature
6. Assess blood glucose as soon as possible; if blood glucose is less than 60mg/dl; See Diabetic Emergencies-Hypoglycemia 2.8A
7. All monitoring and resuscitation equipment must be next to the patient prior to sedation, and patient monitoring should be initiated as soon as possible after sedation. It should never be delayed for extrication
8. Administer sedative:
    - Ketamine 3-4 mg/kg Ideal Body Weight IM injection only. (max dose 400 mg)
        - Repeat 100 mg IM dose in 10 minutes for continued agitation
9. Establish vascular access with crystalloid solution if possible if not already established
10. Continually reassess:
    - Vital signs
    - ECG
    - Neurovascular status of distal extremities
    - Monitor non-invasive waveform capnography when able

6.10 NASAL/ORAL GASTRIC TUBE INSERTION

PARAMEDIC & MICN

INDICATIONS

1. Gastric distention/emptying
2. When an advanced airway has been placed

CONTRAINDICATIONS

1. Gastric decompression should not be performed if an esophageal obstruction is present
2. Nasogastric decompression should not be attempted in a patient with facial trauma, basilar skull fracture or esophageal varices
3. Use extreme caution in patients who have esophageal disease or trauma
4. Oral or nasal obstruction

COMPLICATIONS

1. May induce nausea/vomiting, even when the gag reflex is depressed.
2. Nasal, esophageal or gastric trauma
3. Tracheal placement
4. Gastric tube obstruction

PROCEDURE

1. Prepare the patient:
    - **Nasogastric/Orogastric Decompression**
        - Place the head in a neutral position (if not contraindicated)
        - Pre-oxygenate
        - Locate the larger nostril (for nasal insertion)
    - **Supraglottic Decompression**
        - Pre-load gastric tube into gastric channel if available on SGA device
2. Measure the NG tube from the patient's nose to the ear and from the ear to the xiphoid to determine the correct insertion length.
    - Lubricate the tube with a water-soluble lubricant
3. Advance the tube until the proper length is reached
    - Nasal: gently along the nasal floor and into the stomach.
    - Oral: along the hard palate
4. Confirm placement

- Auscultate the epigastric region while injecting 20 mL of air
- Note gastric contents in the NG tube
- Make sure no gastric contents appears around the NG tube

5. Secure the NG tube in place and attach to suction if indicated
6. Paramedics may not administer medications or fluids via NG/OG tube

7.1 RESUSCITATION SEQUENCE AIRWAY/RESUSCITATION SEQUENCE INDUCTION

PARAMEDIC & MICN

ONLINE MEDICAL COMMAND ORDER REQUIRED

This procedure is only to be used by paramedics who are trained to perform RSI with oversight by local Medical Direction and agency participation in an RSI educational and CQI program approved by NJ Office of EMS. Two RSI trained paramedics should be present however, new paramedics have 90-days to complete RSI training. A trained paramedic may perform RSI with an untrained paramedic ONLY if medical command is first notified of the crew configuration requesting the procedure. RSI may only be performed on patients 13 years of age or older

INDICATION

1. Immediate, severe airway compromise in the adult patient where respiratory arrest is imminent and other methods of airway management are ineffective

CONTRAINDICATION

1. < 13 years of age

PROCEDURE

1. **Contact Medical Command** and request the "RSA/RSI Bundle"

RAPID SEQUENCE AIRWAY (RSA) PROCEDURE

In the event of the airway assessment, or at any point during the advanced airway intervention that it becomes evident that the patient's condition or the circumstances surrounding the airway management necessitates it, a supraglottic airway should be substituted for the endotracheal tube using the same induction and neuro-muscular blocking agents

This process would be beneficial in circumstances where the patient is rapidly desaturating, has difficulty maintaining critical oxygenation, or the position of the patient does not easily permit endotracheal intubation, but may allow for supraglottic airway placement

PREPARATION "SOAPME"

2. **S**uction set up
3. **O**xygen: 100% non-rebreather mask, with bag-valve mask ready. Apply nasal cannula at 6 – 15 LPM in addition to non- rebreather or bag-valve mask preoxygenation. Do not remove nasal cannula during intubation attempt(s)
    - May use CPAP/BiPAP as alternative to NRB when appropriate
4. **A**ssessment: Evaluate airway difficulty based on patient anatomy (e.g., short neck, obesity, decreased thyromental distance and Class III or IV oropharyngeal views on observation). Have fallback plan and equipment ready
5. **P**harmacology: IV/Medications drawn
6. **M**onitor: Cardiac / O2 saturation/ $ETCO_2$ and hemodynamics

- Set NIBP on monitor to cycle every 2-minutes

7. **E**quipment: ETT (check cuff) / Stylet / BVM / PEEP Valve/ Laryngoscope / Blades / Suction / Bougie / Back-up supraglottic devices

PREOXYGENATION

8. Apply nasal cannula with oxygen regulator turned up to its fullest capacity (nasal cannula should remain in place until endotracheal tube is secured)
9. When possible, use a non-rebreather mask for at least 3 minutes to effect nitrogen washout and establish an adequate oxygen reserve
    - In emergent cases, administer 8 vital capacity bag-valve-mask breaths with 100% oxygen
10. After preoxygenation attempts, if unable to achieve $SPO_2 \geq 94\%$ due to hypoxic delirium, move directly to DSA
    - See Delayed Sequence Airway/Delayed Sequence Induction 7.2

ADDRESS HEMODYNAMICS:

11. Patient presenting with Systolic BP <100 or Shock Index >1; can receive push-dose epinephrine 10-20 mcg IV/IO Q2-5 minutes to a max of 100 mcg. Refer to Shock – Adult 2.21A
    - **Push-dose epinephrine is not indicated in the patient suffering traumatic injury**

ADMINISTER RSA/RSI MEDS

1. Induction

    - Ketamine 1.5 mg/kg Ideal Body Weight (max dose 400 mg) unless discussed with medical command; administered over 1-minute via vascular access
        - If hypotensive, adrenergically depleted or high shock index (> 1), decrease induction agent dose
        - Ketamine 0.5-1 mg/kg Ideal Body Weight administered over 1-minute via vascular access

      OR

    - Etomidate 0.3 mg/kg via vascular access
        - If hypotensive, adrenergically depleted or high shock index (> 1), decrease induction agent dose
    - Etomidate 0.1-0.2 mg/kg via vascular access

2. Paralytic
    - Rocuronium 1.5 mg/kg via vascular access; max dose 150mg

      OR

    - Succinylcholine 1.5 mg/kg via vascular access

Pass the tube

3. After paralysis is achieved, follow the procedure outlined in Orotracheal Intubation Procedure

Proof of Placement

4. Confirm appropriate proper placement with quantitative waveform capnography. Document symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask

5. Additional confirmation outlined in Orotracheal Intubation Procedure

Failed Airway

6. If unable to intubate or ventilate appropriately, **Contact Medical Command** and proceed to Cricothyrotomy: Percutaneous; Surgical; Control Cric TM

Post Intubation Care

7. Sedation and Analgesia

8. Reassess the patient and vital signs

9. After 10 minutes, consider need for sedation if hemodynamically stable; see Orotracheal Intubation Procedure

10. If patient was sedated with Etomidate, additional sedation may be required immediately after patient was intubated

11. If not hemodynamically stable, evaluate need for resuscitation. Refer to Shock - Adult

12. Insert an oral/nasal gastric tube; Refer to Nasal/Oral Gastric Tube Insertion

Shock Index (SI) = Heart Rate/ Systolic Blood Pressure

- Shock index been studied in patients experiencing shock from a variety of causes: trauma, hemorrhage, myocardial infarction, pulmonary embolism, sepsis, and ruptured ectopic pregnancy. While HR and SBP have traditionally been used to characterize shock in these patients, they often appear normal in the compensatory phase of shock and can be confounded by factors such as medications administered during RSI
- SI >0.9 has been widely found to predict post-intubation hypotension and increased risk of mortality and other markers of morbidity
- Providers must ensure that utilization of shock index is relevant to the clinical presentation

DOCUMENTATION

Documentation of each RSI attempt shall include the following:

1. Indications for RSI, including supporting narrative, and the assessment tool used to verify that the patient was a candidate for RSI (3-3-2 rule, Mallampati scale, MOANS, ROMAN, LEMONS, HEAVEN, RODS, SMART)

2. Patient age and weight

3. Name of medical command physician as well as orders that were received

4. Patient response to procedure

5. Presence or absence of complications

6. Documentation of all secondary ETT confirmation methods utilized

7. Documentation of confirmation of ETT placement before and after each transfer of the patient, including transfer to hospital staff

8. Documentation shall include number of attempts, technique (direct or video), blade size and types used, tube size and type (cuffed or uncuffed) used, tube depth at lip line and SpO_2

9. $ETCO_2$ value and waveform (and the presence or absence of waveform correlation). Waveforms will be attached to the patient's medical record

10. Follow all other required documentation outlined in Orotracheal Intubation Procedure

SUCCINYLCHOLINE CONTRAINDICATIONS:

- Extensive recent burns or crush injuries > 24 hours old
- History of malignant hyperthermia
- History of Duchenne or Becker's muscular dystrophy
- Hyperkalemia or with underlying conditions at risk for hyperkalemia
- Stroke from 3 days to 6 months
- Spinal cord injuries from 3 days on
- Acute burns from 3 days on
- Prolonged immobilization with tissue breakdown (e.g. nursing home with decubitus ulcers)
- Motor neuron diseases (e.g. Lou Gehrig's Disease/Amyotrophic Lateral Sclerosis)
- Elevated Intraocular pressure

Adrenergic Depletion and Ketamine

Caution: Ketamine may cause worsening hemodynamic instability in patients who have depleted their natural stores of catecholamines. This most often occurs in patients who are in shock or who are otherwise hemodynamically unstable. EMS providers should perform adequate resuscitation PRIOR to intubation and anticipate, prepare for, and treat POST intubation hypotension with fluids and/or vasopressors as clinically indicated. Consider delaying post-intubation sedation dose of ketamine until any hemodynamic instability has been addressed

7.2 DELAYED SEQUENCE AIRWAY/DELAYED SEQUENCE INDUCTION

PARAMEDIC & MICN

ONLINE MEDICAL COMMAND ORDER REQUIRED

DELAYED SEQUENCE AIRWAY (DSA) PROCEDURE

In the event that during the pre-oxygenation phase, the patient isn't able to be adequately oxygenated due to delirium from the underlying condition and hypoxia, leading to agitation and combativeness resulting in impedance of the attempts at pre-oxygenation, then DSA/DSI can be initiated

The end goal may still be the advanced airway intervention with the induction agent having already been given. When the patient is appropriately pre-oxygenated and dissociated, when necessary, before the paralytic may be administered for the completion of the intervention.

DSA/DSI PROCEDURE

1. Administer sedative
    - Ketamine 1.5 mg/kg Ideal Body Weight (Max 150 mg unless discussed with medical command) over 1-minute via vascular access. If patient is too agitated to establish vascular access, refer to Sedation 6.9
        - If critically hypotensive, shock index > 1 or adrenergically depleted:
            - Ketamine 0.5-1 mg/kg administered over 1-minute via vascular access

PREOXYGENATION

2. When possible, use a non-rebreather mask for at least 3 minutes to facilitate nitrogen washout and establish an adequate oxygen reserve
    - In emergent cases, administer 8 vital capacity bag-valve-mask breaths with 100% oxygen
3. Apply nasal cannula with oxygen regulator turned up to its fullest capacity (nasal cannula should remain in place until endotracheal tube is secured)
4. Administer paralytic once dissociated, and patient has been oxygenated to an SpO_2 >94%
    - Rocuronium 1.5 mg/kg via vascular access

      OR
    - Succinylcholine 1.5 mg/kg via vascular access
5. Proceed with intubation

PASS THE TUBE

6. After paralysis is achieved, follow the procedure outlined in Orotracheal Intubation Procedure

PROOF OF PLACEMENT

7. Confirm appropriate proper placement with quantitative waveform capnography. Document symmetrical chest-wall rise, auscultation of equal breath sounds over the chest and a lack of epigastric sounds with ventilations using bag-valve-mask

8. Additional confirmation outlined in Orotracheal Intubation Procedure

FAILED AIRWAY

9. If unable to intubate or ventilate appropriately, **Contact Medical Command** and proceed to Cricothyrotomy: Percutaneous; Surgical; Control Cric ™

Adrenergic Depletion and Ketamine

Caution: Ketamine may cause worsening hemodynamic instability in patients who have depleted their natural stores of catecholamines. This most often occurs in patients who are in shock or who are otherwise hemodynamically unstable. EMS providers should perform adequate resuscitation PRIOR to intubation and anticipate, prepare for, and treat POST intubation hypotension with fluids and/or vasopressors as clinically indicated. Consider delaying post-intubation sedation dose of ketamine until any hemodynamic instability has been addressed

POST INTUBATION CARE

Sedation and Analgesia:

1. Reassess the patient and vital signs.
2. After 10 minutes, provide sedation if hemodynamically stable after evaluating vital signs; see Orotracheal Intubation/Post Intubation Care 5.10
    - If patient was sedated with Etomidate, additional sedation may be required immediately after patient was intubated.
3. Evaluate need for hemodynamic resuscitation. Refer to Shock-Adult 2.21A
4. If hemodynamically unstable, hypotensive, adrenergically depleted or high shock index (> 1), **Contact Medical Command** for additional sedation
5. Consider insertion of an oral/nasal gastric tube; Refer to Nasal/Oral Gastric Tube Insertion

SUCCINYLCHOLINE CONTRAINDICATIONS

- Extensive recent burns or crush injuries > 24 hours old
- History of malignant hyperthermia
- History of Duchenne or Becker's muscular dystrophy
- Hyperkalemia or with underlying conditions at risk for hyperkalemia
- Stroke from 3 days to 6 months
- Spinal cord injuries from 3 days on
- Acute burns from 3 days on
- Prolonged immobilization with tissue breakdown (e.g. nursing home with decubitus ulcers)
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- Elevated Intraocular pressure

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- SI >0.9 has been widely found to predict post-intubation hypotension and increased risk of mortality and other markers of morbidity
- Providers must ensure that utilization of shock index is relevant to the clinical presentation

8.0 ABUSE & NEGLECT ASSESSMENT & MANAGEMENT – CHILD, ELDER, & HUMAN TRAFFICKING

PURPOSE

To provide a process for identification, assessment, management, and reporting of patients who are suspected of having been abused, neglected, and/or exploited. This includes physical, sexual, or emotional abuse, neglectful acts or omissions by self or others, and/or the illegal use of an incapacitated adult's person or property for profit or advantage

Patient Care Goals

1. Recognize any act or series of acts of commission or omission by a caregiver or person in a position of power over the patient that results in harm, potential for harm, or threat of harm to a patient
2. These situations may involve safety issues for responding providers, so take appropriate steps to protect the safety of the responders as well as bystanders
3. Get the patient out of immediate danger
4. Assess any patient injuries that may be a result of acute or chronic events
5. Attempt to preserve evidence whenever possible, however the overriding concern should be providing appropriate emergency care to the patient

Patient Presentation

1. Potential clues to abuse/maltreatment from caregivers or general environment
    - Caregiver apathy about patient's current situation
    - Caregiver overreaction to questions about situation
    - Inconsistent histories from caregivers or bystanders regarding what happened
    - Information provided by caregivers or patient that is not consistent with injury patterns.
    - Injuries not appropriate for patient's age or physical abilities (e.g. infants with injuries usually associated with ambulatory children)
    - Caregiver not allowing patient to speak for himself/herself, or who appears controlling
    - Inadequate facilities where the patient lives and/or evidence of security measures that appear to confine people to the facility
2. Potential clues to abuse or maltreatment that can be obtained from the patient
    - Multiple bruises in various stages of healing
    - Age-inappropriate behavior (are submissive or fearful outside age appropriate norms or children who act in sexually inappropriate way)
    - Pattern burns, bruises, or scars suggestive of specific weaponry used
    - Evidence of medical neglect for injuries or infections
    - Trauma to genitourinary systems or frequent infections to this system

- Evidence of malnourishment and/or serious dental problems

3. Have a high index of suspicion for abuse in children presenting with a mental status change

Patient Management

Assessment

1. Start with a primary survey and identify any potentially life-threatening issues
2. Document thorough secondary survey for potential abuse/maltreatment red flags
    - Multiple bruises in various stages of healing
    - Age-inappropriate behavior (are submissive or fearful outside age appropriate norms or children who act in a sexually inappropriate way)
    - Pattern burns, bruises, or scars suggestive of specific weaponry used
    - Evidence of medical neglect for injuries or infections
    - Trauma to genitourinary systems or frequent infections to this system
    - Evidence of malnourishment and/or serious dental problems
3. Assess physical issues and avoid extensive investigation of the specifics of abuse or maltreatment, but document any statements made spontaneously by patient

Treatment and Interventions

4. Address life threatening issues
5. Find way to get patient to a safe place even if no medical indication for transport
6. Report concerns about potential abuse/maltreatment as described below
    - Caregivers impeding your ability to assess/transport patient
    - Caregivers refusing care for the patient

In New Jersey, any person having reasonable cause to believe that a child has been subjected to abuse/neglect or acts of abuse/neglect should immediately report this information to the State Central Registry (SCR). If the child is in immediate danger, call law enforcement as well as **1-877-NJ-ABUSE**. **A concerned caller does not need proof to report an allegation of child abuse/neglect and can make the report anonymously. Children with suspected child abuse and/or neglect should be taken to a hospital with appropriate resources to deal with this concern unless they are unstable and/or need immediate medical attention that warrants taking them to the closest facility**. **Report should made by the provider directly. Relying on other healthcare provider or law enforcement to make a report is inappropriate.**

SCR screeners are trained caseworkers who know how to respond to reports of child abuse/neglect. Whenever possible, a caller should provide all of the following information:

- Who: The child and parent/caregiver's name, age and address and the name of the alleged perpetrator and that person's relationship to the child
- What: Type and frequency of alleged abuse/neglect, current or previous injuries to the child and what caused you to become concerned
- When: When the alleged abuse/neglect occurred and when you learned of it

- Where: Where the incident occurred, where the child is now and whether the alleged perpetrator has access to the child
- How: How urgent the need is for intervention and whether there is a likelihood of imminent danger for the child

Any person who, in good faith, makes a report of child abuse or neglect or testifies in a child abuse hearing resulting from such a report is immune from any criminal or civil liability as a result of such action. Calls can be placed to the hotline anonymously. However, any person who knowingly fails to report suspected abuse or neglect according to the law or to comply with the provisions of the law is a disorderly person and subject to a fine of up to $1000 or up to six months imprisonment, or both

When a report indicates that a child may be at risk, an investigator from the Department of Children Protection and Permanency (DCPP), formerly the Division of Youth and Family Services will promptly investigate the allegations of child abuse and neglect

Patient Safety Considerations

1. If no medical emergency exists, next priority is safe patient disposition/removal from the potentially abusive situation
2. Do not confront suspected perpetrators of abuse/maltreatment. This can create an unsafe situation for EMS and for the patient

Notes/Educational Pearls

Key Considerations

- Child maltreatment/abuse: Child maltreatment includes any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child. An act of commission (child abuse) is the physical, sexual or emotional maltreatment or neglect of a child or children. An act of omission (child neglect) includes failure to provide (e.g. physical, emotional, medical/dental, and educational neglect) and failure to supervise (e.g. inadequate supervision, and exposure to violent environments)
- Human trafficking: when people are abducted or coerced into service and often transported across international borders

New Jersey Adult Protective Services

New Jersey's APS law (N.J.S.A. 52:27D-406 to 426) was amended to require health care professionals, law enforcement officers, firefighters, paramedics or emergency medical technicians who have reasonable cause to believe that a vulnerable adult is the subject of abuse, neglect or exploitation to report that information to the county Adult Protection Services office

EMS providers who witness or suspect Elder Abuse must report the incident.

Contact information for each county office below:

- Abuse: Means the willful infliction of physical pain, injury or mental anguish, unreasonable confinement, or the willful deprivation of services necessary to maintain a person's physical and mental health
- Neglect: Means an act or failure to act by a vulnerable adult or his/her caregiver which results in the inadequate provision of care or services necessary to maintain the physical and mental health of the vulnerable adult, and which places the vulnerable adult in a situation which can result in serious injury, or which is life-threatening

- Exploitation: Means the act or process of illegally or improperly using a person or his resources for another person's profit or advantage
- Vulnerable Adults: Are persons eligible for services under the APS Program, defined as being 18 years or older, residing in a community setting and subject to abuse, neglect or exploitation, but who, because of physical or mental illnesses or disabilities lack sufficient understanding or capacity to make, communicate or carry out decisions concerning their well-being

Human Trafficking

Human trafficking is modern-day slavery and involves the use of force, fraud, or coercion to obtain some type of labor or commercial sex act. Thousands of men, women, and children are trafficked into forced labor situations and into the sex trade. Many of these victims are lured from their homes with false promises of well-paying jobs; instead, they are forced or coerced into prostitution, domestic servitude, or other types of forced labor. Victims are found in legitimate and illegitimate labor industries, including sweatshops, massage parlors, agricultural fields, restaurants, hotels, and domestic service

Trafficking victims can be any age, race, gender, American or from abroad, with or without legal status

How do I identify human trafficking?

Human trafficking is often "hidden in plain sight." There are a number of red flags, or indicators, which can help alert you to human trafficking. Recognizing the signs is the first step in identifying victims. As a first responder, you may be the victim's only outside contact, so it is important that you recognize the indicators and know how to report your observations and potentially save a life

Common Indicators Found in Trafficking Victims:

- Does the victim exhibit bruises/wounds in various stages of healing or consistent with the application of physical restraints?
- Does the victim exhibit scars, mutilations or untreated infections?
- Does the victim have urinary difficulties, pelvic pain, pregnancy or rectal trauma (from working in the sex industry)?
- Does the victim suffer from chronic back, hearing, eye/eyesight, cardiovascular or respiratory problems?
- Does the victim exhibit signs of malnourishment, serious dental problems or a lack of healthcare?
- Does the victim exhibit disoriented, confused, depressed, submissive, tense or nervous/paranoid behavior?
- Is the victim accompanied by someone who is controlling, provides the victim's information or who does all the communicating?
- Does the victim have trouble communicating due to a language/cultural barrier?
- Does the victim seem submissive or fearful, refuse to make eye contact or seem afraid to speak in the presence of others?
- Does the victim seem confused, claim to just be visiting or have difficulty identifying his or her location?
- Is the victim reluctant to discuss his or her injuries or are there inconsistencies in his or her account /medical history?

- Is the victim inadequately dressed for the situation/work he or she does?
- Are there security measures designed to restrict victim movement (blocked/barred windows, locked doors, barbed wire, or security cameras)?
- Does the victim live in a degraded, unsuitable place or share sleeping quarters?

REPORTING

If you suspect that a person may be a victim of human trafficking, please call the Immigration and Customs Enforcement (ICE) Homeland Security Investigations (HSI) Tip-line at **1-866-DHS-2-ICE (1-866-347-2423).**

You can also report online at www.ice.gov/tips

An additional Special Report should be filled out on your ePCR

8.1 AIR MEDICAL TRANSPORT

EMS personnel may request Air Medical Transport (AMT) when operational and/or clinical conditions exist that would benefit from decreasing time to definitive care and/or advanced clinical capabilities offered by the AMT team

The use of AMT is determined by the prehospital provider with the highest medical level providing patient care. It should not be determined by police or bystanders.

AMT does not require approval of on-line Medical Command. However, if in doubt of the appropriateness of a patient for AMT, please **Contact Medical Command**  as soon as possible

OPERATIONAL CONDITIONS

1. When a patient meets the defined clinical criteria listed below and the ground transport time to the closest hospital capable of providing definitive care (e.g., Level I or 2 trauma hospital, PCI center, stroke center) exceeds the ETA of air medical transport

   OR

2. Patient location, weather, or road conditions preclude the use of ambulance

   OR

3. Multiple patients are present that will exceed the capabilities of local hospital and agencies

4. In general, the patient should begin movement toward the appropriate receiving facility as soon as practical

5. Consider landing zones to minimize total field time

CLINICAL CONDITIONS

1. Severe respiratory compromise with respiratory arrest or abnormal respiratory rate

2. Circulatory insufficiency: sustained systolic blood pressure <90mmHg in adults, age-appropriate hypotension in children, or other signs of shock

3. Neurologic compromise: total GCS <9 or motor component <5. If the patient's neurologic status improves above thee limits, consider canceling the helicopter and transporting to the local hospital

4. Trauma: All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee; chest wall instability or deformity (e.g., flail chest); two or more proximal long-bone fractures; crushed, degloved, mangled, or pulseless extremity; amputation proximal to wrist or ankle; pelvic fracture; open or depressed skull fracture; paralysis

5. Burns: Major burns with greater than 20% BSA and/or inhalation injury with risk of airway compromise

6. Electrocution injuries with loss of consciousness, arrhythmia, or any respiratory abnormality

7. STEMI: If 12-lead ECG interpretation indicates a STEMI. **Contact Medical Command**  for additional confirmation as needed

8. Stroke: 1 or more abnormal signs of the stroke scale; and consistent with local stroke plans

9. Critically ill children, including those with acute decompensation of chronic and/or special healthcare needs

ADDITIONAL NOTES

1. Patients with an uncontrolled airway or uncontrollable hemorrhage should be brought to the nearest hospital unless advanced life support (ALS) service (by ground or air) can intercept in a timelier fashion
2. AMT is **NOT** indicated for patients in cardiac arrest (except for hypothermic arrest). Should the patient go into cardiac arrest after AMT request, the AMT crew may be utilized for resuscitation and stabilization
3. AMT is **NOT** indicated for a contaminated patient until AFTER decontamination
4. AMT may be indicated in a wide range of conditions other than those listed above. In cases where the patient's status is uncertain, **Contact Medical Command**  and proceed as directed
5. Transfers from ground-ambulance to air-ambulance shall occur at the closest appropriate landing site, including a hospital heliport, an airport, or an unimproved landing site deemed safe per AMT crew discretion. In cases where a hospital heliport is used strictly as the ground-to-air ambulance transfer point, no transfer of care to the hospital is implied or should be assumed by hospital personnel, unless specifically requested by the EMS providers
    - Additional information can be found at

      https://www.nj.gov/health/ems/special-services/fly-or-drive-criteria/#1

8.2 TRAUMA TRIAGE & TRANSPORT DECISION

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 fractures • 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 < 70 mmHg + (2x 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 Judgement

• 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) 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)

When in doubt, transport to a Trauma Center

8.3 CONSENT FOR TREATMENT OF A MINOR

A “minor” is a person who has not yet reached his/her eighteenth birthday

Note that the legal definition of a “minor” for purposes of consent is unrelated to the medical definitions of “pediatric patient,” “child,” and “children,” as used in these protocols

EMS personnel may treat minors under the doctrine of implied consent when the minor’s parent or other authorized representative is unavailable to provide expressed consent. With the exception of life- threatening emergencies, personnel should attempt to contact the minor’s parent or legal guardian to obtain informed consent to treat and transport the child. When a parent or legal guardian is unavailable, another authorized representative (e.g., a school or camp official), who has been expressly authorized by the minor’s parent, may consent to health care treatment

A parent or legal guardian may refuse care for a minor:

1. When a parent or legal guardian is not reasonably available, another adult family member (e.g., grandparent), or other authorized representative having custody of the minor, may refuse care
2. EMS personnel may accept a telephonic refusal of care, provided that they have explained the consequences of refusing care; telephonic refusal of care should be carefully documented

Except for the special circumstances listed below, a minor may not refuse care. When a minor attempts to refuse care and/or transport to the hospital, EMS personnel should enlist the assistance of the police, including requesting that the police place the minor in protective custody. Minors should be restrained only as a last resort

SPECIAL CIRCUMSTANCES

1. A minor parent who has not yet reached his/her eighteenth birthday may consent to or refuse care on behalf of his or her minor children, provided that the minor parent has the capacity to understand the nature of the treatment and the possible consequences of consenting to or refusing care
2. **Contact Medical Command** to discuss consent/refusals regarding minors. Always attempt to provide medical care that is in the best interest of the minor
3. Minors of any age may give informed consent to medical treatment associated with rape, incest or sexual abuse
4. An emancipated minor may consent to or refuse care. A minor patient bears the burden of establishing, by legal documentation or otherwise, that he/she is emancipated

8.4 POLST – PRACTITIONER ORDERS FOR LIFE SUSTAINING TREATMENT

EMT, PARAMEDIC, MICN

1. The wishes for conscious and alert patients are to be followed in accordance with standard consent procedures
2. For patients unable to provide consent, determine the presence of a valid Out of Hospital DNR or POLST
3. If these forms are not present, begin standard treatment protocol
4. If any form of Out of Hospital DNR or POLST is present and valid for the patient's clinical state (e.g. cardiac arrest), follow the orders as written, including not beginning or terminating resuscitation. Please follow guidelines on interpreting the POLST on the following page
5. If other forms of advanced directives are present (i.e. living will, presence of a health care proxy, hospital DNR order, hospice status), **Contact Medical Command**  early for further direction
6. A copy of the original POLST or Out of Hospital DNR is considered a valid document

POLST – Practitioner Orders for Life-Sustaining Treatment

A POLST form is a portable medical order that helps individuals with serious illness or frailty communicate their treatment decisions. The current standard of care during an emergency is for emergency medical services (EMS) to attempt everything possible to attempt to save a life. Not all patients who are seriously ill or frail want this treatment and the POLST Paradigm provides the option for them to: (1) confirm this is the treatment they want or (2) to state what level of treatment they do want

The POLST form documents the medical orders that helps give patients more control over receiving treatments they do want to receive, and avoiding treatments they do not want to receive, in the event they cannot speak for themselves during a medical crisis. For example, rather than automatically going to the hospital, a POLST may help keep the patient comfortable where they are located; if that is the treatment level, they have chosen

Like a DNR, a POLST Form lets EMS know whether or not the patient wants CPR. DNR orders only apply when a person does not have a pulse, is not breathing and is unresponsive. However, in most medical emergencies, a person does have a pulse, is breathing or is responsive. That is where POLST is different

A POLST form provides more information to emergency personnel than a DNR by indicating that

1. The patient still wants full treatment, meaning that they want to go to the hospital and that all treatment options should be considered, including use of a breathing machine
2. The patient wants limited interventions, meaning that they want basic medical treatments but wish to avoid the intensive care unit (ICU); or
3. The patient just wants comfort measures, meaning that they do not wish to go to the hospital but want to be made comfortable wherever they are living

Key Differences between the POLST and Advanced Directive

Advanced Directive

1. Not a medical order; requires evaluation by a physician of the individual's diagnosis/ prognosis and preferences with regard to present condition
2. Usually treatments cannot be limited in an emergency situation with only an Advance Directive. Therefore, unwanted treatments and interventions may be applied
3. Helps people communicate treatment preferences in advance of a serious illness and designates a proxy to make decisions should the individual lose capacity to do so
4. Recommended for all adults with decision-making capacity

POLST

1. Is a medical order that guides the care provided by all healthcare providers
2. Reflects the individual's goals of care and wishes around care near/at the end of life, and transforms them into actionable orders that must be followed by all healthcare professionals
3. Recommended for individuals with advanced illness, frailty or strong preferences about medical interventions in their current state of health

ROLE OF EMS in POLST

1. Review POLST for completeness/validity: Physician/APN signature
    - Patient or Surrogate signature
    - Review content of Orders prior to initiating treatment
    - Clarify with patient (if alert with capacity) or surrogate
    - Notify EMS medical command of POLST
    - Bring POLST form with patient to hospital (make copy of POLST and attach to EMS patient report) - Follow EMS procedures for documentation of POLST form on your EMS call sheet.
2. Follow orders for:
    - Box D: Do or Do Not Attempt Resuscitation (DNAR)–same as Out of Hospital DNR
    - Box D: Do or Do Not Intubate for respiratory distress (when patient is not in cardiopulmonary arrest): provide other means of respiratory relief –Oxygen, medications, manual relief of airway obstruction (applies to ALS units for intubation, medications and/or c-pap)
    - Box B: "Full Treatment" –all appropriate interventions (Resuscitation Status –See Section D)
    - Box B: "Limited Treatment" with "Transfer to hospital only if comfort needs cannot be met in current location –transport for comfort/symptom relief

Special EMS issues

1. If a box is left "blank" on POLST form: Assumption is that treatment will be provided for that category
2. If Box B is marked either Limited Treatment or Symptom Treatment Only with indication that transport to hospital should only take place if comfort needs cannot be met in current location: Follow instructions of sending facility after verifying that patient is indeed to be transported
3. Validity of POLST: Required MD or APN signature and signature of patient or surrogate

Section A

4. Goals of Care is NOT part of the order. It is used by the physician/APN to construct a care plan to meet patient goals

Section B

5. Consult with the base physician for guidance
    - May include full treatment
    - May include routine meds and treatments for comfort care unless refused in the document
        - Document why comfort measures cannot be provided at the patient's residence, if need to hospitalize becomes necessary

Section C

6. Outlines Artificial Nutrition

Section D

7. Section D – for critical patients.
8. Pulseless or apneic: Attempt resuscitation /CPR or DNAR
9. Respiratory Distress with pulse: Outlines airway management
10. May include doing everything possible or nothing at all

Section E

11. Lists the surrogate's decision-maker
12. The patient or surrogate may void or modify an existing POLST form

Section F

13. Check to make sure the appropriate signatures are on the bottom of the form – patient (or surrogate) and Physician/APN, and their license number

HIPAA PERMITS DISCLOSURE OF POLST TO OTHER HEALTHCARE PROFESSIONALS AS NECESSARY

NEW JERSEY PRACTITIONER ORDERS FOR LIFE-SUSTAINING TREATMENT (POLST)

Follow these orders, then contact physician/APN/PA. This Medical Order Sheet is based on the current medical condition of the person referenced below and their wishes stated verbally or in a written advance directive. Any section not completed implies full treatment for that section. Everyone will be treated with dignity and respect.

Person's Name (last, first, middle) Date of Birth

Print Person's Address

A — GOALS OF CARE *(See reverse for instructions. This section does not constitute a medical order.)*

B — MEDICAL INTERVENTIONS *Person is breathing and/or has a pulse*

❒ **Full Treatment.** Use all appropriate medical and surgical interventions as indicated to support life. If in a nursing facility, transfer to hospital if indicated. See section D for resuscitation status.

❒ **Limited Treatment.** Use appropriate medical treatment such as antibiotics and IV fluids as indicated. May use non-invasive positive airway pressure. Generally avoid intensive care.

❒ Transfer to hospital for medical interventions. ❒ Transfer to hospital only if comfort needs cannot be met in current location.

❒ **Symptom Treatment Only.** Use aggressive comfort treatment to relieve pain and suffering by using any medication by any route, positioning, wound care and other measures. Use oxygen, suctioning and manual treatment of airway obstruction as needed for comfort. Use antibiotics only to promote comfort. Transfer only if comfort needs cannot be met in current location.

Additional Orders: _____

C — ARTIFICIALLY ADMINISTERED FLUIDS AND NUTRITION *Always offer food/fluids by mouth, if feasible and desired*

❒ No artificial nutrition ❒ Long-term artificial nutrition ❒ Defined trial period of artificial nutrition

D — CARDIOPULMONARY RESUSCITATION (CPR)

Person has no pulse and/or is not breathing

❒ Attempt resuscitation/CPR

❒ Do not attempt resuscitation/DNAR
Allow Natural Death

AIRWAY MANAGEMENT *Person is in respiratory distress with a pulse*

❒ Intubate/use artificial ventilation as needed

❒ Do not intubate - Use O2, manual treatment to relieve airway obstruction, medications for comfort

❒ Additional Order (for example defined trial period of mechanical ventilation)

E

If I lose my decision-making capacity, I authorize my surrogate decision-maker, listed below, to modify or revoke the NJ POLST orders in consultation with my treating physician/APN/PA in keeping with my goals: ❒ Yes ❒ No

F — SIGNATURES

I have discussed this information with my physician/APN/PA

Print Name

Signature

❒ Person Named Above ❒ Spouse/Civil Union Partner

❒ Health Care Representative/ Legal Guardian ❒ Parent of Minor

❒ Other Surrogate

Has the person named above made an anatomical gift:
❒ Yes ❒ No ❒ Unknown

These orders are consistent with the person's medical condition, known preferences and best known information.

PRINT - Physician/APN/PA Name Phone Number

Physician/APN/PA Signature (Mandatory) Date/Time

Professional License Number

SURROGATE INFORMATION

Surrogate listed here is the healthcare representative previously identified in an advance directive: ❒ Yes ❒ No ❒ Unknown

Print Name of Surrogate Phone Number

Print Surrogate Address

■ **Surrogate listed is only authorized to change this form if "yes" is checked in Section E above.**

August 2019

SEND ORIGINAL FORM WITH PERSON, WHENEVER TRANSFERRED

8.5 IMPLANTABLE VENTRICULAR DEVICES (VAD)

EMT, PARAMEDIC & MICN

Patient Care Goals

1. Rapid identification of, and interventions for, cardiovascular compromise in patients with VADs
2. Rapid identification of, and interventions for VAD-related malfunctions or complications

Indications

1. Adult patients that have had an implantable ventricular assist device (VAD) including Left Ventricular Assist Device (LVAD), right ventricular assist device (RVADs); and biventricular-assist devices (BiVADs) and have symptoms of cardiovascular compromise
2. Patients with VADs that are in cardiac arrest
3. Patients with VADs that are experiencing a medical or injury-related event not involving the cardiovascular system or VAD malfunction

Contraindications

1. Adult patients who do not have a VAD in place

Assessment

1. Contact patient's **VAD coordinator** for guidance
    - Assess for possible pump malfunction
    - Assess for alarms
    - Auscultate for pump sound "hum" or "whirl"
    - Signs of hypoperfusion including pallor, diaphoresis, altered mental status
2. If the VAD pump has malfunctioned
    - Utilize available resources to troubleshoot potential VAD malfunctions and to determine appropriate corrective actions to restore normal VAD function
        - Contact the patient's VAD-trained companion, if available
        - Contact the patient's VAD coordinator, using the phone number on the device
        - Check all the connections to system controller
        - Change VAD batteries, and/or change system controller if indicated
        - Have patient stop all activity and assess for patient tolerance
        - Follow appropriate cardiovascular condition-specific protocol(s) as indicated

Treatment and Interventions

1. Manage airway as indicated
2. Cardiac monitoring

3. IV Access
4. Acquire 12-lead ECG and Transmit if requested. (**ALS ONLY**)
5. **If patient is experiencing VAD-related complications or cardiovascular problems, expedite transport to a tertiary care facility if patient's clinical condition and time allows**
6. **If patient has a functioning VAD and is experiencing a non-cardiovascular-related problem, transport to a facility that is appropriate for the patient's main presenting problem without manipulating the device**
7. If patient is in full cardiac arrest
    - CPR should **NOT** be performed if there is any evidence the pump is still functioning. The decision whether to perform CPR should be made based upon best clinical judgment in consultation with the patient's VAD-trained companion and the VAD coordinator (or medical control if VAD coordinator unavailable)
8. CPR may be initiated only when:
    - You have confirmed the pump has stopped AND troubleshooting efforts to restart it have failed, AND
    - The patient is unresponsive and has no detectable signs of life
        - Note: Automated BP monitors are accurate, but their success rate in obtaining a BP is only approximately 50% because of reduced pulse pressure in patients with a continuous-flow LVAD. Without Doppler, a NIBP can be used with the above limitations
        - If the $ETCO_2$ is $\leq$20 and MAP $\leq$50 or undetectable – Start CPR/ACLS

Key Documentation Elements

- Information gained from the VAD control box indicating any specific device malfunctions
- Interventions performed to restore a malfunctioning VAD to normal function
- Time of notification to and instructions from VAD-trained companion and/or VAD Coordinator

Performance Measures

1. Identify and mitigate any correctable VAD malfunctions.
2. Perform CPR for patients in cardiac arrest when indicated.

Resources

Recommended Unit Resource: Print EMS Field Guide. This guide has excellent information and troubleshooting guidance for VAD devices that patients could have out in the public

Access the resource guide at:

https://www.mylvad.com/medical-professionals/resource-library/ems-field-guides

Available for download; "MyLVAD" Hospital Locator App

PEARLS

- You do not need to disconnect the controller or batteries in order to defibrillate or cardiovert
- You do not need to disconnect the controller or batteries in order to acquire a 12-lead EKG
- Flow though many VAD devices is not pulsatile and patients may not have a palpable pulse or accurate pule oximetry
- The blood pressure may not be obtainable or measurable and therefore is not an accurate measure of perfusion
- Ventricular fibrillation, ventricular tachycardia, or asystole/PEA may be the patient's "normal" underlying rhythm. Evaluate clinical condition and provide care in consultation with VAD coordinator
- The patient's travel bag should accompany him/her at all times with back-up controller and spare batteries
- If feasible, bring the patient's Power Module, cable and Display Module with patient to the hospital
- All patients should carry a spare pump controller with them
- The most common cause for VAD alarms are low batteries or battery failures
- Although automatic non-invasive blood pressure cuffs are often ineffective in measuring systolic and diastolic pressure, if they do obtain a measurement, the MAP is usually accurate
- Other VAD complications:
    - Infection - Arrythmias - Congestive Heart Failure
    - Stroke/TIA - Cardiac Tamponade - Aortic Insufficiency
    - Bleeding (GI)

8.6 PEDIATRIC TRANSPORTATION

These guidelines apply to every EMS response resulting in the need to transport pediatric patients who are of an age/weight that require the use of a child safety seat from the scene of an emergency. Pediatric patients that do not require a child safety seat should be transported following the same procedure as adult patients

These guidelines offer recommendations, as published by NHTSA, for the transportation of children in five (5) different possible situations:

1. The transport of a child who is not injured or ill
2. The transport of a child who is ill and/or injured and whose condition does not require continuous and/or intensive medical monitoring or intervention
3. The transport of an ill or injured child who does require continuous and/or intensive monitoring or intervention
4. The transport of a child whose condition requires spinal motion restriction and/or lying flat
5. The transport of a child or children who require transport as part of a multiple patient transport (newborn with mother, multiple children, etc.)

These guidelines do not offer recommendations on specific child restraint systems or products

The child's age and weight shall be considered when determining an appropriate restraint system. Child seat models offer a wide range of age/weight limits, so each individual device must be evaluated to determine the appropriateness of use

When possible, and with the exception of a minor vehicle crash (e.g. "fender-bender"), avoid transporting children in their own safety seats if the seat was involved in a moderate to severe motor vehicle crash

- NHTSA considers a crash minor if all the following situations are true:
  - The vehicle could be driven away from the crash
  - The vehicle door closest to the car seat was not damaged
  - No one in the vehicle was injured
  - The air bags did not go off
  - You can't see any damage to the car seat from the motor vehicle crash. Use of the child's own seat can be considered if no other restraint systems are available, and the seat shows no visible damage/defect

- Transportation of a child in any of the following ways is NEVER appropriate:
  - Unrestrained
  - On a parent/guardian/other caregiver's lap or held in their arms
  - Using only horizontal stretcher straps, if the child does not fit according to cot manufacturer's specifications for proper restraint of patients
  - On the multi-occupant bench seat or any seat perpendicular to the forward motion of the vehicle, even if the child is in a child safety seat

Situation Guidelines:

(*__Ideal transport method is in bold__, with acceptable alternatives listed if ideal is not achievable)

1. Transport of an uninjured/not ill child
    - **Transport child in a vehicle other than a ground ambulance using a properly installed, size-appropriate child restraint system**
    - Transport in a size-appropriate child seat properly installed in the front passenger seat of the ambulance with the airbags off or in another forward-facing seat
    - Transport in a size-appropriate child seat properly installed on the rear-facing EMS provider's seat
    - Consider delaying the transport of the child (ensuring appropriate adult supervision) until additional vehicles are available without compromising other patients on the scene. **Contact Medical Command**  if necessary
2. Transport of an ill/injured child not requiring continuous intensive medical monitoring or interventions
    - **Transport child in a size-appropriate child restraint system secured appropriately on the cot**
    - Transport child in the EMS provider's seat in a size-appropriate restraint system
    - Transport child on the cot using three horizontal straps (chest, waist, knees) and one vertical restraint across each shoulder
3. Transport of an ill/injured child whose condition requires continuous intensive monitoring or intervention
    - **Transport child in a size-appropriate child restraint system secured appropriately to the cot.**
    - With the child's head at the top of the cot, secure the child to the cot with three horizontal straps and one vertical strap across each shoulder. If assessment/intervention requires the removing of restraint strap(s), restraints should be re-secured as quickly as possible
4. Transport of a child or children requiring transport as part of a multiple patient transport (newborn with mother, multiple children, etc)
    - **If possible, for multiple patients, transport each as a single patient according to the guidance provided for situations 1 through 4. For mother and newborn, transport the newborn in an approved size- appropriate restraint system in the rear-facing EMS provider seat with a belt-path that prevents both lateral and forward movement, leaving the cot for the mother**
    - Consider the use of additional units to accomplish safe transport, remembering that non-patient children should be transported in non-EMS vehicles, if possible
    - Note: Even with childbirth in the field, it is NEVER appropriate to transport a child held in the parent/guardian/caregiver's arms or on a parent/guardian/caregiver's lap

8.7 RESUSCITATION INITIATION & TERMINATION

EMT, PARAMEDIC, & MICN

RESUSCITATION EFFORTS SHOULD BE WITHHELD UNDER THE FOLLOWING CIRCUMSTANCES:

1. Valid Do Not Resuscitate: Refer to Do Not Resuscitate (DNR) & (POLST) Protocol 8.9
2. Scene Safety: The physical environment is not safe for providers
3. Dead on Arrival (DOA): A person is presumed dead on arrival when all five “Signs of Death” are present AND at least one associated “Factor of Death” is present

Signs of Death (All five signs of death must be present)

1. Unresponsiveness.
2. Apnea
3. Absence of palpable pulses at carotid, radial, and femoral sites
4. Unresponsive pupils
5. Absence of heart sounds

Factors of Death (At least one associated factor of death must be present)

1. Damage or destruction of the body incompatible with life, such as, but not limited to:
    - Decapitation
    - Decomposition
    - Deforming brain injury
    - Incineration or extensive full thickness burns
2. Body frozen solid—unable to perform chest compressions
3. Rigor Mortis:
    - Rigor mortis appears:
        - 2 hours after death in the muscles of the face and progresses to hand
        - 4 hours in Upper Extremities
        - 6-8 hours after death full rigor completes
            - In rare cases, patients with a downtime of >48-60 hours may no longer display rigor. In such cases, extensive dependent Lividity may be utilized as a Factor of Death
    - Extensive Lividity (only a factor if Rigor has diminished)
        - Lividity (Livor Mortis) Purplish discoloration of the skin with blanching over areas not subject to pressure and appears extensively ~ 6 -12 hours after death

NEONATE

1. A neonate who is apneic, asystolic, and exhibits either neonatal maceration (softening or degeneration of the tissues after death in utero) or anencephaly (absence of a major portion of the brain, skull, and scalp) may be presumed dead
2. **Contact Medical Command**  if gestational age is less than 22 weeks and neonate shows signs of obvious immaturity (translucent and gelatinous skin, lack of fingernails, fused eyelids)

RESUSCITATION MAY BE STOPPED UNDER THE FOLLOWING CIRCUMSTANCES:

1. When the patient regains pulse/respirations: See
    - Post Resuscitative Care – Adult, or Post Resuscitative Care - Pediatric 
    - Cardiac Arrest - Adult or Cardiac Arrest – Pediatric 
2. The physical environment becomes unsafe for providers
3. The exhaustion of EMS providers

TERMINATION OF RESUSCITATION (TOR)

1. **Contact Medical Command**  to consider Termination of Resuscitation for any of the following:
    - If patient has NO return of spontaneous circulation after 20 minutes of either
        - BLS alone or combined BLS and ALS in the absence of hypothermia AND no shocks were delivered or advised; or
        - Extrication is prolonged (>30 minutes) with no resuscitation possible during extrication (hypothermia is an exception); or
        - If extenuating circumstances or questions
2. Consider ED transport in the following circumstances:
    - Witnessed arrest
    - Shockable rhythm any time during resuscitation
    - Persistent Narrow Complex Pulseless Electrical Activity
    - Hypothermic patient without contraindications to CPR should have continued CPR and should not be considered for TOR until the core temperature has been rewarmed to 32^{O} C (90^{O} F) with no Return of Spontaneous Circulation
    - May continue resuscitation and transport if conditions on scene are NOT amenable to cessation of resuscitation
    - Patients with TOR ordered by medical command, but not pronounced, may be transported in certain situations
        - Unsafe scene
        - Public venue
        - When patient is in an ambulance

RESUSCITATION WITHHELD/TERMINATION OF RESUSCITATION

1. When efforts to resuscitate are not initiated or are terminated under the above provisions, EMS providers shall:
    - Document time resuscitation withheld or terminated, as well as the criteria used in the determination
    - Notify law enforcement, who will alert Medical Examiner
    - Be mindful of the possibility of a crime scene and restrict access
    - Any decision to move the body must be made in collaboration with law enforcement and the medical examiner
    - Leave any resuscitation adjuncts such as advanced airway devices, IV/IO access devices, electrode pads, etc., in place
    - Inform family on scene of patient's death and offer to contact family, friends, clergy, or other support systems. Facilitate early grieving

The above requirements apply to situations in which law enforcement, or the medical examiner may take jurisdiction. Law enforcement and the medical examiner are not required to take jurisdiction of hospice or other patients who are known to have been terminally ill from natural causes or congenital anomaly, and death was imminent and expected. Where law enforcement is not involved, EMS providers may provide appropriate assistance to families or other caregivers

SPECIAL CASES

Ventricular Assist Devices

1. Patients with ventricular assist devices (VAD) should almost never be pronounced dead at the scene unless one of the "Factors of Death" is present

DOCUMENTATION

1. Complete a patient care record in all cases. If available, include ECG rhythm strips and code summary with the patient care report
2. Document special orders including DNR, on-line Medical Command, etc
3. MCI conditions may require a triage tag in addition to an abbreviated PCR
4. Record any special circumstances or events that might affect patient care or forensic issues

PARAMEDIC & MICN

PROCEDURE

1. If ALS provider determines resuscitation can be withheld of terminated, they can request physician pronouncement
2. Follow procedure set forth in N.J.A.C. 13:35-6.2 and N.J.A.C. 8:41-3.9
3. In the event of communication failure, no pronouncement can be granted

N.J.A.C. 8:41-3.9 PRONOUNCEMENT OF DEATH

a) All pronouncements of death shall be made in accordance with the New Jersey State Board of Medical Examiners' rules, which are set forth at N.J.A.C. 13:35-6.2, as amended and supplemented

1. All patients who appear dead shall be checked for vital signs (including any cardiac activity) and, where appropriate, given a complete external examination. An ALS crewmember shall then contact the **medical command**  physician and relay all findings. These findings shall include a telemetered electrocardiogram sent when requested by the medical command physician unless the condition of the patient precludes the application of electrocardiogram tracing leads

b) In the event of communications failure, no pronouncement shall be made

c) No vehicle shall be placed in PIOOS status or be deemed unavailable for response to an emergency call for the sole purpose of performing a pronouncement of death

N.J.A.C. 13:35-6.2 PRONOUNCEMENT OF DEATH

d) Where the apparent death has occurred outside a licensed hospital and the attending or covering physician has been notified but is unable to go to the location to make the determination and pronouncement, said physician may specify another physician or may arrange with a professional nurse (R.N.) or a paramedic in accordance with N.J.A.C. 8:41-3.9, which requires the relay of findings, including telemetered electrocardiograms, if feasible to attend the presumed decedent and make the determination and pronouncement. In every such instance a written record, which may be contained within a police record, shall be prepared describing the circumstance and identifying the physician and any other person designated as above to perform the death pronouncement responsibility. Such report shall be promptly communicated orally to the attending physician for use in preparation of the death certificate. A copy of the report shall be provided to the physician as soon as practicable

8.8 BABY SAFE HAVEN

New Jersey Department of Children and Families' Safe Haven hotline at 1-877-839-2339

Guidelines

New Jersey's Safe Haven Infant Protection Act allows parents or their representatives to anonymously surrender a newborn baby at any hospital emergency room, police station, fire station, ambulance, first aid, and rescue squads that are staffed 24 hours a day, seven days a week. If the baby appears to be 30 days old or less, and free of any abuse or neglect, the baby should be accepted with no questions asked.

Safe Haven Guidelines for Police, Fire Station, Ambulance, First Aid, and Rescue Squads

When a baby is brought to any Safe Haven, personnel should:

1. Take the Baby
    - If the baby appears older than 30 days or abused or neglected, handle according to normal police procedures.
2. Offer Support
    - If the birth mother surrenders the baby, she is free to walk away, but always offer to connect her to medical care or social services. Explain that by accepting services, she will not give up her legal protections or anonymity, which are provided under the Safe Haven law.
3. Don't Ask, But If Someone Tells…
    - The law requires that you take the baby without asking questions. Whenever possible, hand a Safe Haven questionnaire to the person surrendering the baby and stress that mailing the pre-addressed questionnaire will not compromise the parents' legal protections or anonymity.
    - Document any information that is offered voluntarily. Useful information includes:
        - Physical or developmental problems the baby may have
        - Parent information, such as race, age and medical history
        - Baby's birthplace and first name
        - Any prenatal care provided to birth mother
4. Immediately notify the on-duty supervisor
    - Supervisor should contact the Operational or Clinical Manager
5. Get the Baby to the Hospital

- The baby should be taken immediately to a hospital emergency room by patrol car, ambulance or first aid squad. All information shared by the birth mother, or her representative should be reported to the emergency room staff

6. Call the Safe Haven Hotline
    - The receiving hospital is required to call the **New Jersey Department of Children and Families' Safe Haven hotline at 1-877-839-2339** no later than the first business day after the baby is surrendered. Police staff may also call when a baby is surrendered to them at a police station.
7. Complete an ePCR for the baby

9.0 HAZARDOUS MATERIAL EXPOSURE

PURPOSE

Upon identification of potential HAZMAT EXPOSURE:

1. Ensure unit is a safe distance from the potential exposure
2. Refer to your (Guide BOOL)
3. Call Poison control and or **medical command**  for guidance
4. Follow local SOPs for HAZMAT Incidents

The goal of the hazardous materials exposure protocol is to prepare the EMS provider for the potential risks that may be encountered and to provide guidelines to mitigate the effects of a hazardous exposure incident. The EMS provider may reference additional protocols for the management of specific hazardous materials exposure in dealing with known chemicals

Successful management of a hazardous materials exposure depends on effective coordination between EMS, local hazardous materials teams, fire and police departments, the Poison Control Center, and appropriate state and federal agencies

IDENTIFICATION

1. Identification of the exposed material should be made at the earliest convenient time possible.
2. Proper chemical name and spelling will be necessary for identification of procedures for Poison Control. and receiving hospitals. **Contact Poison Control** POISON Help 1-800-222-1222 **at 1-800-222-1222** as soon as practical for consultation
3. Utilization of shipping papers, waybills, and Material Safety Data Sheets (MSDS) may assist in identifying chemical hazards, safety precautions, personal protective equipment, and treatments

Note: Many household chemicals may not require activation of a hazardous materials team. Utilize manufacturer's recommendation for decontamination and treatment or contact Poison Control for treatment and decontamination procedures

9.1 MASS/MULTIPLE CASUALITY TRIAGE

PURPOSE

1. The goal of the mass/multiple Casualty Triage protocol is to prepare for a unified, coordinated, and immediate EMS mutual aid response by prehospital and hospital agencies to effectively expedite the emergency management of the victims of any type of Mass Casualty Incident (MCI)
2. Successful management of any MCI depends upon the effective cooperation, organization, and planning among health care professionals, hospital administrators and out-of-hospital EMS agencies, state and local government representatives, and individuals and/or organizations associated with disaster-related support agencies
3. Adoption of Model Uniform Core Criteria (MUCC)

DEFINITIONS

Multiple Casualty Situations

The number of patients and the severity of the injuries do not exceed the ability of the provider to render care. Patients with life-threatening injuries are treated first

Mass Casualty Incidents

The number of patients and the severity of the injuries exceed the capability of the provider, and patients sustaining major injuries who have the greatest chance of survival with the least expenditure of time, equipment, supplies, and personnel are managed first

GENERAL CONSIDERATIONS

Initial assessment to include the following:

1. Location of incident
2. Type of incident
3. Any hazards
4. Approximate number of victims
5. Type of assistance required

COMMUNICATION

1. Within the scope of a Mass Casualty Incident, the EMS provider may, within the limits of their scope of practice, perform necessary ALS procedures, that under normal circumstances would require a direct physician’s order
2. These procedures shall be the minimum necessary to prevent the loss of life or the critical deterioration of a patient’s condition
3. All procedures performed under this order shall be documented thoroughly

TRIAGE

1. Utilize a triage system such as “START” or “SALT” (Sort, Assess, Lifesaving Interventions, Treatment/Transport) to prioritize patients. SALT is part of a CDC-sponsored project based upon best evidence and designed to develop a national standard for mass casualty triage

2. Assess each patient as quickly and safely as possible
3. Conduct rapid assessment
4. Assign patients to broad categories based on need for treatment (Still, Wave, Walk)
5. Remember: Triage is not treatment! Stopping to provide care to one patient will only delay care for others. Standard triage care is only to correct airway and severe bleeding problems

TRIAGE CATEGORIES

- Immediate: **-RED-** Seriously injuries, immediately life-threatening problems, high potential for survival (i.e., tension pneumothorax, exposure to nerve agent resulting in severe shortness of breath or seizures). Likely to survive given available resources. If no to any of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Delayed: -**YELLOW-** Serious (not minor) injuries requiring care but management can be delayed without increasing morbidity or mortality (i.e., long bone fractures, 40% BSA exposure to Mustard gas). If yes to all of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Minimal: **-GREEN-** Injuries require minor care or no care (i.e., abrasions, minor lacerations, nerve agent exposure with mild runny nose). If yes to all of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Expectant: **-BLACK- -GREY-** Unlikely to survive given available resources. Does not mean Dead. Method of preserving resources: should receive comfort care or resuscitation when resources are available. Serious injuries: very poor survivability even with maximal care in hospital or pre-hospital setting (i.e., 90% body surface area burn, multiple trauma with exposed brain matter). If no to any of the following: Has a peripheral pulse? Not in respiratory distress? Hemorrhage is controlled? Follows commands or makes purposeful movements?
- Deceased: **-BLACK-** Patient is not breathing after opening airway. (In children, if after giving 2 rescue breaths, if appropriate.) Deceased or casualties whose injuries are so severe that their chance of survival does not justify expenditure of limited resources. Tag patients to prevent re-triage. Do not move bodies unless they are hindering efforts to rescue live patients, or they are in danger of being further damaged, for example, burned by fire, building collapse, etc

TAGGING SYSTEM

1. Use water-repellent triage tags with waterproof markers and attach to the patient
2. Indicate patient's triage priority, degree of decontamination performed, treatment and medications received

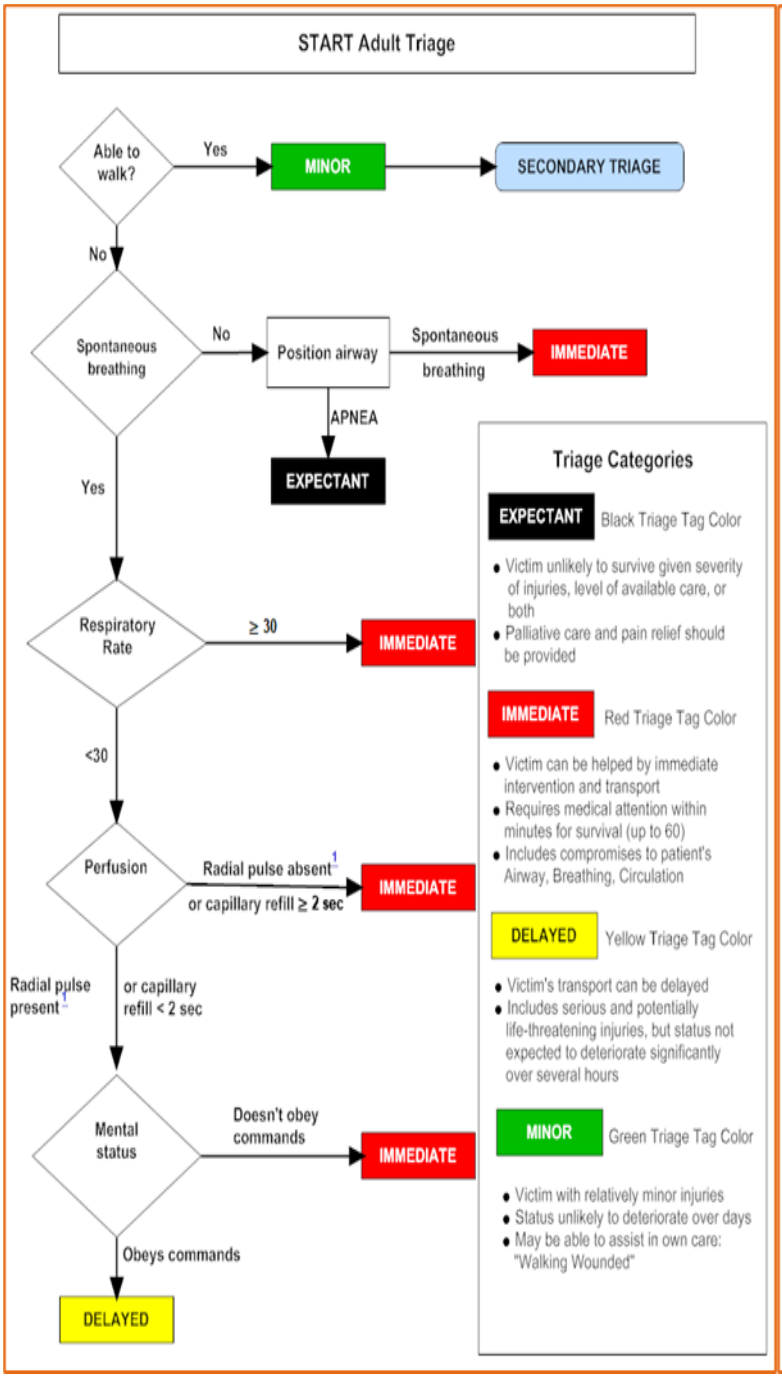
TRIAGE IN HAZARDOUS MATERIAL INCIDENTS

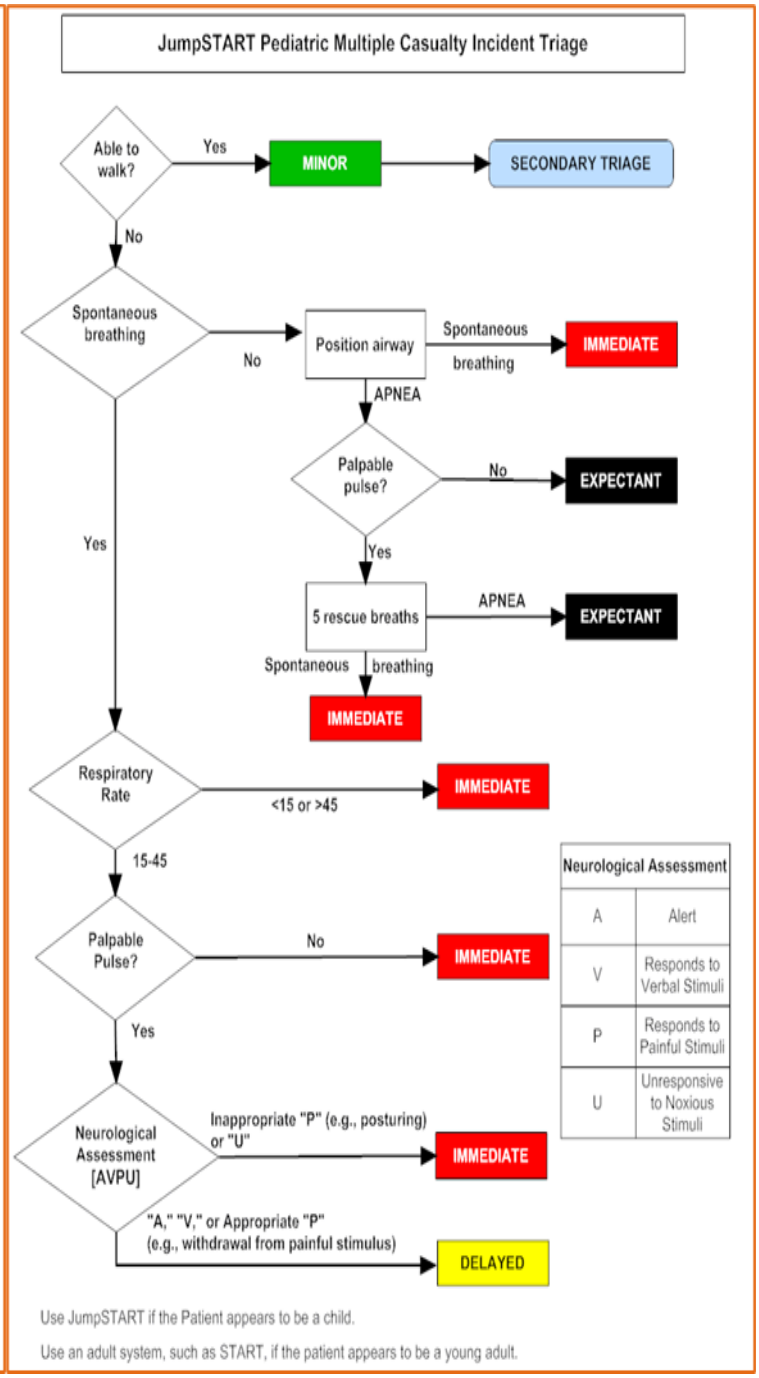
Decontamination

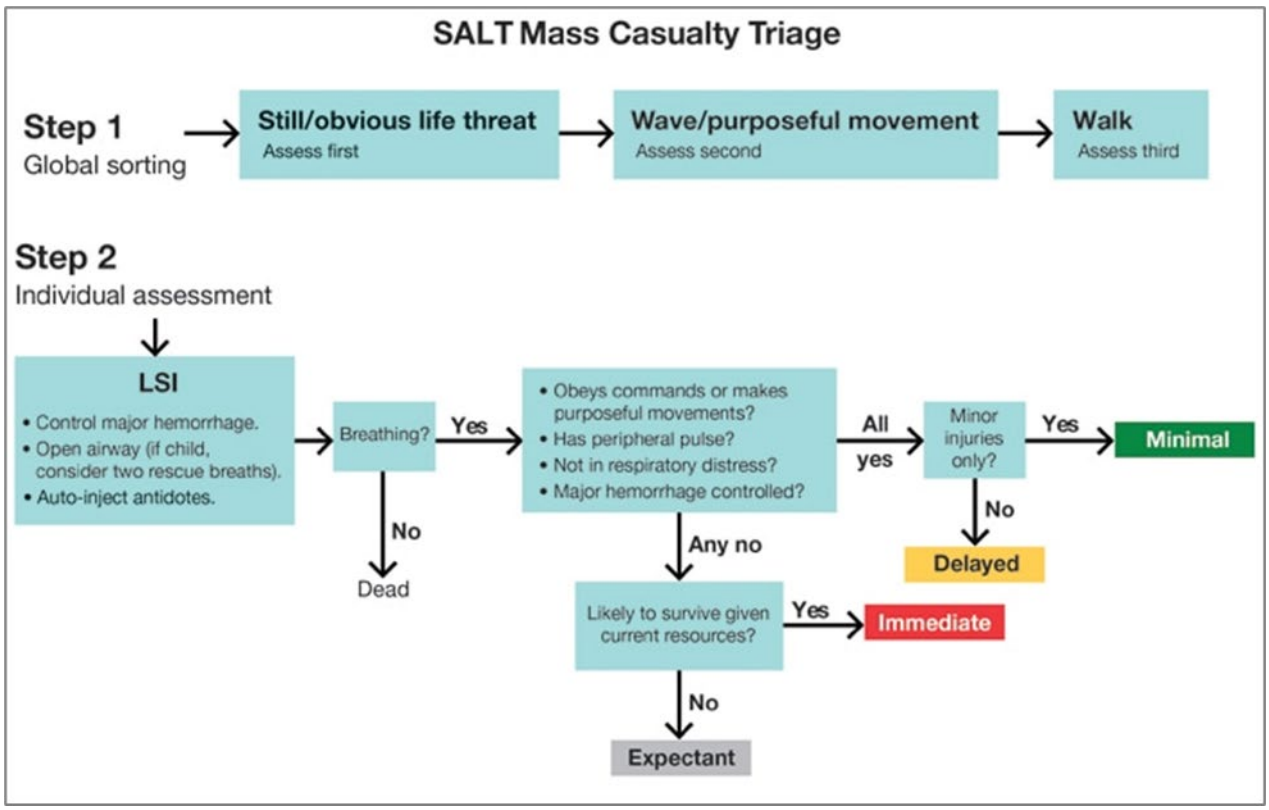
The need for decontamination is the "first triage decision." since decontamination can be a lengthy process, the "second decision" is which patient(s) are the first to be decontaminated. The "third decision" is based on need for treatment during the decontamination process, since only simple procedures such as antidote administration can be accomplished while wearing PPE

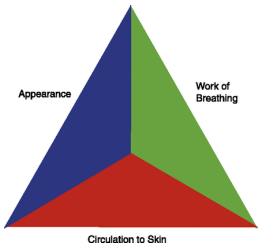
Identification and Treatment

1. Signs and symptoms of exposure will usually dictate the treatment required, however, at the earliest possible time, identification of the specific chemical should be made.
2. Reference additional hazardous materials protocols as necessary
3. Request additional resources. Initial antidote and medical supplies may be limited to priority patients
4. Respiratory compromise is a leading factor of fatalities due to hazardous material exposure. Symptoms of chemical exposure may be delayed and occur suddenly. Constant reevaluation of respiratory status is necessary


START Adult Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
EXPECTANT
Yes
Respiratory Rate
≥ 30
IMMEDIATE
<30
Perfusion
Radial pulse absent[1] or capillary refill ≥ 2 sec
IMMEDIATE
Radial pulse present[1]
or capillary refill < 2 sec
Mental status
Doesn't obey commands
IMMEDIATE
Obeys commands
DELAYED
Triage Categories
EXPECTANT
Black Triage Tag Color
Victim unlikely to survive given severity of injuries, level of available care, or both
Palliative care and pain relief should be provided
IMMEDIATE
Red Triage Tag Color
Victim can be helped by immediate intervention and transport
Requires medical attention within minutes for survival (up to 60)
Includes compromises to patient's Airway, Breathing, Circulation
DELAYED
Yellow Triage Tag Color
Victim's transport can be delayed
Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours
MINOR
Green Triage Tag Color
Victim with relatively minor injuries
Status unlikely to deteriorate over days
May be able to assist in own care: "Walking Wounded"


JumpSTART Pediatric Multiple Casualty Incident Triage
Able to walk?
Yes
MINOR
SECONDARY TRIAGE
No
Spontaneous breathing
No
Position airway
Spontaneous breathing
IMMEDIATE
APNEA
Palpable pulse?
No
EXPECTANT
Yes
5 rescue breaths
APNEA
EXPECTANT
Spontaneous breathing
IMMEDIATE
Yes
Respiratory Rate
<15 or >45
IMMEDIATE
15-45
Palpable Pulse?
No
IMMEDIATE
Yes
Neurological Assessment [AVPU]
Inappropriate "P" (e.g., posturing) or "U"
IMMEDIATE
"A," "V," or Appropriate "P" (e.g., withdrawal from painful stimulus)
DELAYED
Neurological Assessment
A Alert
V Responds to Verbal Stimuli
P Responds to Painful Stimuli
U Unresponsive to Noxious Stimuli
Use JumpSTART if the Patient appears to be a child.
Use an adult system, such as START, if the patient appears to be a young adult.





Comparison Of Adult and Pediatric Assessment Triangle			
	Appearance	Work of Breathing	Circulation of Skin
Adult	Awake, speaking, eye opening, agitated, limp, unresponsive	Labored, noisy, fast, slow, equal chest rise	Pink, flushed, pale, ashen, cyanosis
Pediatric	Muscle tone, interactiveness, consolability, gaze/look, speech/cry	Airway sounds, body position, head bobbing, chest wall retractions, nasal flaring, grunting	Pallor, mottling, cyanosis

Glasgow Coma Scale						
Best Motor Response	Score	*Best Verbal Response*	Verbal - Infants	Score	*Eye Opening*	Score
Obeys commands/spontaneous	6	Oriented	Babbles	5	Open	4
Localizes pain	5	Disoriented	Irritable	4	To voice	3
Withdraws from pain	4	Inappropriate words	Cries to pain	3	To pain	2
Decorticate posturing/flexion	3	Moans, unintelligible	Moans	2	No response	1
Decerebrate posturing/extension	2	No response	No response	1		
No response	1					

A V P U Scale	
Awake	Patient is awake
Verbal	Responds to Verbal stimuli
Pain	Responds to Painful stimuli
Unresponsive	Does not respond

Bag-Valve-Mask Ventilation (BVM) Rates		
Patient	Basic Airway	Supraglottic/ETT*
Adult	10 – 12 breaths per minute	6 – 10 breaths per minute
Child	12 – 20 breaths per minute	8 – 10 breaths per minute
Infant	20 – 30 breaths per minute	8 – 10 breaths per minute

Pediatric Vital Signs	Age Group	Respiratory	Heart Rate	Systolic BP
	Newborn	30-50	120-160	>60
	Infant (1-2 mo)	20-40	80-140	>70
	Toddler (1-3 Yr)	20-30	80-130	>70
	Preschool (3-5 yr)	20-30	80-120	>75
	School Age (6-10)	15-30	70-110	>80
	Adolescent (11+yr)	20-30	60-105	>80
	Preterm < 1Kg	30-60	120-160	36-58
	Preterm 1 Kg	30-60	120-160	42-66
	Preterm 2 Kg	30-60	120-160	50-72

Pulse Oximetry Readings and Oxygen Administration		
% O2 Saturation	Ranges	General Patient Care
≥ 94%	Normal	Usually indicates adequate oxygenation; validate with clinical assessment (see below).
90% – 93%	Mild hypoxia	Consider O2 to maintain saturation ≥ 94%. Caution in COPD patients.
< 90%	Moderate to severe hypoxia	Give oxygen to maintain saturation 94%, as needed.

Notes:

- Obtaining pulse oximetry on agitated children can be difficult; assess for S/S of hypoxia: skin perfusion/color, mental state, etc.
- If patient is profoundly anemic or dehydrated, oxygen saturation may be 100%, but patient may be hypoxemic.
- False pulse oximetry readings may occur in the following: hypothermia, hyperthermia, acidosis, alkalosis, hypoperfusion, carbon monoxide poisoning, hemoglobin abnormality (sickle cell anemia), vasoconstriction, and in the presence of nail polish.

The goal of oxygenation in Pediatric Patients with a cardiac history is to maintain a baseline SPO_2 of 90%. However, some of these patients may have a lower baseline SPO_2.

$ETCO_2$ Readings and Ventilatory Rates		
$EtCO_2$ Reading	Ranges	General Patient Care
35 mmHg – 45 mmHg	Normal	Usually indicates adequate ventilation; validate with clinical assessment (see below).
> 45 mmHg	Hypercarbia	Consider increasing ventilatory rate, assess adjuncts for occlusions.
< 35 mmHg	Hypocarbia	Consider slowing ventilatory rate.

Signs and Symptoms of Pediatric Respiratory Distress or Failure		
Pediatric Respiratory Distress	Pediatric Respiratory Failure	
• Able to maintain adequate oxygenation by using extra effort to move air. • Symptoms include increased respiratory rate, tripod position, nasal flaring, abnormal breath sounds, head bobbing, intercostal retractions, mild tachycardia.	Hallmarks include: • RR < 20 in kids < 6yo • RR < 12 in kids <16 • RR > 60 in any child Cyanosis	• Marked bradycardia or tachycardia • Poor peripheral perfusion • Decreased muscle tone • Mottling • Depressed mental state
Respiratory distress in children and infants must be promptly recognized and aggressively treated as the patient may decompensate quickly.		

- When a child tires and is unable to maintain adequate oxygenation, respiratory failure occurs and may lead to rapid cardiac arrest
- Children under 3 years of age do not require a blood pressure, however; the child's perfusion status requires close monitoring and documentation.