Lima Memorial Health System

EMS

PROTOCOLS
Letter from the Medical Director

Introduction:

You have in your hands (or on your computer screen) the protocol document which describes the methods whereby Fire Departments and EMS Units operating under the medical direction of Lima Memorial Health System will provide high quality pre-hospital medical care. The document is exhaustive; however, we are not able to write a protocol or policy for every situation you may encounter in the pre-hospital environment and as such, they provide a guideline for treating the majority of situations presented to you. Additionally, On-Line Medical Control is always available for your consultation.

Foundations:

Definition of a Patient:

A patient is an individual requesting or potentially needing medical evaluation or treatment. A patient-provider relationship is established via telephone, radio, or personal contact. It is your responsibility to ensure all potential patients are offered the opportunity for evaluation, treatment, and/or transport.

Rights of a Patient:

Once you have begun collecting information about a patient encounter, you have an ethical obligation to protect a patient’s confidential information. It is important to take every opportunity to protect patient confidentiality. This applies to written as well as spoken communications.

Competent patients have the right to accept or refuse medical care, even if the consequences of the refusal of care may potentially be harmful for the patient. In the event that a patient refuses care, it is important to remember the following:

1) Be courteous
2) Offer transport without some or all of the recommended treatment if the patient will allow that. Document the patient’s wishes
3) Clearly advise the patient of the possible complications of their decision
4) Advise the patient to call 911 if they subsequently desire treatment and transport
5) Accurately document all components of the patient encounter

Regarding CONSENT:

1) Minors:
   a) Patients under the age of 18 may not consent to medical treatment or transport. However, the following may consent for the treatment of a minor
      i) Mother or Father
      i) Legal Guardian
      iii) An individual standing in loco parentis. Such persons may include a stepparent taking the responsibilities of a parent of the child.
      iv) The leader of a group of children in possession of written permission from the parent authorizing emergency medical treatment (i.e. a school field trip, etc.)
b) No consent required in the following circumstances prior to initiating treatment:
   i) The patient, guardian, or person standing in loco parentis cannot be reached and the minor needs to receive medical treatment.
   ii) The identity of the child is unknown and a delay in giving treatment would endanger the life of the child.
   iii) The effort to contact the child's parents, guardian, or person standing in loco parentis would result in a delay that would seriously worsen the condition of the child.

c) A minor may consent to treatment without the knowledge of a parent in the following circumstances:
   i) Pregnancy
   ii) Treatment of STDs
   iii) Alcohol or drug abuse
   iv) Emotional disturbance

2) Life threatening situations without the ability to communicate:
   a) A patient of any age who is unable to communicate because of an injury, accident, illness, or unconsciousness and is suffering from what reasonably appears to be a life-threatening injury or illness should be treated under the principle of implied consent.
   b) The principle of implied consent presumes that if the individual with the illness or injury were able to communicate, he or she would consent to the emergency treatment.
   c) In these situations, patients may be transported without their consent. Law enforcement, physical and/or chemical restraint may be required.

3) Potentially life-threatening situations:
   a) Patients usually present in one of two situations: the alert patient who has a concerning presentation and refuses treatment and/or transport or the patient is intoxicated but does not have what reasonably appears to be a life-threatening injury. In these situations, the following steps should be taken:
      i) Determine orientation to person, place, and time. Document.
      ii) Determine what factor(s) is/are influencing the patient to refuse medical care. Resolve those in your power (i.e. transport without an IV).
      iii) Attempt communication with spouse/significant other or family members.
      iv) If patient continues to refuse, consider On-Line Medical Control or contact the medical director.
      v) If patient continues to refuse care, clearly explain risks of refusal and have patient repeat those to you. Document.
      vi) Assure patient they can call back for treatment and transport at any time.
Automatic notification of the Medical Director

Events that may potentially have a negative impact on patient care must be reported to the Medical Director immediately. Notification may be made by directly contacting the Medical Director at (419) 346-9444. These events include the following:

1) Cardiac arrest or respiratory arrest after administrations of any sedative or analgesic
2) Cardiac arrest after administering an anti-arrhythmic agent in a previously stable patient
3) Any attempt at surgical airway
4) Incorrect medication administration with patient complication
5) Any cardiac or respiratory arrest or patient injury related to use of physical or chemical restraints
6) Provider operating outside of scope of practice as defined by the State of Ohio and by the provider's approved level of practice within the system
7) Needle decompression of the chest
8) Intubation attempts >3
9) Unrecognized esophageal intubation or complication related to advanced airway management

Disclaimer: Certain medications and/or medical devices listed in the LMHS EMS protocols may not be available to or used by all departments utilizing LMHS medical direction due to financial considerations/limitations and/or certification level or training.

These policies, procedures, and protocols provide a foundation for providing the best possible patient care to those we encounter in the pre-hospital environment. The way we conduct ourselves in a professional manner is as important as the care we render to the citizens we serve.

I am happy to provide medical direction to your agency.

Sincerely,

Todd Brookens, DO, FACEP
Medical Director
Lima Memorial Health System
Emergency Medical Services
POLICIES
Air Ambulance Resource Utilization

Indications:
An air ambulance may be utilized at the discretion of the incident commander. Conditions that may warrant use of Air Ambulance resources include but are not limited to the following:

1. Patient meets criteria for Trauma/Stroke/STEMI center evaluation.
2. The patient is entrapped and extrication is expected to last greater than 20 minutes.
3. The ground transport time is greater than 15 minutes.
4. The patient is not in traumatic cardiac arrest.

A helicopter may also be utilized when any of the following is present:
~ A situation approved by the medical director or medical control physician - or -
~ Mass Casualty Incident (MCI).

Procedure:
1. The Incident Commander determines that a helicopter is needed for the patient.
2. The Incident Commander notifies dispatch to contact the closest helicopter service for a scene transport. The dispatch center determines which air ambulance is nearest and utilizes this resource.
3. A safe landing zone should be established.
4. Do not delay transport of an ill or injured patient while waiting for a helicopter resource.
LMHS EMS Protocols

Practitioner Disciplinary Procedure

In the Lima Memorial Health Systems EMS System, a practitioner's right to practice medicine is based on extension of the Medical Director's license to practice medicine. If, in the opinion of the Medical Director, an action (or failure to act) on the part of a practitioner is of such a nature that the action of failure to act is inconsistent with, or a violation of, these procedures, or the BLS/ALS practice standard generally accepted in the medical community, the actions described below shall occur:

1) The practitioner will be notified in writing of the issues/concerns that merit the attention of the Medical Director. Notwithstanding this written notice provision, the provisions of 2 and 3 below, and based on the severity and nature of the act (or failure to act), the Medical Director may suspend a practitioner's right to practice BLS/ALS skills upon receipt of information sufficient in the judgment of the Medical Director or EMS Coordinator to support immediate suspension in the interest of patient safety.

2) A written explanation by the individual explaining the incident shall be presented to the Medical Director and EMS Coordinator within three (3) working days of receipt of the Medical Director's issues/concerns. If no written explanation of the incident is sent to the Medical Director by that deadline, the Medical Director may base his decision upon such information that is available to him as of that deadline.

3) The Medical Director or the individual may request a second meeting to further discuss the issues/concerns. If this option is exercised, the meeting shall occur within five (5) working days of receipt of the request.

4) After reviewing all materials, the Medical Director will issue a disposition of the matter. The Medical Director may exercise one or more of the following options:
   a) No action taken/matter resolved
   b) Remediation training
   c) Warning
   d) Require to precept at the approved level again
   e) Temporary suspension of all BLS/ALS practice privileges or suspension of specific BLS/ALS practice privileges
   f) Revocation of BLS/ALS practice privileges

   Such suspension and/or revocation of BLS/ALS practice privileges will extend to all jurisdictions where the BLS/ALS practitioner's right to practice relies on the extension of the LMHS EMS Medical Director's license to practice medicine.

5) After the individual is notified in writing of the Medical Director's decision, he/she may appeal to the Medical Director. This appeal request must be presented within five (5) working days of the decision of the Medical Director to the Medical Director or the EMS Coordinator for referral to the EMS Liaison Team.
6) The EMS Liaison Team will meet within ten (10) working days of receipt of the appeal request. It shall consist of the following representatives:
   
   a) The EC Medical Director  
   b) The EMS Medical Director  
   c) The EMS Coordinator  
   d) The EC Director  
   e) The Trauma Program Manager  
   f) The EC Clinical Manager  

7) The EC Medical Director will function as the presiding officer for purposes of hearing an appeal. The EMS Liaison Committee may hear witnesses (the participation of which is the responsibility of the party calling the witness) and consider documentary and other evidence. The decision of the EMS Liaison Committee shall be in the form of written findings of fact and imposition of action(s) consistent with those findings of fact.

8) The decision of the EMS Liaison Committee is final. The written finding of facts and actions decision will be presented to the appellant ALS practitioner within five (5) working days of the conclusion of the EMS Liaison Team hearing.

9) Until the Patient Safety Subcommittee of the Peer Review Committee EMS Liaison Team meets in hearing, the Medical Director's action(s) as described in 4, above, will stand.

10) If a permanent revocation of ALS privileges is approved, the State Office of EMS will be notified of the decision.

The authority conferred herein does not apply to conduct or behavior outside the sphere of BLS/ALS practice that relies upon the Medical Director's extension of right-to-practice. It does not authorize actions other than warnings, warnings with limitation on certain practices, temporary suspension of BLS/ALS practice rights or revocation of BLS/ALS practice rights. Actions taken pursuant to this Procedure shall be reported to the BLS/ALS practitioner's employer, who may undertake disciplinary actions independent of the actions referred to herein.
Criteria for Death/With-holding Resuscitation

Indications:

- A pulseless, nonbreathing patient who normally would require resuscitation ~ AND ~
- When out of a medical facility has, on scene, a properly completed, state approved DNR form ~ Or ~
- When in a medical facility has, on scene, either:
  - A properly completed state-approved DNR form,
  - OR a physician-signed DNR document,
  - OR a physician-signed order in the facility’s chart for that patient.

Procedure:

- Verify that the patient is the person named in the DNR form or order. (If in doubt, resuscitate.)
- Cease all resuscitation efforts.
- Notify law enforcement of patient's death.
- Attach original DNR form or photocopy of the physician's DNR orders to be completed PCR.

Notes:

- When the patient is not in cardiac arrest, requires care, and has a properly completed DNR form, provide care up to the limits of the DNR form and transport both the patient and the DNR form to the hospital.
- Prehospital care professionals cannot honor other legal documents, such as living wills, without first contacting Medical Control for permission. Telephone orders from a patient’s physician will not be accepted.
- "Medical facility" is defined to be a facility with continual physician or nursing care during its hours of operation; e.g. hospital, nursing home, physician's office.

A Medical Control Physician only may approve exceptions to this procedure.
Deceased Subjects

Indications:
One or more of the following is present:
- Rigor mortis and/or dependent lividity.
- Decapitation.
- Incineration
- If arrest is traumatic in origin, go to Trauma Arrest protocol.

Procedure:
1. Do not resuscitate any patient who meets the above criteria. If resuscitation efforts are in progress, consider discontinuing the resuscitation efforts (Paramedic Only).

2. Notify law enforcement of the patient's death (or a patient's physician if patient is in a medical facility with continual physician or nursing care during its hours of operation; e.g. hospital, nursing home, physician's office).

Note:

If you are unsure whether the patient meets the above criteria, resuscitate.
Termination of Resuscitation (TOR) ALS and BLS

Policy:

Discontinuation of cardiopulmonary resuscitation and other advanced lifesaving interventions may be considered when ALL of the following criteria have been met:

Procedure:

____ Adequate uninterrupted CPR has been administered for at least 25 minutes without ROSC
____ Endotracheal intubation and/or supraglottic airway LMA, King, etc.) placement has been successfully accomplished with adequate ventilation (as per Airway protocol);
____ IV/IO access has been achieved (Unless BLS ONLY crew on scene, No ALS available)
____ Rhythm-appropriate medications and defibrillations for shockable rhythms have been administered according to protocol; **BLS= No shock advised by AED 3 times during 20 minutes of high quality CPR**
____ Persistent asystole or agonal rhythm is present and no reversible causes are identified; **BLS= No Shock Advised 3 times during high quality CPR with BLS only crew**
____ Failure to establish spontaneous circulation = ROSC as described above
____ Patient must be at least 18 years of age.
____ Body temperature is at least 35 centigrade (95°F) for a patient who is submerged in cold water (water temperature less than 47°F (8.5 centigrade)
____ Medical control contacted for permission to terminate resuscitation

- Family members and others present must be acknowledged and assisted.
- Disposition of the body as per the Deceased Persons Protocol.
Policy:

Any patient presenting to any component of the EMS system with a completed Ohio Do Not Resuscitate (DNR) form shall have the form honored and CPR and ALS therapy withheld in the event of cardiac arrest.

Purpose:

- To honor the terminal wishes of the patient.
- To prevent the initiation of unwanted resuscitation.

Procedure:

1. When confronted with a patient or situation involving DNR, the following conditions must be present in order to honor the DNR form and withhold CPR and ALS therapy:
   
   - Ohio DNR form
   - Effective date and expiration date filled out and current
   - Form signed by a physician, physician's assistant, or nurse practitioner
   - Patient in cardiac arrest

2. A valid DNR form may be overridden by the request of:
   
   - The patient
   - The guardian of the patient
   - An on-scene physician

3. A living will or other legal documentation that identifies the patient’s desire to withhold CPR or ALS therapy may be honored with the approval of Medical Control. This should be done when possible in consultation with the patient’s family and personal physician.
Policy:

- For every patient contact, the following must be documented at a minimum:

1. A clear history of the present illness including chief complaint, time of onset, associated complaints, pertinent negatives, mechanism of injury, etc. This should be included in the subjective/typed portion of the PCR. The section should be thorough enough to re-create the clinical situation after it has faded from memory.
2. An appropriate physical assessment that may include pupil assessment, breathe sounds, motor function, abdominal exam, chest exam, head exam, extremity exam, etc. When appropriate, this information should be included in the procedures section of the PCR.
3. At least two complete sets of vital signs (pulse, respirations, and one auscultated blood pressure). These vital signs should be repeated and documented after every drug administration, prior to patient transfer, and as needed during transport of an ALS Patient. Children age < 6 do not need a BP documented.
4. Non-standard medical abbreviations should be avoided.
5. For drug administrations, you must document dosage of the drug, route of administration, time of administration, and response to drug.
6. A complete listing of treatments performed in chronological order. Any response to these treatments should also be listed.
7. For patients with an extremity injury, neurovascular status must be noted before and after immobilization.
8. For patients with spinal immobilization, document motor function before and after spinal immobilization.
9. For IV administration, the size of the IV catheter, placement of IV, number of attempts, type of fluid, and flow rate.
10. A cardiac monitor strip should be attached for all patients placed on the cardiac monitor. Any significant rhythm changes should be documented. For cardiac arrests, the initial strip, ending strip, pre and post defibrillation, pacing attempts, etc. should be attached.
11. 12 lead EKGs when performed, should also be included in the report and transmitted to the receiving facility.
12. For patients that receive intubation, please note the centimeter mark at teeth, methods to confirm placement, size of ET tube, and number of attempts.
13. Any requested orders, whether approved or denied, should be documented clearly.
14. Any waste of Schedule II narcotics should include the quantity wasted, and name of the person who witnessed the waste. This should be documented on the EMS run sheet as well.
15. All crew members should review the content of the PCR for accuracy.
16. Once the call is completed, patient care information may not be modified for any reason. Corrections or additions should be in the form of an addendum. A PCR needs to be completed by the end of your shift or by the end of the date of the run.
Documentation of Vital Signs

Policy:

Vital Signs are a key component in the evaluation of any patient and a complete set of vital signs is to be documented for any patient who receives some assessment component.

Purpose:

To insure:

- Evaluation of every patient's volume and cardiovascular status
- Documentation of a complete set of vital signs

Procedure:

1) **An initial** complete set of vital signs includes:
   a) Pulse rate
   b) Systolic AND diastolic blood pressure
   c) Respiratory rate
   d) Pain/severity (when appropriate to patient complaint)

2) When no ALS treatment is provided, palpated blood pressures are acceptable for repeat vital signs.

3) Based on patient condition and complaint, vital signs may also include:
   a) Pulse Oximetry
   b) Temperature
   c) ETCO₂
   d) Carbon Monoxide (CO) level if available

4) If the patient refuses this evaluation, the patient's mental status and the reason for refusal of evaluation must be documented. A patient disposition form must also be completed.

5) Document situations that preclude the evaluation of a complete set of vital signs.

6) Record the time vital signs were obtained.

7) Any abnormal vital sign should be repeated and monitored closely.
Non-Transport by ALS

**Indications:**
- A single Paramedic crew or a non-Paramedic/Advanced EMT staffed ambulance, when applicable.

**Policy:**
Generally, the highest care provider should attend the patient in the patient care area. A lower level provider may attend the patient if and only if the higher level provider documents patient stability and is responsible to supervise.

- The provider with the highest level of certification on scene shall conduct a detailed physical assessment and subjective interview with the patient to determine their chief complaint and level of distress. If the ALS provider determines that the patient is stable and all patient care needs can be managed by the lower level provider, patient care can be transferred to a provider of lower certification for transport to a hospital.

All personnel are encouraged to participate in patient care while on-scene, regardless of whom "attends" with the patient while en route to the hospital. The determination of who attends should be based upon the patient’s immediate treatment needs and any reasonably anticipated treatment needs while en route to the hospital. The transporting provider must write a narrative documentation that covers all aspects of assessment, care, and disposition. This should be done on one PCR.

The following patients cannot be transferred to a lower level of certification, have the Paramedic unit cancelled, or be transported by a non-Paramedic ambulance without requesting ALS intercept:
- Postictal seizure patients due to the possibility of a re-occurrence of a seizure.

- Patients who have been medicated on the scene may only be transferred to a technician of lower certification whose formulary includes the medications that were administered.

- Any patient suffering from chest pain of suspected cardiac origin, respiratory distress, hypertensive emergencies, multiple trauma, or imminent childbirth.

- Any patient in which transport would be delayed by waiting for a unit with lesser certification to arrive.
Non-Transport of Patients

All Levels of Certification

- Competent patients maintain the right to refuse care and/or transport. If unsure, contact Medical Control.
- All patients refusing service will be:
  - Informed of the availability of service and offered treatment and transport in a non-confrontational, polite manner,
  - Advised to call 911 for emergency service if desired, and
  - Advised that they accept full responsibility for their actions.
- Contact Medical Control if ALS has been started and patient declines transport. Give the Medical Control Physician an explanation by recorded device of the situation and request permission to discontinue ALS. The name of the physician who gave the order must be documented in the PCR.
- The only exception to contacting Medical Control is after treating hypoglycemia and the patient meets the criteria for declining transport.
- Documentation:
  - In the report narrative, describe the patient encounter, vital signs, advice given, that the patient is alert and orientated to person, place, and time, and that the patient understands instructions given to him/her.
  - If possible, have the patient sign the AMA form, have a third party witness the signature, and give copy to the patient.
  - Complete the "Patient Refusal of Care" procedure in the PCR.
- At no time should EMS professionals mention cost of transport, patient’s insurance status, hospital billing or insurance practices, status of system/unit availability, or any other non-clinical subject in an attempt to influence a patient’s decision to accept or decline transport.
Patient Self Medication

All Levels of Certification

Indications:

- A patient who wishes to take his/her own medication or prescription.

Procedure:

- Patient assisted Auto-Injector Epinephrine==>EMR and above
- Patient assisted Nitroglycerin==>EMT and above
- Patient assisted aerosolized/nebulized medications==>EMT and above
Patients who present without a Protocol

Policy:

Anyone requesting EMS service will receive emergent evaluation, care, and an offer of transportation in a systematic, orderly fashion regardless of the patient’s problem or condition.

Purpose:

- To ensure the provision of appropriate medical care for every patient regardless of the patient’s problem or condition.

Procedure:

1) Treatment and medical direction for all patient encounters, which can be triaged into an EMS patient protocol, is to be initiated by protocol.

2) When confronted with an emergency or situation that does not fit into an existing EMS patient care protocol, the Universal Patient Care Protocol should be used to treat the patient, and a Medical Control Physician should be contacted for further instructions.
Physician on Scene

Policy:

The medical direction of prehospital care at the scene of an emergency is the responsibility of those most appropriately trained in providing such care. All care should be provided within the rules and regulations of the state of Ohio.

Indications:

- An Ohio licensed physician at the scene who wishes to assume medical responsibility for the patient.

Procedure:

- If a pre-existing "physician-patient" relationship does not exist, contact Medical Control for physician authorization; the Medical Control physician will decide if the on-scene physician will be allowed to take control of patient care and issue medical orders.

- If a pre-existing "physician-patient" relationship does exist, the physician is authorized to take control of patient care and issue medical orders.

- Follow the orders of the authorized physician even if they conflict with the existing local protocols provided they encompass skills and medications approved by both the Lima Memorial Health Systems Medical Director and the State Medical Board.
Safe Transport of Pediatric Patients

Policy:

Without special considerations, children are at risk of injury when transported by EMS. EMS must provide appropriate stabilization and protection to pediatric persons during EMS transport.

Purpose:

To provide:

- A safe method of transporting pediatric persons within an ambulance.
- Protection of the EMS system and personnel from potential harm and liability associated with the transportation of pediatric patients.

Procedure:

1) Drive cautiously at safe speeds observing traffic laws.
2) Tightly secure all monitoring devices and other equipment.
3) Insure EMS personnel, the patient, and any other occupants use available restraint systems.
4) Transport adults and children who are not patients, properly restrained, in an alternate passenger vehicle whenever possible.
5) Do not allow parents, caregivers, or other passengers to be unrestrained during transport.
6) Do not have the child/infant held in the parent’s, caregiver’s or EMS personnel’s arms or lap during transport.
7) For patients with respiratory distress or other medical conditions that can be worsened by stress, make every attempt to optimize safety while comforting the child.
# Trauma Center Triage Criteria

**Goal:** To provide quality care to all trauma patients while maximizing utilization of resources in the most cost-efficient manner.

**Rationale:** Some trauma patients require a full range of trauma services while a percentage need only modified trauma resources. A tiered system will ensure availability of services based upon clinical presentation of the trauma patient.

**Procedure:** Pre-hospital personnel will provide clinical information to the Emergency Department. The Emergency Department Physician, in collaboration with pre-hospital personnel, will make a determination as to resources required by the patient, either full trauma resources or modified trauma resources. The Emergency Department Physician will make the final decision on level of resources.

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## Criteria for consideration of transport to a Trauma Center

### Trauma Level I

**Level I Criteria:**
- **Trauma Physician within 15 minutes**
- GCS < 14
- Systolic BP < 90, age 6-adult, <70 age 0-5
- Heart Rate > 130
- Respiratory Rate <10 or > 29
- Facial Trauma with impending airway compromise
- Intubated prior to arrival
- Flail chest or open pneumothorax
- Penetrating injury to head, neck, torso, or extremities proximal to knee or elbow
- Bleeding uncontrolled proximal to wrist/ankle
- Inhalation injury with or without burns
- Trauma with 20% BSA burns
- Suspected two or more long bone fractures proximal to knee or elbow
- Amputation proximal to wrist or ankle
- Suspected pelvic fracture
- Paralysis in the field
- Emergency Center Physician Discretion, related to EMS suspicion of high-energy impact and/or presence of co-morbid factors.

### Trauma Level II

**Level II Criteria:**
- **Trauma Physician within 15 minutes**
- Open Fractures proximal to elbow or knee
- Crush injury proximal to wrist or elbow
- Pedestrian, bicycle struck by vehicle > 5 MPH impact, thrown over or run over
- Motorcycle, ATV crash >20 mph
- Ejected from vehicle
- High speed collision (>80 MPH or > 40 MPH unrestrained), or major vehicle deformity (20")
- Falls >12' (Adult) or > 3 times a child's height
- Trauma with burns >5% and < 20% BSA
- Death in passenger compartment
- Extrication time of > 20 minutes
- Emergency Center Physician Discretion
- Hanging/traumatic asphyxiation
PROCEDURES
12Lead ECG

Clinical Indications
- Suspected cardiac patient (Chest pain, dyspnea, weakness, fatigue)
- Electrical injuries
- Syncope
- CHF

Procedure:
1) Assess patient and monitor cardiac shunts
2) If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12LeadECG
3) Prepare ECG monitor and connect patient cable with electrodes.
4) Expose chest and prep as necessary. Modesty of the patient should be respected.
5) Apply chest leads and extremity leads using the following landmarks:
   - RA - Right arm or as directed by manufacturer
   - LA - Left arm or as directed by manufacturer
   - RL - Right leg
   - LL - Left leg
   - V1 - 4th intercostal space at right sternal border
   - V2 - 4th intercostal space at left sternal border
   - V3 - Directly between V2 and V4
   - V4 - 5th intercostal space at midclavicular line
   - V5 - Level with V4 at left anterior axillary line
   - V6 - Level with V5 at left mid axillary line
6) Instruct patient to remain still.
7) Press the appropriate button to acquire the 12LeadECG.
8) Print data as per guidelines and attach a copy of the 12 lead to the PCR. Place the name and age of the patient on the paper copy of the ECG.
9) STEMI Patients must be transported to closest STEMI Interventional Hospital.
10) Document the procedure, time, and results on/with the patient care report (PCR)
11) An EMT or EMT-A may transmit a 12LeadECG; a Paramedic, may interpret the 12-lead before implementing any treatment modalities.

Certification Requirements:
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Clinical Indications:

- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least one failed intubation attempt has occurred.
- Intubation is impossible due to patient accessor difficult airway anatomy.

Absolute Contraindications:

- Deforming facial trauma

Relative Clinical Contraindications:

- Pulmonary fibrosis
- Morbid obesity

Who may insert a supraglottic airway (King LT) per Ohio EMS Scope of Practice

**EMT:** Pulseless AND Apneic patients  
**AEMT:** Apneic patients + Pulseless and Apneic  
**Paramedic:** Paramedic discretion

Procedure:

1) Prepare, position and oxygenate the patient with 100% Oxygen.
2) Choose proper size King airway per package recommendations.
3) Check the tube for proper inflation and deflation.
4) Lubricate with a water-soluble jelly.
5) Insert the King airway rotated 45 degrees into posterior pharynx. Rotate into position
6) Inflate the cuffs per the manufacturer’s recommendations until a seal is obtained.
7) Connect the King to a BVM and assess for breath sounds and air entry.
8) Apply wave form end tidal carbon dioxide monitor and record readings at the scene, enroute to the hospital, and at the hospital.
9) Re-verify King placement after every move and upon arrival in the ED.
10) Document the procedure, time, and result on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Airway-Nasotracheal Intubation

Clinical Indications:

- Patients in need of a secure airway in which oral intubation is contra-indicated or otherwise unable to be obtained. The patient must be breathing for this technique.

Contraindications:

- Apneic patients.
- Suspected fracture/instability of mid-face secondary to trauma.
- Relative contraindications:
  - Blood clotting abnormalities
  - Nasal polyps
  - Upper neck hematomas or infections

Procedure:

1) Prepare, position and oxygenate the patient with 100% Oxygen.
2) Choose proper ET tube about 1 mm less than for oral intubation.
3) Lubricate ET tube generously with water-soluble lubricant such as Lidocaine Jelly.
4) Pass the tube in the largest nostril with the beveled edge against the nasal septum and perpendicular to the facial plate.
5) Use forward and lateral back and forth rotational motion to advance the tube. *Never force the tube.*
6) Continue to advance the tube noting air movement through it; use the BAAM whistle to assist you.
7) Apply firm, gentle cricoid pressure and advance the tube quickly past the vocal cords during inspiration.
8) Inflate the cuff with 3 to 10 cc of air, secure the tube to the patient's face, and confirm bilateral breath sounds.
9) **Apply end tidal carbon dioxide monitor and record readings at the scene, enroute to the hospital, and at the hospital.**
10) Reassess airway and breath sounds after transfer to the stretcher and during transport. These tubes are easily dislodged and require close monitoring and frequent reassessment.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Airway Orotracheal Intubation

Clinical Indications:

- Patients with unprotected airway/hypoxia/critical condition/Sepsis.
- Multiple trauma patient
- Respiratory arrest/Cardiac arrest:

Contraindications:

- Presence of gag reflex.
- Relative contraindications:
  - Blood clotting abnormalities
  - Upper neck hematomas or infections

Procedure:

1) Prepare, position and oxygenate the patient with 100% Oxygen.
2) Select proper ET tube (and stylette, if used), have suction ready.
3) Using laryngoscope, visualize vocal cords. (Use Sellick maneuver/BURP to assist you).
4) Limit each intubation attempt to 30 seconds with BVM between attempts. **AVOID HYPOXIA**
5) Visualize tube passing through vocal cords.
6) Inflate the cuff with 3 to 10 cc of air; secure the tube to the patient's face.
7) Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag-valve mask.
8) Consider using Supraglottic airway if ET intubation efforts are unsuccessful.
9) Apply waveform capnometry and record readings on scene, enroute to the hospital, and at the hospital. **Maintain ETC O2 between 35-45 mmHg. Avoid overventilation**
10) Document ET T size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Airway Suctioning-Advanced

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assessed by an airway adjunct such as a naso-tracheal tube, endotracheal tube, tracheotomy tube, or acricothyrotomy tube.

Procedure:

1) Ensure suction device is in proper working order.
2) Pre-oxygenate the patient.
3) Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
4) For all devices except King, use the suprasternal notch and the end of the airway into which the catheter will be placed as guides, measure the depth desired for the catheter (judgement must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes). If using a King, suction only from the lumen of the King. Do not attempt to suction beyond the length of the King as this may promote laryngospasm.
5) If applicable, remove ventilation devices from the airway.
6) With the thumb port of the catheter uncovered, insert the catheter through the airway device.
7) Once desired depth (measured in number 4 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
8) Small volume (< 10 mL) of normal saline lavage may be used as needed.
9) Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient.
10) Document time and result in the patient care report (PCR)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Airway Suctioning-Basic

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

1) Ensure suction device is in proper working order with suction tip in place.
2) Pre-oxygenate the patient as is possible.
3) Explain the procedure to the patient if they are coherent.
4) Examine the oropharynx and remove any potential foreign bodies or material that may occlude the airway if dislodged by the suction device.
5) If applicable, remove ventilation devices from the airway.
6) Use the suction device to remove any secretions, blood, or other substance.
7) The alert patient may assist with this procedure.
8) Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
9) Record the time and result of the suctioning in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Non-Invasive Ventilation-CPAP

Clinical Indications:

- CPAP indicated for patients over age 12 with pulmonary edema, COPD, Asthma, CHF, pneumonia, submersion injury, respiratory failure who is cooperative and has spontaneous respirations. These patients may demonstrate hypoxia (SpO2 <90%), Tachypnea, retractions, accessory muscle use, rales (crackles) in lung fields.

Contraindications:

- Depressed LOC (i.e. GCS <9; Hypotension (SBP<90mmHg); Respiratory or Cardiac Arrest; major trauma/facial injury; uncontrolled vomiting; Known or suspected pneumothorax; gastric distention (i.e. bowel obstruction). Patients who are unable to maintain their own airway are NOT candidates for CPAP.

Procedure:

1) Ensure adequate oxygen supply to ventilation device.
2) Explain the procedure to the patient.
3) Consider placement of a nasopharyngeal airway.
4) Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point.
5) Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6) Evaluate the response by the patient. Assess breath sounds, oxygen saturation, and general appearance of the patient.
7) Titrate oxygen to patient response. 5cmH20 for Asthma, COPD, Submersion Injury, Pneumonia; 10cmH20 for CHF/Acute Pulmonary Edema.
8) Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complication. The patient must be breathing on their own for optimal use of the CPAP device.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Blood Glucose Analysis

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior etc.)

Procedure:

1) Gather and prepare equipment
2) Blood samples for performing glucose analysis should be obtained simultaneously with intravenous access when possible
3) Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4) Time the analysis as instructed by the manufacturer.
5) Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6) Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.
7) Perform Quality Assurance on glucometers at least once every 7 days, if any clinically suspicious readings, and/or as recommended by the manufacturer and document in log.

Certification Requirements:

- Attend equipment in-services
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Cardioversion

Clinical Indications:

- **Unstable** patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

Procedure:

1) Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2) Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3) Consider the use of pain or sedating medications (i.e., fentanyl or midazolam)
4) Set energy selection to the appropriate setting.
5) Set monitor/defibrillator to synchronized cardioversion mode.
6) Make certain all personnel are clear of patient.
7) Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. **NOTE:** It may take the monitor/defibrillator several cardiac cycles to "synchronize", so there may be a delay between activating the cardioversion and the actual delivery of energy.
8) Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient's rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9) If the patient’s condition is unchanged, repeat steps 2 to 8 above, using escalating energy settings.
10) Repeat until maximum setting or until efforts succeed.
11) Note procedure, response, and time in the patient care report (PCR)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Needle Chest Decompression

Clinical Indications:

- Patients with hypotension (SBP<90), clinical signs of shock, and at least one of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance to percussion on the affected side.
  - Increased resistance when ventilating a patient

~ OR ~

- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated.
  These patients may require bilateral chest decompression even in the absence of the signs above.

Procedure:

1) Personal protective equipment (gloves, eye protection, etc.).
2) Administer high flow oxygen.
3) Identify and prep the site:
   - Locate the second intercostal space (ICS) in the mid-clavicular line on the same side as the pneumothorax.
   - Prepare the site with provide one-iodine ointment or solution.

[Note: If unable to place anteriorly, lateral placement may be used at the fourth intercostal mid-axillary line.]

4) Insert the catheter (preferred 3.25 inch ARS catheter) into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace.
5) Advance the catheter through the parietal pleura until a "pop" is felt and the air or blood exits under pressure through the catheter then advance catheter only to chest wall.
6) Remove the needle, leaving the plastic catheter in place.
7) Secure the catheter hub to the chest wall with dressings and tape.
8) Consider placing a finger cut from an exam glove over the catheter hub. Cut a small hole in the end of the finger to make a flutter valve. Secure the glove finger with tape or a rubber band. (Note: don't waste much time preparing the flutter valve; if necessary control the air flow through the catheter hub with your gloved thumb.)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Surgical Cricothyrotomy

Indications

A patient in need of definitive airway in which you are unable to adequately ventilate due to an obstructed airway. A patient that can be adequately ventilated by other means (BVM, Nasopharyngeal/oral airway, supraglottic airway) does not require a cricothyrotomy. The only patients that qualify for cricothyrotomy are those with an obstructed airway and inadequate ventilation.

Types of patients with obstructed airways that may need cricothyrotomy
- Direct trauma to larynx
- Anaphylactic reactions
- Food or other object in the airway (choking)

Procedure

1) Assemble all equipment (suction, BVM, ETT, Scalpel, end-tidal CO2 monitor, oxygen)

2) Extend the head if not contra-indicated (spine fracture)

3) Identify landmarks (Thyroid cartilage, cricothyroid membrane)

4) Make vertical incision over the cricothyroid membrane with scalpel down to the cricothyroid membrane. Incision should be just big enough for the tube

5) Make horizontal incision through cricothyroid membrane and pass bougie through opening

6) Pass appropriately sized endotracheal tube over the bougie through incision into trachea. The bougie is then removed and tube left in place.

7) Ventilate patient and measure end-tidal CO2

8) Secure tube in place. Avoid migration of tube and main-stem bronchus intubation

9) Control bleeding at site of incision with gauze and direct pressure

10) Contact Medical Control as soon as possible and transport to closest appropriate facility
**Cardiopulmonary Resuscitation**

**Indications:**

- Basic life support for patient in Cardiac Arrest

**Procedure:** ALL CERTIFICATION LEVELS: **EMR, EMT, AEMT, Paramedic**

- Assess Level of consciousness (Not breathing, Abnormal breathing
- Bring AED to patient's side and activate
- Begin CPR with adequate rate and depth and achieving complete chest recoil between compressions.
  - Minimize interruptions
  - Avoid over-ventilation
  - Push "hard and fast"
- Utilize automated CPR device if available per manufacturer recommendations

*C-A-B (not ABC's any more) Focus on effective Compressions, then position airway with oral airway; Place non-rebreather mask with high flow Oxygen. Avoid ventilations for first 4 cycles of CPR. Thereafter, Begin ventilations with low tidal volumes (400-600ml) slowly with ResQPod in place. 6-8 breaths/minute

*Compression-Ventilation Ratio without an advanced airway 30-2 for one rescuer, and 15-2 for child/infant 2 or more Rescuers.

<table>
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<th>Age</th>
<th>Location</th>
<th>Depth</th>
<th>Rate</th>
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</thead>
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<tr>
<td>Infant</td>
<td>Sternum between nipples 2-3 fingers</td>
<td>About 1-1.5 inches</td>
<td>100-120/min</td>
</tr>
<tr>
<td>Child</td>
<td>Sternum</td>
<td>About 2 inches</td>
<td>100-120/min</td>
</tr>
<tr>
<td></td>
<td>Heel of one hand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult</td>
<td>Sternum</td>
<td>2 inches</td>
<td>100-120/min</td>
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<tr>
<td></td>
<td>Both hands</td>
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</tbody>
</table>

- Go to Cardiac Arrest Procedure
- 6-8 breaths/minute with ResQPod ITD
- Avoid interruptions in compressions (load shock on defibrillator; dump charge if non-shockable rhythm or AED advises "NOSHOCK ADVISED"
- Document time CPR started in Patient care report (PCR)
- Always follow most current AHA Guidelines for CPR
Defibrillation-Automated

Clinical Indications:

- Patients in cardiac arrest (pulseless, non-breathing).
- Age < 8 years, use Pediatric Pads if available.

Contraindications:

- Pediatric patients who body habitus is such that the pads cannot be placed without touching one another.

Procedure:

1) If multiple rescuers are available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.
2) Apply defibrillator pads per manufacturer recommendations. Use alternate placement when implanted devices (pacemakers, AICDs) occupy preferred pad positions.
3) Remove any medication patches on the chest and wipe off any residue.
4) If necessary, connect defibrillator leads: white to the anterior chest pad and the red to the posterior pad.
5) Activate AED for analysis of rhythm.
6) Stop CPR and clear the patient for rhythm analysis. Keep interruption in CPR as brief as possible.
7) Defibrillate if appropriate by depressing the "shock" button. Assertively state "CLEAR" and visualize that no one, including yourself, is in contact with the patient prior to defibrillation. The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
8) Begin CPR (chest compressions and ventilations) immediately after the delivery of the defibrillation.
9) After 2 minutes of CPR analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
10) If "no shock advised" appears, perform CPR for two minutes and then reanalyze.
11) Transport and continue treatment as indicated.
12) Keep the interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

If pulse returns:

See post resuscitation protocol.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Clinical Indications:

- Cardiacarrest with ventricular fibrillation or pulse-less ventricular tachycardia.

Procedure:

1) **Ensure chest compressions are adequate and interrupted only when necessary.**
2) Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3) Apply hands free pads to the patient’s chest in the proper position (Anterior-Posterior position)
4) Set the appropriate energy level.
5) Charge the defibrillator to the selected energy level. **Continue chest compressions while the defibrillator is charging.**
6) **Hold compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.**
7) Deliver the counter shock by depressing the **shock button** for hands free operation.
8) Immediately resume chest compressions and ventilations for 2 minutes. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm.
9) Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
10) **Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.**

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Transcutaneous Pacing

Clinical Indications:

- Monitored heart rate less than 60 per minute with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
  - Chest pain
  - Hypotension
  - Pulmonary edema
  - Altered LOC, disorientation, confusion, etc.
  - Ventricular ectopy.
- Asystole, pacing must be done early to be effective.
- PEA, where the underlying rhythm is bradycardic and reversible causes have been treated.

Procedure:

1) Attach standard four-lead monitor.
2) Apply defibrillation/pacing pads to chest and back:
   - One pad to left mid chest next to sternum, one pad to mid left posterior chest next to spine.
3) Rotates selector switch to pacing option.
4) Adjust heart rate to 70BPM for adult and 100BPM for child.
5) Note pacer spikes on EKG screen.
6) Slowly increase output until capture of electrical rhythm on the monitor.
7) If unable to capture while at maximum current output, stop pacing immediately.
8) If capture observed on monitor, check for corresponding pulse and assess vital signs.
9) Consider the use of sedation or analgesia if patient is uncomfortable.
10) Document the dysrhythmia and the response to external pacing with ECG strips in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Intranasal Medication Administration

Clinical Indications:

- Patient without IV access requiring urgent medication administration (e.g., active seizure, opiate overdose, hypoglycemia).

Procedure:

1) Determine appropriate medication dose per applicable protocol.
2) Draw medication into syringe and carefully dispose of sharps.
3) Place mucosal atomizer on the end of the syringe and screw into place.
4) Gently insert the atomizer into the nostril. Stop once resistance is met.
5) Rapidly administer the medication.
6) Document the results in the PCR.
7) Medications approved for use IntraNasal are:
   a) Naloxone (Narcan) => EMR and above
   b) Midazolam (Versed) and Sublimaze (Fentanyl) => AEMT and above
   c) Glucagon: AEMT and above
   d) Haldol: Medic

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Impedance Threshold Device (ITD) - Cardiac Arrest (ResQPod)

Clinical Indications:

- The ITD should be utilized to assist with control of ventilatory rate and improve cardiac preload for adult patients (age 15 or older) who are receiving CPR.
- It may be utilized with an endotracheal tube or with a BVM or Supraglottic Airway (SGA).

Contraindications:

- The ITD should NOT be utilized for patients who have spontaneous respirations. It should be removed from the endotracheal tube/BVM/SGA once spontaneous respirations have returned.

Procedure:

1) Ensure the airway is adequate per airway protocol.
2) Place the ITD between the bag and the EtCO_2 detector (for intubated patients) or between the bag and mask (for patients ventilated with the BVM). The elbow O_2 device should be between the ITD and the bag.
3) Flip the red switch to the "on" position so that the respiratory timing lights flash.
4) Provide a low tidal volume breath (100 ml) after each flash on the LED timing lights.
5) Perform chest compression per the CPR procedure.
6) Once there is return of spontaneous circulation and the EtCO_2 climbs above 40, remove the ITD. Allow the EtCO_2 value to control your respiratory rate (bag faster if EtCO_2 > 50, bag slower if EtCO_2 < 30). The ITD should also be removed if the patient has spontaneous respirations.
7) Carefully monitor the placement of the endotracheal tube after movement of the patient, placement of the ITD, and/or removal of the ITD.
8) Document the procedure and results in the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Rapid Sequence Intubation
(Must have individual Medical Director Approval)

**Indication:** To be used in securing an endotracheal tube in conscious patients who require aggressive airway management. (i.e.: Combative Head Injury).

**Important:** Use extreme caution when deciding to use neuromuscular blockers. Simple airway maneuvers are preferred first (positioning, nasal airways, suctioning, BVM, CPAP). Special consideration must be made for obese patients

**Initial step:**

1. Hyper-oxygenate patient with NRB and 100% oxygen (3 minutes or 8 tidal volume breaths)
   *If SpO2 is not greater than 90% after above, add CPAP to pre-oxygenate
   *Apply nasal cannula with 15 lpm oxygen to provide “apneic oxygenation” after sedation
2. Assure patency of IVs. (Preferably two large bore IV’s).
3. Observe cardiac monitor; Pulse oximeter; End Tidal CO2; Blood pressure
4. Consider **pre-medicating** patient:
   Fentanyl 0.5-1 mcg/kg IV
   Pediatric patients < 3 yo - Atropine .01 mg/kg IVP
   Adults exhibiting bradycardia - Atropine 0.5 mg IVP
5. Administer Induction medication
   **Etomidate** (Amidate) 0.3 mg/kg IV
6. Administer Paralytic (must have IV established)
   **Rocuronium** (Zemuron) 1.0 mg/kg. DO NOT ADMINISTER PARALYTIC TO PATIENT THAT IS NOT ABLE TO BE VENTILATED

7. Reassess patient. Watch for the jaw to relax, making ventilation easier, indicating paralytic has taken effect.
8. Perform Intubation.
   A. If unable to Intubate, apply Backward, Upward, Rightward Pressure to the thyroid cartilage (BURP maneuver) and again attempt to intubate.
   DO NOT bag the patient. Use nasal cannula during intubation attempt to provide “apneic oxygenation” 15 lpm oxygen by nasal cannula
   B. If still unable to intubate, immediately place King LTD airway. **Avoid Any Hypoxia**
9. Once intubation is complete, inflate the ETT cuff and confirm placement by auscultation, AND capnography. (Waveform capnography is the “gold standard” for confirmation.)
10. Once airway is secure, transport patient rapidly to the nearest appropriate facility.

**Post Intubation:** Assure adequate sedation and analgesia. Give Fentanyl and Versed if blood pressure allows.

**Note:** Patients who have been paralyzed cannot be fully assessed until medication wears off. Your assessment and communication of the assessment to the Emergency Department is critical.
Permissive Hypotension and Impedance Threshold Device (ITD) - ResQGard

Clinical Indications:

- An ITD (ResQGard) may be used to provide therapeutic resistance to inspiration in spontaneously breathing patients who are experiencing symptoms of low blood circulation or hypotension which is secondary to a variety of causes including but not limited to:
  a. Traumatic Blood Loss
  b. Burns
  c. Dehydration
  d. Drug Overdose
  e. Shock
  f. Orthostatic Intolerance
  g. Sepsis/Toxins

Contraindication:

- The use of an ITD for Trauma Patients is contraindicated in the following:
  a. Flail Chest
  b. Respiratory Distress
  c. Chest Pain
  d. CHF
  e. Pulmonary Hypertension
  f. Aortic Stenosis

Procedure:

1) Obtain baseline vital signs and monitor cardiac rhythm.
2) Explain to the patient that the device will make it slightly more difficult to breathe but the resistance will make them feel better.
3) Apply the ResQGard per the manufacturers guidelines.
4) Have the patient breathe slowly (over 2-3 seconds) and deeply; exhale normally.
5) If supplemental oxygen is used, attach the tubing to the oxygen port on the ITD and deliver up to 15 LPM.
6) If available, attach ETCO2 to the exhalation port of the device.
7) Re-assess the patient’s vitals every 3-5 minutes.
8) Once the patient’s blood pressure has stabilized or risen to an acceptable level, continue the use of the ITD for approximately 5 minutes, before discontinuing use.
9) Document the use of the ITD in the Patient Care Report along with initiation time, vital sign response, and discontinuation time.

Certification Requirements:

- Maintain knowledge of the indications, contraindication, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Spinal Motion Restriction (SMR)

Goals: Minimize secondary injury to spine in patients who have, or may have an unstable spinal injury
Minimize patient morbidity from immobilization procedures

Assessment: ALL LEVELS = EMR, EMT, AEMT, PARAMEDIC

- Assess scene to determine risk of injury; mechanism alone should not determine need to immobilize. High risk mechanisms = MVCs, Axial loading injuries to spine, Falls > 10 feet
- Assess patient in position found. Determine if C-collar needs to be applied
- Assess mental status, neurologic deficits, spinal pain or tenderness, evidence of intoxication or other severe injuries

Treatment:

1. Immobilize with c-collar if there are any of the following
   a. Patient complains of midline neck or spine pain
   b. Any midline neck or spinal tenderness with palpation
   c. Any abnormal mental status, neuro deficit, extreme agitation
   d. Any alcohol or drug intoxication
   e. Another painful distracting injury present
   f. Torticollis in children
2. Penetrating injury to neck should not receive spinal immobilization unless neurologic deficit is present
3. If extrication is required from vehicle, place c-collar if indicated and allow patient to self-extricate if able. Extricate infants and toddlers in car seats while strapped to car seat. Other situations requiring extrication may use a padded long board using lift and slide technique
4. Patients should not routinely be transported on long boards unless clinical situation warrants its use. If used, long boards should be padded or have a vacuum mattress applied to minimize secondary injury to the patient

Safety considerations: Beware of potential airway compromise/aspiration/nausea and vomiting, facial and oral bleeding. Tight straps can limit chest excursion, pressure injures to skin possible, spine board is uncomfortable

Patients likely to benefit from immobilization should undergo this treatment

Patients who are not likely to benefit from immobilization should not be immobilized

Ambulatory patients may be safely immobilized on gurney with c-collar

Long spine boards should be reserved for patient movement in non-ambulatory patients who meet immobilization criteria and should be removed as soon as practical
Splinting

Clinical Indications: ALL Levels: EMR, EMT, AEMT, PARAMEDIC

- Immobilization of an extremity for transport, either due to suspected fracture, sprain or injury.
- Immobilization on an extremity for transport to secure medically necessary devices such as intravenous catheters.

Procedure:

1) Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected, consider reduction of the fracture prior to placement of the splint.
2) Remove all clothing from the extremity.
3) Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4) Do not secure the splint directly over the injury or device.
5) Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6) Document pulses, sensation, and motor function after placement of the splint. If there has been deterioration in any of these 3 parameters, remove the splint and reassess.
7) If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the following procedure may be followed for placement of a femoral traction splint:
   a) Assess neurovascular function as in #1 above.
   b) Place the ankle device over the ankle.
   c) Place the proximal end of the traction splint on the posterior side of the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis.
   d) Extend the distal end of the splint at least 6 inches beyond the foot.
   e) Attach the ankle device to the traction crank.
   f) Twist until moderate resistance is met.
   g) Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8) Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Taser Barb Removal

Clinical Indications:

- When Taser darts have been deployed by Law Enforcement Officers to subdue adult (17 years and older) perpetrators.

Procedure:

1) Once a Taser has been used against a perpetrator and the scene has been secured, a medical evaluation is necessary to ensure that the perpetrator is safe to be taken into custody.

2) The default procedure is always to transport the patient to the hospital by ambulance with a Law Enforcement Officer (LEO) in attendance.

3) Recognize that a Taser dart removal in the field should proceed only if ALL criteria for refusal of transport are met.

4) After a 10 minute observation period in the field (starting from arrival at the patient's side) all of the following criteria must be met:
   - The patient must have a GCS of 15
   - Patient must have a heart rate of > 110 bpm, a respiratory rate of > 12 bpm, Systolic BP of > 100 mmHg and < 180 mmHg
   - The patient has no other acute medical psychiatric conditions requiring physician evaluation
   - All Taser barbs have been accounted for
   - No tetanic muscle contractions
   - Patient does not request transport
   - Patient is > than 17 years of age
   - Patient has current Tetanus Booster and (If the patient has not had a Tetanus booster within 10 years or the status or psychiatric conditions requiring physician is unknown, LEO may transport to the hospital if all other criteria are met.)

5) Law Enforcement are to be informed that it is the responsibility of the LEO to ensure that the patient receives a tetanus booster within 72 hours.

5) Once all of the above criteria have been met, the following steps must be followed:
   - Use scissors to cut the wires.
   - Wearing PPE grasp the dart and remove with a quick, firm pull, perpendicular to the skin of the patient.
   - Clean and cover each wound, as per Wound Care Protocol.
   - Follow Refusal of Transport Protocol.

Certification Requirements:

- Maintain knowledge of the indications, contraindication, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Venous Access-Existing Catheters

Clinical Indications:

- Inability to obtain adequate peripheral access for patient requiring emergency medication administration. Should not be accessed for routine use
- Access of an existing venous catheter for medication or fluid administration in emergency situation
- Central venous access in a patient in cardiac arrest.

Procedure:

1) Clean the port of the catheter with alcohol wipe.
2) Using sterile technique, withdraw 5-10cc of blood and place syringe in sharps box.
3) Using 5 cc of normal saline, access the port with sterile technique and gently attempt to flush the saline.
4) If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, then proceed to step 5. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
5) Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
6) Record procedure, any complications, and fluids/medications administered in the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Venous Access-Extremity

Clinical Indications:

- Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition).

Procedure:

1) Saline locks may be used as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS professional.
2) Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access- Intraosseous procedure.
3) Use the largest catheter bore necessary based upon the patient’s condition and size of veins.
4) Fluid and setup choice is preferably:
   - Normal Saline with a macro drip (10 gtt/cc) for trauma, hypovolemia, or medical conditions, and
   - Normal Saline with a micro drip (60 gtt/cc) for medical infusions.
5) Rates are preferably:
   - Adult: KVO: 60 cc/hr (1 gtt/6 sec for a macro drip set)
   - Pediatric KVO: 30 cc/hr (1 gtt/12 sec for a macro drip set)
6) If shock is present:
   - Adult: 500 cc fluid boluses repeated as long as lungs are dry and BP < 90.
     - Consider a second IV line.
   - Pediatric: 20 cc/kg boluses repeated PRN for poor perfusion.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Venous Access- Intraosseous

Clinical Indications:

- Patients where rapid, regular IV access is unavailable with any of the following:
  - Cardiac arrest.
  - Multisystem trauma with severe hypovolemia.
  - Severe dehydration with vascular collapse and/or loss of consciousness.
  - Respiratory failure/respiratory arrest.

Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta.
- Current or prior infection at proposed intraosseous site or evidence of joint replacement

Procedure:

1) Personal protective equipment (gloves, eye protection, etc.).
2) Identify anteromedial aspect of the proximal tibia (bony prominence below the knee cap). The insertion location will be 1-2 cm (2 finger widths) below this. If this site is not suitable, and patient > 12 years of age, identify the anterior medial aspect of the distal tibia (2 cm proximal to the medial malleolus). If available, may use yellow EZIO needle in the humeral head. Must have attended training session to use the humeral headsite
3) Prep the site with alcohol prep.
4) For manual pediatric devices, hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further.
5) For the EZ-IO intraosseous device, hold the intraosseous needle at a 60 to 90 degree angle. aimed away from the nearby joint and epiphyseal plate, power the driver until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further.
6) Remove the stylette and place in an approved sharps container.
7) Attach a syringe filled with at least 5 cc NS; aspirate bone marrow for manual devices only, to verify placement; then inject at least 5 cc NS to clear the lumen of the needle.
8) Attach the IV line and adjust flow rate. A pressure bag may assist with achieving desired flows.
9) Stabilize and secure the needle with dressings and tape.
10) You may administer, through the IO needle, 10 to 20 mg (1 to 2 cc) of cardiac lidocaine in adult patients who experience infusion-related pain. This may be repeated prn to a maximum of 60 mg (6 cc).
11) Following the administration of any IO medications, flush the IO line with 10 cc of IV fluid.
12) Document the procedure, time, and result (success) on/with the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
Clinical Indications:

- Protection and care for open wounds prior to and during transport.

Procedure: ALL LEVELS: EMR, EMT, AEMT, PARAMEDIC

1) Use personal protective equipment, including gloves, gown, and mask as indicated.
2) If active bleeding, elevate the affected area if possible and hold direct pressure. Do not rely on "compression" bandage to control bleeding. Direct pressure is much more effective.
3) Once bleeding is controlled, irrigate contaminated wounds with sterile water as appropriate (this may have to be avoided if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation.
4) Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
5) Monitor wounds and/or dressings throughout transport for bleeding.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the LMHS EMS System.
ADULT

PROTOCOLS
Abdominal Pain

History
- Age
- Past medical history/surgical history
- Medications
- Onset
- Palliation/Provocation
- Quality
- Region/Radiation/Referred
- Severity
- Time
- Fever
- Last meal
- Last bowel movement/ emesis
- Menstrual history (pregnant?)

Signs and Symptoms:
- Pain
- Tenderness
- Nausea/vomiting/diarrhea
- Dysuria
- Constipation
- Vaginal bleeding/discharge
- Pregnancy

Associated Symptoms:
- Fever
- Headache
- Weakness
- Malaise
- Myalgias
- Cough
- Mental status changes
- Rash

Differential:
- Pneumonia/PE
- Liver
- Peptic ulcer/gastritis
- Gallbladder
- MI
- Pancreatitis
- Kidney stone
- AAA
- Appendicitis
- Bladder/prostate
- Pelvic (ectopic, PID, ovarian cyst)
- Spleen
- Diverticulitis
- Bowel Obstruction
- Gastroenteritis

Universal patient care protocol

IV Protocol

Fluid bolus
20 ml/kg mL NS IV
Avoid in dialysis patients and CHF/fluid overloaded

Orthostatic BP

Vomiting

Ondansetron 4 mg IV/IM
Phenergan 25 mg IM
Ondansetron 4 mg ODT

Pearls
Exam: Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- Abdominal pain in women of childbearing age g Ectopic pregnancy until proven otherwise
- Consider AAA in pts. > 50 years old with abdominal pain
- Repeat vital signs after therapeutic interventions
- Avoid ondansetron in early pregnancy (1st trimester)
Airway

Assess ABC’s, respiratory rate, effort, adequacy

Basic maneuvers first
- Open airway, nasal/oral airway
- BVM

Assess SpO₂ and ventilator status

Obstructed airway per AHA guidelines

Obstruction

Inadequate

Orotracheal intubation

Direct/Video laryngoscopy (apneic)

Direct/Video laryngoscopy

Successful

Ventilating at < 12 bpm

ETCO₂

Supplemental Oxygen

Pulse Oximetry

Adequate?

Midazolam 2-5 mg IV
For sedation

Failed airway protocol

Unsuccessful?
Insert King Airway

Modify technique
Intubating stylet

Pearls
- For this protocol, Adult = 12 years or older
- Capnometry is mandatory with all methods of intubation. Document results.
- Continuous EtCO₂ monitoring is required for all intubated patients
- Do not assume hyperventilation is psychogenic - use oxygen
- BURP (Backward, Upward, Rightward, Pressure) maneuver may be used to assist with difficult intubations
- Use King Airway when unable to intubate a patient. Avoid hypoxemia
- In head trauma, maintain EtCO₂ 35-45. Avoid overventilation. Avoid hypoxemia
- Utilize continuous pulse oximetry
- All intubated patients must have a C-Collar in place. For non-trauma patients, remove collar upon transfer
- Intubating stylet (Bougie) may be used on any attempt based on initial assessment
Airway - Failed

One (1) failed intubation attempt by most proficient provider on scene
Utilize gum bougie?
NO MORE THAN 1 ATTEMPT TOTAL

Continue BVM  
Yes
Good Air Movement with BVM Ventilation?

No
Facial trauma or swelling?

No
Yes and obstructed airway

King Airway

Nasotracheal intubation

Obstructed airway?

Yes
Surgical Cricothyrotomy

No
Continue Ventilation

Ventilate to maintain ETCO2 at 35-45 mmHg

Pearls
Continuous pulse Oximetry should be used in all patients with inadequate respiratory function
Continuous EtCO2 should be applied to all patients with respiratory failure and to all intubated patients
Providers should consider using a King airway when unable to intubate a patient
AEMTs and EMTs may use the King Airway only after attending approved in-service and completing practical examination
Notify OLMC as soon as possible about failed airway
Patient must have respiratory effort to perform naso-tracheal intubation
**History**
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

**Signs and Symptoms:**
- Itching/hives
- Coughing/wheezing/respiratory distress
- Chest or throat tightening
- Difficulty swallowing
- Hypotension/shock
- Edema

**Differential:**
- Urticaria
- Anaphylaxis
- Shock
- Angioedema
- Aspiration
- Vasovagal
- Asthma/COPD
- CHF

**Universal patient care protocol**
- Hives/rash only
- No resp. component

**Pediatric Protocol Available**
- Resp. Distress
- Not in arrest/shock

**Impending Arrest/Shock**
- Epinephrine 0.3 mg 1:1000 by autoinjector
- Epinephrine 1:1000 0.3 mg IM

**Epinephrine 0.3 mg 1:1000**
- IV/Cardiac Monitor

**Epinephrine 1:1000 0.3 mg IM**
- IV/Cardiac Monitor

**Diphenhydramine 25-50 mg IV/IM**
- Reassess

**Diphenhydramine 25-50 mg IV/IM**
- Methylprednisolone 125 mg IV/IM

**Methylprednisolone 125 mg IV/IM**
- Anaphylaxis
- Epinephrine 0.3 mg 1:10,000 IV

**Hypotension**
- Hypotension protocol

**Respiratory Distress**
- Respiratory distress protocol

**Dysrhythmia?**
- Arrhythmia protocol

**Pearls**

**Exam:** Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- Epinephrine may precipitate cardiac ischemia. Use caution with patients who have underlying cardiac disease. Perform ECG.
- Shorter the onset = more severe the reaction
Altered Mental Status

History
- Known diabetic, medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug use or ingestion
- Past medical history
- Medications
- History of trauma

Signs and Symptoms:
- Decreased mental status
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath)
- Kuss-mall respiration, dehydration

Consider spinal motion restriction

Differential:
- Head trauma
- CNS(CVA, tumor, seizure, infection)
- Infection
- Thyroid
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper/hypoglycemia)
- Toxicological
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary
- Electrolyte abnormality
- Psychiatric

Consider 50% Dextrose 25 grams IV
Naloxone 2 mg slow
IV/IN/IM 12 Lead ECG

Oral glucose, 15 grams if airway not compromised
50% Dextrose 25 grams IV
Glucagon 1 mg IM-IN
Thiamine 100 mg IV

Glucose < 60
Glucose 60-350
Glucose > 350 dehydration
Naloxone 2mg IN
Normal Saline Bolus 1000 mL

No
Return to baseline?

If yes, patient may refuse transport without OLMC order. IF patient is not on oral diabetic meds and adult present with patient blood glucose >100 Pt. able to eat meal now

Pearls:
Exam:
- Mental status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Use caution for environmental toxin or Haz-Mat exposure as cause of mental status changes
- Safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood sugar after D50/glucagon
- Do not let alcohol confuse clinical picture
- Do not give oral glucose if patient cannot protect airway
- Consider patient restraints
- Omit thiamine if no signs of malnutrition
# Asystole

## History
- Past Medical History
- Medications
- Events
- End stage renal failure
- Estimated downtime
- Hypothermia?
- Overdose?
- DNR?

## Signs and Symptoms:
- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

## Differential: (H’s and T’s)
- Medical or Trauma
- Hypoxia
- Potassium (hypo/hyperkalemia)
- Overdose
- Acidosis
- Hypothermia
- Device error - check leads
- Death

## Universal Patient Care Protocol

### H’s and T’s
- Hydrogen Ion (acidosis)
- Hypovolemia
- Hypothermia
- Hypoxia
- Hyperkalemia/Hypokalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker
- Tension pneumothorax
- Tamponade
- Toxins
- Thrombosis-Pulmonary/Coronary

## Cardiac Arrest Protocol

### Use Automated CPR Device if available if non trauma

- Avoid Interruptions
- Delay Airway for first 2 cycles (4 minutes) of CPR
- Use ResQPod
- Use King LTD or intubation
- Avoid overventilation
- Use continuous End Tidal CO2 monitoring

## IV/IO Protocol

- **AT ANYTIME**

  **ROSC (Return of Spontaneous Circulation)** Remove ITD (ResQPod)

  Go to Post Resuscitation Protocol

- **Epinephrine 1 mg 1:10,000 IV/IO**

  Repeat every 3-5 minutes

## Pearls:
- Always confirm asystole in more than one lead
- Always address correctable causes
- Place ITD (impedance threshold device) early in resuscitation to BVM and then advanced airway device (IE: ETT/King)

## Criteria to discontinue?
- Contact OnLine Medical Control to cease efforts
- If approved, leave body at scene with police
- Leave medical devices used in place (ETT, IO, needle decomp, King)
Atrial Fibrillation

**History**
- Medications (theophylline, diet pills, thyroid, decongestants, digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past Medical History
- Palpitations
- Syncope

**Signs and Symptoms:**
- HR > 160/min (varies)
- QRS < 0.12sec
- Dizziness, CP, Dyspnea
- Possible rhythms:
  - Sinus tach
  - Atrial fib/atrial flutter
  - Multifocal atrial tachycardia

**Differential:**
- Heart disease (WPW, Valvular)
- Sick Sinus Syndrome
- MI
- Electrolyte imbalance
- Exertion, pain, emotional stress
- Fever
- Hypoxia
- Hypovolemia/anemia
- Overdose
- Hyperthyroidism
- PE

**Universal Patient Care Protocol**

1. **V-tach with a pulse protocol**
   - Hx of WPW WPW on ECG?
   - Symptomatic (Chest pain, altered mental status)
   - Pre-arrest (no palpable BP, severely altered mental status)

2. **IV Protocol**
   - Consider sedation for cardioversion
     - Midazolam 2-5 mg IV
     - Synchronized cardioversion
       - Narrow regular 50-100J
       - Narrow irregular 120-200J
       - Wide regular-100J
       - Wide irregular defib. dose-not synchronized
     - Diltiazem 0.25 mg/kg
       - Over 5-10 minutes (max = 20 mg)
     - If unsuccessful after 15 min,
       - Diltiazem 0.35 mg/kg over 5-10 min (Max = 20 mg)
     - After conversion
       - 12-Lead ECG

**Pearls**
- Exam: Mental status, HEENT, skin, heart, lungs, abdomen, back, extremities, neuro
- Monitor for hypotension after diltiazem administration
- Monitor for respiratory depression/hypotension with midazolam
- Continuous pulse-oximetry required
- Document all effects of therapy/rhythm changes

**After cardioversion**
- 12-Lead ECG
Back Pain

History
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain/injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Better or worse with activity

Signs and Symptoms:
- Pain
- Swelling
- Pain with ROM
- Extremity weakness
- Extremity numbness
- Shooting pain into an extremity
- Bowel or bladder dysfunction

Differential:
- Muscle spasm/strain
- Herniated disc with nerve compression
- Sciatica
- Spine fracture
- Kidney stone
- Pyelonephritis
- Aortic aneurysm
- Pneumonia
- Cardiac

Universal Patient Care Protocol

Spinal Motion Restriction Protocol

Signs of Shock?

Orthostatic Blood Pressure

 Pearls
 Exam: Mental status, HEENT, neck, chest, lungs, abdomen, back, extremities, neuro
 - Abdominal aneurysm: consider in patients > 50 years old
 - Kidney stones typically present with acute onset flank pain radiating to groin area
 - Patients with midline pain over the spinous process should be spinally immobilized
 - Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation
Behavioral/Agitated Delirium

**History**
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medical alert tag
- Substance abuse/OD
- Diabetes

**Signs and Symptoms:**
- Anxiety
- Agitation
- Confusion
- Affect change
- Hallucinations
- Delusional thoughts
- Bizarre behavior
- Combative/violent
- Expression of suicidal/homicidal thoughts

**Differential:**
- See altered mental status
- Hypoxia
- Alcohol intoxication
- Medication effect/OD
- Withdrawal syndromes
- Depression
- Bipolar
- Schizophrenia

**Scene Safety**

**Universal Patient Care Protocol**

**Remove patient from stressful environment**

**Verbal techniques**
(Reassurance, calm, rapport)

**In the absence of a Paramedic**
- The AEMT may administer 2-5 mg Midazolam IV/IM/IN for violent
- Patient’s requiring physical and chemical restraint
- All patients receiving sedation must have continuous monitoring of vital signs

**Haloperidol 10 mg IM/IN only**
- 2-5 mg Versed IM/IN/IV Monitor vitals including ETCO2 Apply oxygen
- Establish IV and give 1 LNS Apply Soft restraints

**Pearls**
**Exam:** Mental status, skin, heart, lungs, neuro
- Consider ALL causes for behavior Trauma vs. medical (hypoglycemia, OD, hypoxia, head injury, substance abuse
- Do not overlook possibility of domestic violence or child abuse
- If patient with agitated delirium suffers cardiac arrest, give fluid bolus and consider sodium bicarbonate
- All patients with physical or chemical restraints must be continuously monitored by ALS personnel on scene (SpO2, ETCO2, ECG, and NIBP).
- Cocaine/Meth Suspected?; Psychiatric? Haldol/Midazolam
Bites and Envenomation

**History**
- Type of bite/sting
- Description of animal involved
- Time, location, size of bite/sting
- Previous reaction to bite/sting
- Domestic vs. wild
- Tetanus and rabies risk
- Immunocompromized patient

**Signs and Symptoms:**
- Rash, skin break, wound
- Pain, swelling, redness
- Blood oozing from the wound
- Infection?
- Shortness of breath, wheezing
- Allergic reaction, hives, itching
- Hypotension/shock

**Differential:**
- Animal bite
- Human bite
- Snake bite
- Spider bite
- Insect sting/bite
- Infection risk
- Rabies/tetanus risk

**Universal Patient Care Protocol**
- **No**
- **Yes**

**EMS transport?**
- Document contact with Animal control or Police Office for animal bites

**Position of comfort**
- Immobilize affected area/limb

**Allergic reaction protocol**
- **Yes**
- **No**

**Pain Control**

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**For Black Widow spider bites consider** Midazolam 2-5mg IV

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**Pearls**

**Exam:** Mental status, skin, extremities, neck, lung, heart, abdomen, back, and neuro
- Human bites worse than animal bites
- Carnivore bites more likely to become infected and have risk of Rabies exposure
- Cat bites progress to infection rapidly
- Black widow spider bites are minimally painful, but over a few hours, muscle pain and severe abdominal pain develop
- Brown recluse spider bites are minimally painful. Tissue necrosis develops over a few days
Bradycardia

**History**
- Past medical history
- Medications
  * Beta-blocker
  * Calcium channel blocker
  * Clonidine
  * Digoxin
- Events
- Pacemaker

**Signs and Symptoms:**
- HR < 60 bpm
- Chest pain
- Hypotension or shock
- Altered mental status
- Syncope

**Differential:**
- MI
- Hypoxia
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury
- CVA
- Spinal cord injury
- Sick sinus syndrome
- AV block
- Overdose

**Universal Patient Care Protocol**

1. **12-Lead ECG**
2. **IV Protocol**
   - Fluid Bolus as needed

3. **Hypotension**
   - SBP < 90 mmHg and/or symptomatic

   - 2nd or 3rd degree block
   - Not 2nd or 3rd degree block

   - External transcutaneous pacing
     - Consider sedation with Midazolam 2mg IV

   - Atropine 0.5-1mg up to 3mg

   - Consider Epinephrine 0.2-0.3mg (1:10,000) IV or Epinephrine drip 1mcg/min to HR > 60

   - Monitor

   - External transcutaneous pacing
     - Consider sedation with Midazolam 2mg IV

   - Consider Epinephrine 0.2-0.3mg (1:10,000) IV or Epinephrine drip 1mcg/min to HR > 60

**Pearls**

- Mental status, neck, heart, lungs, neuro
- Use of lidocaine in heart block can worsen bradycardia and lead to asystole or death
- Pharmacologic treatment of bradycardia is based on presence or absence of symptoms
- If symptomatic, treat
- If asymptomatic, monitor only
- Consider treatable causes for bradycardia: i.e. beta or calcium channel blocker OD
- Remember to oxygenate and support ventilatory effort
Burns

**History**
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of injury
- Past medical history
- Medications
- Other trauma
- LOC

**Signs and Symptoms:**
- Burns, pain, swelling
- Dizziness
- LOC
- Hypotension/shock
- Airway compromise/distress
- Singed facial or nasal hair
- Hoarseness or wheezing

**Differential:**
- Superficial (1st degree) - red and painful
- Partial thickness (2nd degree) - blistering
- Full thickness (3rd degree) - painless/ charred leathery skin
- Chemical
- Thermal
- Electrical
- Radiation

**Universal Patient Care Protocol**

**Remove rings, bracelets, and other constricting items**

**Thermal**
If burn < 10% BSA (rule of 9’s)
Cool down wound with normal saline/sterile water

**Chemical**
Remove dry clothing or expose area.
Brush off any visible dry chemical or powder

Cover with dry sterile sheet or dressings

**IV Protocol**

**Pain control protocol**

Transport
To a nearest Trauma center

**Pearls**
Exam: Mental status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro
Critical Burns: > 25% BSA; 3rd Degree burns > 10% BSA; 2nd or 3rd degree burns to face, eyes, hands or feet; electrical burns, respiratory burns, deep chemical burns, burns with extremes of age or chronic disease; burns associated with major traumatic injury. These burns require admission or transfer to a burn center.
Early intubation required in significant inhalation injuries
Treat potential CO exposure with 100% Oxygen
Circumferential burns to extremities are dangerous due to potential vascular compromise due to soft tissue swelling
Burn patients are prone to hypothermia
Do not overlook possibility of multi-system trauma
Do not overlook possibility of child abuse.
LMHS EMS Protocols

Cardiac Arrest

History
- Events
- Downtime
- Past medical history
- Medications
- Terminal illness
- Lividity, rigor mortis
- DNR

Signs and Symptoms:
- Unresponsive
- Apneic
- Pulseless

Differential:
- Medical vs. Traumatic
- VF or Pulseless VT
- Asystole
- PEA

AT ANYTIME
ROSC (Return of Spontaneous Circulation) Remove ITD (ResQPod)
Go to Post Resuscitation Protocol

Universal patient care protocol
“PITCREW” approach

Criteria for death-no resuscitation?

Begin continuous compressions

Advanced Life Support Available

No

Defibrillation Automated

Airway Protocol

Yes

Assess Rhythm

Go to appropriate protocol:
Ventricular Fibrillation Pulseless
Ventricular Tachycardia PEA
Pediatric Pulseless Arrest

Avoid interruptions in compressions
Ventilate no more than 8-10 breaths/minute Apply ITD (ResQPod) to BVM and/or King Airway

Pearls

Always Follow Current ACLS & AHA Guidelines
Success based on proper planning and execution; Pit Crew Approach to arrest. Assure adequate space and patient access.
No ventilations for first 2 cycles of CPR (4 minutes) use OPA and NRB mask; position airway
Maternal arresting- Treat mother per appropriate protocol with immediate notification of medical control and rapid transport.
Adequate compressions and timely defibrillation are keys to success.
Apply ITD (impedance threshold device) to BVM and/or ETT/King early. Do not over-ventilate.
**Chest Pain**

**History**
- Age
- Medications
- Erectile dysfunction meds?
- Past medical history
- Diabetes
- Allergies
- Onset
- Palpitation/provocation
- Quality
- Region/radiation/referred
- Severity
- Time (duration)

**Signs and Symptoms:**
- Chest pain
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness

**Differential:**
- Trauma vs. Medical
- Acute coronary syndrome vs. MI
- Pericarditis
- PE
- Asthma/COPD
- Pneumothorax
- Aortic dissection
- GER eflux, hiatal hernia
- Esophageal spasm
- Chest wall pain
- Pleural pain
- Overdose (cocaine)

**Universal patient care protocol**

**Aspirin 325 mg PO**
- Unless allergy to ASA

**STEMI on 12-Lead**
- Immediate transport
- Notify receiving facility
- Transmit ECG if able

**12-Lead ECG**

**Nitroglycerin 0.4 mg SL**
- Every 5 minutes if SBP > 90

**IV fluid bolus for Inferior MI**
- (volume dependent)

**IV Protocol**
- Continued pain
- Morphine 2-4 mg slow IV push up to 10 mg

**Nitroglycerin 0.4 mg SL**
- Every 5 minutes if SBP > 90

**For nausea/vomiting, consider**
- Ondansetron 4 mg IV/IM/ODT

**Pearls**
- Avoid NTG in patient who has used erectile dysfunction meds (Viagra, Levitra, Cialis, Etc.) in past 24 hours
- If patient has STEMI, establish 2nd IV
- Monitor for hypotension after NTG and/or morphine administration

**Remember**
- Diabetics, geriatric and female patients often have atypical symptoms
**Childbirth/Labor**

**History**
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Drug use
- Gravida/para-status
- High risk pregnancy?

**Signs and Symptoms:**
- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

**Universal patient care protocol**

**Left lateral position**

**Treat suspected medical or trauma problems per protocol**

**Hypertension?**
- Abnormal vaginal bleeding?

**Visually inspect perineum for crowning**
(No digital exam)

**Crowning**
> 36 weeks gestation

**Monitor and reassess**
Document frequency and duration of contractions

**IV Protocol**

**Imminent Childbirth:** If prolapsed cord, push up on presenting part

**Pediatric protocol**

**Priority symptoms:**
- Crowning < 36 weeks gestation
- Abnormal presentation
- Severe vaginal bleeding
- Multiple gestation

**Early notification of Hospital of impending delivery**

**Differential:**
- Abnormal presentation
  - Buttock
  - Foot
  - Hand
- Prolapsed cord
- Placenta Previa
- Abruptio placenta

**Pearls**
- **Exam (mother):** Mental status, heart, lungs, abdomen, neuro
- **Document at all times (deliver, contractions frequency/length)**
- **After delivery:** Massage uterus (lower abdomen) which will promote uterine contraction to control post-partum bleeding
- Some perineal bleeding is normal with childbirth, large quantities or free bleeding is abnormal
- **Record APGAR at 1 and 5 minutes after birth**
Deceased Persons

**History**
- Patient encountered by EMS who meets criteria for obvious death
- Patient with duly executed DNR who is apneic
- Patient for whom resuscitation efforts are ceased on-scene

**Key Information:**
- Name of primary care physician
- Known medical conditions
- Last time known to be alive

**Differential:**
- Attended death - a patient with a primary care physician who apparently died of medical causes (natural death)
- Unattended death - a patient without a primary care physician who apparently died of medical causes (natural death)
- Suspicious death (law enforcement)

**Patient meets criteria for obvious death?**  See Deceased Subject Protocol

**Patient meets criteria for discontinuation/TOR guidelines**

**Law enforcement and/or EMS recognize suspicious death?**

- No
  - No - Attended death?
    - Yes
    - No - Contact made with primary care physician?
      - No
        - Confirm name of primary care physician from family. Give info to law enforcement
      - Yes
        - Describe case and obtain Name of physician

**Release of body appropriate.**
Medical devices may be removed.

**Differential:**
- Attended death - a patient with a primary care physician who apparently died of medical causes (natural death)
- Unattended death - a patient without a primary care physician who apparently died of medical causes (natural death)
- Suspicious death (law enforcement)

**Contact law enforcement and/or county Coroner.** Leave all medical devices in place. If devices have been removed, tape them to the chest of the pt. Do not place sharps under tape; note them on the tape.

**Contact made with primary care physician?**

- No
  - Yes
    - Describe case and obtain Name of physician

**Pearls**
- The body of a deceased person may be released to the funeral home if the death is attended and law enforcement confirms that the death is not suspicious. It is preferred to communicate directly with the primary care physician prior to releasing the body. All reasonable attempts to contact the PCP must be made.
- If the death is unattended, the Medical Examiner must be contacted.
- If the death is traumatic, the Medical Examiner must be contacted.
**LMHS EMS Protocols**

**Drowning/Submersion**

**History**
- Submersion in water regardless of depth
- Possible history of trauma
- Duration of immersion
- Temperature of water
- Fresh or salt water

**Signs and Symptoms:**
- Unresponsive
- Mental status change
- Decreased or absent vital signs
- Vomiting
- Coughing

**Differential:**
- Trauma
- Pre-existing medical condition
- Pressure injury (diving)
  - Barotrauma
  - Decompression sickness

**Universal patient care protocol**

**Spinal Motion Restriction (SMR) Protocol**

**Adult airway protocol**
- OR

**Respiratory distress protocol**
- OR

**Other appropriate protocol**

**IV Protocol**

**Cardiac monitor**

**Pulse Ox**

**ETCO₂**

**CPAP 5 cmH₂O for respiratory distress**

In awake patients able to maintain own airway

**Pearls**

**Exam:** Trauma survey, head, neck, chest, pelvis, back, extremities, skin, neuro
- With cold water there is no time limit – resuscitate all
- All victims should be transported for evaluation due to potential for worsening over next several hours
- All appropriately trained rescuers to remove victims from areas of danger
- With pressure injuries, consider transport to hyperbaric chamber (The Toledo Hospital) by air ambulance
Electrical Injuries

**History**
- Lightning or electrical exposure
- Single or multiple victims
- Trauma from fall or MVC into pole
- Duration of exposure
- Voltage and current (AC/DC)

**Signs and Symptoms:**
- Burns
- Pain
- Entry and exit wounds
- Hypotension or shock
- Arrest

**Differential:**
- Cardiac arrest
- Seizure
- Burns
- Multiple trauma

---

**Scene safety**

**Universal patient care protocol**

**Spinal Motion Restriction Protocol**

**IV protocol**

**Focused history and physical exam**

**Look for entry and exit wounds**

**Pain control protocol**

**12-Lead ECG**

**Appropriate protocol based on symptoms**

---

**Pearls**

**Exam:** Mental status, HEENT, neck, heart, lungs, abdomen, extremities, back, neuro
- Ventricular fibrillation and asystole are most common dysrhythmias
- Damage often hidden - most severe damage to muscle, vessels, and nerves
- In multiple victim lightning incident, attend to victims in full arrest first. **IF** the victim did not arrest initially, it is likely they will survive. These patients are often resuscitated with adequate CPR and ALS
- Assess for other trauma
- Lightning is a massive DC shock, most often leading to asystole or other dysrhythmia
- In lightning injuries, most of the current will travel over the body surface producing flash burns
Epistaxis

History
- Age
- Past medical history
- Medication (BP, anticoagulants)
- Trauma
- Previous nosebleeds
- Duration
- Quantity

Signs and Symptoms:
- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

Differential:
- Trauma
- Infection
- Allergic rhinitis
- Lesions (polyps/ulcers)
- Hypertension

Universal patient care protocol

Upright position
Compress nostrils together Ice pack

Hypotension and/or tachycardia

Yes

IV protocol

No

Consider hypertension protocol

Normal saline bolus
500 mL

Pearls
Exam: Mental status, HEENT, neck, heart, lungs, neuro
- It is difficult to quantify the amount of blood loss in epistaxis
- Bleeding may be posterior and you may see the patient expel blood clots from the mouth
- Anticoagulants include: aspirin, Coumadin, Plavix, NSAIDS, Pradaxa, Eliquis, Xarelto, Lovenox
LMHS EMS Protocols

Extremity Trauma

**History**
- Type of injury
- Mechanism: crush/penetrating/amputation
- Time of injury
- Open vs. closed wound/fracture
- Wound contamination
- Medical history
- Medications

**Signs and Symptoms:**
- Pain
- Swelling
- Deformity
- Altered sensation/motor function
- Diminished pulse/cap refill
- Decreased extremity temperature

**Differential:**
- Abrasion
- Confusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputations

**Universal patient care protocol**

**Multiple trauma protocol**

**Isolated extremity injury?**

*Yes*

**Immobilize extremity as indicated**

**Apply ice to reduces swelling**

**Woundcare/hemorrhage control**

**Limb or life-threatening event?**

*Pain medication needed?*

**IV Protocol**

**Pain control protocol**

**Amputation?**

- Clean amputated part-
  - Wrap part in sterile dressing soaked with normal saline. Place in air tight container. Place container on ice if available.

**Pearls**

**Exam:** Mental status, extremity, neuro
- In amputations, time is critical. Consider transport to Traumacenter.
- Hip dislocation and knee and elbow fracture/dislocations have a high incidence of vascular compromise
- Urgently transport any injury with vascular compromise
- Blood loss may be concealed or not apparent with extremity injuries
- Severe bleeding not rapidly controlled may necessitate application of a tourniquet
- Lacerations must be evaluated for repair within 6 hours from the time of injury
**Eye injury/Complaint**

**History**
- Time of injury/onset
- Blunt/penetrating/chemical
- Open vs. closed injury
- Involved chemical/MSDS
- Wound contamination
- Medical history
- Tetanus status
- Normal visual acuity
- Medications

**Signs and Symptoms:**
- Pain, swelling, blood
- Deformity, contusion
- Visual deficit
- Leaking aqueous/vitreous humor
- Upwardly fixed eye
- Shooting or streaking light
- Visible contaminants
- Lacrimation

**Differential:**
- Abrasion/laceration
- Globe rupture
- Retinal nerve damage/detachment
- Chemical/thermal/agent of terror
- Orbital fracture
- Orbital compartment syndrome
- Neurological event
- Acute glaucoma
- Retinal artery occlusion

**Universal patient care protocol**

1. Pain/visual
   - Injury
   - Assess visual acuity
   - Evaluate pupils
   - Complete neuro exam
   - Screen for unrecognized chemical exposure
   - Cover both eyes
   - Cover with saline-soaked gauze
   - Immediate irrigation with saline or water
   - Assess Orbital Stability
   - Tetracaine 2 drops
   - Irrigate with normal saline
   - Cover unaffected eye
   - Pain control protocol

**Isolated to eye(s)?**
- No
- Appropriate protocol

**Mechanism**
- Burn/chemical
- Physical trauma
  - Burn/chemical
  - Physical trauma

**Assess orbital stability**
- Yes
  - Penetrating trauma or globe rupture?
  - No
  - Ondansetron 4 mg IV/IM/ODT
- Yes

**Pearls**
- Normal visual acuity can be present even with severe eye injury
- Remove contact lenses when possible
- Any chemical or thermal burn to the face/eyes should raise suspicion of respiratory insult
- Orbital fractures raise concern of globe or nerve injury and need repeated assessments of visual status
- Should cover both eyes to prevent injury
- Use shields for physical trauma to eyes (not pads)
- Do **not** remove impaled objects
Fever/Suspected Sepsis

**History**
- Age
- Duration
- Severity
- Past medical history
- Medications
- Immuno-compromised (HIV, transplant, diabetes, cancer)
- Exposure
- Last acetaminophen/ibuprofen use

**Signs and Symptoms:**
- Warm
- Flushed
- Sweaty
- Chills/rigors
- Myalgias, cough, chest pain
- Headache
- Dysuria
- Abdominal pain
- Mental status change
- Rash

**Universal patient care protocol**

Consider droplet, airborne, contact precautions

**Suspected Sepsis?**

Pulse, RR, BP, ETCO2, Temp

- Yes
- No

Airway support

Establish 2 large Bore IVs
Saline 30 ml/kg bolus Reassess vitals/lung sounds Notify receiving facility of Sepsis Alert

**Differential:**
- Infection/sepsis
- Cancer/tumors/lymphomas
- Medication reaction
- Connective tissue disease
- Hyperthyroid
- Heat stroke
- Meningitis

**Suspected Sepsis:**

- Hypotension
- Tachycardia
- Tachypnea
- Hypo/Hyperthermia
- Altered Hyper Mental Status

Notify receiving facility early of suspected sepsis

**Monitor/trend vitals limit on-scene time Prevent hypothermia**

**Pears**

- Mental status, skin, HEENT, neck, heart, lungs, abdomen, back, extremities, neuro
- SIRS = Systemic Inflammatory Response Syndrome = Fever > 38 (100.4) or < 36 (96.8); HR > 90; RR > 20, Decreased ETCO2
- Sepsis: one or more organs begins to fail. Septic shock = sustained hypotension after aggressive fluid resuscitation
- Avoid hypoxia. Consider CPAP early; Intubate for altered mental status/respiratory failure
- Avoid overventilation to prevent acute lung injury
- Avoid pressors (Dopamine)/(Norepinephrine) until adequate fluid resuscitation has been performed
- Febrile seizure are more likely in children with history of febrile seizures with rapid elevation in temperature
- Droplet precautions include standard PPE plus surgical mask for provider and NRB or surgical mask for pt. Use for suspected influenza, meningitis, mumps, strep when spread by large droplets suspected
- Airborne precautions include standard PPE plus a N-95 mask for providers and surgical mask/NRB for pt. Use for TB, measles, varicella
- Contact precautions include standard PPE plus gown, change gloves after every patient contact, strict handwashing precautions. Use with MRSA, scabies, shingles, or other illnesses spread by contact
- All hazards precautions include standard PPE + airborne + contact > Used during initial phase of outbreak with unknown agent
**Head Trauma**

**History**
- Time of injury
- Mechanism: blunt/penetrating
- LOC
- Bleeding
- Medical history
- Medication
- Evidence of multi-trauma
- Helmet use/damage to helmet

**Signs and Symptoms:**
- Pain
- Swelling
- Bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress/failure
- Vomiting
- Significant MOI

**Differential:**
- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse

**Universal patient care protocol**

**Multiple trauma protocol**

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**Isolated head trauma?**

---

**SMR protocol**

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**IV Protocol**
- NS bolus to keep SBP > 100

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**Obtain GCS**
- GCS < 8
  - No Gag Reflex
  - Intubate apneic pts
  - Maintain ETCO2 35-45 mmHg
  - Resp 10/minute
  - Avoid Hypoxia
  - Avoid overventilation
- GCS > 8
  - GCS < 8 Gag Reflex Present
  - Midazolam 2-5 mg IV
  - Fentanyl 1-3 mcg/kg IV for sedation/pain control

---

**Assist with basic airway maneuvers**
- Maintain Pulse Ox > 95%

---

**Seizure?**
- Go to seizure protocol

---

**Monitor and reassess**

---

**Pearls**

**Exam:** Mental status, skin, HEENT, heart, lungs, abdomen, extremities, back, neuro

**Cushing’s Response:** Elevated ICP causing hypertension and bradycardia
- Hypotension usually indicates injury or shock unrelated to head injury and should be aggressively treated
- Monitor and document changes in LOC and GCS
- Consider restraints if necessary for safety of patient and/or personnel protection. Do not use Haldol
- Concussions are periods of confusion or LOC associated with trauma and may be resolved upon arrival of EMS
- Any prolonged period of confusion or mental status abnormality that does not return to normal within 15 minutes should be evaluated by a physician
Hypertension

**History**
- Documented hypertension
- Related diseases: diabetes, CVA, renal failure, cardiac
- Medications (compliance?)
- Viagra, Levitra, Cialis?
- Pregnancy?

**Signs and Symptoms:**
- Headache
- Nosebleed
- Blurred vision
- Dizziness
- Chest Pains

**Differential:**
- Hypertensive encephalopathy
- CNS injury
  - Cushing response = bradycardia with hypertension
- MI
- Aortic dissection
- Pre-eclampsia/Eclampsia

**Universal patient care protocol**

1. Check BP in both arms

2. 12-Lead ECG

3. IV protocol

**Hypertension + End-organ damage**
1) Acute coronary syndrome
2) Acute MI
3) Acute renal failure

**Administer Nitro sublingual every 5 minutes until Mean Arterial Pressure (MAP) is 110 mmHG**

**Pearls**
**Exam:** Mental status, skin, neck, lung, heart, abdomen, back, extremities, neuro
- Never treat elevated blood pressure based on one set of vital signs
- Symptomatic hypertension is usually revealed through end-organ damage to cardiac, CNS, or renal systems
- Transport symptomatic patients with hypertension with their head elevated
**Hypotension/Shock - Non-Trauma**

**History**
- Blood loss: GI, AAA, Ectopic, Vaginal
- Fluid loss: Vomiting, diarrhea, fever
- Infection
- Cardiac: ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- Poor PO intake history

**Signs and Symptoms:**
- Restless, confused
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

**Differential:**
- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Ectopic pregnancy
- Dysrhythmias
- PE
- Tension pneumothorax
- Medications/OD
- Vasovagal
- Physiologic

---

**Universal patient care protocol**

**Observe and reassess**

**Symptomatic**

**Cardiac**
- Normal saline
  - 20 mL/kg bolus

**Non-cardiac**
- Normal saline
  - 20 mL/kg bolus

**Non-trauma**
- Treat per appropriate trauma protocol

**Trauma**
- Treat per appropriate cardiac protocol

**No**

**No rales present**
- Normal saline
  - 500 mL bolus

**Additional normal saline**
- 20 mL/kg bolus if no response

**Norepinephrine 0.5-30 mcg/min**
- IV titrated to SBP >100 mmHg
- Should be reserved for lengthy transports. Always start low and titrate

---

**Pearls**

**Exam:** Mental status, skin, heart, lungs, abdomen, back, extremities, neuro
- Hypotension = SBP < 90 mmHg
- Consider orthostatic vital signs on non-trauma patients with suspected blood or fluid loss
- Consider all causes of shock and treat per protocol
- Norepinephrine = Levophed. **Use only in patients not responsive to Saline Bolus therapy**
- Must have large bore IV
- Monitor closely for extravasation; IV pump preferable. 4 mg ampule in 1000 ml Dextrose = 4 mcg/ml
Hypothermia

History
- Age
- Exposure to environment even in normal temperatures
- Past medical history/meds
- Exposure to extreme cold
- Length of exposure/wetness
- Drug use
- Infection/sepsis
- Extremes of age

Signs and Symptoms:
- Cold, clammy
- Shivering
- Mental status change
- Extremity pain/sensory abnormality
- Bradycardia
- Hypotension
- Shock

Differential:
- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
  - CVA
  - Head injury
  - Spinal cord injury

Universal patient care protocol

Document patient temperature

Remove wet clothing

No

Temperature < 95 F (35 C)

Yes

Handle very gently

Blankets/external rewarming

IV protocol with warmed saline

Appropriate protocol based on symptoms

Pearls

Exam: Mental status, skin, HEENT, heart, lungs, neuro
- No patient considered dead until warm
- Core temperature < 35 C (95 F)
- Extremes of age susceptible
- Temp. less than 31 C (88 F) Vfib is common cause of death. Handle these patients gently to prevent Vfib
- Hypothermia may produce severe bradycardia
- Shivering stops below 32 C (90 F)
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LMHS EMS Protocols

IV

Universal patient care protocol

Assess need for IV
Emergent or potentially emergent medical or trauma condition

Peripheral IV

External jugular IV if trained for life threatening event

IO (EZIO) (ped or adult) for life threatening event

Successful?

Unsuccessful?

Monitor saline lock

Monitor infusion 500 mL fluid bolus PRN

Continue peripheral IV

Continue external jugular IV for life threatening event

Continue IO (peds/adult) for life threatening event

Pearls
- IO with EZIO for adult or pediatric patient
- External jugular (>12 years old)
- Any pre-hospital fluids or medications approved for IV use may be given through IO
- All rates KVO unless giving fluid bolus
- Use micro drips for patients under 6 years old
- External jugular lines can be attempted initially in life-threatening events with no obvious peripheral site
- In CARDIAC ARREST, pre-existing dialysis shunt or external central venous catheter may be used
- In patient who are hemodynamically unstable or in extremis, contact OLMC prior to accessing dialysis catheter or centralcatheters
- Any venous catheter which has already been accessed prior to EMS arrival may be used
- Upper extremity preferred to lower extremity IV sites
- In post-mastectomy patients, avoid IV/injection or blood pressure in arm on affected side

Version 1.6

January 2017
Multiple Trauma

History:
- Time and MOI
- Damage to structure/vehicle
- Location in structure/vehicle
- Others injured/dead
- Speed and details of MVC
- Restraints/protective equipment
- Past medical history
- Medications

Signs and Symptoms:
- Pain
- Swelling
- Altered mental status
- Unconscious
- Deformity
- Bleeding
- Hypotension/shock
- Arrest

Universal patient care protocol

Rapid trauma assessment and GCS

Minimize on-scene time

Spinal Motion Restriction Protocol

IV protocol

Vital signs and perfusion?

Normal
Abnormal

NS bolus to maintain SBP 60-90 for Hemorrhagic shock

Differential:
- Chest
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemothorax
- Intra-abdominal bleeding
- Pelvis/femur fracture
- Spine fracture/cord injury
- Head injury
- Extremity fracture/dislocation
- Airway obstruction
- Hypothermia

Continued hypotension (SBP <90)?
Permissive Hypotension (SBP 60-90 mmHg)
(See Page 41)
Reduce long bone fractures
Bind Pelvis with sheet for pelvic fracture
Control external hemorrhage

Consider pain control protocol if SBP > 90 and GCS= 15

Pearls
Exam: Mental status, HEENT, heart, lungs, abdomen, extremities, back, neuro
- In prolonged extrications/serious trauma, consider air transport
- Severe bleeding from an extremity not rapidly controlled may necessitate the application of a TOURNIQUET

Version 1.6  January 2017  78
**Obstetrical Emergency**

### History
- Past medical history
- Hypertensive meds
- Prenatal care
- Prior pregnancies
- G/P

### Signs and Symptoms:
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Headache
- Visual changes
- Facial/hand edema

### Differential:
- Pre-eclampsia/eclampsia
- Placenta-Previa
- Placenta-Abruptio
- Spontaneous abortion

### Universal patient care protocol

#### IV Protocol

- **Known pregnancy or missed period?**
  - Yes: **Left lateral position**
  - No: **Hypertension?**
    - Yes: **Seizure activity?**
      - Yes: **Blood glucose**
        - Yes: **Magnesiumsulfate 4 g IV slow over 10-20 min**
        - No: **Active seizure activity**
          - Midazolam2-5mg slow IV push/IM
    - No: **Complaint of labor?**
      - Yes: **Childbirth protocol**
      - No: **Transport to hospital**

### Pearls
- **Exam:** Mental status, abdomen, heart, lungs, neuro
  - Severe headache, vision changes, RUQ pain may indicate pre-eclampsia
  - In pregnancy, HTN = BP > 140/90
  - Maintain patient in left lateral position to minimize risk of supine hypotensive syndrome
  - Quantify bleeding = number of pads per hour
  - Any pregnant patient in MVC should be seen in EC for evaluation and fetal monitoring
  - Magnesium may cause hypotension and decreased respiratory drive. Use cautiously

- **500 mL NS bolus**

- **Hypotensive**

- **Abdominal pain protocol**
Overdose/Toxic Ingestion

**History**
- Ingestion or suspected ingestion of toxic substance
- Substance ingested, quantity, route
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

**Signs and Symptoms:**
- Mental status changes
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

**Differential:**
- TCA's
- Acetaminophen
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, alcohols, cleaning agents
- Insecticides (organophosphates)

**Universal patient care protocol**

**IV protocol**

**Tricyclic Ingestion?**

**Sodium bicarbonate 1 meq/kg IV**

**Pearls**

**Exam:** Mental status, skin, HEENT, heart, lungs, abdomen, extremities, neuro
- Do not rely on patient history of ingestion in suicide attempt
- Bring bottles to ED
- TCA: seizure, dysrhythmias, hypotension, decreased mental status, coma
- Acetaminophen: normal or N/V - causes irreversible liver failure if not detected
- Depressants: decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- Stimulants: increased HR, increased BP, increased temperature, dilated pupils, seizures
- Anticholinergic: increased HR, increased temperature, dilated pupils, mental status change
- Cardiac meds: dysrhythmias, mental status changes
- Insecticides: increased/decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints per restraints procedures
- Mark kits contain 2 mg Atropine and 600 mg pralidoxime in auto injector
Pain Control

**History**
- Age
- Location
- Duration
- Severity
- Past medical history
- Medications
- Drug allergies

**Signs and Symptoms:**
- Severity
- Quality
- Radiation
- Relation to movement
- Increased with palpation

**Differential:**
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural/respiratory
- Neurogenic
- Renal

**Universal patient care protocol**

**Care based on complaint specific protocol**

**Pain severity > 6/10 OR Indication for IV/IM pain medication?**

**IV protocol**
- Pulse oximetry

**Morphine 2-5 mg IV/IM**
- OR
**Fentanyl 50-100 mcg**
- IV/IM/IN or
**Nubain 5 mg IV/10 mg IM**

**Pearls**
- Pain severity is a vital sign and must be recorded pre and post IV/IM/IN pain medications
- Vitals should be obtained pre, post, and at disposition with all pain medications
- Contraindications to Morphine = hypotension, altered mental status, head injury, respiratory distress, severe COPD
- Document drug allergies
- Observe for drug reaction
Follow universal patient care protocol

Utilize pre-printed drug dose cards. For weight based drug dosing, verify correct drug and dose before administration

Document once per shift presence of all equipment, meds, and supplies

If supplies fall below required levels, restock. If dispatched to call requiring depleted supplies, respond and call for backup

For massive depletion of supplies and/or contamination, remain out of service until resupplied and clean

For equipment failure, utilize equipment failure procedure and complete "Unusual Event Report"

For medication error, clinical misadventure, or other adverse patient outcome, contact medical director

Appropriate protocol

Transport patient per patient transport policy

Patient doesn't fit a protocol? Contact OLMC

Pearls
Exam: Mental status, skin, neck, heart, lungs, abdomen, back, extremities, neuro
- For witnessed/monitored VT, have patient cough or deliver precordial thump
- Torsades de Pointes may benefit from Magnesium Sulfate 2g IV
- For presumed hyperkalemia (ESRD, dialysis) administer 1 amp Sodium Bicarbonate
**Police Custody**

**History**
- Traumatic injury
- Drug abuse
- Cardiac history
- Asthma?
- Psych history

**Signs and Symptoms:**
- External signs of trauma
- Palpitations
- SOB
- Wheezing
- Altered mental status
- Intoxication/substance abuse

**Differential:**
- Agitated delirium secondary to psychiatric illness
- Agitated delirium secondary to substance abuse
- Traumatic injury
- Closed head trauma
- Asthma exacerbation
- Cardiac dysrhythmia

**Universal patient care protocol**

**Appropriate protocol**

- Yes
  - Traumatic injury or medical illness
  - No
    - Use of pepper spray or taser?
      - Pepper spray
      - Taser
  - Wheezing?
    - Yes
      - Resp Distress protocol and transport
    - No
      - Significant injury from taser entry point or from fall after taser use?
        - Yes
          - Irrigate face/eyes remove contaminated clothing
          - Go to Agitated Delirium Protocol
        - No
          - Consider restraint procedure and/or chemical restraint
          - Coordinate disposition with patient and law enforcement

**Pearls**
*Agitated delirium* = marked restlessness, irritability, and/or high fever. These patients are at risk for sudden death.
- Patients restrained by law enforcement devices cannot be transported in the ambulance without a law enforcement officer in the patient compartment who is capable of removing the device.
- If there is any doubt about the cause of the patient's altered mental status, transport to hospital.
- All patients in police custody retain the right to request transport.
**Post Resuscitation**

**History**
- Respiratory arrest
- Cardiac arrest

**Signs and Symptoms:**
- Return of pulse (ROSC)

**Differential:**
- Continue to address specific differential with original arrhythmia

---

**Repeat primary assessment**

**Candidate for induced hypothermia?**
Monitor ETCO₂ (>20 mmHg) with RR < 10/min. DO NOT HYPERVENTILATE
Remove ITD (ResQPod) if pulses return

**IV Protocol**
Monitor ECG, vitals, pulse oximetry

**Bradyarrhythmia**

**Administer 1 LNS fluid bolus**

**Norepinephrine 0.5 mcg/min to 30 mcg/min titration for refractory hypotension**

**Hypotension**

**Arrhythmia?**

**Go to appropriate protocol**

**12-Lead ECG**

**If arrest re-occurs, revert to appropriate Protocol and/or initial successful**

---

**Pearls**

**Exam:** Mental status, skin, neck, heart, lungs, abdomen, extremities, neuro
- Avoid hyperventilation
- Most patients post resuscitation will require ventilatory assistance
- Post resuscitation condition of patient changes rapidly
- Consult OLMC as needed regarding management
- Ensure adequate fluid resuscitation is ongoing
- Remove ITD (ResQ) if ROSC (return of spontaneous circulation) occurs
**Pulmonary Edema/CHF**

**History**
- CHF
- Past medical history
- Medications (digoxin, Lasix)
- Viagra, Levitra, Cialis
- Cardiac history (ie. MI)

**Signs and Symptoms:**
- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- JVD
- Pink, frothy sputum (late sign)
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

**Differential:**
- MI
- CHF
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion/pneumonia
- PE
- Tamponade
- Toxic exposure

**Universal patient care protocol**

> Obtain ETCO₂ and Pulse Ox

> Nitroglycerin 0.4 mg SL q 2-3 min if systolic BP > 110

> IV protocol

> Apply CPAP

> 12-Lead ECG

**Consider Morphine 2 mg slow IV**

**Consider Midazolam 1-2 mg IV OR 2 mg IN if SBP > 100 For sedation if needed**

**Pearls**
- Mental status, skin, neck, heart, lungs, abdomen, back, extremities, neuro
- *Early aggressive treatment of pulmonary edema with nitrates and CPAP avoids intubation*
- Pre-hospital use of diuretics is no longer indicated
- Avoid Nitro in patient who has used Viagra, Levitra, Cialis in past 24 hours
- Consider myocardial infarction in all of these patients (cardiogenic shock)
- Careful monitoring of LOC, BP, respiratory status with above interventions is essential
Pulseless Electrical Activity (PEA)

**History**
- Past medical history
- Medications
- Events
- End stage renal failure
- Estimated downtime
- Hypothermia?
- Overdose?
- DNR?

**Signs and Symptoms:**
- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

**Differential:**
- Hypovolemia (trauma, AAA, other)
- Hypoxia
- Potassium (hypo/hyperkalemic)
- Overdose (TCA's, digoxin, beta blockers, calcium channel blockers)
- Acidosis
- Hypothermia
- Cardiac tamponade
- Massive MI
- Hyperkalemia

**H's and T's**
- Hydrogen Ion (acidosis)
- Hypovolemia
- Hypothermia
- Hypoxia
- Hyper/Hypokalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker)
- Tension pneumothorax
- Tamponade
- Thrombosis - Pulmonary/Coronary
- Toxins

**Universal patient care protocol**

**Cardiac arrest protocol**
- Attach ITD (ResQPod)

**Epinephrine 1 mg 1:10,000 IV/IO**
- Repeat every 3-5 minutes

**Airway and IV/IO protocols**

**Calcium 1 g IV (hyperkalemic arrest)**

**Bicarbonate 1 mcg/kg IV (TCA, hyperkalemia, renal failure)**

**norepinephrine 0.5mcg/min-30mcg/min**

**Needle decompression**

**Glucagon 1 mg IV (beta blocker)**

**Needle decompression**
- As indicated

**Epinephrine 1 mg 1:10,000 IV/IO**
- Repeat every 3-5 minutes

**AT ANYTIME**

ROSC (Return of Spontaneous Circulation) remove ITD

Go to post resuscitation protocol

**Criteria to discontinue**
- Cease efforts
- Contact OLMC for guidance if needed

**PEARLS:**
Always Follow Current ACLS Guidelines
Always confirm asystole in more than one lead. Always address correctable causes
Attached ITD (Impedance threshold device) early in resuscitation to BVM and then to ETT/King once advanced airway is placed.

**For cardiac arrest in renal failure pt’s, assume hyperkalemia and treat with Bicarbonate and Calcium Chloride**
Respiratory Distress

History
- Asthma
- COPD
- CHF
- Home treatment (oxygen/nebulizer)
- Meds (theophylline, steroids, inhalers)
- Toxic exposure
- Smoke inhalation

Signs and Symptoms:
- SOB
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, ronchi, rales, stridor
- Accessory muscle use
- Fever, cough, tachycardia

Differential:
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pneumonia/pleural effusion
- Pneumothorax
- Cardiac (MI/CHF)
- PE
- Tamponade
- Hyperventilation
- Inhaled toxin

Universal patient care protocol

Respiratory insufficiency? Yes

No

Position of comfort

Rales/CHF

Stridor

Wheezes

Pulmonary edema protocol

IV protocol

Duoneb Aerosol

Albuterol Aerosol

Methylprednisolone 125 mg IV/IM
Mag Sulfate 2 g IV over 20 min

Consider Epi 0.3 mg 1:1,000 SQ/IM

Contact OLMC if patient does not meet criteria for Epi. See below

3 mL nebulized saline

No improvement
Vaponephrine (Racemic) unit dose

For severe cases
Epi 1:10,000 0.3 mg IV

Pearls
- EMT Basic’s may assist patients with their own albuterol MDI
- Monitor pulse ox continuously
- CPAP may be used for patients with COPD, CHF, Pneumonia, Asthma as per protocol
- Contact OLMC prior to administering epinephrine to patients > 50 years old, have a cardiac history, or heart rate > 150.
  Perform 12-lead ECG on these patients
- Monitor ETCO2 continuously
Seizure

**History**
- Reported/witnessed seizure
- Previous seizure history
- Medical alert tag
- History of trauma
- History of diabetes
- History of pregnancy

**Signs and Symptoms:**
- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconsciousness

**Differential:**
- CNS trauma
- Tumor
- Metabolic, hepatic, renal failure
- Hypoxia
- Electrolyte abnormality
- Drugs, meds, non-compliance
- Infection/fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia

**Universal patient care protocol**

**Consider spinal motion restriction criteria**
- Status Epilepticus
- Post-ictal

**Airway protocol**
- **IV protocol**
  - Midazolam 2-5 mg slow IV
  - OR Versed 5 mg IM/IN may be repeated x1

**Focused history/exam**
- Blood glucose
  - Glucose < 60

**Pearls**
Exam: Mental status, HEENT, heart, lungs, extremities, neuro
Status Epilepticus: > 2 successive seizures without a period of consciousness or recovery
Grand mal: generalized - LOC, incontinence, tongue trauma
Focal seizures (petit mal): only a part of the body affected and not associated with LOC
Jacksonian seizures: focal seizures that become generalized
- Be prepared for airway problems and continued seizures
- Assess for occult trauma and substance abuse
- Be prepared to assist ventilation if Versed is used
- Seizures in pregnant patient: follow OB Emergency Protocol
- Thiamine may be omitted in patients who do not appear malnourished
**Spinal Motion Restriction (SMR)**

**Low Risk Mechanism**
- Simple rear-end collision
- Ambulatory on scene at any time
- No neck pain on scene
- No midline cervical tenderness

These Low Risk Factors allow Safe omission of SMR in Patients with GCS= 15

**High Risk Mechanism**
- Age > 65
- Trauma Triage criteria
- Axial loads/diving injuries
- Sudden acceleration/Deceleration
- Lateral bending forces to neck/torso
- Violent impact to head, neck, torso, pelvis
- Numbness, tingling, parasthesias

If Any of the above, strongly consider SMR

**Potential Mechanism for unstable spine injury??**

**Altered LOC (GCS<15)??**

**Unreliable interaction**

**Motor/Sensory Exam**
- Wrist/Hand extension bilaterally
- Foot plantar-flexion bilaterally
- Foot dorsiflexion bilaterally
- Gross sensation in all extremities
- Check for paresthesia

**Unreliable Patient Interactions**
- Language barriers, inability to communicate
- Lack of cooperation during exam
- Evidence of drug/alcohol intoxication
- Painful distracting injury (i.e. long bone fracture)

**Spinal Tenderness?**

**OR**

**Anatomic deformity of spine?**

**OR**

**Neurologic deficit or complaint?**

**Spinal Motion Restriction (SMR)**

**OMIT SMR**

**Apply SMR**

**Apply SMR**
**Suspected Stroke**

**History**
- Previous CVA, TIA
- Previous cardiac, vascular surgery
- Diabetes, HTN, CAD
- A-fib
- Medications (blood thinners)
- Trauma?

**Signs and Symptoms:**
- Altered mental status
- Weakness/paralysis
- Blindness or sensory loss
- Aphasia/dysarthria
- Syncope
- Vertigo/dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hyper/Hypotension

**Differential:**
- See altered mental status
- TIA
- Seizure
- Hypoglycemia
- CVA
- Tumor
- Trauma

**Universal patient care protocol**

**Cincinnati/ RACE pre-hospital stroke screen**

If positive and symptoms < 3 hours, transport to approved stroke facility. Limit scene time.

**Blood glucose**

**IV protocol**

**12-Lead ECG**

Consider other protocols as indicated:
- Altered mental status
- Hypertension
- Seizure
- Airway protocol

**Notify Stroke Center Of Last Known Well time**

**Pearls**

Exam: Mental status, HEENT, heart, lungs, abdomen, extremities, neuro
- **Cincinnati Pre-Hospital Stroke Screen** - Arm drift, leg drift, facial drooping, slurred speech
- Minimize scene and transport time if symptom onset < 3 hours
- Onset of symptoms - last witnessed time the patient was symptom free
- Monitor for airway problems (swallowing, vomiting)
- Always assess for hypoglycemia
- Patients that are not malnourished do not require Thiamine
- Document stroke screen
- Document 12-Lead ECG
Supraventricular Tachycardia

**History**
- Medications: Theophylline, diet pills, thyroid supplements, decongestants, digoxin, Diet - caffeine, chocolate, Drugs - nicotine, cocaine, Past medical history, Palpitations, Syncope

**Signs and Symptoms:**
- HR > 150 bpm
- QRS 0.12 sec
- History of WPW go to V-Tach protocol
- Dizziness, CP, SOB
- Potential rhythm presenting
  * Sinus tach
  * Atrial fib/atrial flutter
  * Multifocal atrial tachycardia

**Differential:**
- WPW, Valvular heart disease
- Sick sinus syndrome
- MI
- Electrolyte imbalance
- Exertion, pain, emotional stress
- Fever
- Hypoxia
- Hypovolemia/anemia
- Overdose
- Hyperthyroidism
- PE

---

**Universal patient care protocol**

**IV protocol**

**Stable**
- 12-Lead ECG
- Attempt valsala
- Adenosine 6 mg rapid IV Push with 10 mL saline
- Repeat Adenosine at 12 mg rapid IV with 10 mL saline bolus if no effect with 6 mg
- Diltiazem 0.25 mg/kg slow IV push

**Pre-arrest**
- Consider Adenosine 6 mg rapid push IV sedate for cardioversion with Versed 2-5 mg
- Synchronized cardioversion
  - Narrow regular 50-100 J
  - Narrow irregular 120-200 J
  - Wide regular 100 J
  - Wide irregular defib dose
- Diltiazem 0.25 mg/kg slow IV Max 20 mg
- 12-Lead ECG after conversion

**Pearls**
- Exam: Mental status, skin, neck, lung, heart, abdomen, back, extremities, neuro
- History of WPW - do NOT give Cardizem
- Adenosine may not be effective in atrial flutter/fib, yet is not harmful
- Monitor for hypotension after Cardizem
- Monitor for respiratory depression and hypotension after Versed
- Continuous pulse oximetry
- Document rhythm changes with therapeutic interventions
Syncope

**History**
- Cardiac, CVA, seizures
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss, N/V/D
- Past medical history
- Medications

**Signs and Symptoms:**
- LOC with recovery
- Lightheadedness, dizzy
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Low blood pressure

**Differential:**
- Vasovagal
- Orthostatic hypotension
- Cardiac
- Micturation defacation syncope
- Psychiatric
- CVA
- Hypoglycemia
- Seizure
- PE
- Shock
- Toxicology
- Medication effect

**Universal patient care protocol**

**Consider spinal motion restriction protocol**

**Blood glucose** < 60

**IV protocol**

**12-Lead ECG**

**Consider other protocols as indicated:**
- Altered mental status
- Hypotension
- Seizure
- Airway protocol

**Pearls**
**Exam:** Mental status, skin, HEENT, heart, lungs, abdomen, extremities, neuro
- Assess for trauma
- Consider dysrhythmias, GI bleed, ectopic pregnancy, seizure as causes of syncope
- Omit thiamine in patients who are not malnourished
- More than 1/4 of geriatric syncope is cardiac dysrhythmia related
Traumatic Cardiac Arrest (TCA)

**History**
- Patient who has suffered a traumatic injury and is now pulseless

**Signs and Symptoms:**
- Evidence of penetrating trauma
- Evidence of blunt trauma

**Differential:**
- Medical condition preceding traumatic event as cause of arrest
- Tension pneumothorax
- Hypovolemic shock
  - External hemorrhage
  - Unstable pelvic fracture
  - Displaced long bone fracture
  - Hemothorax
  - Intra-abdominal hemorrhage
  - Retroperitoneal hemorrhage

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**Universal patient care protocol**

**Do not attempt resuscitation**
Contact law enforcement

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**Yes**
Patient with injury obviously incompatible with life or traumatic arrest in asystole

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**No**

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**Simultaneous Procedures:**
- BLS airway/Advanced airway procedures
- Bilateral Needle Decompression of thorax
- Establish IV/IO and give fluid bolus
- Pull long bone fractures to length
- Bind pelvis with pelvic binder or sheet
- Stop external hemorrhage (Tourniquets/compression)
- If no return of pulse, consider TOR guidelines
- Do Not Use Automated CPR Devices in TCA

---

**Pearls**
Injuries obviously incompatible with life include decapitation, massively deforming head or chest injuries or other features of a patient encounter that would make resuscitation futile. If in doubt, place patient on monitor. Consider using medical cardiac arrest protocols if uncertainty exists regarding medical or traumatic cause of arrest.
Do not use automated CPR devices on traumatic cardiac arrest patients.
Universal Patient Care Protocol

Scene Safety
- Bring all necessary equipment to patient's side
- Demonstrate professionalism and

PPE (consider airborne or droplet precautions)

Initial assessment
- BLS
- Consider spinal immobilization
- For peds, use Broselow tape

Cardiac arrest protocol

Airway protocol
- (Adult or Pediatric)

Vital Signs
- Temperature and blood glucose as indicated

Cardiac arrest

Pulse oximetry
- Supplemental Oxygen

Consider:
- Cardiac monitor/12-Lead ECG

Appropriate protocol

Transport patient per patient transport policy

Patient doesn't fit a protocol?
- Contact OLMC
Ventricular Fibrillation/Pulseless Ventricular Tachycardia

**History**
- Estimated down time
- Past medical history
- Medications
- Events leading to arrest
- Renal Failure/hemodialysis
- DNR

**Defibrillation sequence:** Defibrillate @ 360J or equivalent biphasic immediately resume CPR
Reassess rhythm and repeat every 2 min

**Airway protocol**
Avoid ventilation for first 4 minutes of arrest
Position airway, place oral airway and NRB

**IV/IO protocol**
Epinephrine 1 mg 1:10,000 IV/IO
Repeat every 3-5 minutes
Amiodarone 300 mg IV/IO push
Amiodarone 150 mg IV/IO push
Consider 2 g Magnesium Sulfate

**Cardiac arrest protocol**
Attach ITD (ResQPod)

**Criteria to discontinue**
Cease efforts

**ALWAYS FOLLOW CURRENT ACLS GUIDELINES**
- Attach ITD (ResQPod) early in resuscitation. Remove if ROSC occurs.
- Wait 3-5 minutes after vasopressin dose to begin epinephrine and between other medication administrations
- Airway: Avoid airway procedures during first 4 minutes of arrest; focus on chest compressions and defibrillation
- For suspected HYPERKALEMICARREST administer Calcium Chloride and Sodium Bicarbonate
- For Torsades de Pointes: 2 grams Magnesium Sulfate
- Effective CPR and early defibrillation are keys to success
- If unable to intubate, insert Supraglottic airway (King LTD)

**Differential:**
- Asystole
- Artifact/device failure
- Cardiac
- Endocrine/metabolic
- Drugs
- Pulmonary

**Pearls**

**AT ANYTIME**
ROSC (Return of Spontaneous Circulation) remove ITD
Go to post resuscitation protocol

**Signs and Symptoms:**
- Unresponsive
- Ventricular fibrillation or ventricular tachycardia on ECG

**EMR**
**EMT**
**AEMT**
**Paramedic**
**Med Control**

**History**
- Estimated down time
- Past medical history
- Medications
- Events leading to arrest
- Renal Failure/hemodialysis
- DNR

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- If unable to intubate, insert Supraglottic airway (King LTD)
**Ventricular Tachycardia/ Wide Complex with Pulse**

**History**
- Past history, meds, diet, drugs
- Syncope/near syncope
- Palpitations
- Pacemaker
- Allergies: lidocaine

**Signs and Symptoms:**
- Ventricular tachycardia on ECG
- Conscious, rapid pulse
- Chest pain, SOB
- Dizziness
- Rate usually 150-180 bpm
- QRS > 0.12 sec

**Differential:**
- Artifact/device failure
- Cardiac
- Endocrine/metabolic
- Hyperkalemia
- Drugs
- Pulmonary

**Universal patient care protocol**

1. **Palpable pulse?**
   - Yes
     - Pre-arrest
     - BP, altered mental status

2. **No Palpable pulse?**
   - IV protocol
     - 12-Lead ECG
     - Amiodarone 150 mg over 10 minutes
       - IV ONLY if QRS is regular and monomorphic look for WPW
       - If irregular and wide and polymorphic, use procainamide
     - Procainamide 20 mg/min until conversion, QRS widens by 50%, hypotension or max dose reached (17 mg/kg)

   - If pt. becomes unstable
     - Move to pre-arrest portion

   - No response, Amiodarone 150 mg IV Over 10 minutes then 1 mg/min IV infusion

**Pearls**

*ALWAYS FOLLOW CURRENT ACLS GUIDELINES*

*Exam:*
- Mental status, skin, neck, heart, lungs, abdomen, back, extremities, neuro
- Torsades de Pointes may benefit from Magnesium Sulfate 2 gram IV
- For presumed hyperkalemia (renal failure, dialysis) administer 1 amp Sodium Bicarbonate
- 1 gram Calcium Chloride
Vomiting and Diarrhea

**History**
- Age
- Last meal
- Last BM/emesis
- Duration
- Sick contacts
- Past medical history
- Past surgical history
- Medications
- Menstrual history
- Travel history
- Bloody emesis/diarrhea

**Signs and Symptoms:**
- Pain
  - Constant, sharp, dull, etc.
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

**Associated Symptoms:**
- Fever, Headache, blurred vision, weakness, myalgia's, cough, dysuria, mental status changes, rash

**Differential:**
- CNS
- MI
- Drugs
- GI/renal
- DKA
- Gynecologic
- Infections
- Electrolyte imbalance
- Food or toxin induced
- Medication/substance abuse
- Pregnancy
- Psychologic

---

**Universal patient care protocol**

**IV protocol**

**Orthostatic blood pressure**

**Blood sugar**

**Normal saline bolus**

500 mL

Vomiting/severe nausea?  
- No  
  Monitor and reassess
- Yes

**Ondansetron 4 mg IV/IM**

Do not use in 1st TM pregnancy

**Ondansetron 4 mg ODT**

---

**Pearls**

**Exam:** Mental status, skin, HEENT, neck, heart, lungs, abdomen, back, extremities, neuro
- Maintain high suspicion of cardiac event for persons with diabetes or neuropathies
Well Person Check

**History**
- Patient presents requesting blood pressure check
- EMS response to "assist invalid"
- Other situation in which patient does not have a medical complaint or obvious injury

**Signs and Symptoms:**
- Assess for medical complaint
- For patients with hypertension, check for chest pain, dyspnea, neuro changes
- For invalid assist calls, check for syncope, chest pain, trauma, inability to ambulate

**Differential:**
- Hypertensive urgency
- Hypertensive emergency
- Syncope
- Cardiac ischemia/dysrhythmia
- Fracture
- Head trauma

**Universal patient care protocol**

1. **Patient has medical complaint or obvious trauma**
   - Yes
   - Go to appropriate protocol and recommend transport
   - No

2. **Obtain BP, Pulse, SpO2**
   - Pulse > 110
   - SBP > 200; DBP > 120
   - Pulse ox < 94%
   - Yes
   - Recommend transport for eval
     - Have patient sign refusal if transport
   - No

3. **Confirm patient has no medical complaint.**
   - Provide patient with vital sign results and have them contact their doctor to report

**Pearls**
- Patients who are denying more severe symptoms may initially present for a routine check
- All persons who request service shall have a PCR completed
- For this category of patient, the PCR may be brief, but must include vital signs and documentation of a lack of medical complaint. Complete trauma exams on patients with potential mechanism for trauma
Airway

Assess ABC’s, respiratory rate, effort, adequacy

Inadequate

Basic maneuvers first
- Open airway, nasal/oral airway
- BVM

Obstructed airway per AHA guidelines

Unsuccessful?

Oxygenate, ventilate, position, reassess

Successful

Orotracheal intubation protocol

Unsuccessful?

Obstruction

Unsuccessful?

Modify technique intubating stylet

Unsuccessful?

Failed airway protocol

Pulse Oximetry

Supplemental Oxygen

Oxygenate, ventilate, position, reassess

Rapid transport
Apply EtCO₂
Maintain EtCO₂ > 20 if possible

PEDIATRIC

Pearls
- For this protocol, pediatric = < 12 years old
- Capnometry is mandatory with all methods of intubation. Document results.
- If adequate oxygenation and ventilation with BVM, acceptable to defer intubation until arrival at hospital
- Nasal cannula EtCO₂ should be utilized to monitor BVM ventilations
- Limit intubation attempts to 3 per patient
- Maintain C-spine immobilization for patients with suspected spine injury
- Use Sellick's maneuver
- Use continuous pulse oximetry
- Consider c-collar to maintain ETT for intubated patients, remove in ER upon transfer
PEDIATRIC

Airway - Failed

NO MORE THAN 1 ATTEMPT TOTAL to intubate
Avoid any hypoxia

Continue BVM

Yes

Good Air Movement with BVM Ventilation?

No

If SpO₂ drops < 90% or
difficult to ventilate with bvm

Attempt OP or NP airway

No

Yes

King Airway

Continue BVM

Ventilate at 12-20 bpm Apply EtCO₂
Maintain EtCO₂ > 35-45

Continue Ventilation

Pearls

If first intubation attempt fails, use BVM ventilations, Avoid any hypoxia
Continuous pulse oximetry should be used in all patients
Notify OLM Cas early as possible about difficult/failed airway
## PEDIATRIC

### Allergic Reaction

#### History
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

#### Signs and Symptoms:
- Itching/hives
- Coughing/wheezing/respiratory distress
- Chest or throat tightening
- Difficulty swallowing
- Hypotension/shock
- Edema

#### Differential:
- Urticaria
- Anaphylaxis
- Shock
- Angioedema
- Aspiration
- Vasovagal
- Asthma/COPD
- CHF

#### Universal patient care protocol

- Hives/rash only No resp. component

- **IV/Cardiac Monitor**

- **Diphenhydramine**
  - 1 mg/kg IV/IM

- **Reassess**

- **Anaphylaxis: Hypotension, altered mental status, tachycardia, tachypnea, wheezing, diffuse hives**

- **Epinephrine 1:1000**
  - 0.01 mg/kg IM
  - Max 0.3 mg
  - Epi Pen (see note below)

- **Methylprednisolone 1 mg/kg IV/IM**

- **Anaphylaxis**
  - Epinephrine 1:10,000
  - 0.01 mg/kg IV
  - to max 0.3 mg PRN
  - Epi Pen (see note to the right)

- **Respiratory Distress protocol**

- **Hypotension protocol**

- **Arrhythmia protocol**

#### Pearls

**Exam:** Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- Any patient with respiratory symptoms or extensive reaction should receive epinephrine and IV/IM Benadryl
- Shorter the onset = more severe the reaction
Consider spinal immobilization

**Blood Glucose**

- **Glucose < 60**
  - 25% Dextrose 1-2 mL/kg IV
  - If no IV access
  - Glucagon 0.025 mg/kg IM/IN

- **Glucose 60-250**
  - Naloxone 0.1 mg/kg /IN
    - If respiratory depression
  - Naloxone 0.1 mg/kg IV/IN/IM
    - If respiratory depression

- **Glucose > 250 dehydration**
  - Normal Saline Bolus 10 mL/kg
  - Consider other causes:
    - Head injury
    - OD CVA
    - Hypoxia ALTE
      (apparent life-threatening event)

- **If signs of shock**
  - Normal saline bolus 20 mL/kg IV

- **Consider**
  - D25% 1-2 mL/kg
  - Naloxone 0.1 mg/kg IV/IM/IN/ET
  - Glucagon 0.025 mg/kg IM

**Pearls**

- Mental status, HEENT, skin, heart, lungs, abdomen, back, extremities, neuro
- Be aware of AMS assign of environmental toxin or Haz-Mat exposure
- Safer to assume hypoglycemia than hyperglycemia if doubt exists
- Low glucose < 60, Normal glucose 60-120, High glucose > 250
Bradydcardia

**Pearls**

**Exam:** Mental status, HEENT, skin, heart, lungs, abdomen, back, extremities, neuro
- Infant = < 1 year of age
- Most maternal medications pass through breast milk to infant
- The majority of pediatric arrests are due to airway problems
- Hypoglycemia, severe dehydration and narcotic effects may produce bradydcardia
- Minimum atropine dose is 0.1 mg IV/IO

**History**
- Past medical history
- Foreign body?
- Respiratory distress or arrest
- Apnea
- Possible toxin exposure
- Congenital disease
- Medication (maternal or infant)

**Signs and Symptoms:**
- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered LOC

**Differential:**
- Respiratory distress
  - Foreign body
  - Secretions
  - Infection/sepsis
- Hypovolemia
- Congenital heart disease
- Trauma
- Hypothermia
- Toxin ingestion
- Hypoglycemia

**Universal Patient Care Protocol**

**Pediatric airway protocol**

**Identify and Treat Underlying causes**
- Maintain airway; assist breathing
  - IV/IO, Oxygen, Monitor, Pulse Oximetry, 12 lead
  - Cardiac compromise?? Hypotension, Altered MS, Shock??
  - CPR if HR < 60/min

**Persistent Bradydcardia?**
- Epinephrine 0.01 mg/kg 1:10,000 repeat every 3-5 minutes IV/IO
- Atropine for increased vagal tone = 0.02 mg/kg IV/IO

**Bradychardia Improves?**
- Support ABCs, Oxygen, Observe, Transport

**Pulseless arrest?**
- Go to appropriate algorithm
Burns

**History**
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of injury
- Past medical history
- Medications
- Other trauma
- LOC

**Signs and Symptoms:**
- Burns, pain, swelling
- Dizziness
- LOC
- Hypotension/shock
- Airway compromise/distress
- Singed facial or nasal hair
- Hoarseness or wheezing

**Differential:**
- Superficial (1st degree) - red and painful
- Partial thickness (2nd degree) - blistering
- Full thickness (3rd degree) - painless/charred leathery skin
- Chemical
- Thermal
- Electrical
- Radiation

**Universal Patient Care Protocol**

### Thermal

If burn < 10% BSA (rule of 9's) Cool down wound with normal saline/sterile water

Cover with drysterilesheet or dressings

**Chemical**

Remove wet clothing or expose area.

Remove any visible dry chemical or powder

Eye involvement Saline flush in affected eye

See eye protocol

Flush area with water or normal saline For 10-15 minutes

**Pain Control:**

- Morphine: 0.1 mg/kg (IV/IM)
- Fentanyl: 0.5-1.0 mcg/kg (IV/IM/IN)

Consider transport to nearest burn center.

Nearest ED if airway involved.

**Pearls**

Exam: Mental status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro

Critical Burns:
- > 20% BSA age > 10;
- > 10% BSA age < 10;
- 3rd Degree burns > 10% BSA;
- 2nd or 3rd degree burns to face, eyes, hands or feet; electrical burns, respiratory burns, deep chemical burns, burns with extremes of age or chronic disease; burns associated with major traumatic injury. These burns require admission or transfer to a burn center.
- Early intubation required in significant inhalation injuries
- Treat potential CO exposure with 100% Oxygen
- Circumferential burns to extremities are dangerous due to potential vascular compromise due to soft tissue swelling
- Burn patients are prone to hypothermia
- Do not overlook possibility of multi-system trauma
- Do not overlook possibility of child abuse.
### Extremity Trauma

#### History
- Type of injury
- Mechanism: crush/penetrating/amputation
- Time of injury
- Open vs. Closed wound/fracture
- Wound contamination
- Medical history
- Medications

#### Signs and Symptoms:
- Pain
- Swelling
- Deformity
- Altered sensation/motor function
- Diminished pulse/cap refill
- Decreased extremity temperature

#### Differential:
- Abrasion
- Confusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputations

#### Universal patient care protocol

Pediatric multiple trauma protocol

<table>
<thead>
<tr>
<th>Isolated extremity injury?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Immobilize extremity as indicated</td>
</tr>
<tr>
<td>Apply ice to reduce swelling</td>
</tr>
</tbody>
</table>

#### Woundcare/hemorrhage control

Limb or life threatening event?
- Pain medication needed?
  - IV Protocol

#### Pediatric pain control protocol

Amputation?
- Clean amputated part
  - Wrap part in sterile dressing soaked with normal saline. Place in air tight container. Place container on ice if available.

### Pearls
**Exam:** Mental status, extremity, neuro
- In amputations, time is critical. Consider transport to pediatric trauma center.
- Hip dislocation and knee and elbow fracture/dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Severe bleeding not rapidly controlled may necessitate application of a tourniquet.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.
**History**
- Time of injury
- Mechanism: blunt/penetrating
- LOC
- Bleeding
- Medical history
- Medication
- Evidence of multi-trauma
- Helmet use/damage to helmet

**Signs and Symptoms:**
- Pain
- Swelling
- Bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress/failure
- Vomiting
- Significant MOI

**Differential:**
- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse

**Remove helmet if indicated**

**Universal patient care protocol**

**Pediatric multiple trauma protocol**

**Isolated head trauma?**
  - **Yes**
  - **SMR Protocol**
    - **IVProtocol**
      - NSbolus to keep SBP>100
  - **GCS <8**
    - No Gag Reflex
    - **Intubate (apneic)**
    - **Maintain ETCO₂ 35-40 mmHg**
    - **Consider Midazolam 0.1 mg/kg IV for sedation if intubated**
    - **GCS >8**
      - GCS <8 Gag Reflex Present
      - **Maintain Pulse Ox >90%**
      - **Monitor and reassess**
  - **GCS <8**
    - No Gag Reflex
    - **Intubate (apneic)**
    - **Maintain ETCO₂ 35-40 mmHg**
    - **Consider Midazolam 0.1 mg/kg IV for sedation if intubated**

**Pearls**
**Exam:** Mental status, skin, HEENT, heart, lungs, abdomen, extremities, back, neuro
- Consider air transport for GCS < 12; anticipate intubation for GCS < 8
**Cushing’s Response:** Elevated ICP causing hypertension and bradycardia
- Hypotension usually indicates injury or shock unrelated to head injury and should be aggressively treated
- Monitor and document changes in LOC and GCS
- Consider restraints if necessary for safety of patient and/or personnel protection. Do not use Haldol
- Concussions are periods of confusion or LOC associated with trauma and may be resolved upon arrival of EMS
- Any prolonged period of confusion or mental status abnormality that does not return to normal within 15 minutes should be evaluated by a physician

**Go to Pediatric seizure protocol**
- Check blood glucose < 60
- D25 1-2 mL/kg IV Glucagon
- 0.025 mg/kg IM

**Monitor and reassess**
Hypotension/Shock - Non-Trauma

**History**
- Blood loss
- Fluid loss
- Vomiting, diarrhea, fever
- Infection
- Medications
- Allergic reaction
- Poor PO intake history

**Signs and Symptoms:**
- Restless, confused
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Rapid pulse
- Decreased BP

**Differential:**
- Trauma
- Infection
- Dehydration
- Vomiting
- Diarrhea
- Fever
- Congenital heart disease
- Medication or toxin

**Universal patient care protocol**

**Pediatric multiple trauma protocol**

**Evidence or history of trauma**

**Blood glucose**

- < 60
- > 60

**IV protocol**

- D25% 1-2 cc/kg IV
- Glucagon 0.025 mg/kg IM/IN (if no IV)

**Normal saline bolus** 20 mL/kg

May repeat prn x 1

**Pearls**

**Exam:** Mental status, skin, heart, lungs, abdomen, back, extremities, neuro
- Max dose of D25 = 25 mL per dose, glucagon = 1 mg
- Consider all causes of shock and treat per appropriate protocol
- Decreasing heart rate is a sign of impending collapse
**Multiple Trauma**

**History**
- Time and MOI
- Damage to structure/vehicle
- Location in structure/vehicle
- Others injured/dead
- Speed and details of MVC
- Restraints/protective equipment
  - Car seat
  - Helmet
  - Pads
- Ejection
- Past medical history
- Medications

**Signs and Symptoms:**
- Pain
- Swelling
- Altered mental status
- Unconscious
- Deformity
- Bleeding
- Hypotension/shock
- Arrest

**Universal patient care protocol**

**Rapid trauma assessment and GCS**

**Consider air ambulance per air transport protocol**
**Minimize on-scene time**

**Differential:**
- Chest
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemotorax
- Intra-abdominal bleeding
- Pelvis/femur fracture
- Spine fracture/cord injury
- Head injury
- Extremity fracture/dislocation
- Airway obstruction
- Hypothermia

**SMR Protocol**

**IV protocol**

**Vital signs and perfusion?**

**NS bolus to maintain SBP > 90**

**Ongoing assessment- Pain Control**

**Transport**

**Continued hypotension**
**Continue fluid bolus**
**Consider:**
- Reduction of long bone fracture
- Pelvic binder for pelvic fracture
- Control of external hemorrhage

**Consider chest decompression**

**Pearls**
**Exam:** Mental status, HEENT, heart, lungs, abdomen, extremities, back, neuro
- Mechanism is the most reliable indicator of serious injury. Examine all restraints/protective equipment for damage
- In prolonged extrications/serious trauma, consider air transport
- Severe bleeding from an extremity not rapidly controlled may necessitate the application of a tourniquet
- Do not overlook the possibility of child abuse
**History**
- Due date and gestational age
- Multiple gestation (twins, etc)
- Meconium
- Delivery difficulties
- Congenital disease
- Maternal medications
- Maternal risk factors
  - Smoking
  - Substance abuse

**Signs and Symptoms:**
- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

**Differential:**
- Airway failure
- Secretions
- Respiratory drive
- Infection
- Maternal med effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia

**Meconium in amniotic fluid?**

- Yes

  - Nasopharyngeal suctioning

**Dry infant and keep warm**

- Bulb suction mouth and

  - Nose

**Stimulate infant and note APGAR score**

**Respirations present?**

- Heart rate?

- Reassess heart rate and APGAR

**Give report to receiving hospital**

**Bag 30 seconds with 100% O₂**

**Peds airway protocol/CPR**

**IV protocol**

**Appropriate dysrhythmia protocol**

**Consider**

- D12.5% 1-2 mL/kg IV/IO
- Naloxone 0.1 mg/kg IV/IO
- NS bolus 20 mL/kg IV/IO

**Score**

<table>
<thead>
<tr>
<th>Score</th>
<th>Appearance</th>
<th>Blue central</th>
<th>Blue extremities</th>
<th>Pink</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Pulse</td>
<td>&lt; 100</td>
<td>&gt; 100</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Grimace</td>
<td>None</td>
<td>Grimace</td>
<td>Pulls away</td>
</tr>
<tr>
<td>2</td>
<td>Activity</td>
<td>Absent</td>
<td>Arm/leg flexed</td>
<td>Active movement</td>
</tr>
<tr>
<td></td>
<td>Resp</td>
<td>Absent</td>
<td>Slow</td>
<td>Crying, good</td>
</tr>
</tbody>
</table>

**Pearls**

- Maternal sedation/narcotics will sedate the infant
- Consider hypoglycemia in infant
- Document 1 and 5 minute APGARs
- D12.5% = D50 diluted to 1/4 strength (1 mL D50 with 3 mL saline)
**History**
- Ingestion or suspected ingestion of toxic substance
- Substance ingested, quantity, route
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

**Signs and Symptoms:**
- Mental status changes
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

**Differential:**
- TCA's
- Acetaminophen
- Depressants
- Stimulants
- Anticholinergic
- Cardiac meds
- Solvents, alcohols, cleaning agents
- Insecticides (organophosphates)

**Universal patient care protocol**

**IV protocol**

**Tricyclic ingestion with cardiac arrhythmia?**
- Sodium bicarbonate 1 meq/kg IV

**Respiratory Depression?**
- Beta blocker
- Organophosphates carbamates?
- Calcium channel blocker

**Naloxone 0.1 mg/kg IN**

**Atropine 0.02 mg/kg IV PRN**

**Calcium chloride 20 mg/kg slow IV**

**Other ingestion/toxin with hypotension/seizures/arrhythmia mental status change**

**Pearls**
- Exam: Mental status, skin, HEENT, heart, lungs, abdomen, extremities, neuro
- Max dose: Narcan 2 mg, glucagon 1 mg, Calcium Chloride 1 g, Sodium Bicarbonate 50 meq, atropine 2 mg/dose (minimum = 0.1 mg)
- Do not rely on patient history of ingestion in suicide attempt
- Bring bottles to ED
- TCA: seizure, dysrhythmias, hypotension, decreased mental status, coma
- Acetaminophen: normal or N/V- causes irreversible liver failure if not detected
- Depressants: decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- Stimulants: increased HR, increased BP, increased temperature, dilated pupils, seizures
- Anticholinergic: increased HR, increased temperature, dilated pupils, mental status change
- Cardiac meds: dysrhythmias, mental status changes
- Insecticides: increased/decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints per restraints procedures

**Mark I kits contain 2 mg Atropine and 600 mg Pralidoxime in auto injector**
**PEDIATRIC**

**Pain Control**

**History**
- Age
- Location
- Duration
- Severity (1-10)
- Past medical history
- Medications
- Drug allergies

**Signs and Symptoms:**
- Severity
- Quality
- Radiation
- Relation to movement
- Increased with palpation

**Differential:**
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural/respiratory
- Neurogenic
- Renal

**Universal patient care protocol**

**Care based on complaint specific protocol**

**Cardiac Monitor, ETCO2 and SPo2**
Monitoring for all Patients when using Narcotics

**Pain severity > 6/10 OR Indication for IV/IM pain medication?**

**IV protocol**
Pulse oximetry

**Isolated extremity traumatic pain**

- Yes
- No

Morphine 0.1 mg/kg IV/IM
May repeat q10 min x 1
Fentanyl 0.5-1 mcg/kg IV/IM

**Contact OLMC**

**Pearls**
- Max dose Morphine = 2 mg/dose
- Fentanyl 1-2 mcg/kg slow IVP
- Pain severity is a vital sign and must be recorded pre and post IV/IM pain medications
- Vitals should be obtained pre, post, and at disposition with all pain medications
- Contraindications to Morphine = hypotension, altered mental status, head injury, respiratory distress, severe COPD
- Document drug allergies
- Observe for drug reaction
**LMHS EMS Protocols**

**PEDIATRIC**

**Pulseless Arrest**

**History**
- Time of arrest
- Medical history
- Medications
- Foreign body?
- Hypothermia?
- Suspected abuse?
- SIDS

**Signs and Symptoms:**
- Unresponsive
- Cardiac arrest

**Differential:**
- Respiratory failure
- Foreign body
- Secretions
- Infection
- Hypovolemia
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin ingestion
- Hypoglycemia
- Acidosis

**Universal patient care protocol**

**Ventricular fibrillation**

**Defibrillate**
1st 2 J/kg
2nd 4 J/kg
3rd 4 J/kg

**Pediatric airway protocol**

**Epinephrine**
0.01 mg/kg 1:10,000 IV/IOOR
Epi 0.01 mg/kg 1:1000 ET
Repeat q 3-5 min

**D25** 1-2 mL/kg IV/IO
Naloxone 0.1 mg/kg IV/IO/ETT

**Consider and treat causes**
- Hypoxemia - oxygen
- Acidosis - oxygen, bicarb 1 meq/kg IV
- Volume depletion - fluid bolus 20 mL/kg
- Tension pneumothorax
- Hypothermia
- Hypoglycemia - D25 1-2 mL/kg IV

**Pearls**
- Max doses: Epi = 1 mg; Amiodarone = 300 mg; D25 = 25 mL; Narcan = 2 mg; Sodium Bicarbonate = 50 meq; Atropine = 0.1-1 mg/dose (max 3 doses)
- For success to occur, a cause must be identified and corrected
- For ROSC, go to post resuscitation protocol

**Defibrillate**
4 J/kg Q1-2min

**Consider Amiodarone 5 mg/kg IV**

**Pediatric airway protocol**

**IV protocol**

**Epinephrine**
0.01 mg/kg 1:10,000 IV/IOOR
Epi 0.01 mg/kg 1:1000 ET
Repeat q 3-5 min

**D25** 1-2 mL/kg IV/IO
Naloxone 0.1 mg/kg IV/IO/ETT

**Consider and treat causes**
- Hypoxemia - oxygen
- Acidosis - oxygen, bicarb 1 meq/kg IV
- Volume depletion - fluid bolus 20 mL/kg
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- For success to occur, a cause must be identified and corrected
- For ROSC, go to post resuscitation protocol
LMHS EMS Protocols

PEDIATRIC

Respiratory Distress

**History**
- Asthma
- COPD
- CHF
- Home treatment (oxygen/nebulizer)
- Meds (theophylline, steroids, inhalers)
- Toxic exposure
- Smoke inhalation

**Signs and Symptoms:**
- SOB
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, ronchi, rales, stridor
- Accessory muscle use
- Fever, cough, tachycardia

**Differential:**
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pneumonia/pleural effusion
- Pneumothorax
- Cardiac (MI/CHF)
- PE
- Tamponade
- Hyperventilation
- Inhaled toxin

**Universal patient care protocol**

**Respiratory insufficiency?**

- No

**Position of comfort**

- Wheezes age < 18 mo or 1st wheeze

- Epi Neb 3 mL 1:1000

- Monitor and transport

- Contact OLMC

- Consider Epi 0.3 mg 1:1000 SQ/IM

- Wheezes age > 18 mo or history

- Duoneb aerosol
  - If not improved
  - Repeat duoneb aerosol
  - If not improved
  - Albuterol aerosol

- Continuous Albuterol 5 mg Neb IV protocol

- Methylprednisolone 1-2 mg/kg IV

- Consider Epi 0.01 mg/kg 1:1000 SQ or IM

**Pediatric airway protocol**

- No improvement
- Vaponephrine (racemic) 2.25%
- 0.5 ml in 3 ml saline nebulized

**Pearls**
- Pulse oximetry should be monitored continuously if initial saturation is < 96% or there is a decline in patient status
- Do not force a child into a position. They protect their airway by body position
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to albuterol
- Croup typically affects children < 2 yrs old. It is viral and may be associated with fever, gradual onset, no drooling
- Epiglottitis typically affects children > 2 yrs old. It is bacterial, with fever, rapid onset, possible stridor, and common drooling
- For patients on Xopenex, you may continue a treatment in place of albuterol. Use patient meds and dosing (0.3mg-1/25mg) nebulized
**PEDIATRIC**

**Seizure**

**History**
- Fever
- Previous seizure history
- Reported seizure activity
- History of recent head trauma
- Congenital abnormality

**Signs and Symptoms:**
- Observed seizure activity
- Altered mental status
- Hot, dry skin or elevated body temperature

**Differential:**
- Fever
- Infection
- Head trauma
- Medication/toxin
- Hypoxia/respiratory failure
- Hypoglycemia
- Metabolic abnormality/acidosis
- Tumor

**Universal patient care protocol**

**Pediatric airway protocol**

**Cool patient**

- Yes
  - Fever?
    - No
      - IV protocol
    - Yes
      - Blood glucose < 60
        - D25 1-2 mL/kg IV or Glucagon 0.025 mg/kg IM if no IV
      - Active seizure?
        - Yes
          - Repeat seizures or status
            - Midazolam 0.05-0.1 mg/kg IV
              - Max dose = 5 mg/dose
              - If no IV
                - Midazolam 0.2 mg/kg IM/IN
                  - Max dose = 5 mg/dose
        - No
      - Evidence of Shock or Trauma?
        - Yes
          - Go to appropriate protocol
        - No
          - Be prepared to assist ventilation if Versed is used
          - Immobilize the spine if there is suspicion of trauma
          - In an infant, a seizure may be the only evidence of a closed head injury

**Pearls**
- Max dose of D25 = 25 mL, max dose of glucagon = 1 mg
- Status Epilepticus: > 2 successive seizures without a period of consciousness or recovery
- Grand mal: generalized - LOC, incontinence, tongue trauma
- Focal seizures (petit mal): only a part of the body affected and not associated with LOC
- Jacksonian seizures: focal seizures that become generalized
- Be prepared to assist ventilation if Versed is used
- Immobilize the spine if there is suspicion of trauma
- In an infant, a seizure may be the only evidence of a closed head injury

**Evidence of Shock or Trauma?**
- Go to appropriate protocol
Supraventricular Tachycardia

**History**
- Past medical history
- Medications or toxin ingestion (Aminophylline, diet pills, thyroid pills, decongestants, digoxin)
- Drugs - nicotine, cocaine
- Congenital heart disease
- Respiratory distress
- Syncope or near syncope

**Signs and Symptoms:**
- HR> 180 in child
- HR> 220 in infant
- Pale/cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered LOC
- Pulmonary congestion
- Syncope

**Differential:**
- Heart disease (congenital)
- Hypo/hyperthermia
- Hypovolemia/anemia
- Electrolyte abnormality
- Anxiety/pain/stress
- Fever/infection/sepsis
- Hypoxia
- Hypoglycemia
- Medication/toxin/drugs
- PE
- Trauma/tension pneumothorax

**Universal patient care protocol**

- **Continuous cardiac monitor**
- **Identify**

**Stable**
- **Vagal maneuvers**
  - Ice pack to face or valsalva

**Unstable**
- **Cardioversion**
  - 0.5J/kg Consider Midazolam 0.1 mg/kg IV/IN up to max of 2 mg

**Repeat cardioversion**
- (1-2J/kg)

**Adenosine**
- 0.1mg/kg IV
- 0.2mg/kg IV (repeat if needed)
- Max dose 12 mg

**Pearls**
- **Exam:** Mental status, skin, neck, lung, heart, abdomen, back, extremities, neuro
- Carefully evaluate the rhythm to distinguish Sinus Tach, SVT, and V tach
- Separating the child from caregiver may worsen clinical condition
- Use pediatric hands-free paddles in children < 10 kg or Broselow color purple
- Monitor for respiratory depression and hypotension with Versed use
- Continuous pulse oximetry required
- Document all rhythm changes
- Maximum sinus tachycardia rate is 220 - patient age in years
**Vomiting and Diarrhea**

**History**
- Age
- Last meal
- Last BM/emesis
- Duration
- Sick contacts
- Past medical history
- Past surgical history
- Medications
- Menstrual history
- Travel history
- Bloody emesis/diarrhea

**Signs and Symptoms:**
- Pain
  - Constant, sharp, dull, etc.
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

**Associated Symptoms:**
- Fever, Headache, blurred vision, weakness, myalgias, cough, dysuria, mental status changes, rash

**Differential:**
- CNS
- MI
- Drugs
- GI/renal
- DKA
- Gynecologic
- Infections
- Electrolyte imbalance
- Food or toxin induced
- Medication/substance abuse
- Pregnancy
- Psychologic

**Universal patient care protocol**

**Consider IV protocol**

**Blood Glucose**
If < 60 go to altered mental status protocol

**Normal saline bolus**
20 mL/kg IV PRN
(10 mL/kg if glucose > 250)

**Vomiting/severe nausea?**
- No
  - Monitor and reassess
- Yes
  - Consider Ondansetron
    - 0.2/kg IV up to 4mg
    - 2 mg ODT (1/2 tablet)

**Pearls**
**Exam:** Mental status, skin, HEENT, neck, heart, lungs, abdomen, back, extremities, neuro
- Monitor frequently to reassess vascular status
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Drug Formulary List
Interfacility Transport Protocols
Interfacility Infusion Maintenance Antibiotics

**Clinical Indications:**
- Treatment of bacterial infections.
- The list of potential antibiotics that can be transported is extensive. This list contains some examples only. Paramedics may transport all antibiotics/antivirals whether listed or not. - Ciproflaxin, Cefazolin, Ceftoxime - Gentamycin, Vancomycin, Levaquin - Amoxicillin, Ampicillin, Penicillin - Doxycycline, Tetracycline - Acyclovir

**Contraindications:**
- Allergy or hypersensitivity to medications.

**Procedure:**
1) Paramedics may maintain antibiotic transfusions during inter-hospital transfers that are initiated by the referring facility. These may be peripheral IV lines or PICC lines.

2) Antibiotics/antivirals must be delivered as a piggy-back or secondary line. They should always be run with a compatible main IV line/PICC line such as Normal Saline or other compatible crystalloid IV solution.

3) Some people may have an allergic reaction to antibiotics, particularly Penicillin and similar medicines such as Cephazolin. They can develop side-effects such as a rash, swelling of the face and tongue, and difficulty breathing. This is called an **anaphylactic** reaction and it can be serious or even fatal.

4) During transport, if the patient develops signs or symptoms of an anaphylactoid reaction, turn off the antibiotic and remove bag from main IV line.

5) Establish a second IV line. Do not push any medications through any IV line that may contain residual Antibiotic.

6) Refer to Anaphylaxis Protocol and contact On-Line Medical Control for further orders.

   7) No other medications may be administered through an antibiotic/antiviral infusion.

   8) The Paramedic may transport a patient with an antibiotic/antiviral infusion running through a PICC line

**Certification Requirements:**
- Attend equipment in-services
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
Interfacility Infusion Maintenance
Cardizem (Diltiazem)

Clinical Indications:
· Control of Atrial Fibrillation or Atrial Flutter with Rapid Ventricular Response
· When ordered by a physician with written orders to continue medicated drip during transport

Contraindications:
· Allergy or hypersensitivity to medications.
· Hypotension
· Second Degree Heart Block
· Third Degree Heart Block
· Ventricular Tachycardia

Procedure:
1) Follow Universal Care and Atrial Fibrillation protocol, when applicable
2) Obtain written orders from transferring physician and include with the patient care documentation
3) Verify concentration, dosage and VS parameters on physician’s order sheet from transferring hospital
4) Monitor vital signs: B/P, heart rate every 15 minutes continuous EKG monitoring.
5) Notify Medical Control of the vital signs (heart rate < 110/ > 150, or Systolic BP < 90) deviate from the predetermined parameters set forth by the transferring hospital or any AV Block.

Certification Requirements:
· Attend equipment in-services
· Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
Interfacility Infusion Maintenance
Dopamine

Clinical Indications:
- Treatment of hypotension.
- Improve renal perfusion/urine output.

Contraindications:
- Allergy or hypersensitivity to medications.
- Hypertension

Procedure: Paramedics may maintain Dopamine infusions during inter-hospital transfers that are initiated by the referring facility.

The patient’s systolic blood pressure must be greater than 100 mmHg.

During transport, if the patient develops hypotension (SBP < 100 mmHg), contact On-Line Medical Control for further orders.

If the patient develops hypertension, (SBP > 180 mmHg), stop the infusion and contact On-Line Medical Control. If the patient develops tachycardia (> 120 bpm), contact On-Line Medical Control.

No other medications may be administered through a Dopamine infusion. The Dopamine may be infused through a PICC line.

Certification Requirements:
- Attend equipment in-services
- Maintain knowledge of the indications, contra-indications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
Interfacility Infusion Maintenance

Heparin

Clinical Indications:
- Treatment of acute coronary syndrome/unstable angina/MI
- Treatment of DVT
- Treatment of PE
- Treatment of acute arterial occlusion

Contraindications:
- Allergy or hypersensitivity to medications
- Active hemorrhage
- Gastrointestinal hemorrhage
- Intracranial hemorrhage

Procedure:
1) Heparin infusions started at referring facilities may be maintained by ALS personnel at the rate initiated by the referring facility. Typical treatment regimens include 5000 unit bolus followed by an infusion at 1000 units/hour. Alternate treatment regimens include a weight based dosing determined by the referring facility.

2) Heparin infusions should be maintained at the unit/hour rate determined by the referring facility.

3) Heparin infusions should be discontinued if the patient develops signs of active bleeding or has signs of allergic reaction (rare). On-Line Medical Control should be contacted immediately for further instructions.

4) The Paramedic may maintain an infusion begun through a PICC line.

Certification Requirements:
- Attend equipment in-services
- Maintain knowledge of the indications, contra-indications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
Interfacility Infusion Maintenance
Nitroglycerine

Clinical Indications:
- Treatment of chest pain related to acute coronary syndrome/unstable angina/MI.
- Blood pressure control.

Contraindications:
- Allergy or hypersensitivity to medications.
- Hypotension

Procedure:
Paramedics may maintain infusions of nitroglycerine during inter-hospital transfers if the medication is initiated at the referring facility.

If the patient condition changes, contact On-Line Medical Control for orders.

If the patient develops hypotension (SBP < 100), turn drip off and contact On-Line Medical Control for orders. The EMT-P may maintain an infusion begun through a PICC line.

Certification Requirements:
- Attend equipment in-services.
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
The Paramedic may maintain the following infusions started at referring facilities:

** IV Solutions containing Potassium such as D51/2NS with 20 Meq KCL

** Sodium Bicarbonate drips (strongly consider recommending Mobile ICU for these patients)

The Paramedic may NOT transport straight KCL boluses (nursing level)

ALL patients being transported with these infusions must be monitored with NIBP, SP02, Cardiac monitoring.

Any change in patient condition during transport mandates a call to medical control for further direction.
Interfacility Infusion Maintenance
Amiodarone

Clinical Indications:
- Control of ventricular arrhythmias
- When ordered by a physician with written orders to continue medicated drip during transport

Contraindications:
- Allergy or hypersensitivity to medications.
- Hypotension
- Second Degree Heart Block
- Third Degree Heart Block

Procedure:
1) Follow Universal Care and Wide Complex/V-Tach protocol, when applicable
2) Obtain written orders from transferring physician and include with the patient care documentation
3) Verify concentration, dosage and VS parameters on physician’s order sheet from transferring hospital
4) Monitor vital signs: B/P, heart rate every 15 minutes continuous EKG monitoring.
5) Notify Medical Control of the vital signs (heart rate < 110/150, or Systolic BP < 90) deviate from the predetermined parameters set forth by the transferring hospital or any AV Block.

Certification Requirements:
- Attend equipment in-services
- Maintain knowledge of the indications, contra-indications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by Lima Memorial Health Systems.
LMHS EMS Protocols

Change Log

**Version 1.6  January 2017**
Updated to include current ACLS, AHA, and PALS guidelines
Added lateral needle decompression
Added racemic epi for Respiratory distress

**Version 1.5  December 2015**
Updated Narcan for all providers
Updated RSI protocol
Updated CHF/CPAP protocol
Updated C-spine clearance protocol to include EMR’s(Spinal Motion Restriction) Added sepsis protocol
Modified VT with pulse protocol
Added Norepinephrine for refractory hypotension (Deleted dopamine)
Deleted Captopril from CHF protocol
Added Sodium bicarbonate/potassium containing solutions for Interfac. Transports Added table of contents
Termination of Resuscitation (TOR guidelines) updated to include BLS only crew configuration

**Version 1.4  December 2013**
Added Basic assist to Chest Pain Protocol Corrected
Advanced EMT Colors for Epinephrine Added
Narcan to IN route of administration

**Version 1.3  August 2013**
Added Interfacility Transport Protocol (Cardizem)

**Version 1.2  June 2013**
Added Interfacility Transport Protocols
Corrected inappropriate Advanced EMT Medication chart colors
Added Pain Medication to Chest Pain and Pain Management Protocols

**Version 1.1  Not Released**
Format Changes

**Version 1.0  April 2013**
Initial Release