

**Lima Memorial**

**Health System**

**EMS**

**PROTOCOLS**

# Lima Memorial Health System EMS System

## 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
- ii) 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)

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- 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 STD's
  - 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.

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## 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 contacting the Lima Memorial Health Systems EMS Coordinator at (419) 226-5178. These events include the following:

- 1) Cardiac arrest or respiratory arrest after administrations of midazolam (Versed) or Morphine or Fentanyl
- 2) Cardiac arrest after administering an antiarrhythmic 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 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

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**

# Lima Memorial Health System EMS System

## Air Transport

### Indications:

An air ambulance may be utilized when **ALL** of the following criteria are present:

1. **Patient meets criteria for trauma 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).
- ~ The patient meets burn center criteria.

### Procedure:

1. The highest certified technician on the crew (usually the Paramedic) will determine that a helicopter may be needed for the patient. An on-scene Fire Department Officer may request a helicopter to expedite its arrival. As always, the Fire Chief or his designee retains overall incident command, unless he/she delegates EMS Operations.
2. That technician will request that the 911 center contact a helicopter service for a scene transport. The 911 center will determine which air ambulance is nearest and utilize this resource.
3. A safe landing zone should be established.
4. If the helicopter does not arrive prior to the extrication of the patient, the patient should be immediately placed in the ambulance and transport begun to the nearest trauma center.
5. **Under NO circumstances will transport of a patient be delayed to use a helicopter.**

# Lima Memorial Health System EMS System

## 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 or the EMS Coordinator, an action (or failure to act) on the part of a practitioner is of such a nature that the action or 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 or 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.

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- 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.

# Lima Memorial Health System EMS System

## Criteria for Death/Withholding 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.**

# Lima Memorial Health System EMS System

## Deceased Subjects

### Indications:

One or more of the following is present:

- Rigormortis 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.**

# Lima Memorial Health System EMS System

## Discontinuation of Prehospital Resuscitation

### Policy:

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

### Procedure:

- \_\_\_ Adequate CPR has been administered;
- \_\_\_ Endotracheal intubation and/or rescue airway device (LMA, King, etc.) placement has been successfully accomplished with adequate ventilation (as per Airway protocol);
- \_\_\_ IV/IO access has been achieved
- \_\_\_ Rhythm-appropriate medications and defibrillations for ventricular dysrhythmias have been administered according to protocol;
- \_\_\_ Persistent Asystole or agonal rhythm is present and no reversible causes are identified;
- \_\_\_ Failure to establish spontaneous circulation (palpable pulse) or persistently recurring or refractory ventricular fibrillation/tachycardia or any continued neurological activity (spontaneous respiration, eye opening, or motor response) after appropriate BLS and ALS resuscitation efforts for over 25 minutes\*; and
- \_\_\_ 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)
- \_\_\_ All paramedics on scene agree with decision to cease efforts.

- \* The 25 minutes of efforts identified above begin at the time the first responder initiates care.
- Family members and others present must be acknowledged and assisted.
- Disposition of the body as per the Deceased Persons Protocol.

_____ Patient's Name	_____ Time Resuscitation Discontinued	_____ Run Number
_____ Paramedic Printed Name	_____ Paramedic Signature	_____ Date
_____ Crew Members Printed Name	_____ Crew Member Signature	_____ Date
_____ Printed name of Law Enforcement Official	_____ Physician Notified	_____ Date/Time

# Lima Memorial Health System EMS System

## Do Not Resuscitate Form

### 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:
  - Original Ohio DNR form - not a copy
  - 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.

# Lima Memorial Health System EMS System

## Documentation of the Patient Care Report (PCR)

### 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, breath 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 lead II 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 narcotics should include the quantity wasted, and name of the person who witnessed the waste. Hospital personnel should be utilized (if available).
  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.
  17. For all patients who receive EMS medications or procedures (beyond KVO IV), the PCR shall be completed prior to leaving the hospital. Exceptions must be approved by the receiving facility. When possible, all PCRs should be completed prior to leaving the hospital. All PCRs should be available to the receiving facility within 4 hours.

# Lima Memorial Health System EMS System

## 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) ETCO<sub>2</sub>
  - d) CO level
- 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.

# Lima Memorial Health System EMS System

## Non Transport by ALS

### Indications:

- A single Paramedic crew or a non-Paramedic 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 who "attends" with the patient while enroute 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 enroute to the hospital. Both the transporting provider and the ALS provider who transferred care 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.

# Lima Memorial Health System EMS System

## 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. When making contact with the physician, the contact should be done on a recorded device. Call 911 or use the hospital radio channel in order to assure that the call is recorded. Calling the hospital direct will not record the call.
- 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 a copy to the patient.
  - Complete the "Patient Refusal of Care" procedure in the electronic call report.
- At no time will 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.

# Lima Memorial Health System EMS System

## 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 Nitroglycerine==>EMT and above
- Patient assisted aerosolized/nebulized medications==>EMT and above

# Lima Memorial Health System EMS System

## Patient 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.

# Lima Memorial Health System EMS System

## 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:

- A 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.

# Lima Memorial Health System EMS System

## 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.
- 8) Do not transport the pediatric patient who is assessed as meeting trauma center criteria in a child seat that was involved in a collision that produced the child's injury.

# Lima Memorial Health System EMS System

## Trauma Center Triage Criteria

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

	EMT	
	AEMT	
	Paramedic	

**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.**

### 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 with separation of rider from bike and speed > 20 MPH  
Ejected from vehicle  
High speed collision (>60 MPH or > 40 MPH unrestrained) or major vehicle deformity (20")  
Falls >20' (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

\* For the above, consider transport to a trauma center by Air Ambulance. If there is a delay in arrival of helicopter, transport to the closest available hospital.

**Lima Memorial Health System EMS System**

# **PROCEDURES**

# Lima Memorial Health System EMS System

## 12 Lead ECG

### Clinical Indications

- Suspected cardiac patient
- Suspected tricyclic overdose
- 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 12 Lead ECG
- 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 midaxillary line
- 6) Instruct patient to remain still.
- 7) Press the appropriate button to acquire the 12 Lead ECG.
- 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) If STEMI suspected, if able, transmit 12-Lead ECG and notify hospital of STEMI alert.
- 10) Document the procedure, time, and results on/with the patient care report (PCR)
- 11) An EMT or EMT-A may perform and transmit a 12 Lead ECG; 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.

	EMT	
	AEMT	
	Paramedic	

## Airway-King LTD-S

### 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.
- Appropriate intubation is impossible due to patient access or difficult airway anatomy.

### Absolute Contraindications:

- Deforming facial trauma

### Relative Clinical Contraindications:

- Pulmonary fibrosis
- Morbid obesity

### Warning:

**This airway does not prevent aspiration of stomach contents.**

### 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 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).
- 11) **Complete and submit to the Quality Assurance Officer an Airway Audit form within 48 hours.**

### 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:

- CNS trauma.
- Rigidity or hypoxia from seizures (e.g. "clenched teeth").
- Poisonings.
- Metabolic disturbance.
- Patients with severe respiratory distress.

### Contraindications:

- Non-breathing or near apnic patient.
- Known or likely 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 1mm less than for oral intubation.
- 3) Instill Afrin Spray into appropriate nostril.
- 4) Lubricate ET tube generously with water-soluble lubricant such as Lidocaine Jelly.
- 5) Pass the tube in the largest nostril with the beveled edge against the nasal septum and perpendicular to the facial plate.
- 6) Use forward and lateral back and forth rotational motion to advance the tube. **Never force the tube.**
- 7) Continue to advance the tube noting air movement through it; use the BAAM whistle to assist you.
- 8) Apply firm, gentle cricoid pressure and advance the tube quickly past the vocal cords during inspiration.
- 9) Inflate the cuff with 3 to 10 cc of air, secure the tube to the patient's face, and confirm bilateral breath sounds.
- 10) **Apply end tidal carbon dioxide monitor and record readings at the scene, enroute to the hospital, and at the hospital.**
- 11) 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:

- Hypoxic or obtunded patients.
- Patients with possible increasing ICP.
- Respiratory 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.
- 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 LMA if ET intubation efforts are unsuccessful.
- 9) **Apply end tidal carbon dioxide monitor and record readings on scene, enroute to the hospital, and at the hospital.**
- 10) Document ETT 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.

	AEMT	
	Paramedic	

## 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 a cricothyrotomy tube.

### Procedure:

- 1) Ensure suction device is in proper working order.
- 2) Preoxygenate the patient as is possible.
- 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.

	EMT	
	AEMT	
	Paramedic	

## 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) Preoxygenate 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 LMHSa EMS System.

	EMT	
	AEMT	
	Paramedic	

## Airway - CPAP

### Clinical Indications:

- The CPAP device should be applied to all patients in whom inadequate ventilation is suspected. This could be as a result of pulmonary edema, pneumonia, COPD, etc.

### Contraindications:

- Respiratory arrest; inability to control secretions; inability to maintain own airway; suspected pneumothorax

### 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. Many patients respond to low FIO<sub>2</sub> (30-50%).
- 8) Encourage the patient to allow forced ventilation occur. Observe closely for signs of complication. The patient must be breathing for optimal use of the CPAP device.
- 9) Document time and response on 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.

	EMT	
	AEMT	
	Paramedic	

## 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.

## 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 in the mid-clavicular line on the same side as the pneumothorax.
  - Prepare the site with providone-iodine ointment or solution.

[Note: If unable to place anteriorly, lateral placement may be used at the fourth ICS midaxillary line.]

- 4) Insert the 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.

	EMT	
	AEMT	
	Paramedic	

## Cardiopulmonary Resuscitation (CPR)

### Clinical Indications:

- Basic life support for the patient in cardiac arrest

### Procedure:

- 1) Assess the patient's level of responsiveness (not breathing or abnormal breathing)
- 2) Bring AED to patient's side
- 3) Start CPR-->Push Hard and Fast-->assure adequate rate and depth with complete chest recoil after each compression. MINIMIZE interruptions in compression, Avoid over ventilation
- 4) C-A-B (Not ABC's anymore)= Compressions-Airway-Breathing

Age	Location	Depth	Rate
Infant	Over sternum between nipples (inter-mammary line), 2-3 fingers	0.5 to 1 inch (1/3 the anterior-posterior chest dimension)	At least 100/minute
Child	Over sternum, just cephalad from xyphoid process, heel of one hand	1 to 1.5 inches (1/3 the anterior-posterior chest dimension)	100/minute (3 compressions every 2 seconds)
Adult	Over sternum, just cephalad from xyphoid process, hands with interlocked fingers	1.5 to 2 inches (1/3 the anterior-posterior chest dimension)	100/minute (3 compressions every 2 seconds)

- 5) Go to Cardiac Arrest procedure. Begin ventilations in the adult as directed in the Cardiac Arrest Procedure.
- 6) Provide no more than 12 breaths per minute with the BVM. Use EtCO<sub>2</sub> to guide your ventilations as directed in the Cardiac Arrest Procedure.
- 7) **Chest compressions should be provided in an uninterrupted manner. Only brief interruptions are allowed for rhythm analysis, defibrillation, and performance of procedures.**
- 8) Document the time and procedure 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.

	EMT	
	AEMT	
	Paramedic	

## 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 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.

## Defibrillation-Manual

### Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless 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 countershock 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
  - AMA, 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) Rotate selector switch to pacing option.
- 4) Adjust heart rate to 70 BPM for an adult and 100 BPM for a 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.

# Lima Memorial Health System EMS System

## Intranasal Medication Administration

### Clinical Indications:

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

### 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 nare. Stop once resistance is met.
- 5) Rapidly administer the medication.
- 6) Document the results in the PCR.
- 7) Medications approved for use IntraNasal are: Naloxone (Narcan) and Midazolam (Versed)

### 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.

	EMT	
	AEMT	
	Paramedic	

## Impedance Threshold Device (ITD) - Cardiac (ResQPod)

### Clinical Indications:

- The ITD should be utilized to assist with control of ventilatory rate and improve cardiac preload for patients who are receiving CPR.
- It may be utilized with an endotracheal tube or with a BVM.

### Contraindications:

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

### Procedure:

- 1) Ensure the airway is adequate per airway/failed airway protocol.
- 2) Place the ITD between the bag and the EtCO<sub>2</sub> detector (for intubated patients) or between the bag and mask (for patients ventilated with the BVM). The elbow O<sub>2</sub> 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 rapid breath 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<sub>2</sub> climbs above 40, remove the ITD. Allow the EtCO<sub>2</sub> value to control your respiratory rate (bag faster if EtCO<sub>2</sub> >50, bag slower if EtCO<sub>2</sub> < 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.

## Medication Facilitated Induction (ONLY after Medical Director Approval)

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

**Important:** The decision to paralyze makes the Paramedic responsible for the patient's airway. DO NOT make a bad situation worse. (Bad breathing is better than no breathing).

**Initial step:** Shall Contact on line medical control and ask permission to give Paralytic. If medical control is not readily available use common sense.

1. Hyper-oxygenate patient with AMBU and 100% oxygen.
2. Assure patency of IV's (Preferably two large bore IV's).
3. Observe cardiac monitor.
4. Consider **pre-medicating** patient:
  - Head injury - Lidocaine 1.0 mg/kg IVP.
  - Pediatric patients < 3 yo - Atropine .01 mg/kg IVP
  - Adults exhibiting bradycardia - Atropine 0.5 mg IVP
5. Administer Sedation
  - Versed (Midazolam) 0.1 mg/kg IVP **or** Etomidate 0.3 mg/kg IVP.
6. Apply cricoid pressure (Sellick maneuver) throughout procedure.
7. Administer Paralytic
  - Succinylcholine (Anectine) 1.0-1.5 mg/kg **or**
  - Norcuron (Vecuronium) 0.1 mg/kg.
8. Reassess patient. Watch for the jaw to relax, making ventilation easier, indicating paralytic has taken effect.
9. Perform Intubation.
  - A. If unable to Intubate, apply cricoid pressure and again attempt to intubate.
    - DO NOT bag the patient. You have 4 minutes to intubate before oxygen saturations drop.
  - B. If still unable to intubate consider immediate secondary airway placement or emergency cricothyroidotomy.
10. Once intubation is complete, inflate the ETT cuff and confirm placement by auscultation, AND capnography.
11. Once airway is secure, transport patient rapidly to the nearest appropriate facility.

**Note: Succinylcholine:** Onset of flaccid paralysis occurs in less than 1 minute and single dose administration lasts 4 - 6 minutes.

**Norcuron:** Complete paralysis takes between 3 - 4 minutes. Duration is approximately 25 minutes.

**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.

	EMT	
	AEMT	
	Paramedic	

## Permissive Hypotension and Impedance Threshold Device (ITD) - Trauma

### 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 breath but the resistance will make them feel better.
- 3) Apply the ResQGard per the manufacturers guidelines
- 4) Have the patient breathe in 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 ETCO<sub>2</sub> to the exhalation port of the device.
- 7) Reassess the patients vitals every 3-5 minutes.
- 8) Once the patients 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 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 Examination

### Clinical Indications:

- Suspicion of spinal/neurological injury
- Provider decision to utilize the Spinal Immobilization Clearance protocol

**\*\*\* This procedure details the spinal examination process and must be used in conjunction with the Spinal Immobilization Clearance protocol. It is not intended as a replacement for that protocol \*\*\***

### Procedure:

- Explain to the patient the actions that you are going to take. Ask the patient to immediately report any pain, and to answer questions with a "yes" or "no" rather than shaking the head.
- With the patient's spine supported to limit movement, begin palpation at the base of the skull at the midline of the spine.
- Palpate the vertebrae individually from the base of the skull to the bottom of the sacrum.
- On palpation of each vertebral body, look for evidence of pain and ask the patient if they are experiencing pain. If evidence of pain along spinal column is encountered, the patient should be immobilized.
- If the capable patient is found to be pain free, ask the patient to turn their head first to one side (so that the chin is pointing toward the shoulder on the same side as the head is rotating) then, if pain free, to the other. If there is evidence of pain the patient should be immobilized.
- With the head rotated back to its normal position, ask the patient to flex and extend their neck. If there is evidence of pain the patient should be immobilized.

### 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.

	EMT	
	AEMT	
	Paramedic	

## Splinting

### Clinical Indications:

- 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 a 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.

	EMT	
	AEMT	
	Paramedic	

## 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 > 12bpm, Systolic BP of > 100mmHg and < 180 mmHg
  - The patient has no other acute medical or 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 a current Tetanus Booster (If the patient has not had a Tetanus booster within 10 years or the status is unknown, LEO may transport to the hospital if all other criteria are met.)
- **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:

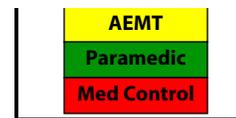
- Inability to obtain adequate peripheral access.
- Access of an existing venous catheter for medication or fluid administration.
- Central venous access in a patient in cardiac arrest.

### Procedure:

- 1) Clean the port of the catheter with alcohol wipe.
- 2) Using sterile technique, withdraw 5-10 cc 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).

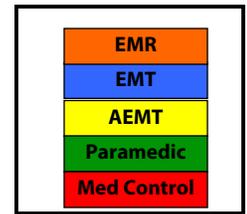
### Procedure:

- 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.

# Lima Memorial Health System 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

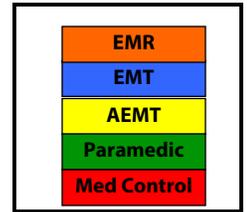
### Procedure:

- 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 anteriomedial 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 head site
- 3) Prep the site with providone-iodine ointment or solution.
- 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 10 to 20 mg (1 to 2 cc) of 2% 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.

# Lima Memorial Health System EMS System



## Wound Care

### Clinical Indications:

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

### Procedure:

- 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 saline 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.
- 6) Document the wound and assessment and care in the Patient Care Report (PCR).

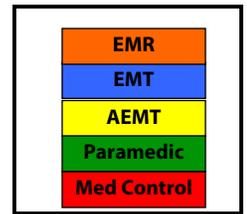
### Certification Requirements:

- 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.



**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:

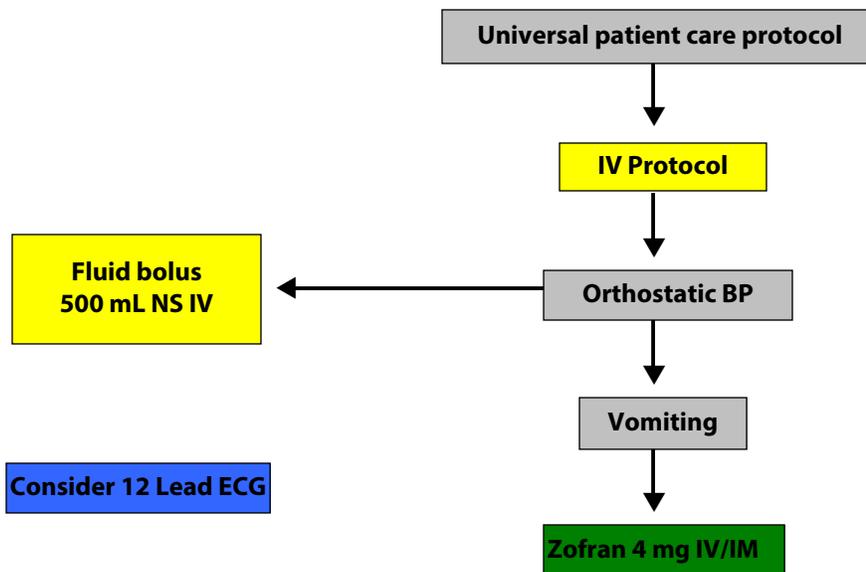
- Pain
- Tenderness
- Nausea/vomiting/diarrhea
- Dysuria
- Constipation
- Vaginal bleeding/discharge
- Pregnancy

### 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



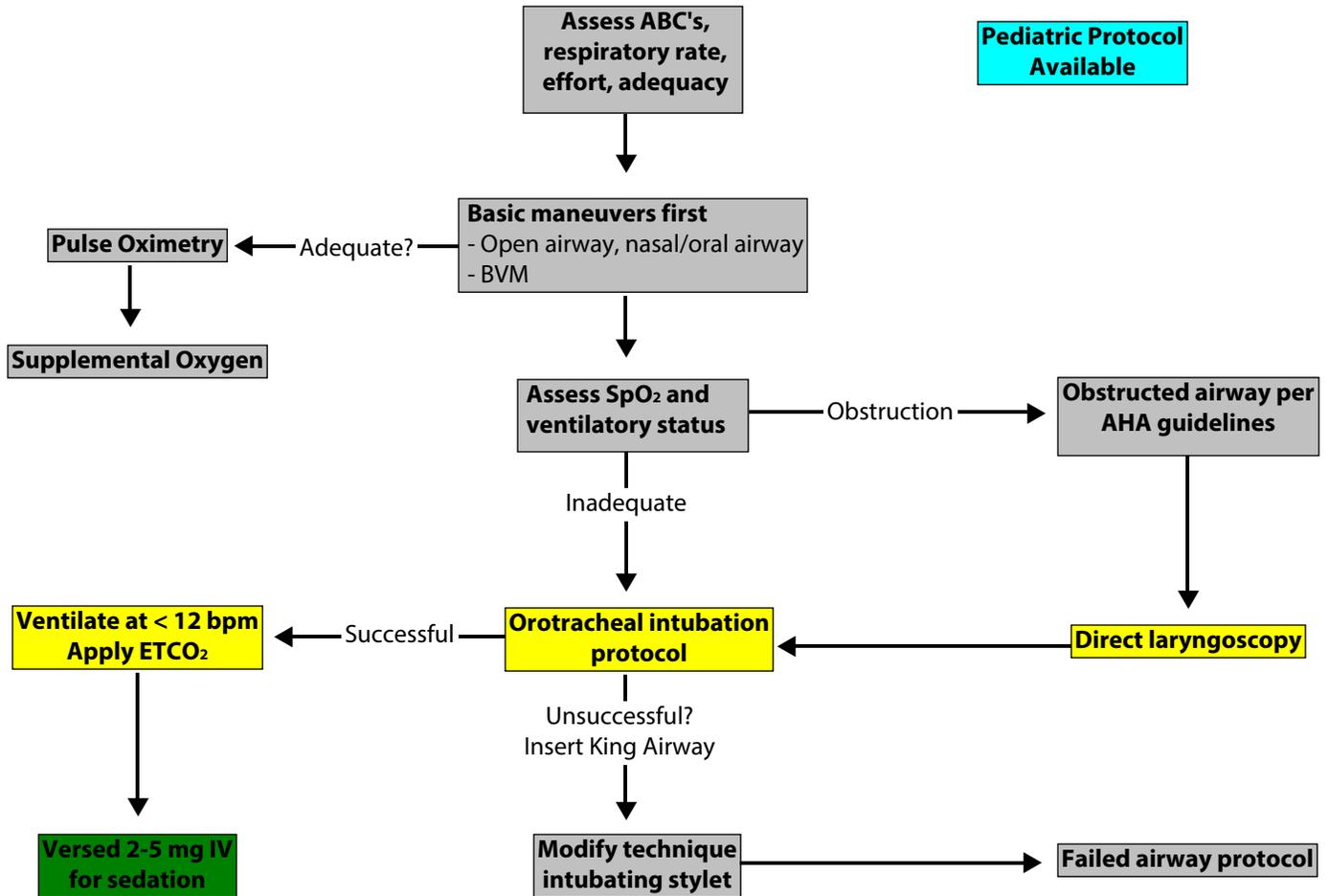
### Pearls

- Exam:** Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- Abdominal pain in women of childbearing age → Ectopic pregnancy until proven otherwise
  - Consider AAA in pts. > 50 years old with abdominal pain
  - Repeat vital signs after therapeutic interventions

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

## Airway



### Pearls

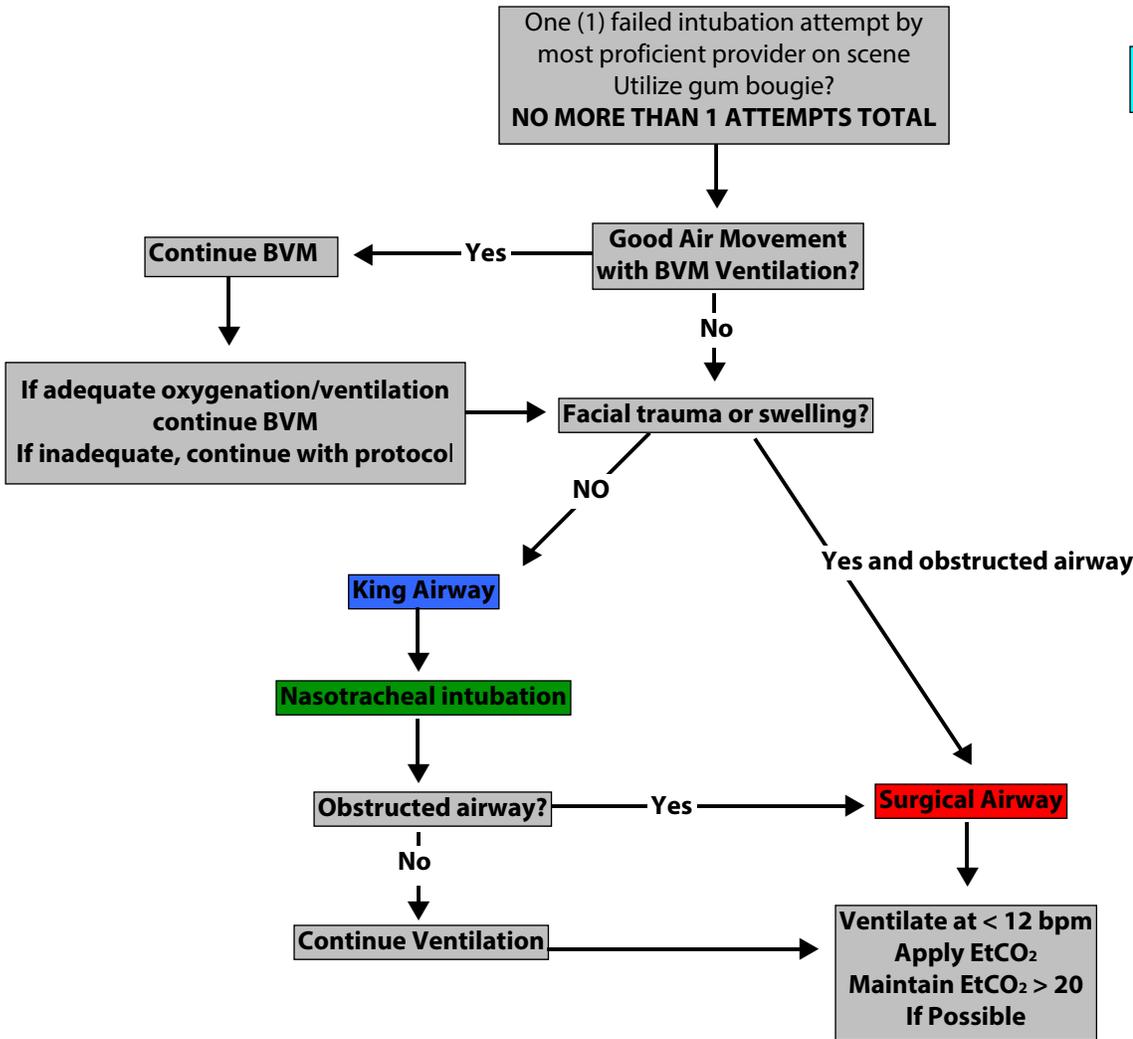
- For this protocol, Adult = 12 years or older
- Capnometry is mandatory with all methods of intubation. Document results.
- Continuous EtCO<sub>2</sub> monitoring is required for all intubated patients
- Do not assume hyperventilation is psychogenic - use oxygen
- Sellick's maneuver or BURP (Backward, Upward, Rightward, Pressure) maneuver may be used to assist with difficult intubations
- Consider use of King Airway when unable to intubate a patient
- In head trauma, maintain EtCO<sub>2</sub> 30-35
- Utilize continuous pulse oximetry
- All intubated patients must have a C-Collar in place. For non-trauma patients, remove collar upon transfer
- Intubating stylet may be used on any attempt based on initial assessment

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

## Airway - Failed

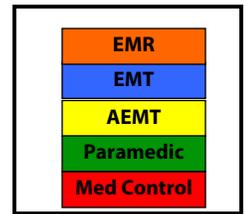
**Pediatric Protocol Available**



### Pearls

Continuous pulse Oximetry should be used in all patients with inadequate respiratory function  
 Continuous EtCO<sub>2</sub> 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  
 AEMT's and EMT's 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

# Lima Memorial Health System EMS System



## Allergic Reaction

### History

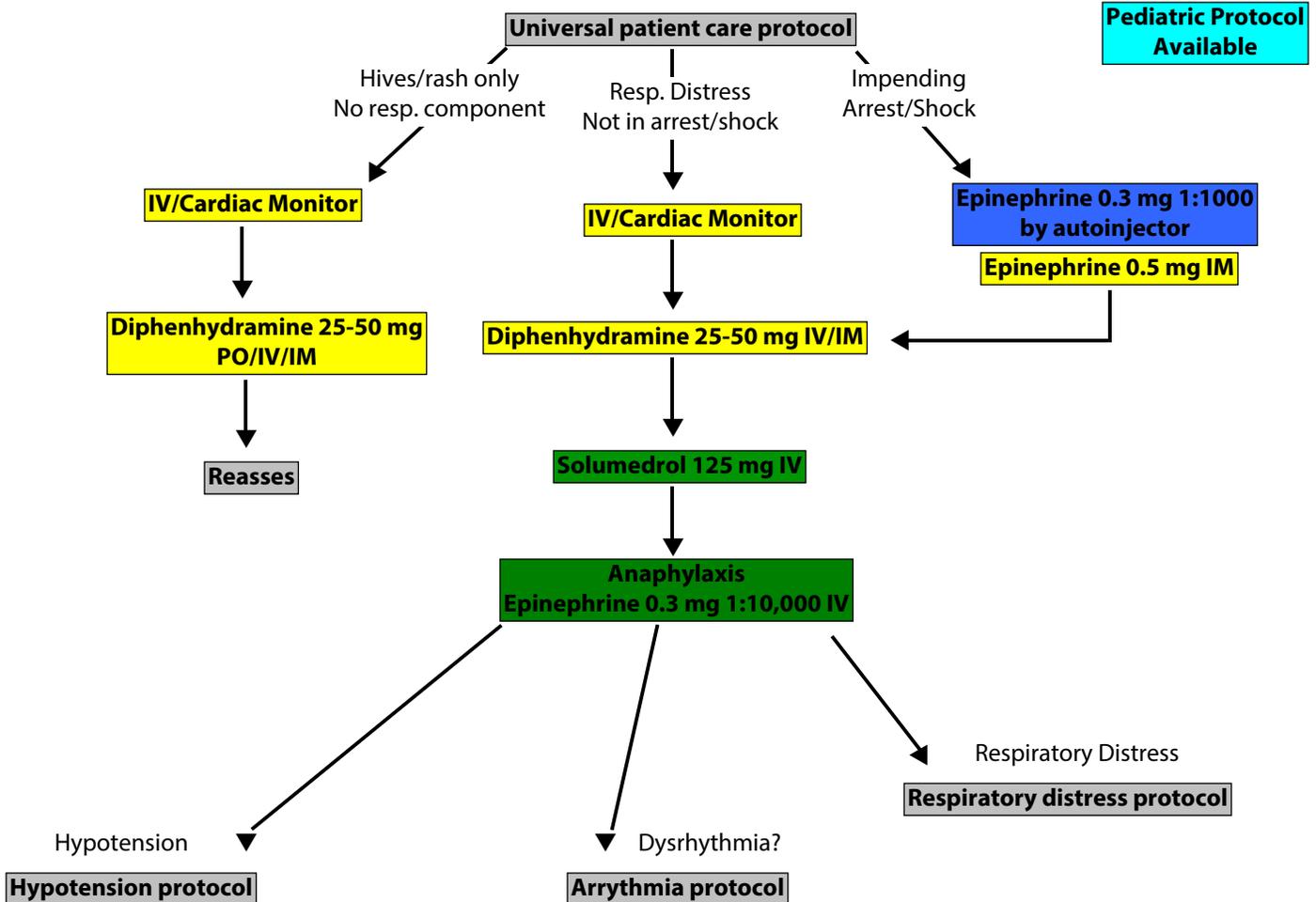
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

### Signs and Symptoms:

- Itching/hives
- Coughing/wheezing/respiratory distress
- Chest or throat tightening
- Difficulty swallowing
- Hypotension/shock
- Edema

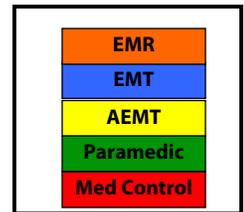
### Differential:

- Urticaria
- Anaphylaxis
- Shock
- Angioedema
- Aspiration
- Vasovagal
- Asthma/COPD
- CHF



### Pearls

- Exam:** Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- Epinephrine may precipitate cardiac ischemia. Contact OLMC before giving epi to patients greater than 50 years old. 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)
- Kussmaul respiration, dehydration

### Differential:

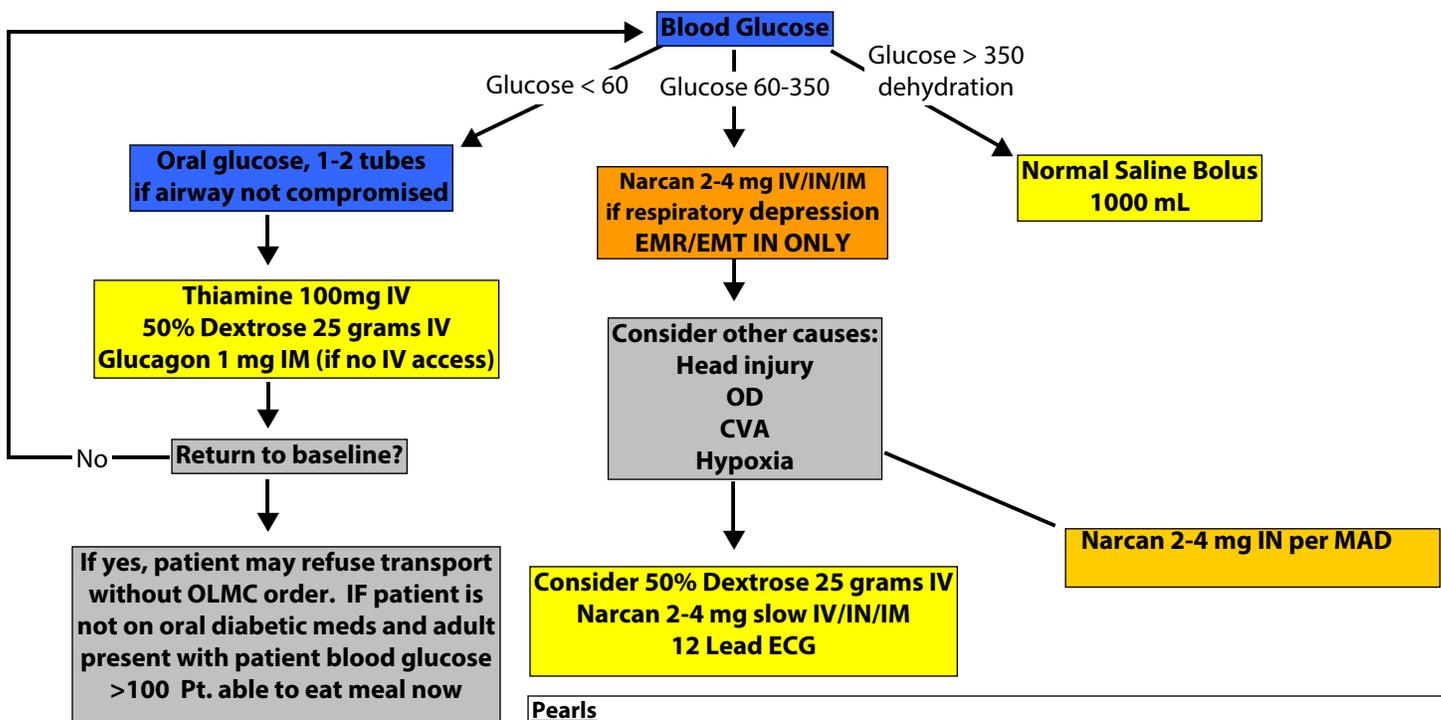
- Head trauma
- CNS (CVA, tumor, seizure, infection)
- Infection
- Thyroid
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper/hypoglycemia)
- Toxicologic
- Acidosis/Alkalosis
- Environmental exposure
- Pulmonary
- Electrolyte abnormality
- Psychiatric

Universal patient Care Protocol

Consider spinal immobilization

IV Protocol

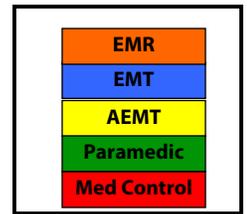
Pediatric Protocol Available



### Pearls

- Exam:** Mental status, HEENT, Sking, 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

# Lima Memorial Health System EMS System



## 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/hyperkalemic)
- Overdose
- Acidosis
- Hypothermia
- Device error - check leads
- Death

Universal Patient Care Protocol



Cardiac Arrest Protocol



**Airway Protocol**  
Begin ventilation <12/min  
Place ITD (ResQPod)



**IV/IO Protocol**



**Vasopressin 40 U IV/IO x1**



**Epinephrine 1 mg 1:10,000 IV/IO  
OR 2 mg ET  
Repeat every 3-5 minutes**



**Identify/correct causes of asystole**

Criteria to discontinue → Cease efforts



**Continue Epinephrine, consideration of correctable causes**

### H's and T's

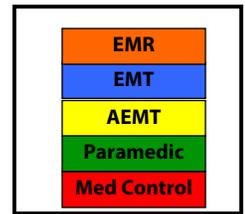
- Hydrogen Ion (acidosis)
- Hypovolemia
- Hypothermia
- Hypoglycemia
- Hyperkalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker)
- Tension pneumothorax

### 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 (eg. ETT/King)

**AT ANY TIME**

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



## Atrial Fibrillation

### History

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

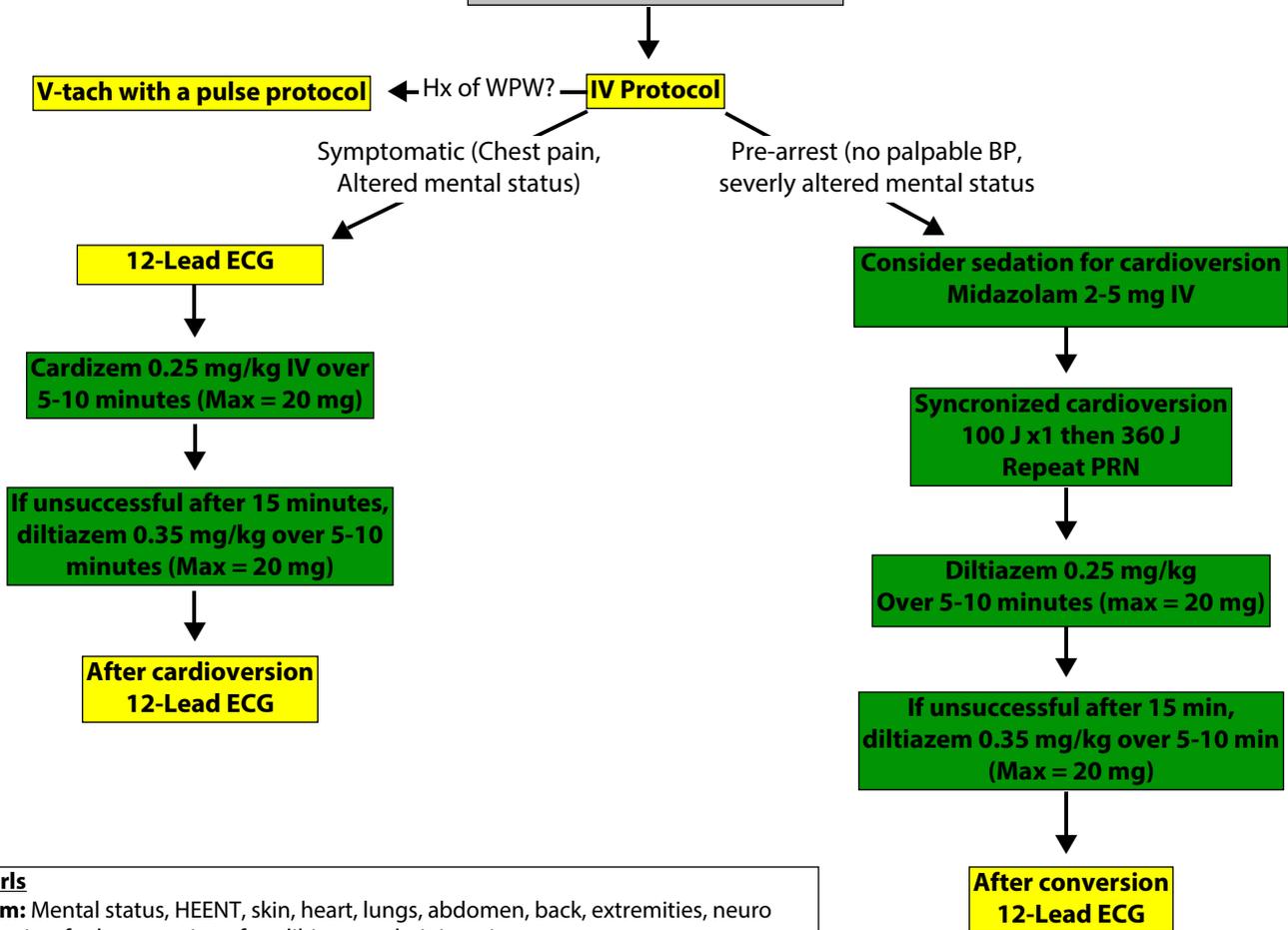
### Signs and Symptoms:

- HR > 160/min (varies)
- QRS < 0.12 sec
- 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

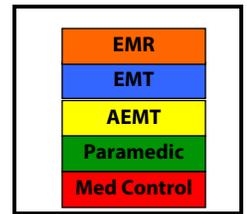
### Universal Patient Care Protocol



### 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

# Lima Memorial Health System EMS System



## Back Pain

### History

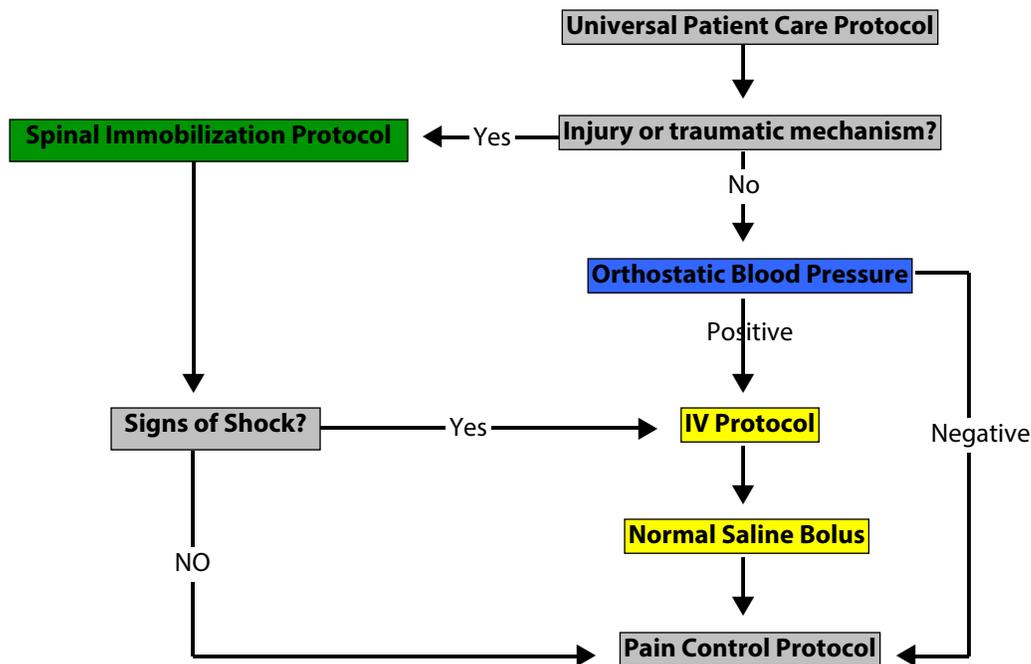
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain/injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Better or worse with activity

### Signs and Symptoms:

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

### Differential:

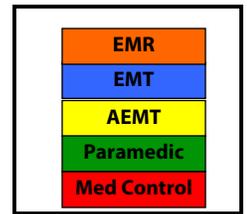
- Muscle spasm/strain
- Herniated disc with nerve compression
- Sciatica
- Spine fracture
- Kidney stone
- Pyelonephritis
- Aortic aneurysm
- Pneumonia
- Cardiac



### 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

# Lima Memorial Health System EMS System



## Behavioral/Agitated Delirium

### History

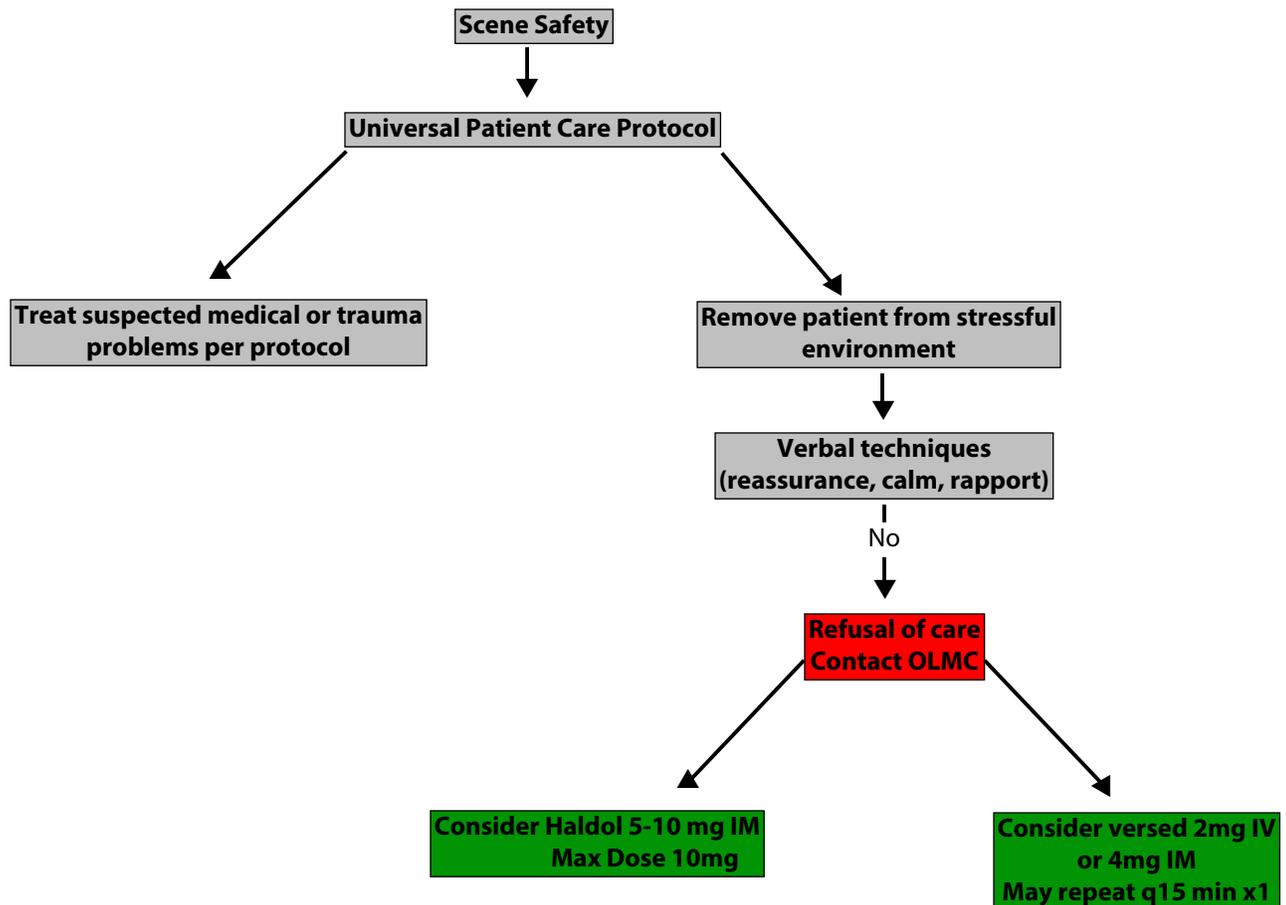
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse/OD
- Diabetes

### 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

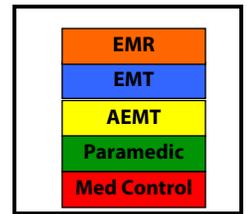


### Pearls

**Exam:** Mental status, skin, heart, lungs, neuro

- Consider Haldol for patients with history of psychosis; Versed for patients with presumed substance abuse
- 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 observed by ALS personnel on scene

# Lima Memorial Health System EMS System



## Bites and Envenomations

### History

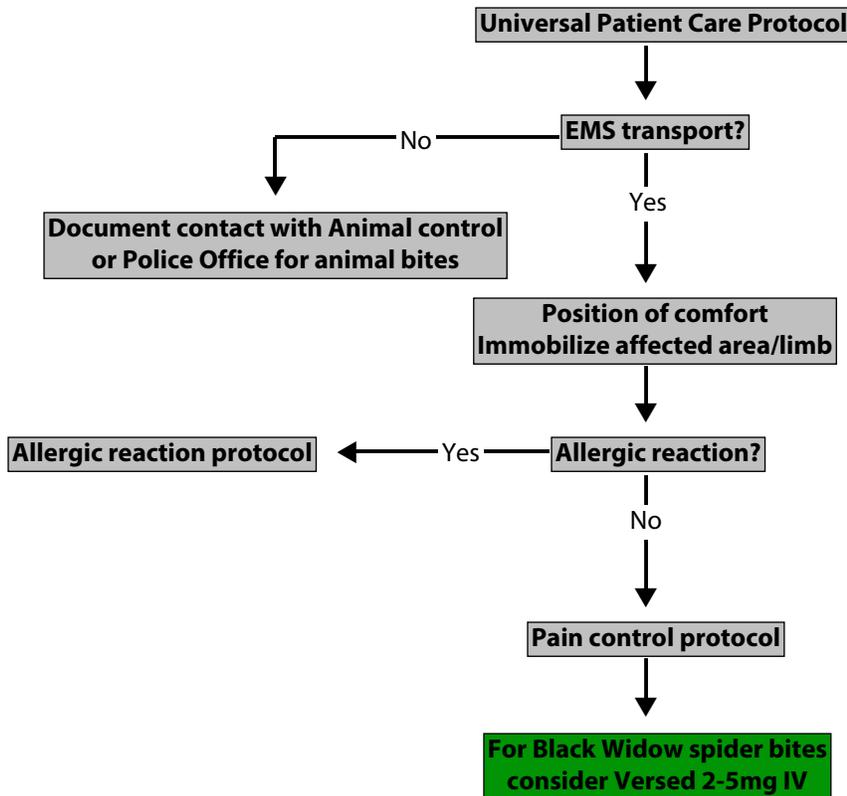
- Type of bite/sting
- Description of animal involved
- Time, location, size of bite/sting
- Previous reaction to bite/sting
- Domestic vs. wild
- Tetanus and rabies risk
- Immunocompromized patient

### 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

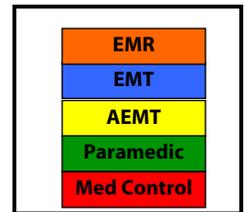


### Pearls

**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

# Lima Memorial Health System EMS System



## 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**

**12-Lead ECG**

**IV Protocol  
Fluid Bolus as needed**

**Pediatric Protocol  
Available**

**Hypotension  
SBP < 90 mmHg and/or symptomatic**

2nd or 3rd degree block

Not 2nd or 3rd degree block

**Monitor**

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

**Atropine 0.5-1mg IV up to 3mg**

**Atropine 0.5-1mg up to 3mg**

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

**Consider Dopamine 2-20mcg/kg/min IV**

**Consider Dopamine 2-20mcg/kg/min IV**

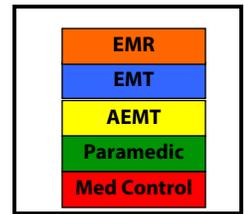
**Consider Epinephrine 0.2-0.3mg (1:10,000) IV or  
Epinephrine drip 1mcg/min to HR > 60**

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

**Pearls**

- Exam:** 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

# Lima Memorial Health System EMS System



## Burns

### History

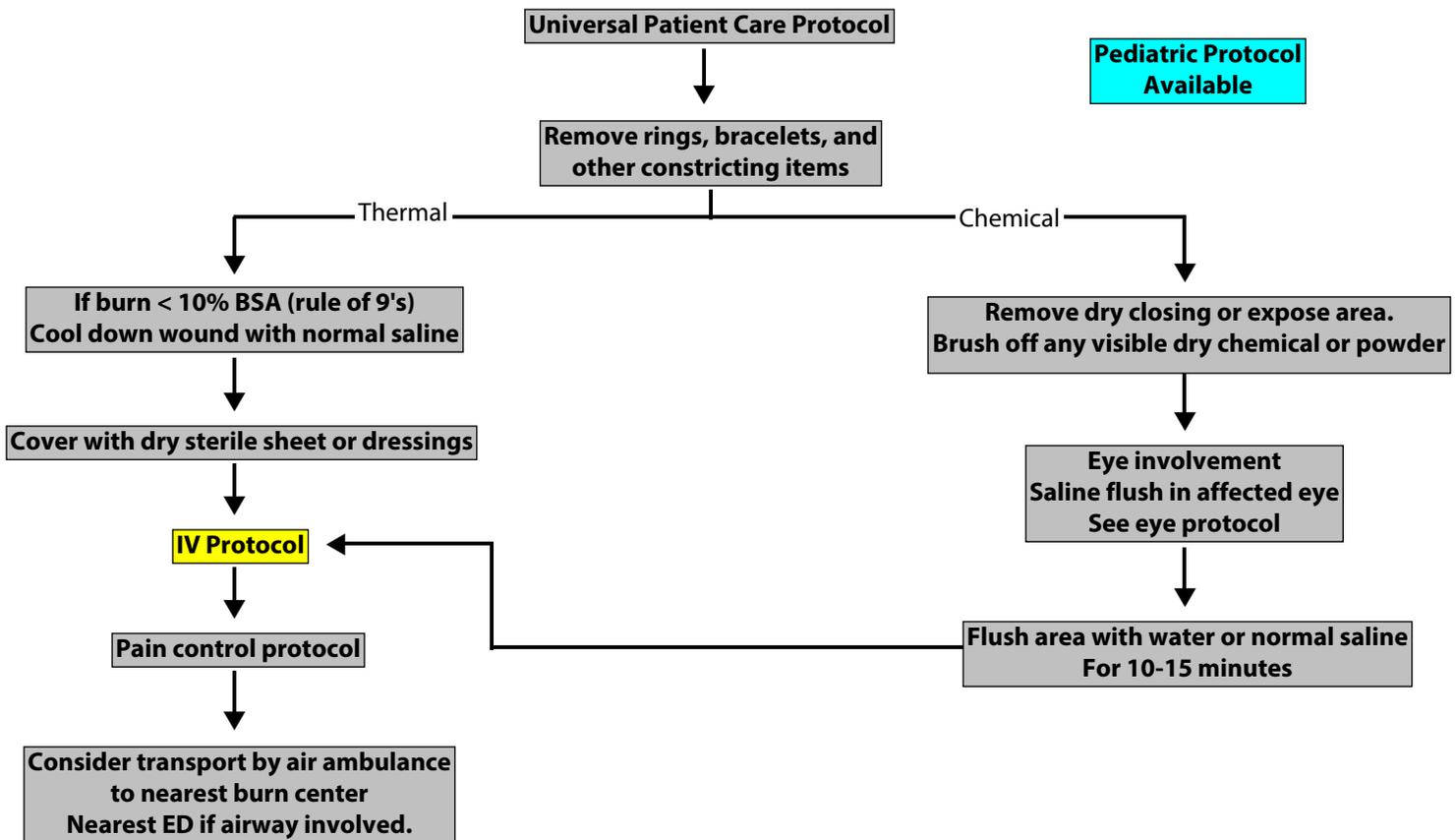
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of injury
- Past medical history
- Medications
- Other trauma
- LOC

### 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



### 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

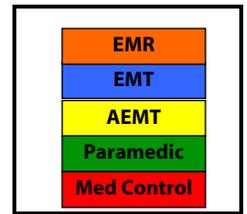
Treat potential CO exposure with 100% Oxygen

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.



## Cardiac Arrest

### History

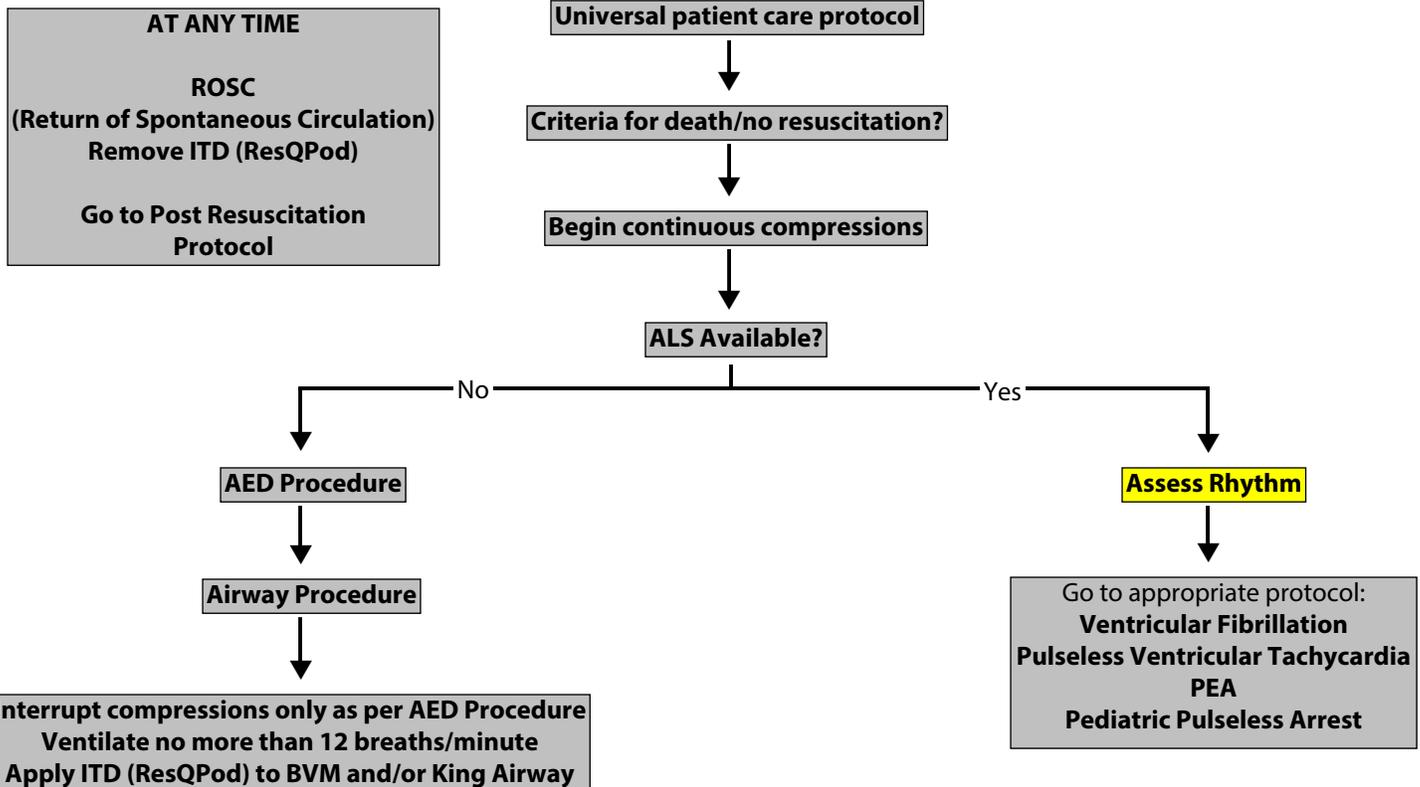
- Events
- Downtime
- Past medical history
- Medications
- Terminal illness
- Lividity, rigor mortis
- DNR

### Signs and Symptoms:

- Unresponsive
- Apneic
- Pulseless

### Differential:

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



### Pearls

**Exam:** Mental status

Success based on proper planning and execution. Assure adequate space and patient access.

Reassess airway frequently and with every patient move.

Maternal arrest → 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/LMA early. Do not overventilate.

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

## 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
- GE Reflux, hiatal hernia
- Esophageal spasm
- Chest wall pain
- Pleural pain
- Overdose (cocaine)

### Universal patient care protocol

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

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

**12-Lead ECG**

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

**\*\*\* If the patient has their own supply \*\*\***  
**Basic's may assist the patient with**  
**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 10mg**

**Hypotension/arrhythmia**  
**Treat per protocol**

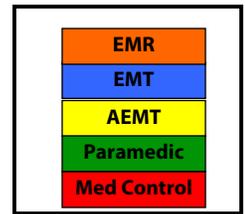
**Nitroglycerin 0.4 mg SL**  
**Every 5 minutes if SBP > 90**

**For nausea/vomiting, consider**  
**Zofran 4mg IV/IM**

### Pearls

- Exam:** Mental status, skin, neck, heart, lung, abdomen, back, extremities, neuro
- 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

# Lima Memorial Health System EMS System



## Childbirth/Labor

**History**

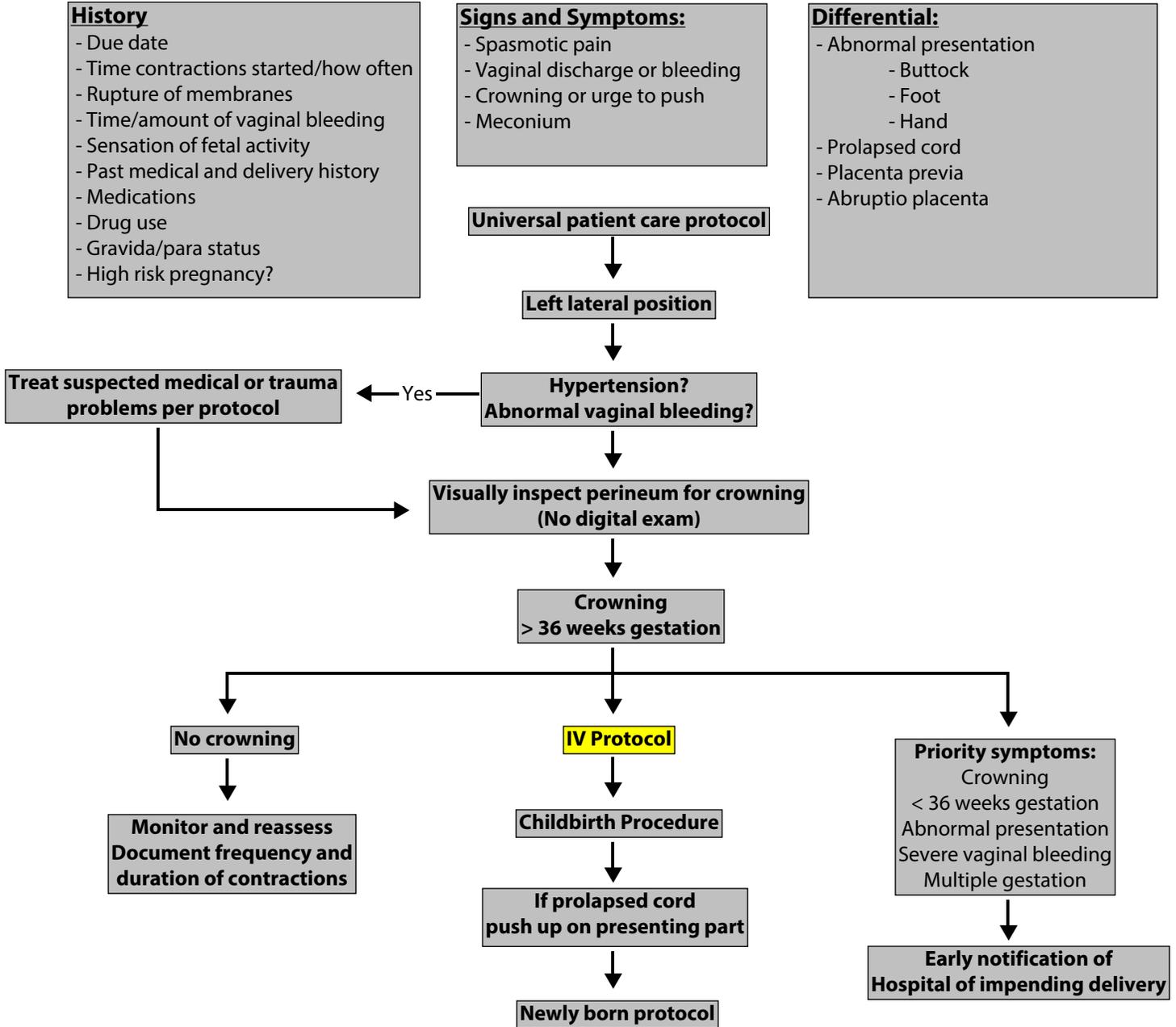
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Drug use
- Gravida/para status
- High risk pregnancy?

**Signs and Symptoms:**

- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

**Differential:**

- Abnormal presentation
  - Buttock
  - Foot
  - Hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta



**Pearls**

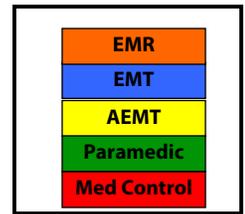
**Exam (mother):** Mental status, heart, lungs, abdomen, neuro

- 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

# Lima Memorial Health System EMS System



## Deceased Persons

### History

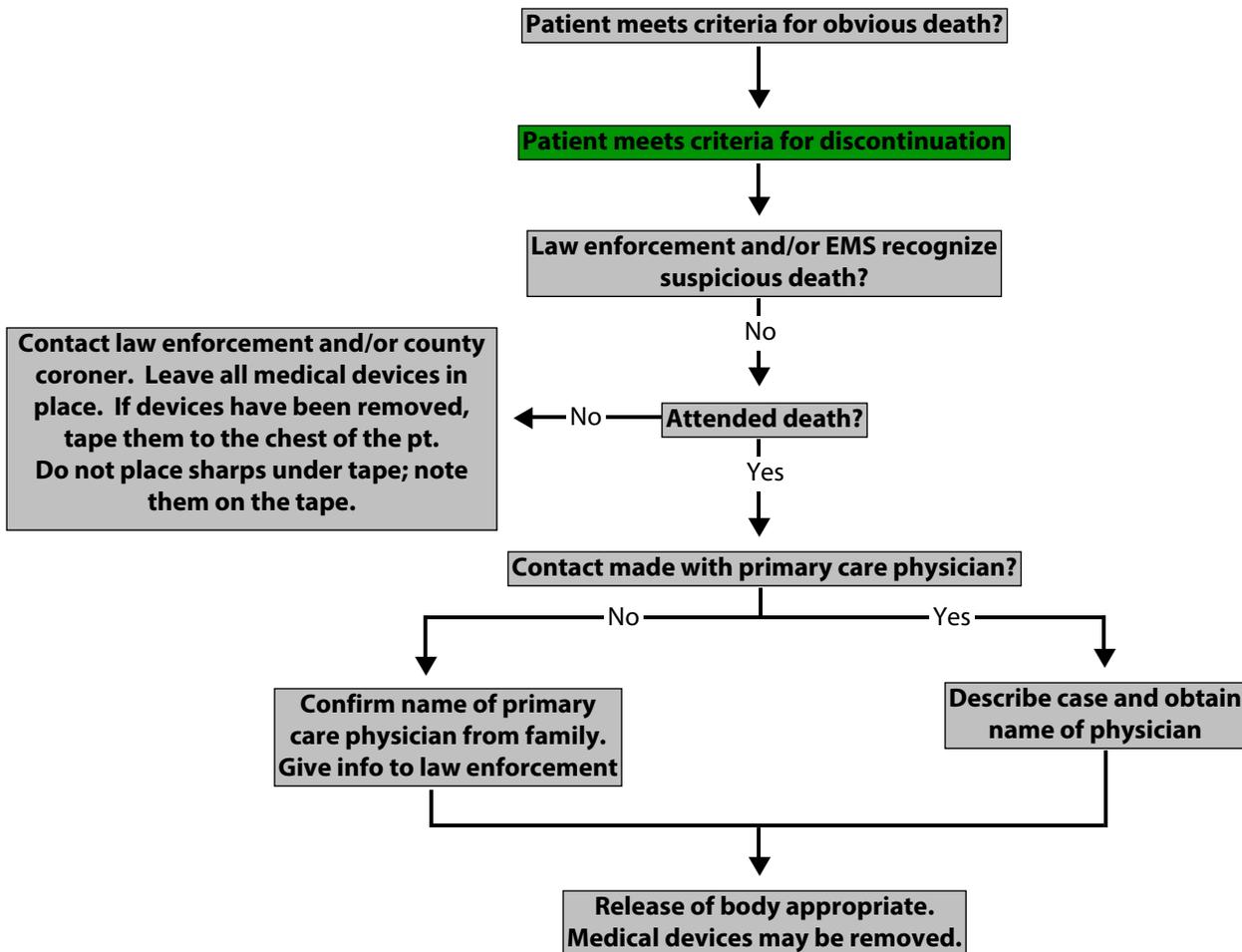
- Patient encountered by EMS who meets criteria for obvious death
- Patient with duly executed DNR who is apneic
- Patient for whom resuscitation efforts are ceased on-scene

### Key Information:

- Name of primary care physician
- Known medical conditions
- Last time known to be alive

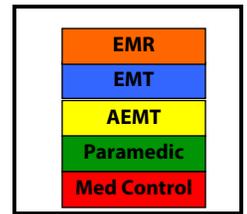
### Differential:

- 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)



### 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.



## Drowning/Near Drowning

### 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 immobilization protocol



Adult airway protocol  
OR  
Respiratory distress protocol  
OR  
Other appropriate protocol



IV Protocol



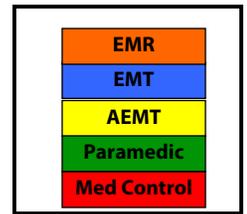
Cardiac monitor  
Pulse Ox  
ETCO<sub>2</sub>



Consider CPAP

### 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

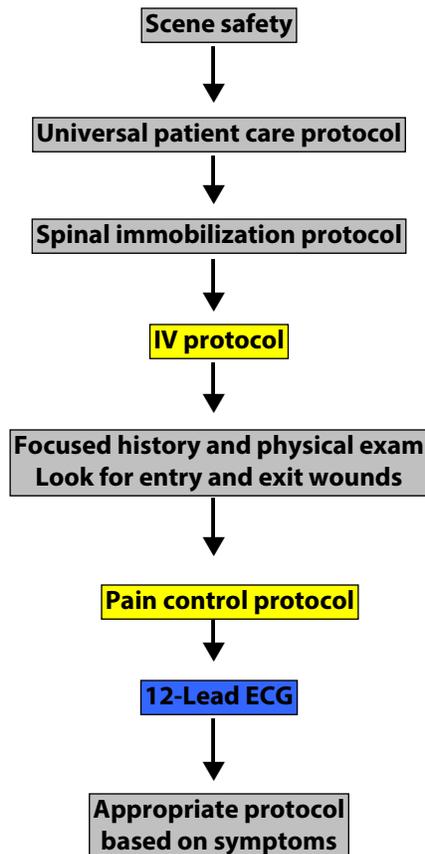
- Lightning or electrical exposure
- Single or multiple victims
- Trauma from fall or MVC into pole
- Duration of exposure
- Voltage and current (AC/DC)

### Signs and Symptoms:

- Burns
- Pain
- Entry and exit wounds
- Hypotension or shock
- Arrest

### Differential:

- Cardiac arrest
- Seizure
- Burns
- Multiple trauma

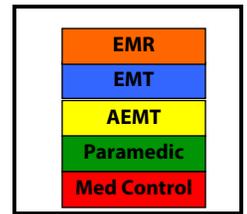


### Pearls

**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
- Do not overlook other trauma
- Lightning is a massive DC shock, most often leading to asystole as the dysrhythmia
- In lightning injuries, most of the current will travel over the body surface producing flash burns

# Lima Memorial Health System EMS System



## Epistaxis

### History

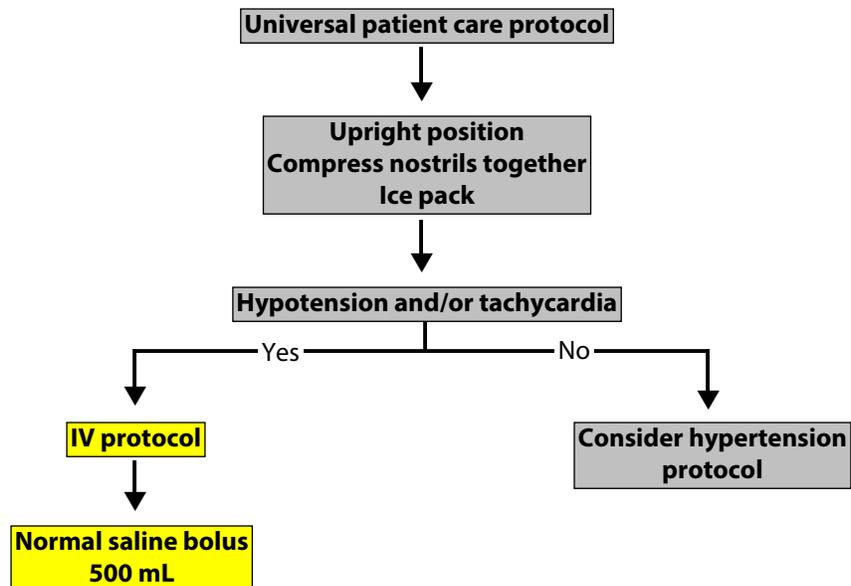
- Age
- Past medical history
- Medication (BP, anticoagulants)
- Trauma
- Previous nosebleeds
- Duration
- Quantity

### Signs and Symptoms:

- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

### Differential:

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

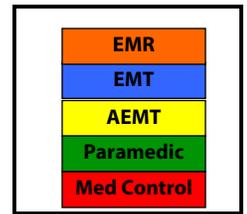


### Pearls

**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

# Lima Memorial Health System EMS System



## Extremity Trauma

### History

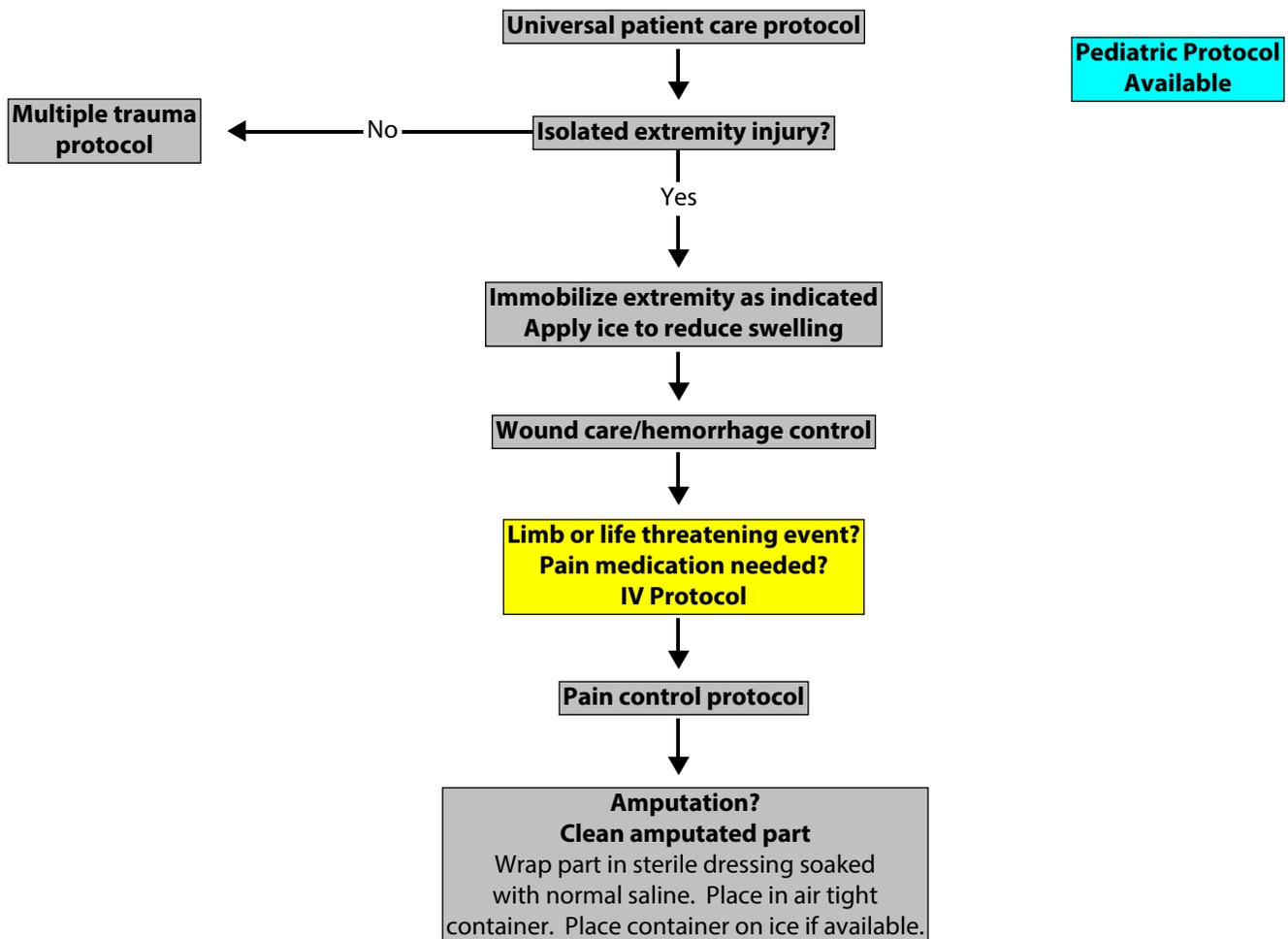
- Type of injury
- Mechanism: crush/penetrating/ amputation
- Time of injury
- Open vs. Closed wound/fracture
- Wound contamination
- Medical history
- Medications

### 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

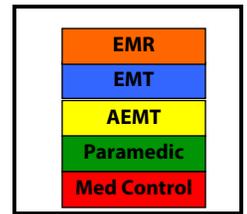


**Pediatric Protocol Available**

### Pearls

**Exam:** Mental status, extremity, neuro

- In amputations, time is critical. Consider transport to 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



## Eye injury/Complaint

**History**

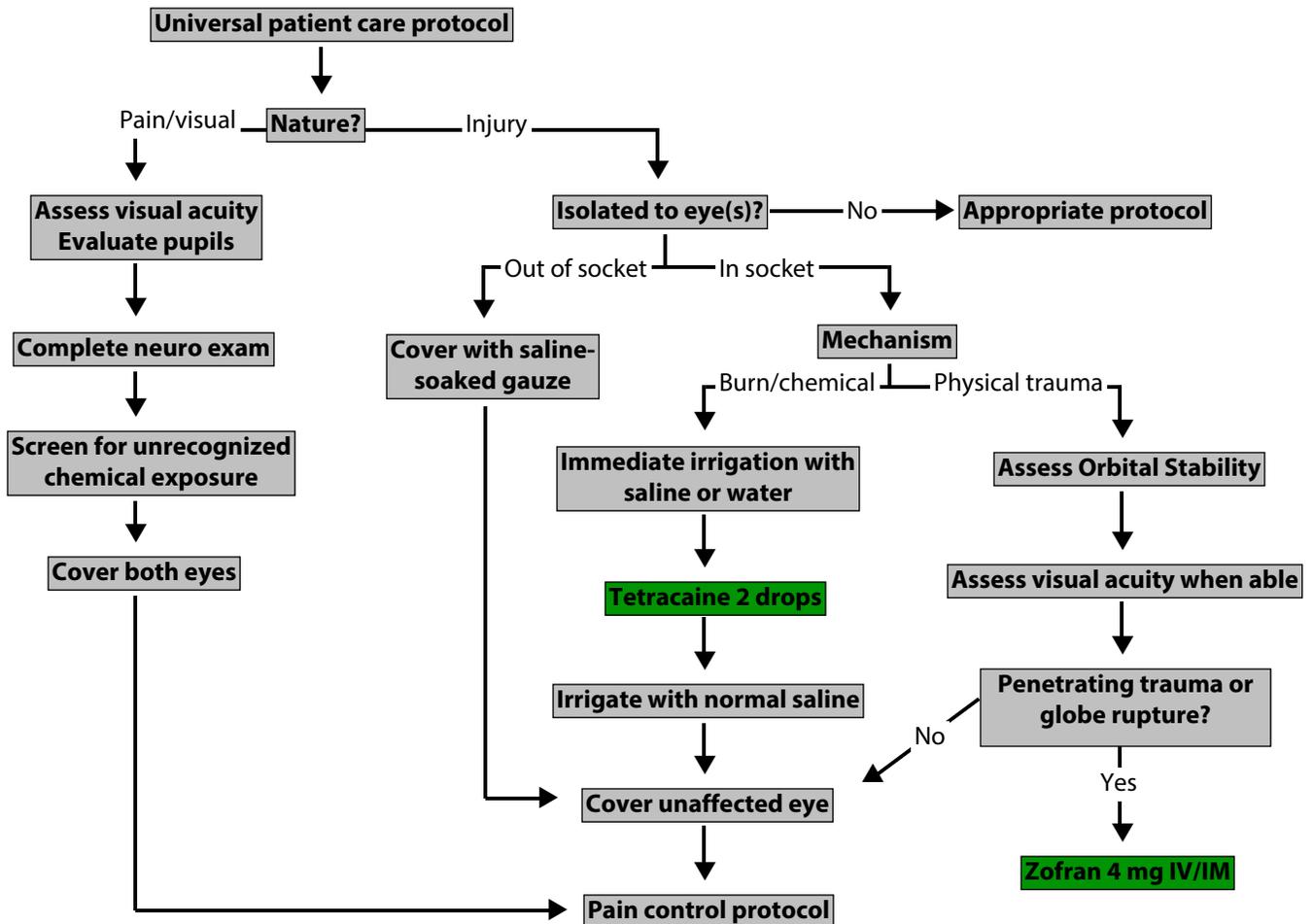
- Time of injury/onset
- Blunt/penetrating/chemical
- Open vs. closed injury
- Involved chemical/MSDS
- Wound contamination
- Medical history
- Tetanus status
- Normal visual acuity
- Medications

**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

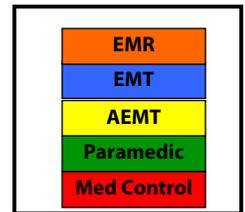


**Pearls**

- 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



# Lima Memorial Health System EMS System



## Head Trauma

**History**

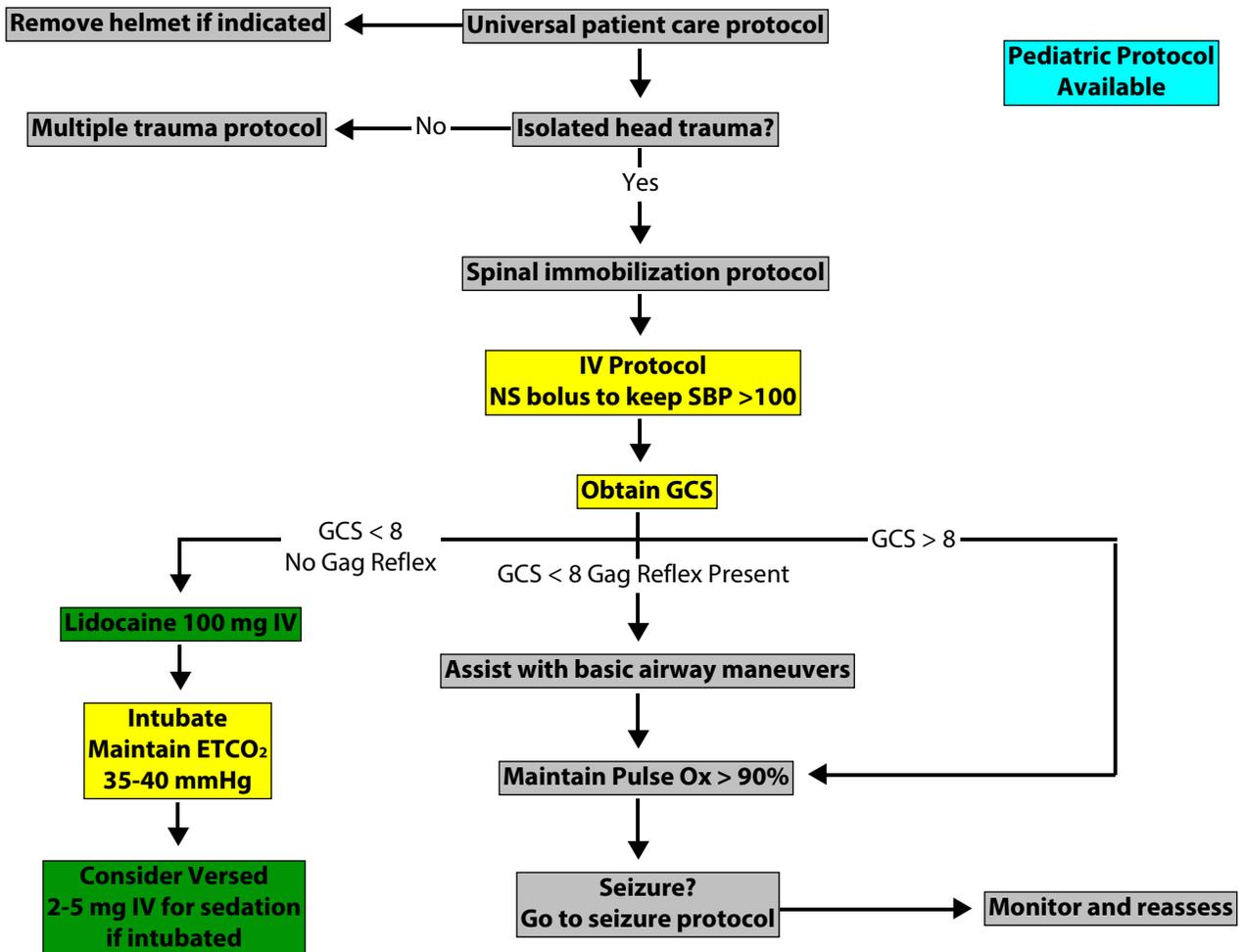
- Time of injury
- Mechanism: blunt/penetrating
- LOC
- Bleeding
- Medical history
- Medication
- Evidence of multi-trauma
- Helmet use/damage to helmet

**Signs and Symptoms:**

- Pain
- Swelling
- Bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress/failure
- Vomiting
- Significant MOI

**Differential:**

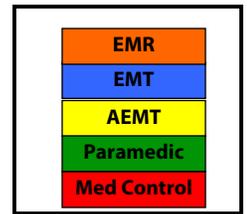
- Skull fracture
- Brain injury (concussion, contusion, hemorrhage, laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



**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

# Lima Memorial Health System EMS System



## Hypertension

### History

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

### Signs and Symptoms:

- Systolic BP > 200
- Diastolic BP > 120

#### Plus

- Headache
- Nosebleed
- Blurred vision
- Dizziness

### Differential:

- Hypertensive encephalopathy
- CNS injury
  - Cushing response = bradycardia
- With hypertension
  - MI
  - Aortic dissection
  - Pre-eclampsia/Eclampsia

Universal patient care protocol



Check BP in both arms



12-Lead ECG



IV protocol



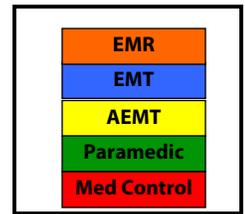
**Hypertension + End-organ damage**  
1) Acute coronary syndrome  
2) Acute MI  
3) Acute renal failure  
Administer Nitro Spray sublingual every 5 minutes until Mean Arterial Pressure (MAP) is 110 mmHG

### 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

# Lima Memorial Health System EMS System



## Hypotension/Shock - Non-Trauma

**History**

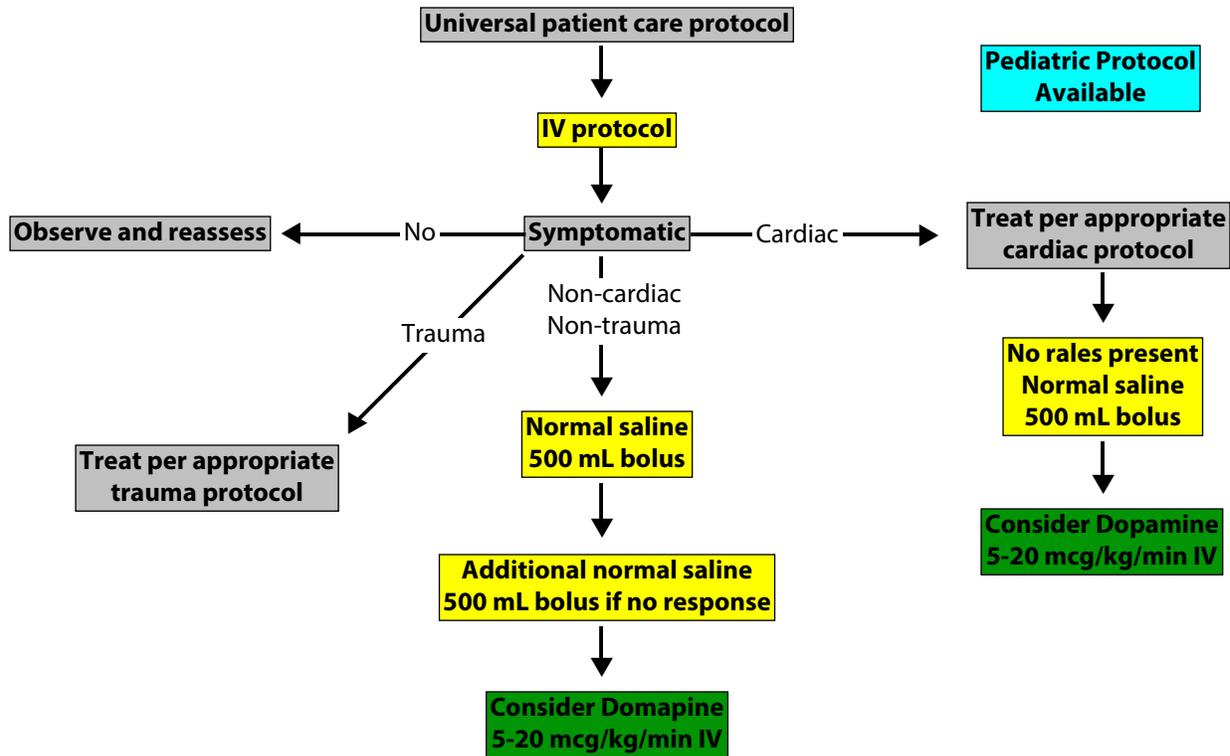
- Blood loss: GI, AAA, Ectopic, Vaginal
- Fluid loss - Vomiting, diarrhea, fever
- Infection
- Cardiac: ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- Poor PO intake history

**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

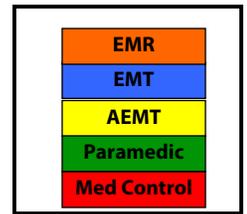


**Pearls**

**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

# Lima Memorial Health System EMS System



## Hypothermia

### History

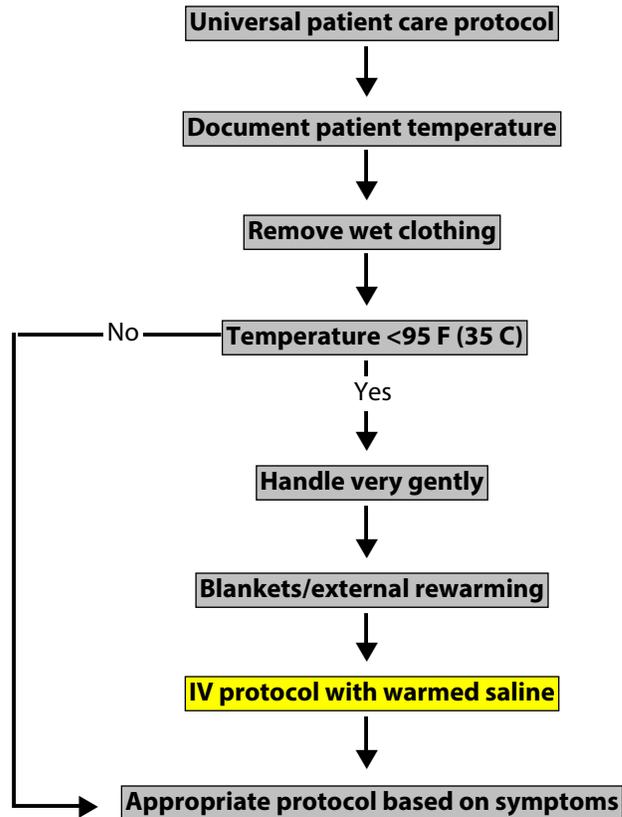
- Age
- Exposure to environment even in normal temperatures
- Past medical history/meds
- Exposure to extreme cold
- Length of exposure/wetness
- Drug use
- Infection/sepsis
- Extremes of age

### 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

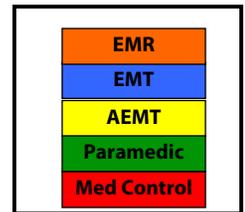


### Pearls

**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)

# Lima Memorial Health System EMS System



## Induced Hypothermia (I.C.E.)

### History

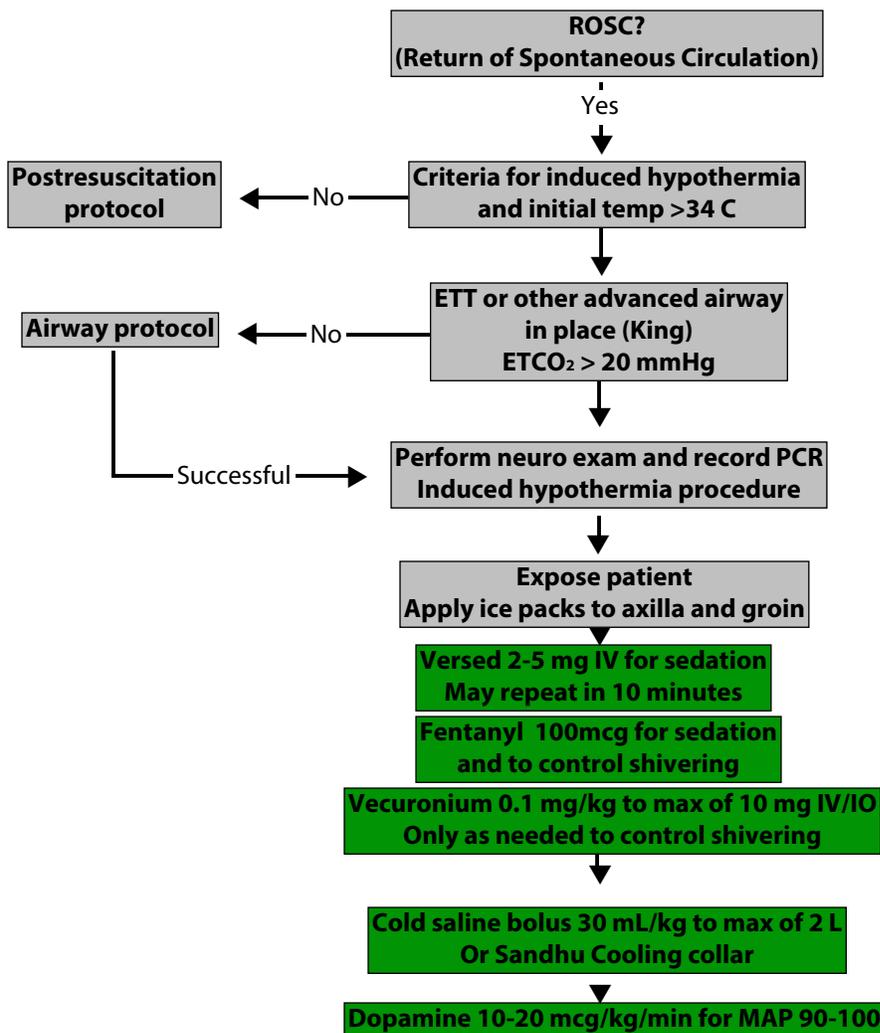
- Non-traumatic cardiac arrest

### Signs and Symptoms:

-With or without ROSC  
-Cooling may be performed intra-arrest

### Differential:

- Continue to address specific differential associated with original dysrhythmia



### Pearls

#### Criteria for Induced Hypothermia

- ROSC after cardiac arrest not related to trauma or hemorrhage
- Age greater than 18
- Pregnant female with obviously gravid uterus
- Initial temperature > 34 C

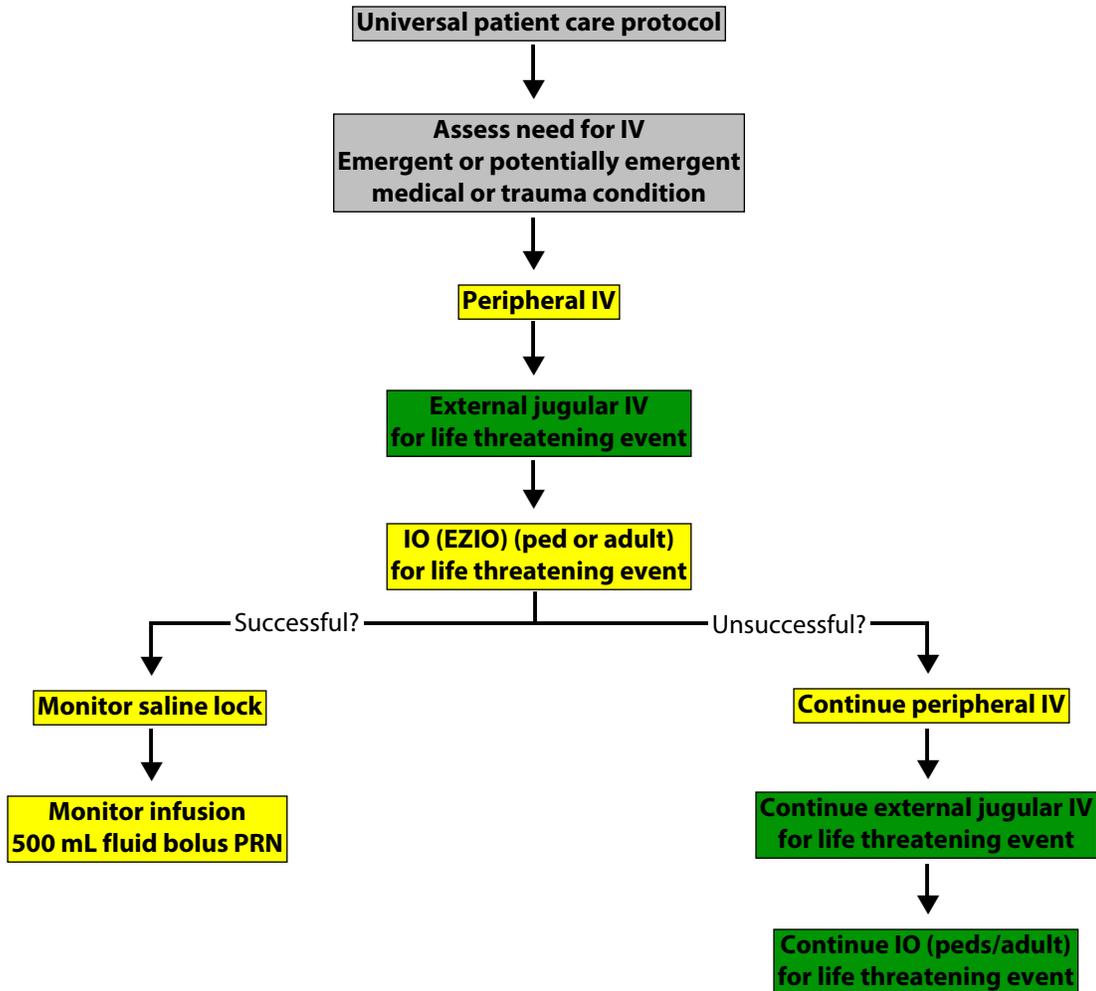
Patient must have advanced airway in place (ETT or King) prior to starting ICE protocol

- I.C.E. = Induced Cooling in EMS
- May leave undergarments in place for modesty
- Do not delay transport for purpose of cooling; Obtain and record pre and post cooling temperatures
- Reassess airway frequently and with each patient move
- DO NOT HYPERVENTILATE (RR <12/min)
- Contact Medical Director if there is a loss of circulation during cooling or any other complications

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

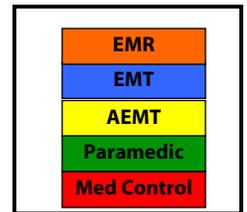
## IV



### 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 microdrips 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 central catheters
- 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

# Lima Memorial Health System EMS System



## Multiple Trauma

**History**

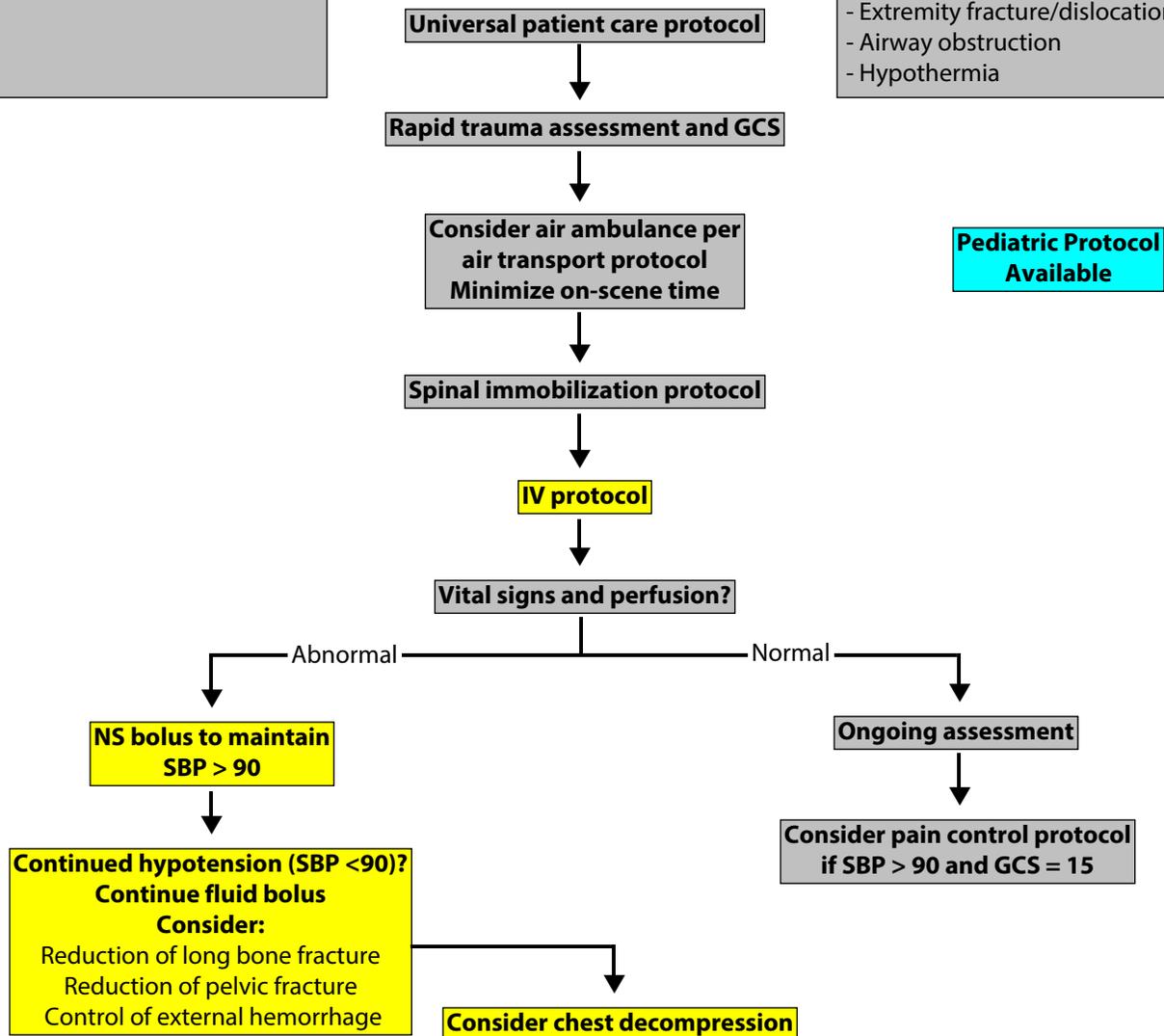
- Time and MOI
- Damage to structure/vehicle
- Location in structure/vehicle
- Others injured/dead
- Speed and details of MVC
- Restraints/protective equipment
- Past medical history
- Medications

**Signs and Symptoms:**

- Pain
- Swelling
- Altered mental status
- Unconscious
- Deformity
- Bleeding
- Hypotension/shock
- Arrest

**Differential:**

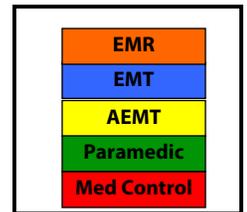
- Chest
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemothorax
- Intra-abdominal bleeding
- Pelvis/femur fracture
- Spine fracture/cord injury
- Head injury
- Extremity fracture/dislocation
- Airway obstruction
- Hypothermia



**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



## Obstetrical Emergency

### History

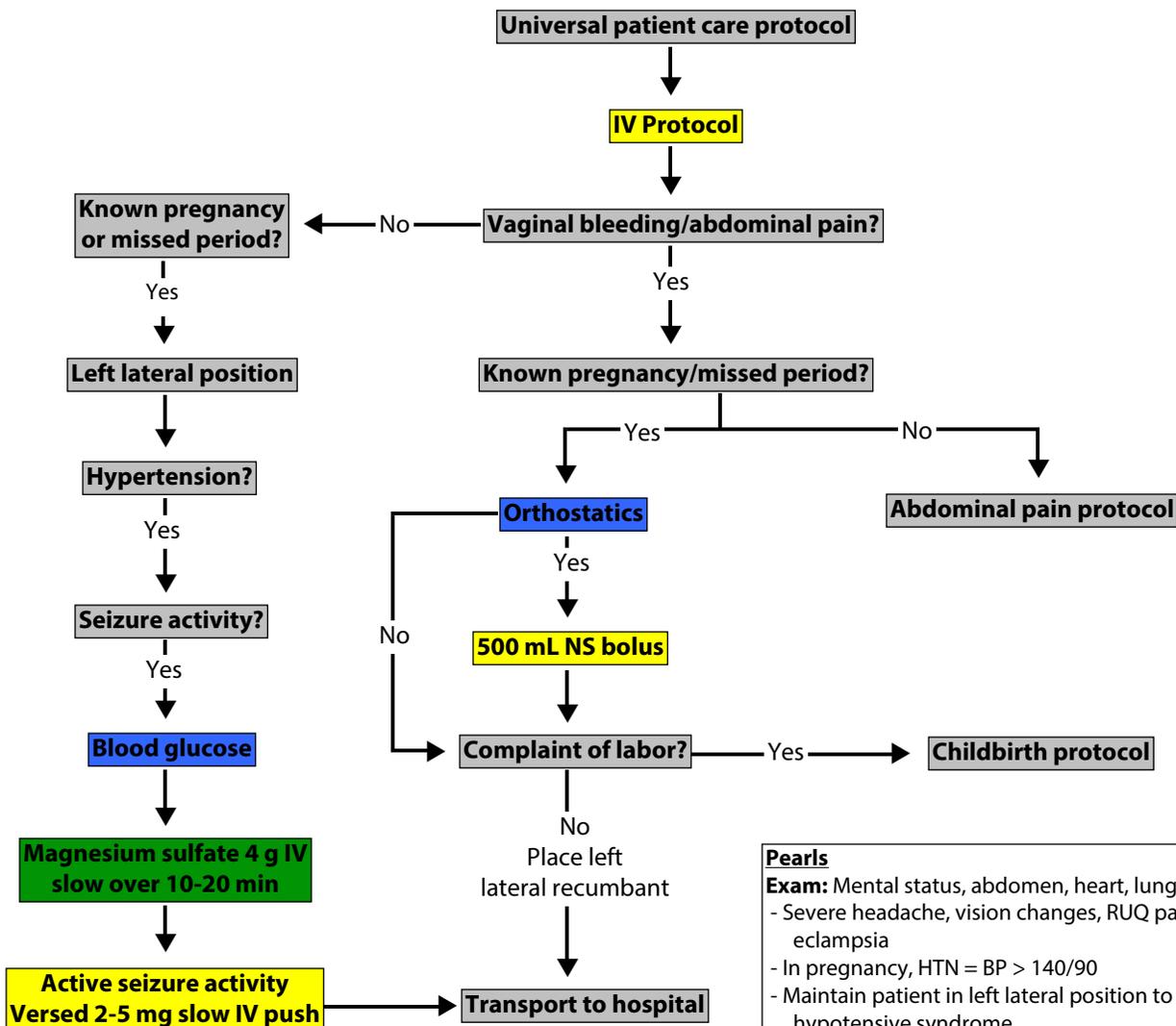
- Past medical history
- Hypertensive meds
- Prenatal care
- Prior pregnancies
- G/P

### Signs and Symptoms:

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Headache
- Visual changes
- Facial/hand edema

### Differential:

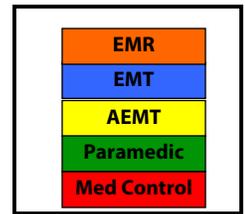
- Pre-eclampsia/eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion



### 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 by physician for evaluation and fetal monitoring
  - Magnesium may cause hypotension and decreased respiratory drive. Use cautiously

# Lima Memorial Health System EMS System



## 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

Refusal of care  
contact OLMC

Respiratory  
Depression?

Chest pain?

Organophosphates  
carbamates?

Other

EMR/EMT - Narcan 4mg IN  
AEMT/Medic Narcan 2-4mg IV  
or  
Narcan 4mg IN

Chest pain protocol

Atropine  
2 mg IV q 5 min  
No max dose

Hypotension seizures  
ventricular dysrhythmias  
or mental status changes

Appropriate protocol

Pediatric Protocol  
Available

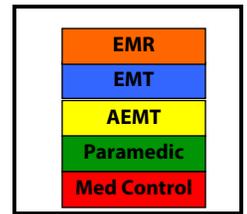
### Pearls

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

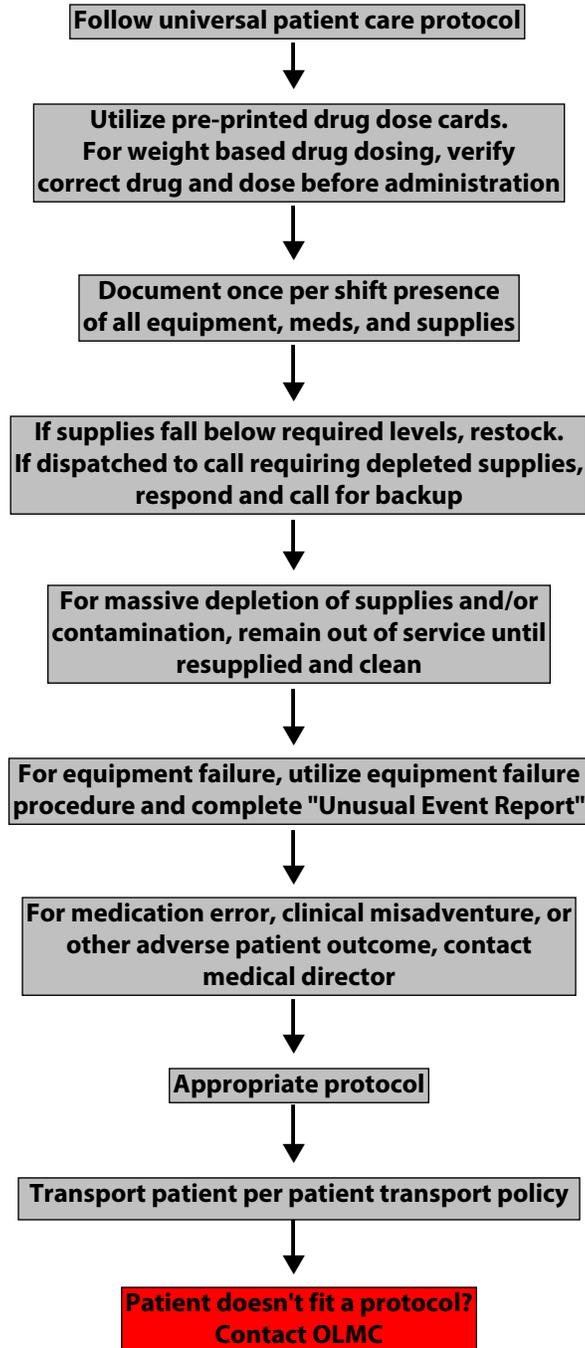
- Do not rely on patient history of ingestion in suicide attempt
- Bring bottles to ED
- TCA: seizure, dysrhythmias, hypotension, decreased mental status, coma
- Acetaminophen: normal or N/V - causes irreversible liver failure if not detected
- Depressants: decreased HR, decreased BP, decreased temperature, 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 I kits contain 2 mg Atropine and 600 mg Pralidoxime in autoinjector



# Lima Memorial Health System EMS System

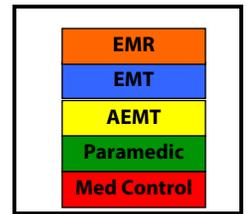


## Patient Safety



**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

# Lima Memorial Health System EMS System



## Police Custody

**History**

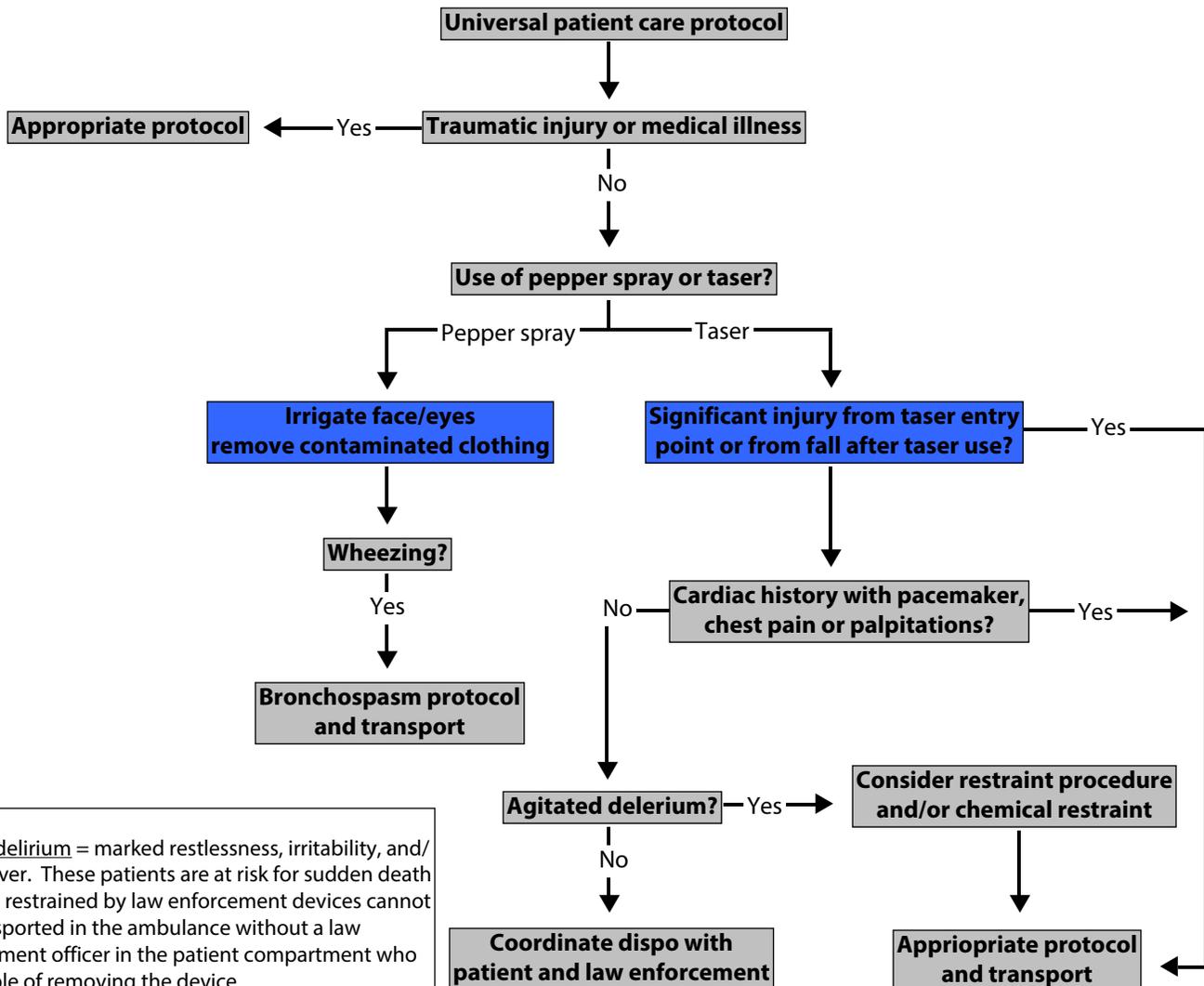
- Traumatic injury
- Drug abuse
- Cardiac history
- Asthma?
- Psych history

**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



**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

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

## Post Resuscitation

### History

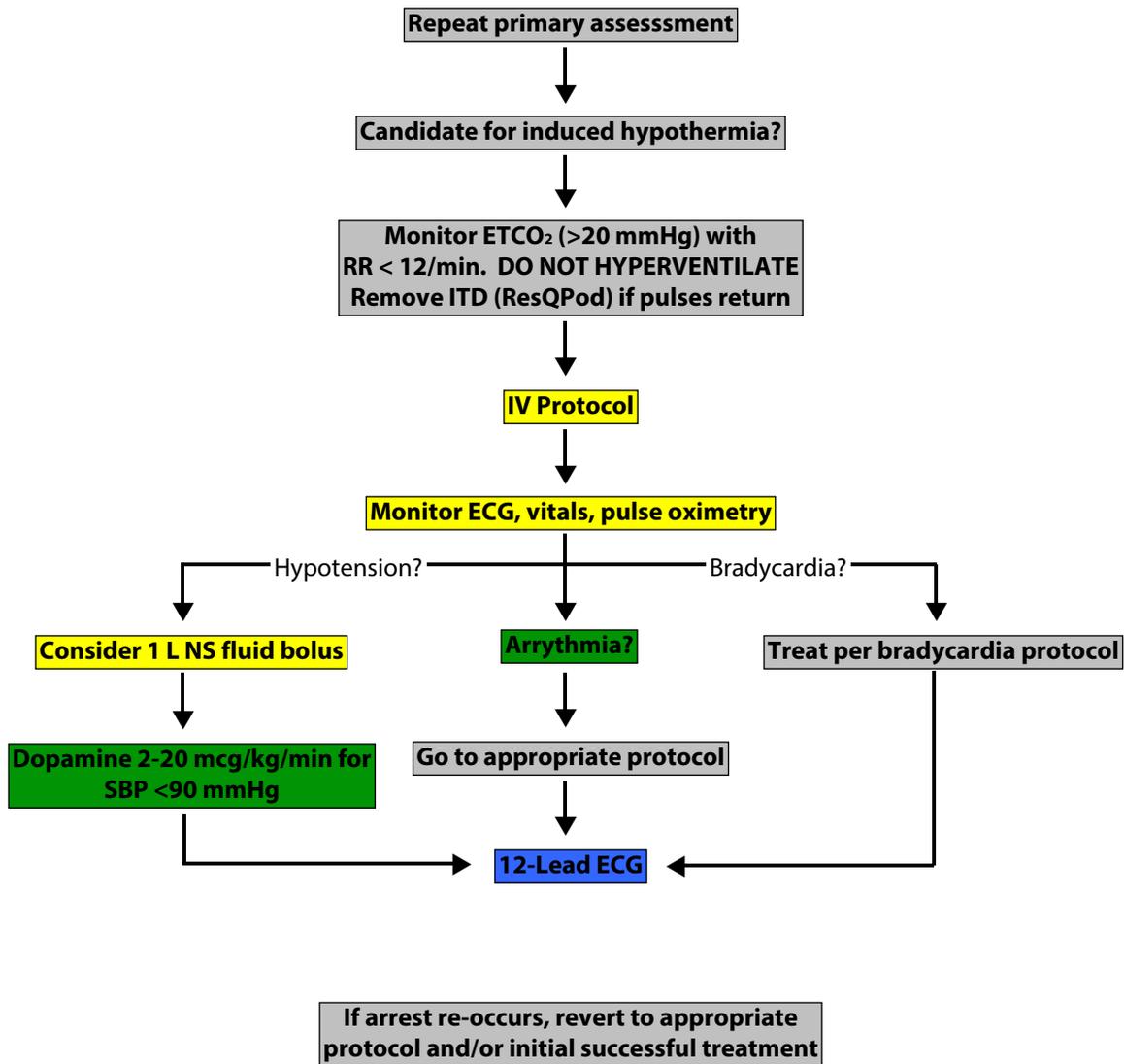
- Respiratory arrest
- Cardiac arrest

### Signs and Symptoms:

- Return of pulse (ROSC)

### Differential:

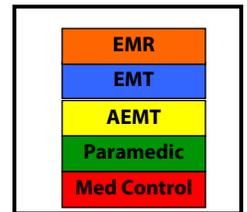
- Continue to address specific differential with original arrhythmia



### 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
- Titrate dopamine to maintain MAP >90. 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 ETCO<sub>2</sub> 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 Bumex  
0.5 – 2 mg IV administered  
over one to two minutes

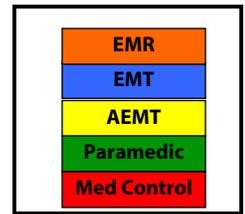
Consider Lasix  
0.5 – 2 mg/kg IV administered  
over one to two minutes (Max 2mg/kg)

Consider Versed 1-2 mg IV  
OR 2 mg IN if SBP > 100  
for sedation if needed

### Pearls

- Exam:** Mental status, skin, neck, heart, lungs, abdomen, back, extremities, neuro
- Early aggressive treatment of pulmonary edema avoids intubation
  - Avoid Nitro in patient who has used Viagra or Levitra in past 24 hours or Cialis in past 36 hours
  - Consider myocardial infarction in all of these patients (cardiogenic shock)
  - Careful monitoring of LOC, BP, respiratory status with above interventions is essential
  - Allow patient to remain in position of comfort to maximize breathing effort

# Lima Memorial Health System EMS System



## 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
- Hypoglycemia
- Hyperkalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker)
- Tension pneumothorax

### Universal patient care protocol

Cardiac arrest protocol  
attach ITD (ResQPod)

Airway and IV/IO protocols

Epinephrine 1 mg 1:10,000 IV/IO  
OR 2 mg ET  
Repeat every 3-5 minutes

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

Consider with all PEA patients

Fluid bolus  
D50 25g IV  
Narcan 2-4 mg IV/IO/IN

Calcium 1 g IV (hyperkalemic arrest)  
Bicarbonate 1 meq/kg IV (TCA, hyperkalemia, renal failure)  
Dopamine 2-20 mcg/kg/min  
Trans. cut. pacing  
Needle decompression  
Glucagon 1 mg IV (beta blocker)

Epinephrine 1 mg 1:10,000 IV/IO  
OR 2 mg ET  
Repeat every 3-5 minutes

Criteria to discontinue  
Cease efforts

### Pearls

- Always confirm asystole in more than one lead
- Always address correctable causes
- Attach ITD (impedance threshold device) early in resuscitation to BVM and then to ETT/King once advanced airway is placed

# Lima Memorial Health System EMS System

EMR
EMT
AEMT
Paramedic
Med Control

## Respiratory Distress

### History

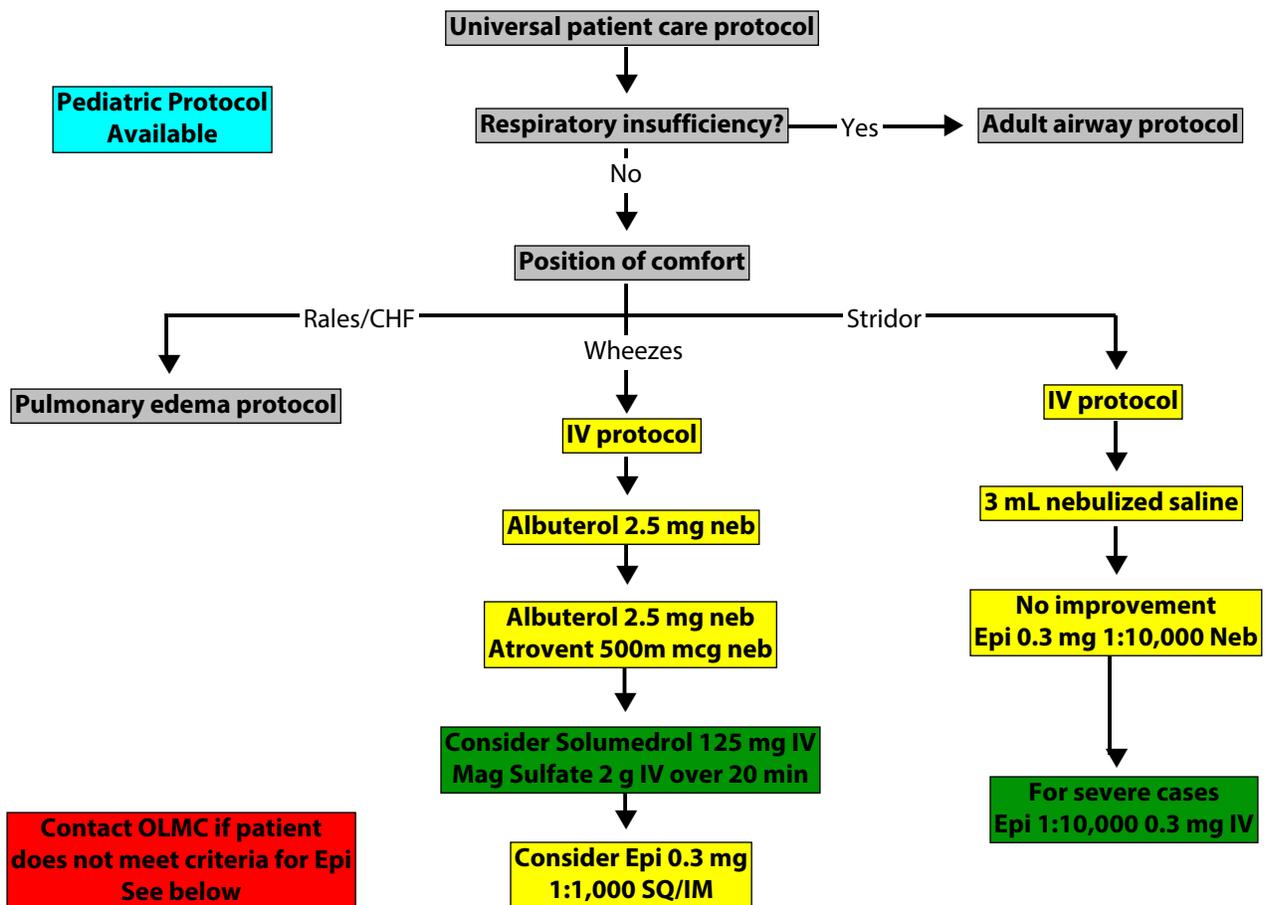
- Asthma
- COPD
- CHF
- Home treatment (oxygen/nebulizer)
- Meds (theophylline, steroids, inhalers)
- Toxic exposure
- Smoke inhalation

### Signs and Symptoms:

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

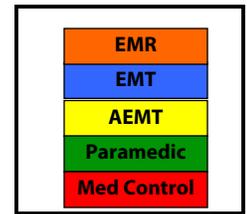
### Differential:

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



### Pearls

- EMT Basic's may assist patients with their own albuterol MDI
- Monitor pulse ox continuously
- Use of CPAP contraindicated
- 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
- Record ETCO<sub>2</sub> for patients given solumedrol, magnesium sulfate or epinephrine



## Seizure

### History

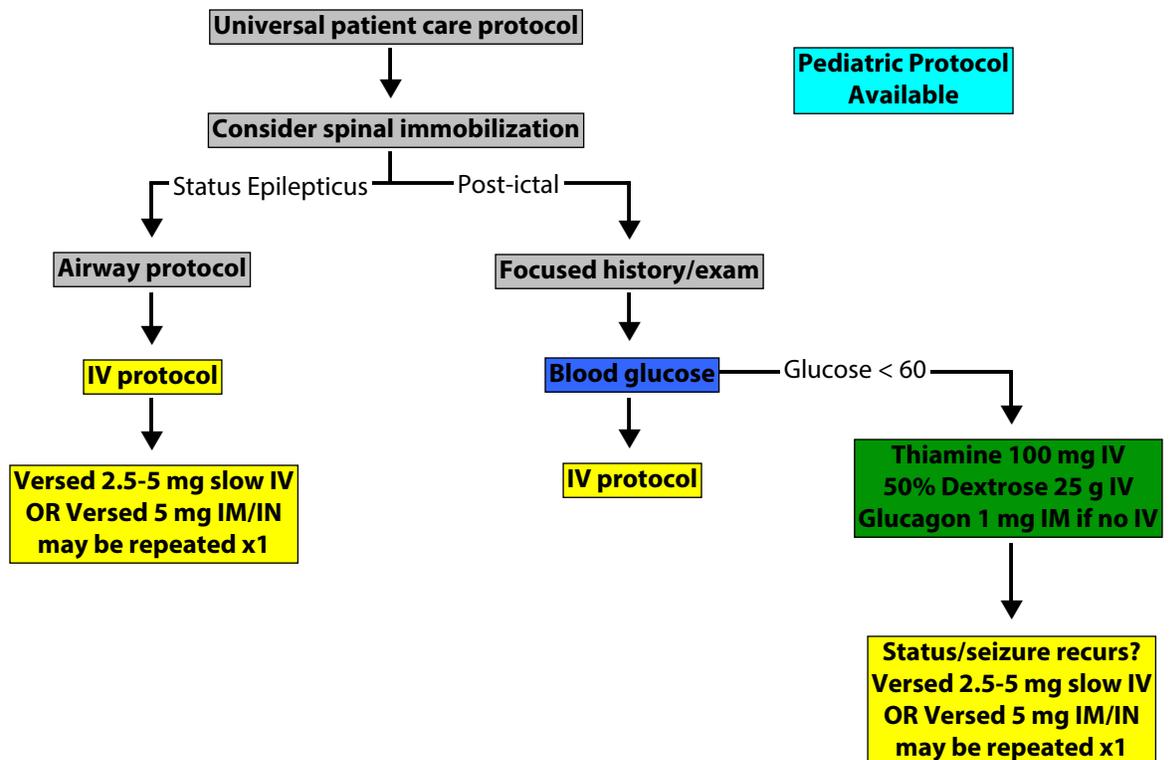
- Reported/witnessed seizure
- Previous seizure history
- Medical alert tag
- History of trauma
- History of diabetes
- History of pregnancy

### Signs and Symptoms:

- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconsciousness

### Differential:

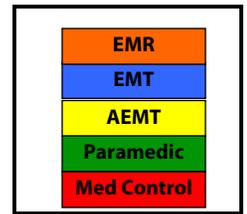
- CNS trauma
- Tumor
- Metabolic, hepatic, renal failure
- Hypoxia
- Electrolyte abnormality
- Drugs, meds, non-compliance
- Infection/fever
- Alcohol withdrawl
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia



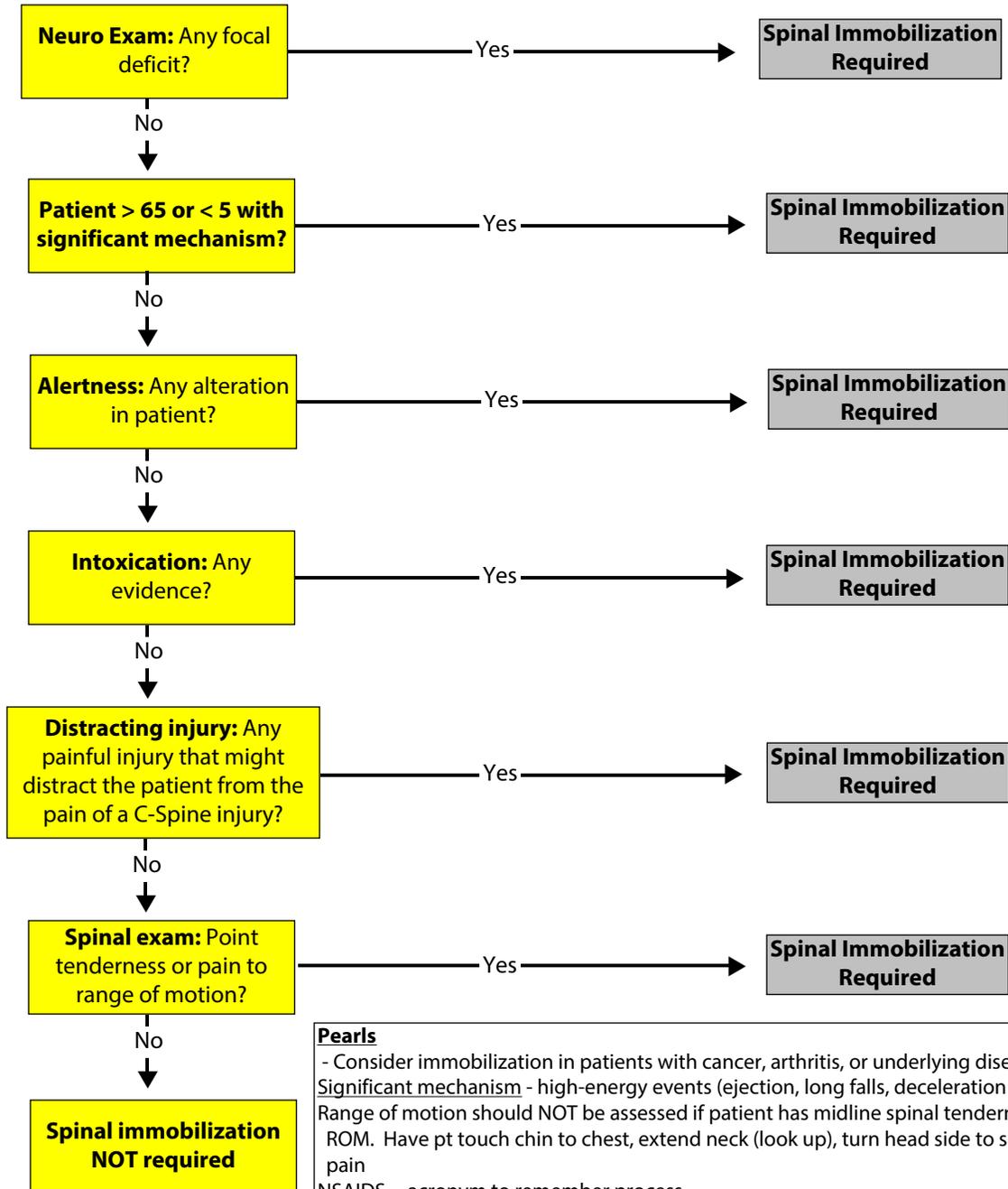
### Pearls

- 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

# Lima Memorial Health System EMS System

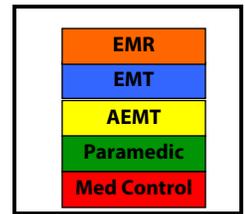


## Spinal Immobilization Clearance



### Pearls

- Consider immobilization in patients with cancer, arthritis, or underlying disease
- Significant mechanism - high-energy events (ejection, long falls, deceleration crashes)
- Range of motion should NOT be assessed if patient has midline spinal tenderness. Do not assist ROM. Have pt touch chin to chest, extend neck (look up), turn head side to side without spinal pain
- NSAIDS = acronym to remember process
- N** - Neuro exam
- S** - Significant mechanism in extremes of age
- A** - Alertness
- I** - Intoxication
- D** - Distracting injury
- S** - Spinal exam
- Decision to not implement spinal immobilization is the responsibility of the EMT-I/EMT-P
- In the very young and very old, a normal exam may not be enough to rule out spinal injury



## Suspected Stroke

**History**

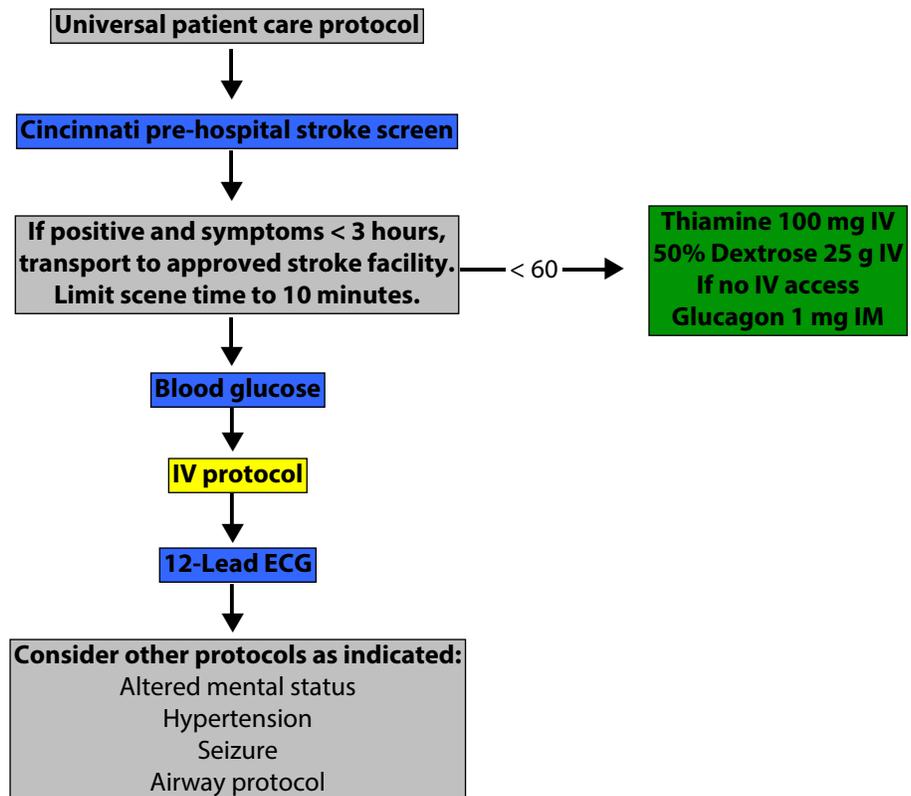
- Previous CVA, TIA
- Previous cardiac, vascular surgery
- Diabetes, HTN, CAD
- Afib
- Medications (blood thinners)
- Trauma?

**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

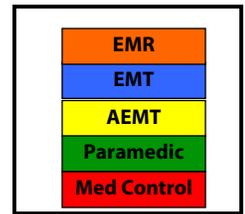


**Pearls**

**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 not malnourished do not require Thiamine
- Document stroke screen
- Document 12-Lead ECG

# Lima Memorial Health System EMS System



## Supraventricular Tachycardia

### History

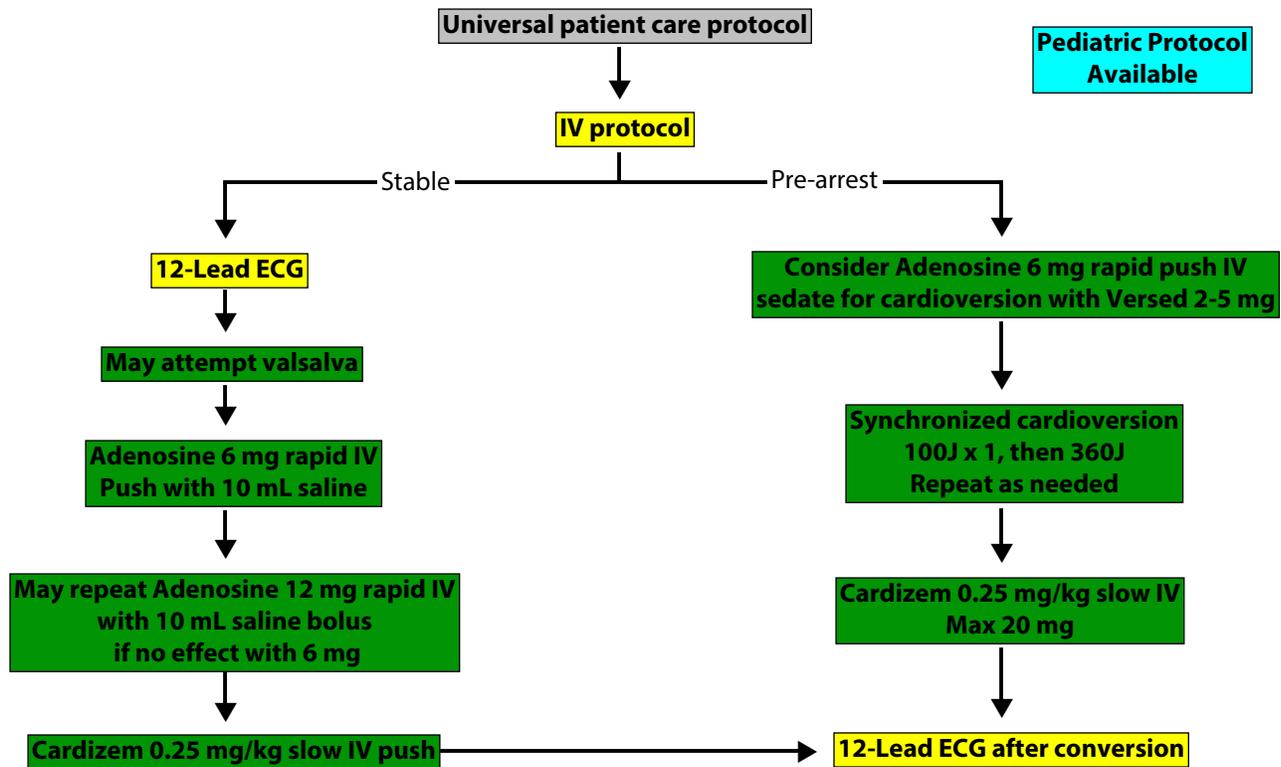
- Medications: Theophylline, diet pills, thyroid supplements, decongestants, digoxin
- Diet - caffeine, chocolate
- Drugs - nicotine, cocaine
- Past medical history
- Palpitations
- Syncope

### 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:

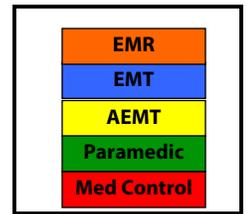
- WPW, valvular heart disease
- Sick sinus syndrome
- MI
- Electrolyte imbalance
- Exertion, pain, emotional stress
- Fever
- Hypoxia
- Hypovolemia/anemia
- Overdose
- Hyperthyroidism
- PE



### Pearls

- Exam:** Mental status, skin, neck, lung, 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

# Lima Memorial Health System EMS System



## Syncope

### History

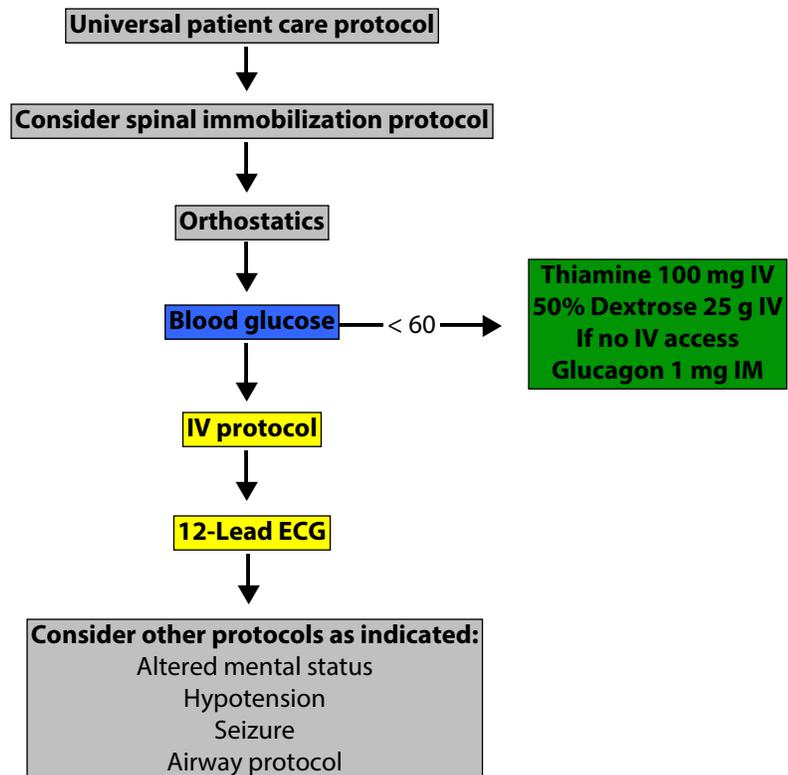
- Cardiac, CVA, seizures
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss, N/V/D
- Past medical history
- Medications

### Signs and Symptoms:

- LOC with recovery
- Lightheadedness, dizzy
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Low blood pressure

### Differential:

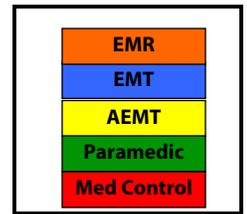
- Vasovagal
- Orthostatic hypotension
- Cardiac
- Micturation/defecation syncope
- Psychiatric
- CVA
- Hypoglycemia
- Seizure
- PE
- Shock
- Toxicologic
- Medication effect



### 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

# Lima Memorial Health System EMS System

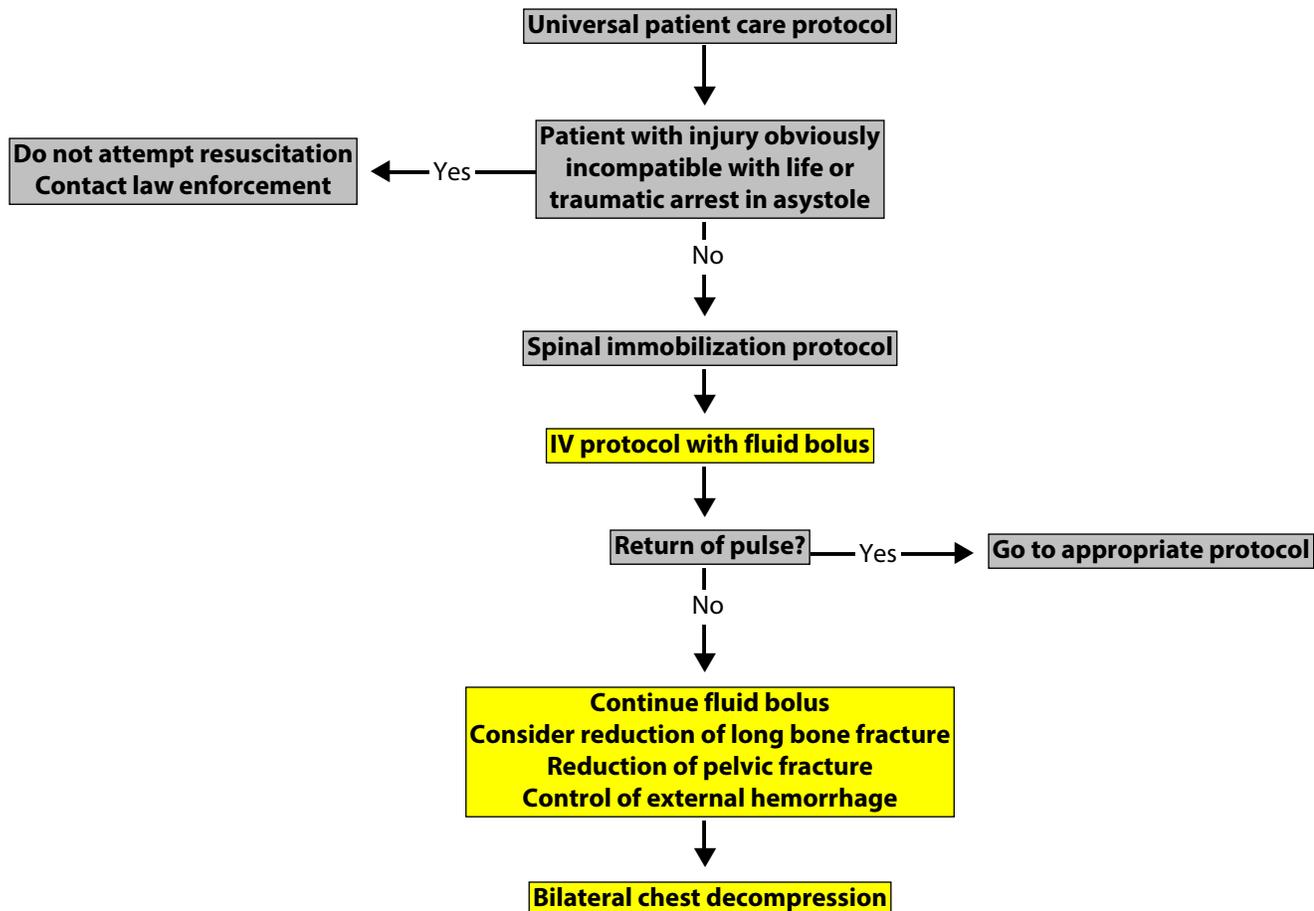


## Trauma Arrest

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

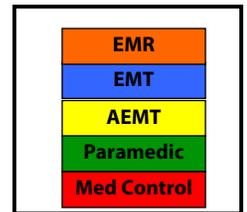
**Signs and Symptoms:**  
 - Evidence of penetrating trauma  
 - Evidence of blunt trauma

**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

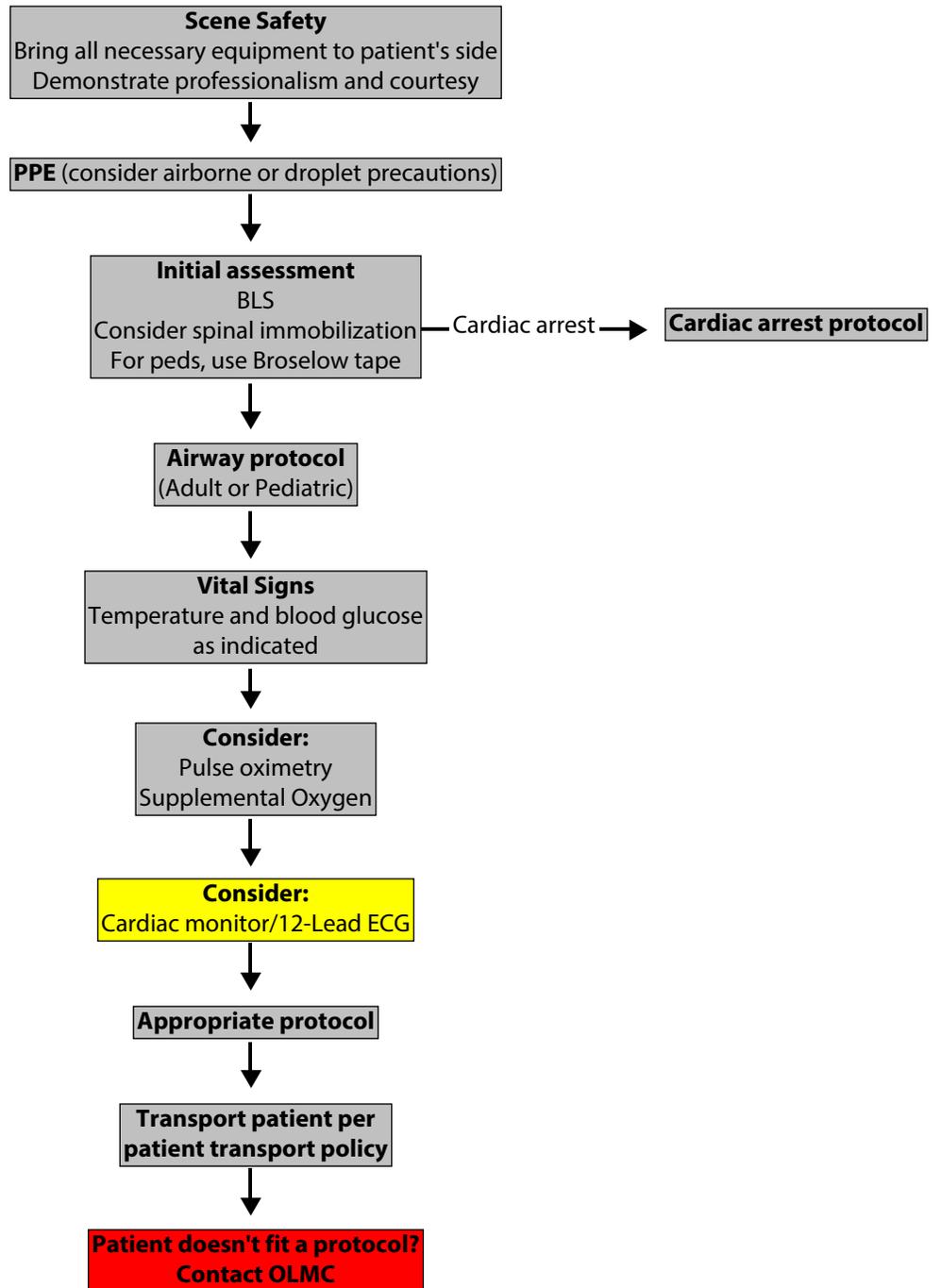


**Pearls**  
 Injuries obviously incompatible with life include decapitation, massively deforming head or chest injuries or other features of a patient encounter that would make resuscitation futile. If in doubt, place patient on monitor. Consider using medical cardiac arrest protocols if uncertainty exists regarding medical or traumatic cause of arrest

# Lima Memorial Health System EMS System

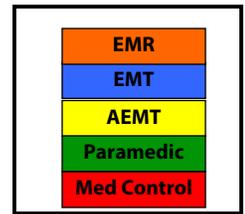


## Universal Patient Care Protocol



### Pearls

- Any patient contact that does not result in transport requires documentation and disposition
- Required vital signs on every patient include BP, pulse, RR, pain/severity
- Pulse oximetry, glucose measurement and temperature documentation is dependent on complaint
- Timing of transport based on patient's clinical condition
- If an ALS assessment has been performed and it is documented in the Patient Care Report that the Patient requires no further Advanced Interventions or assessments, then a BLS provider may accompany the patient during transport, so long as all appropriate care is taken to ensure patient care is never jeopardized.



## Ventricular Fibrillation Pulseless Ventricular Tachycardia

### History

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

### Signs and Symptoms:

- Unresponsive
- Ventricular fibrillation or ventricular tachycardia on ECG

### Differential:

- Asystole
- Artifact/device failure
- Cardiac
- Endocrine/metabolic
- Drugs
- Pulmonary

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



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



**Airway protocol**  
Begin ventilation < 12/min



**IV/IO protocol**



**Vasopressin 40 U IV/IO x1**



**Epinephrine 1 mg 1:10,000 IV/IO  
OR 2 mg ET  
Repeat every 3-5 minutes**



**Amiodarone 300 mg IV/IO push**



**Amiodarone 150 mg IV/IO push**



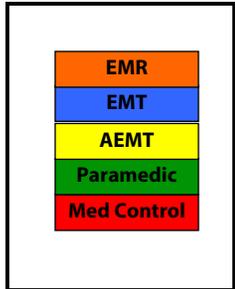
**Consider 2 g Magnesium Sulfate**

**Criteria to discontinue  
Cease efforts**

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

### Pearls

- Attach ITD (impedance threshold device) early in resuscitation. Remove if ROSC occurs.
- Wait 3-5 minutes after vasopressin dose to begin epinephrine and between other medication administrations
- Reassess airway frequently
- For suspected **HYPERKALEMIC ARREST** 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 LMA/King Airway



## Ventricular Tachycardia/ Wide Complex with Pulse

### History

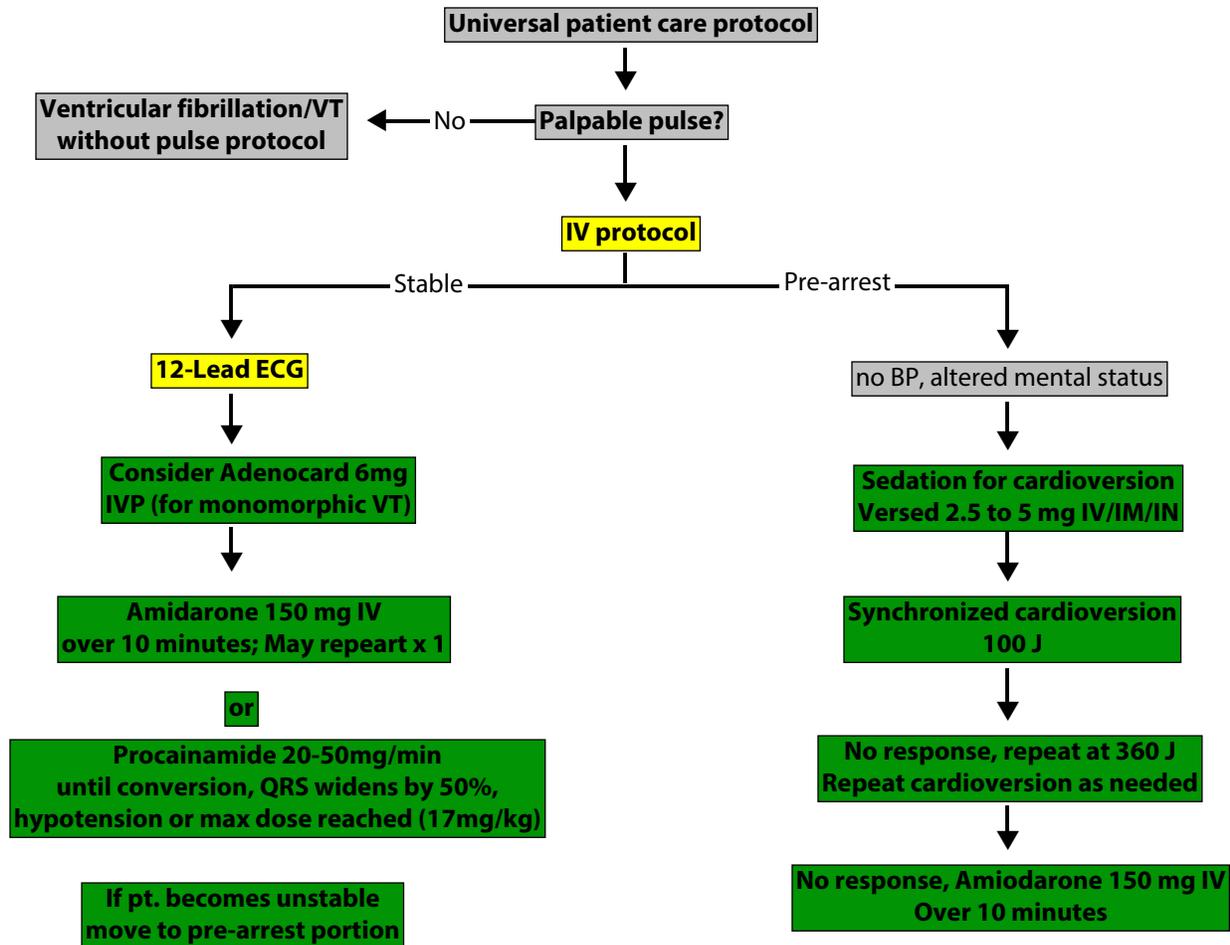
- Past history, meds, diet, drugs
- Syncope/near syncope
- Palpitations
- Pacemaker
- Allergies: lidocaine

### Signs and Symptoms:

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

### Differential:

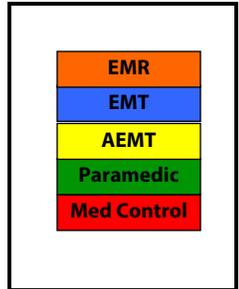
- Artifact/device failure
- Cardiac
- Endocrine/metabolic
- Hyperkalemia
- Drugs
- Pulmonary



### 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 2 gram IV
  - For presumed hyperkalemia (ESRD, dialysis) administer 1 amp Sodium Bicarbonate

# Lima Memorial Health System EMS System



## 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

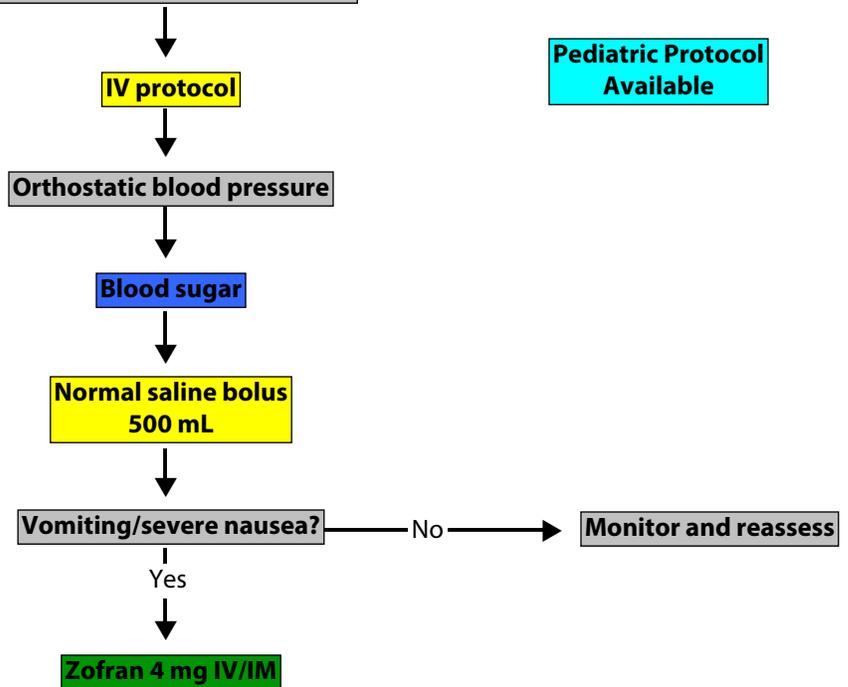
### Associated Symptoms:

- 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

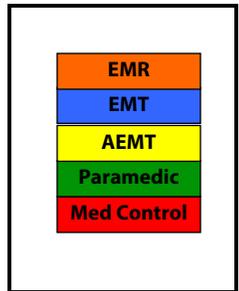
### Universal patient care protocol



### 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

# Lima Memorial Health System EMS System



## 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

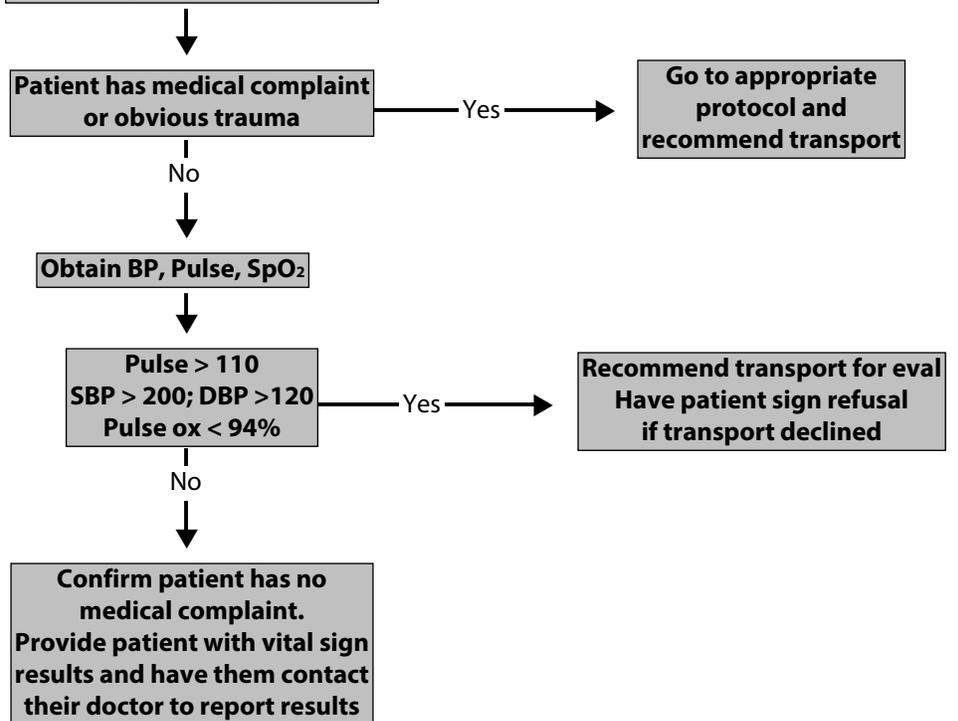
### Signs and Symptoms:

- 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



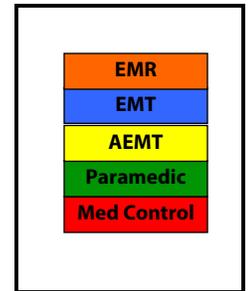
### Pearls

- 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

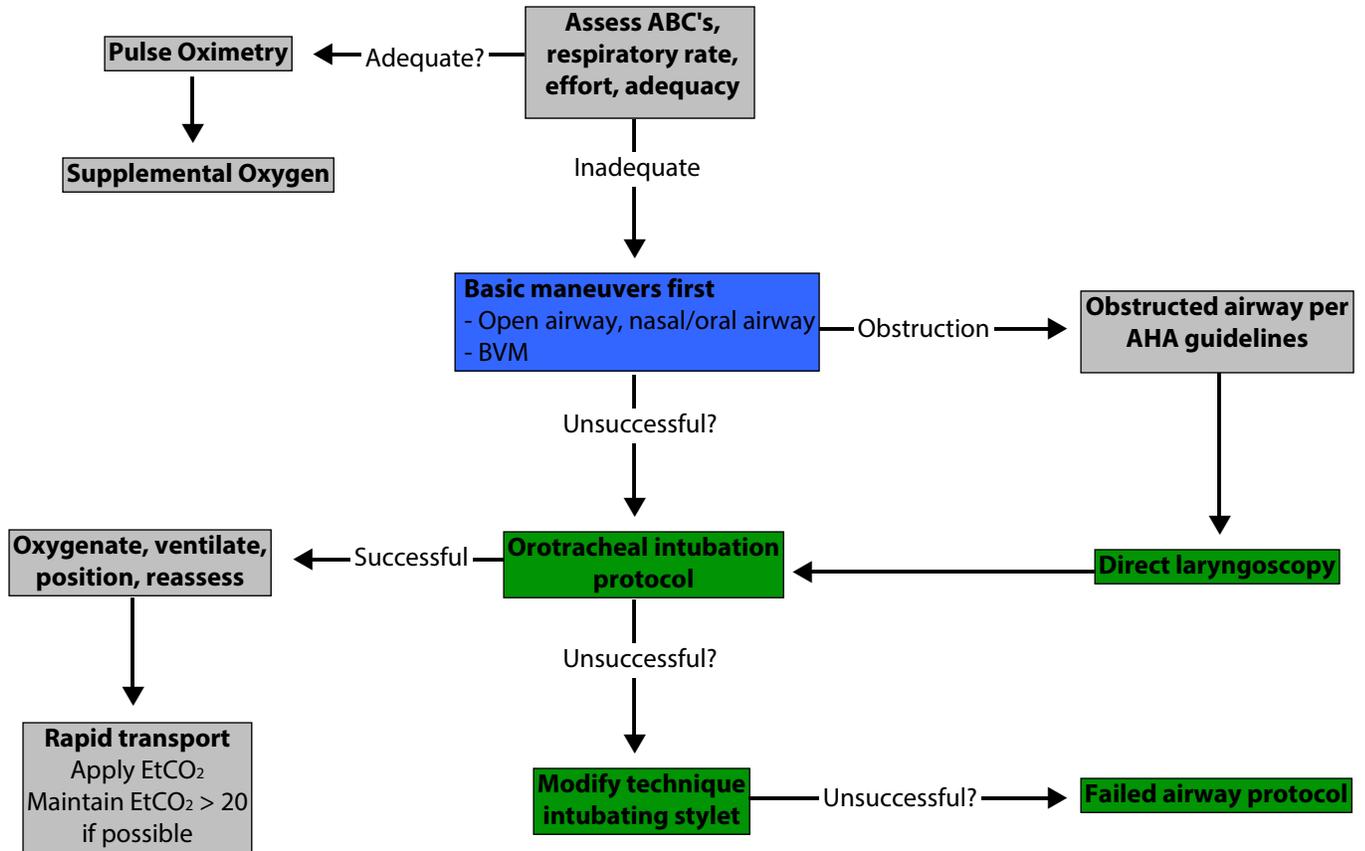
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# **PEDIATRIC PROTOCOLS**

# Lima Memorial Health System EMS System



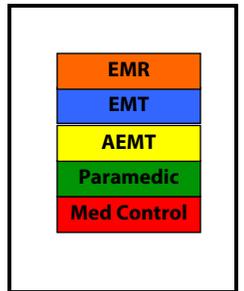
## Airway



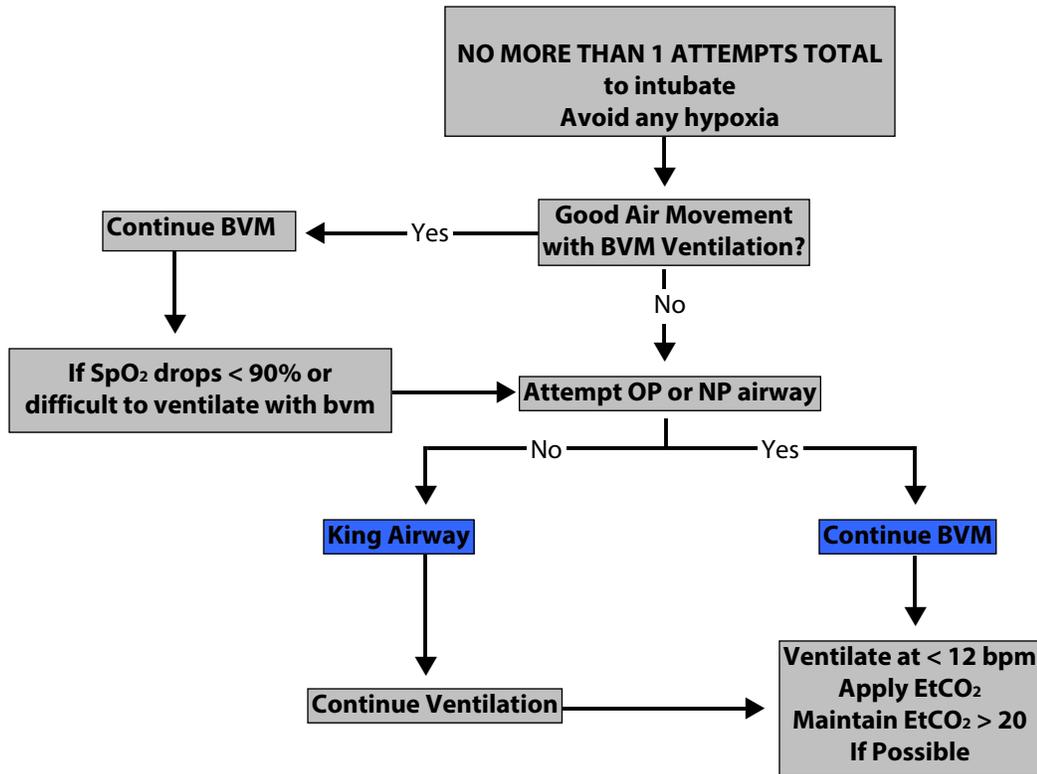
### Pearls

- 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 EtCO<sub>2</sub> 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

# Lima Memorial Health System EMS System



## Airway - Failed



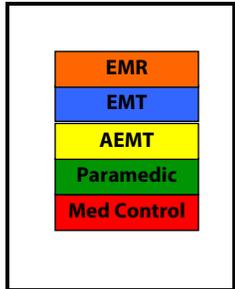
### Pearls

If first intubation attempt fails, use BVM ventilations, Avoid hypoxia

Continuous pulse oximetry should be used in all patients

**Notify OLMC as early as possible about difficult/failed airway**

# Lima Memorial Health System EMS System



## Allergic Reaction

### History

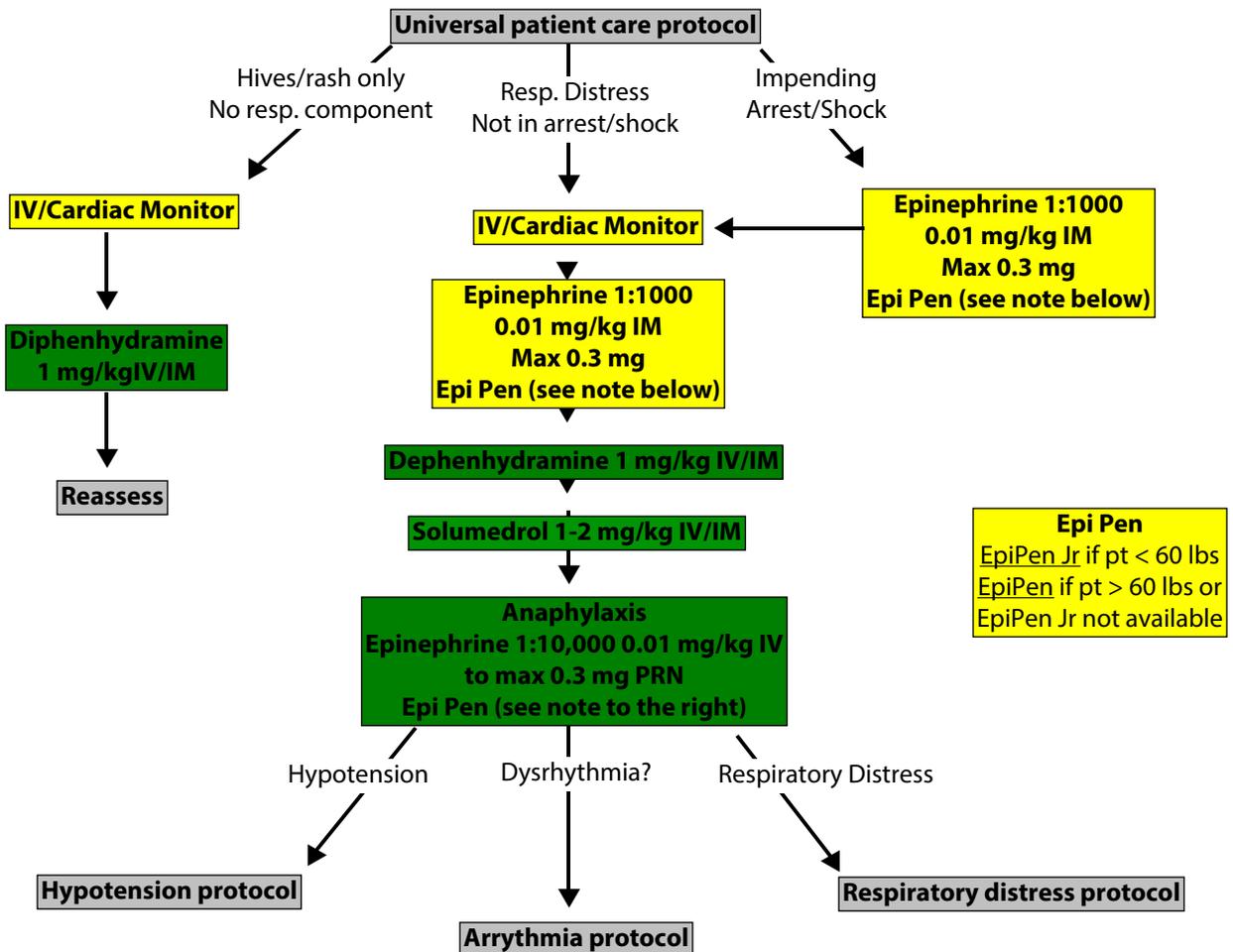
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

### Signs and Symptoms:

- Itching/hives
- Coughing/wheezing/respiratory distress
- Chest or throat tightening
- Difficulty swallowing
- Hypotension/shock
- Edema

### Differential:

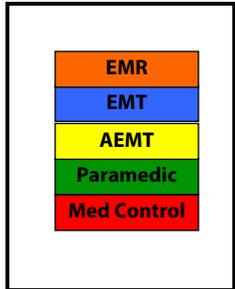
- Urticaria
- Anaphylaxis
- Shock
- Angioedema
- Aspiration
- Vasovagal
- Asthma/COPD
- CHF



### 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

# Lima Memorial Health System EMS System



## Altered Mental Status

### History

- Known diabetic, medic alert tag
- Drugs, drug paraphenalia
- 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)
- Kussmal respiration, dehydration

### Differential:

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

Universal patient Care Protocol

Consider spinal immobilization

IV Protocol

Blood Glucose

Glucose < 60      Glucose 60-250      Glucose > 250  
dehydration

25% Dextrose  
1-2 mL/kg IV  
If no IV access  
Glucagon 0.025 mg/kg IM

Narcan 0.1 mg/kg IV/IN/IM  
If respiratory depression

Normal Saline Bolus  
10 mL/kg

No — Return to baseline?

Yes

If yes, patient may refuse transport without OLMC order. IF:  
Adult present with patient  
Blood glucose > 100  
Pt. able to eat meal now  
No history of oral hypoglycemic med use

Consider other causes:  
Head injury  
OD  
CVA  
Hypoxia  
ALTE (apparent life-threatening event)

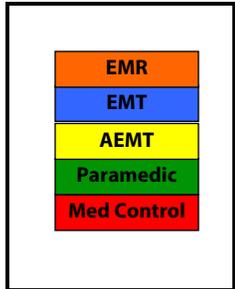
If signs of shock  
Normal saline bolus  
20 mL/kg IV

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

### Pearls

- Exam:** Mental status, HEENT, skin, heart, lungs, abdomen, back, extremities, neuro
- Be aware of AMS as sign 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

# Lima Memorial Health System EMS System



## Bradycardia

### History

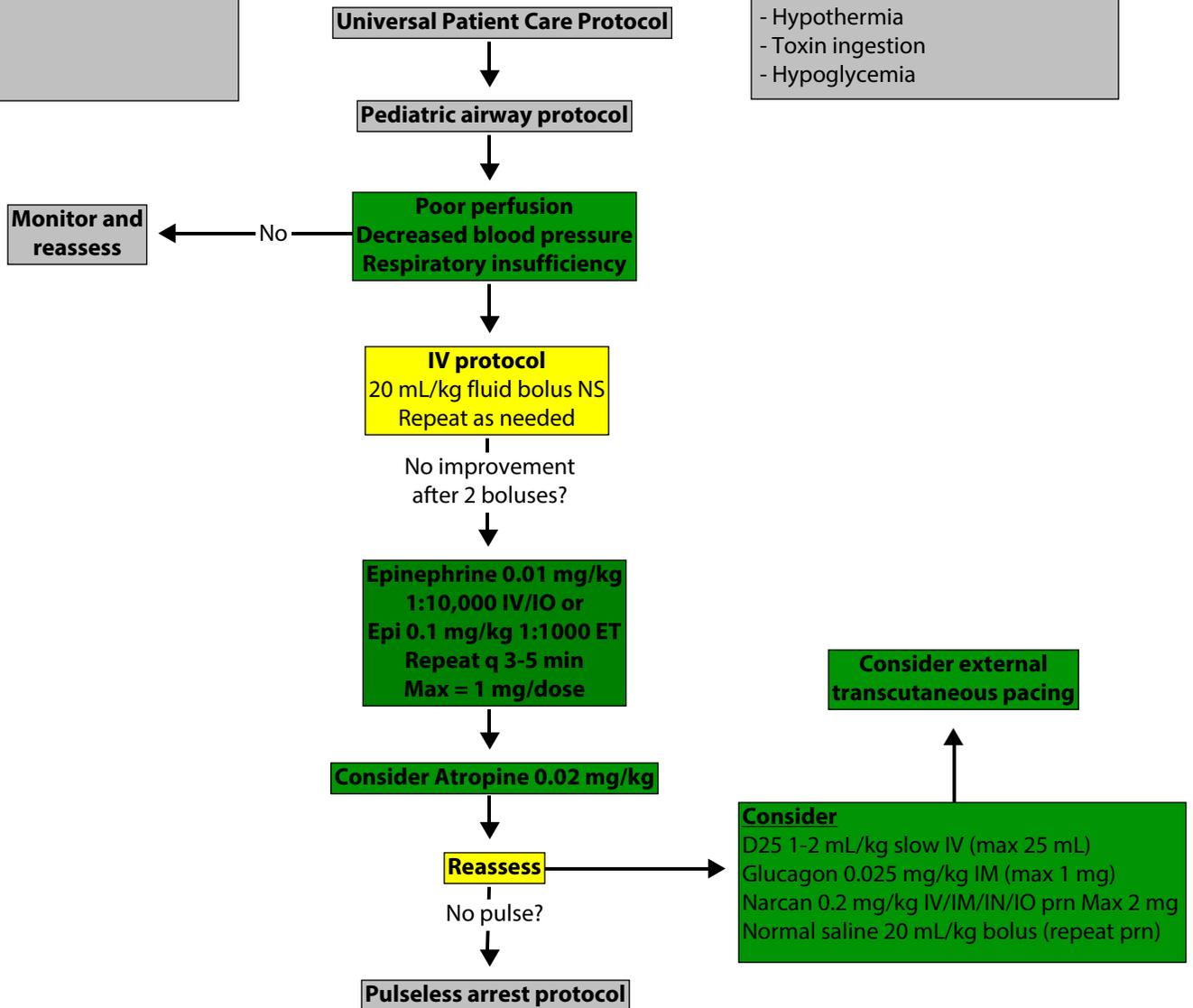
- Past medical history
- Foreign body?
- Respiratory distress or arrest
- Apnea
- Possible toxin exposure
- Congenital disease
- Medication (maternal or infant)

### Signs and Symptoms:

- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered LOC

### Differential:

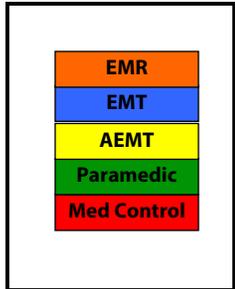
- Respiratory distress
  - Foreign body
  - Secretions
  - Infection/sepsis
- Hypovolemia
- Congenital heart disease
- Trauma
- Hypothermia
- Toxin ingestion
- Hypoglycemia



### 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 bradycardia
  - Minimum atropine dose is 0.1 mg IV/IO

# Lima Memorial Health System EMS System



## Burns

### History

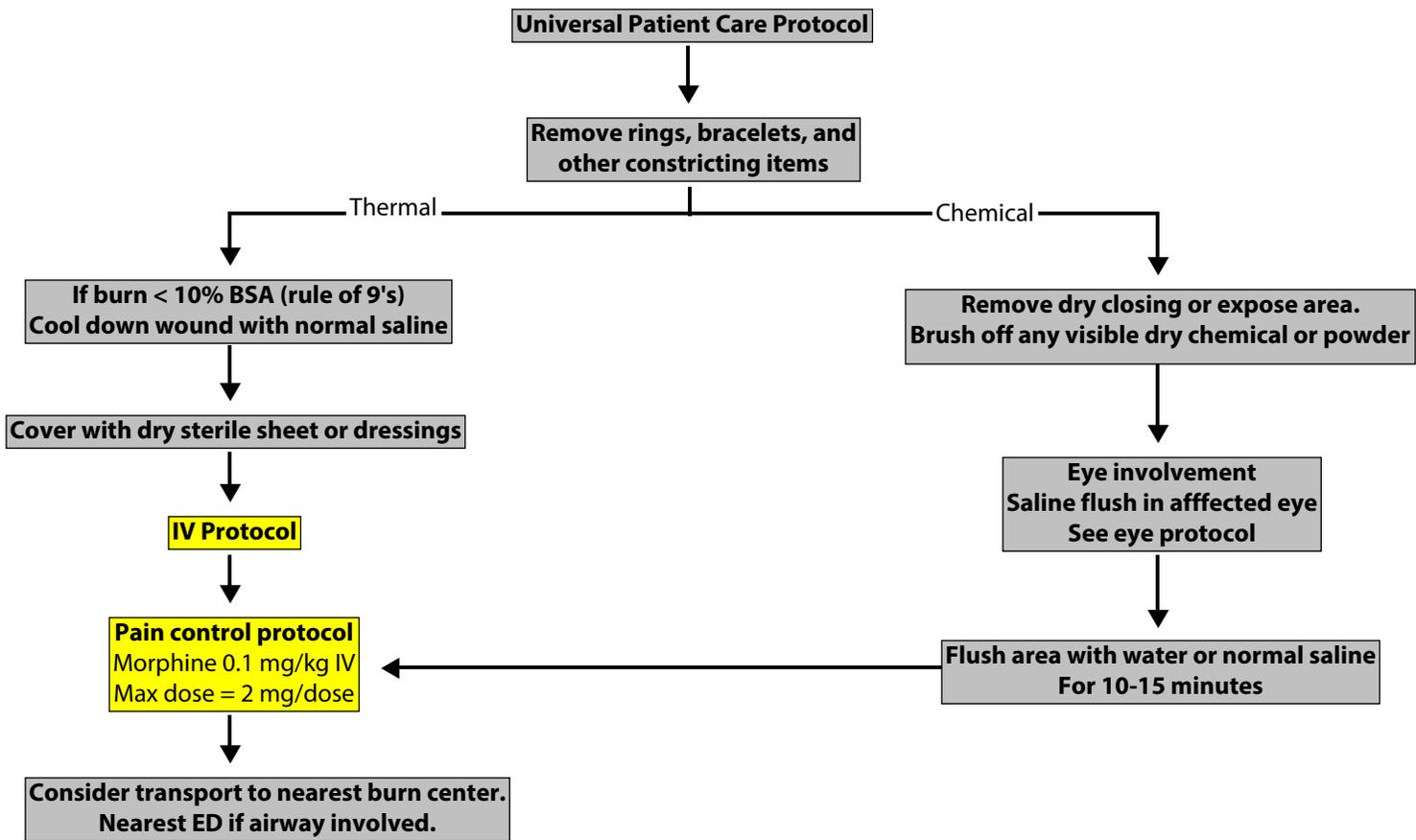
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of injury
- Past medical history
- Medications
- Other trauma
- LOC

### 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



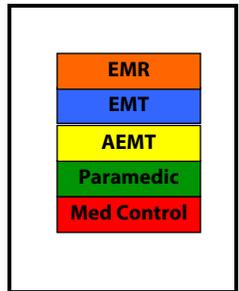
### Pearls

**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.

# Lima Memorial Health System EMS System



## Extremity Trauma

### History

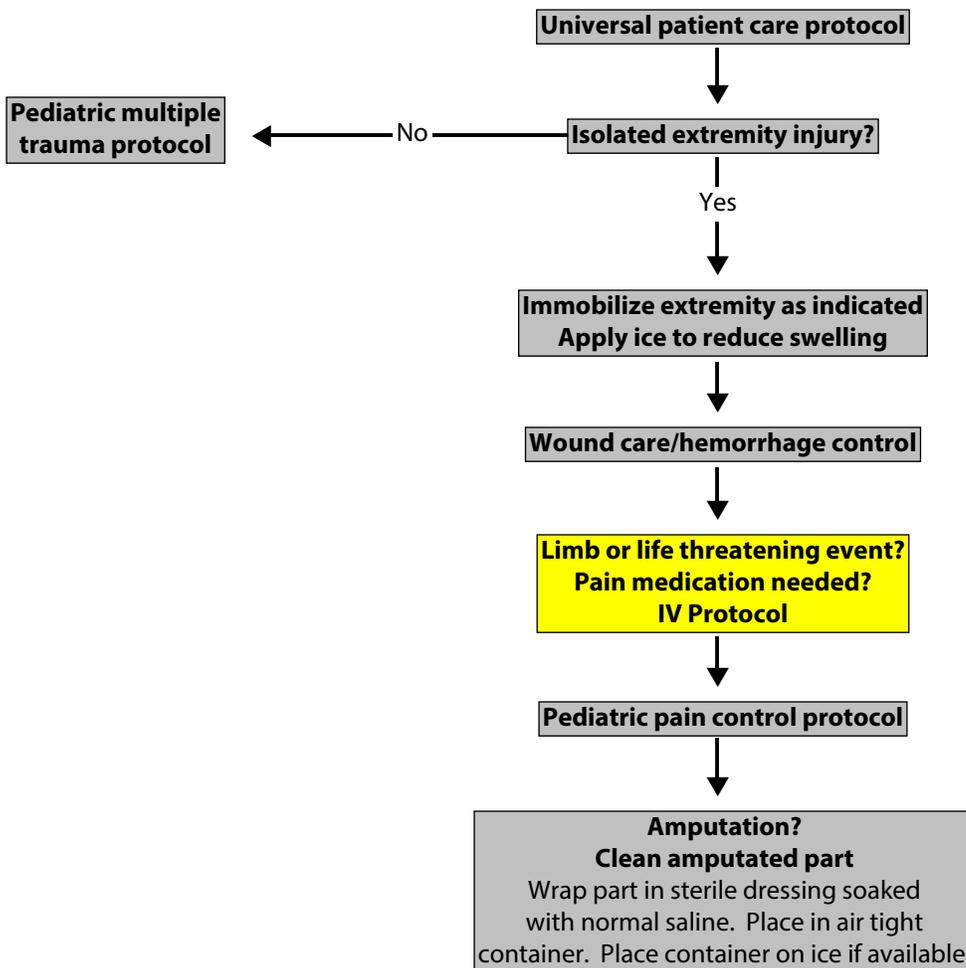
- Type of injury
- Mechanism: crush/penetrating/ amputation
- Time of injury
- Open vs. Closed wound/fracture
- Wound contamination
- Medical history
- Medications

### 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

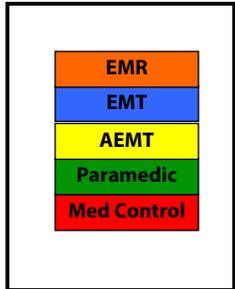


### Pearls

**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

# Lima Memorial Health System EMS System



## Head Trauma

### History

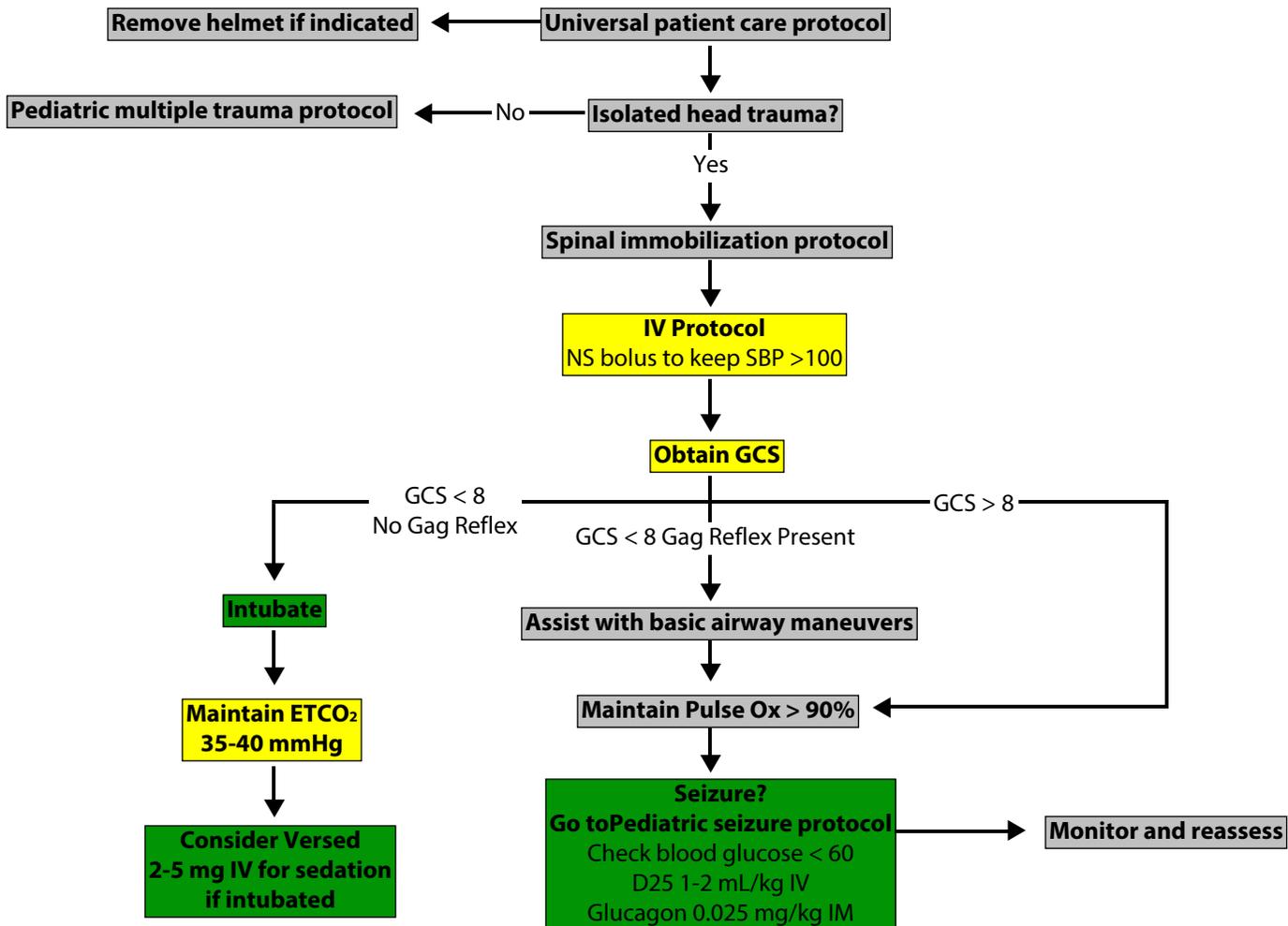
- Time of injury
- Mechanism: blunt/penetrating
- LOC
- Bleeding
- Medical history
- Medication
- Evidence of multi-trauma
- Helmet use/damage to helmet

### 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



### Pearls

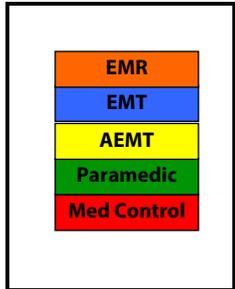
**Exam:** Mental status, skin, HEENT, heart, lungs, abdomen, extremities, back, neuro

- 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

# Lima Memorial Health System EMS System



## Hypotension/Shock - Non-Trauma

**History**

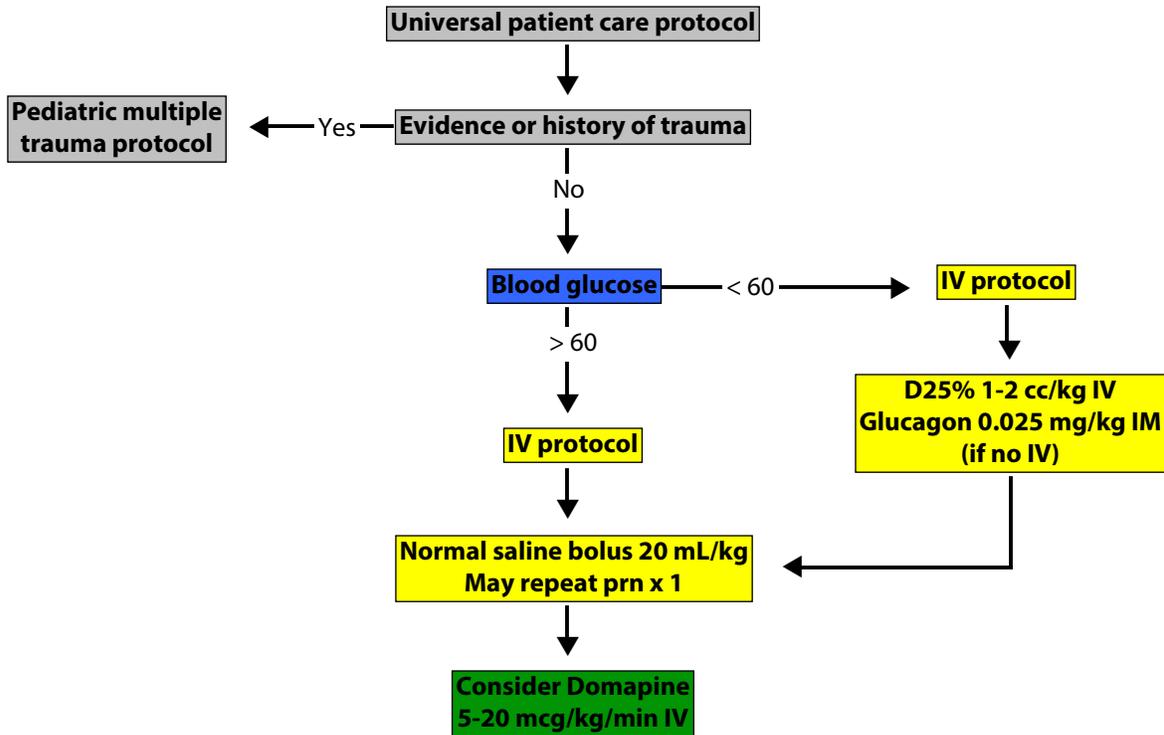
- Blood loss
- Fluid loss - Vomiting, diarrhea, fever
- Infection
- Medications
- Allergic reaction
- Poor PO intake history

**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

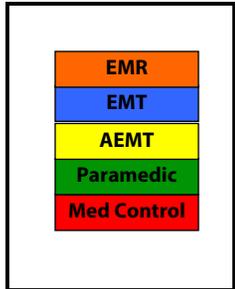


**Pearls**

**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

# Lima Memorial Health System EMS System



## Multiple Trauma

**History**

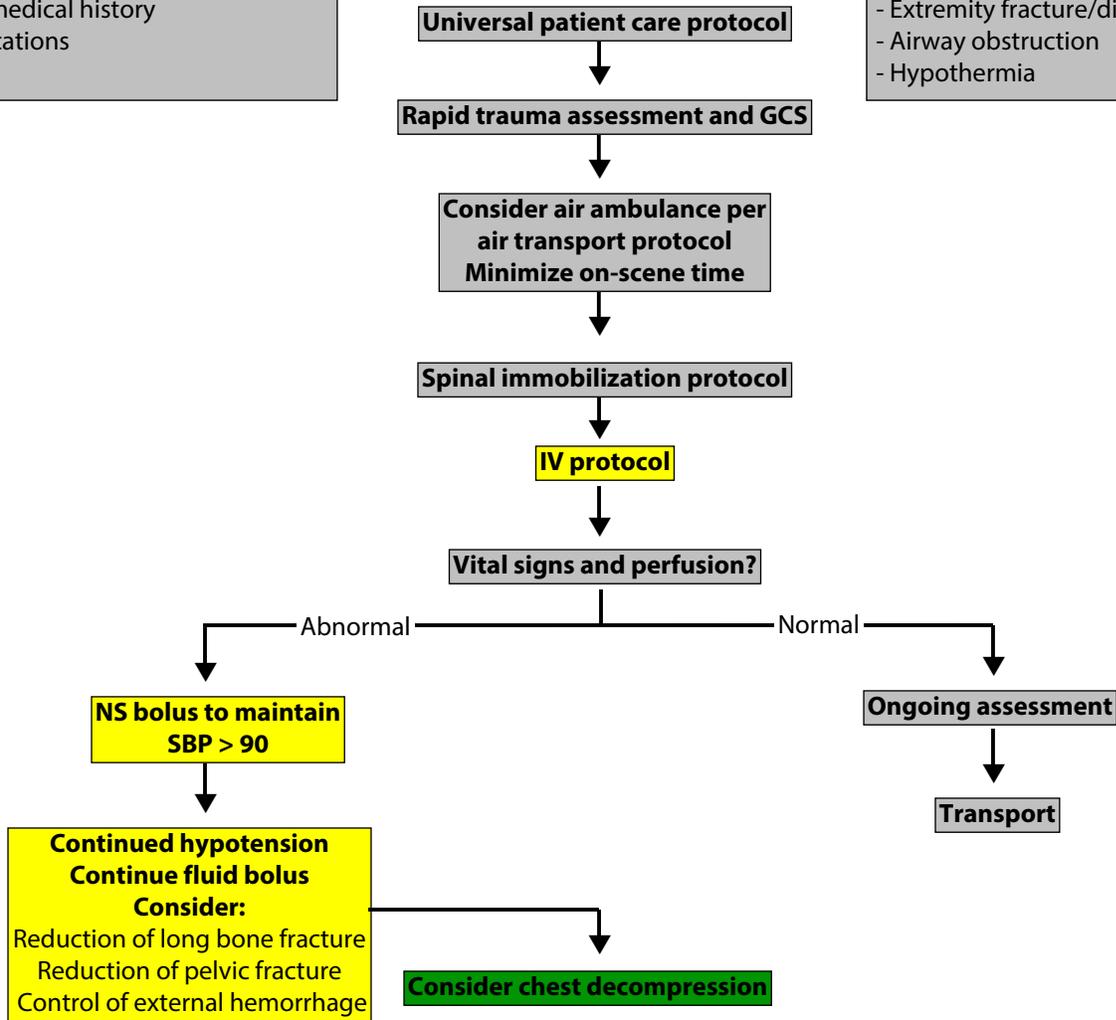
- Time and MOI
- Damage to structure/vehicle
- Location in structure/vehicle
- Others injured/dead
- Speed and details of MVC
- Restraints/protective equipment
  - Carseat
  - Helmet
  - Pads
- Ejection
- Past medical history
- Medications

**Signs and Symptoms:**

- Pain
- Swelling
- Altered mental status
- Unconscious
- Deformity
- Bleeding
- Hypotension/shock
- Arrest

**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

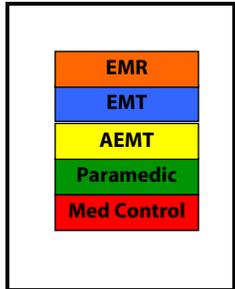


**Pearls**

**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

# Lima Memorial Health System EMS System



## Newly Born

### History

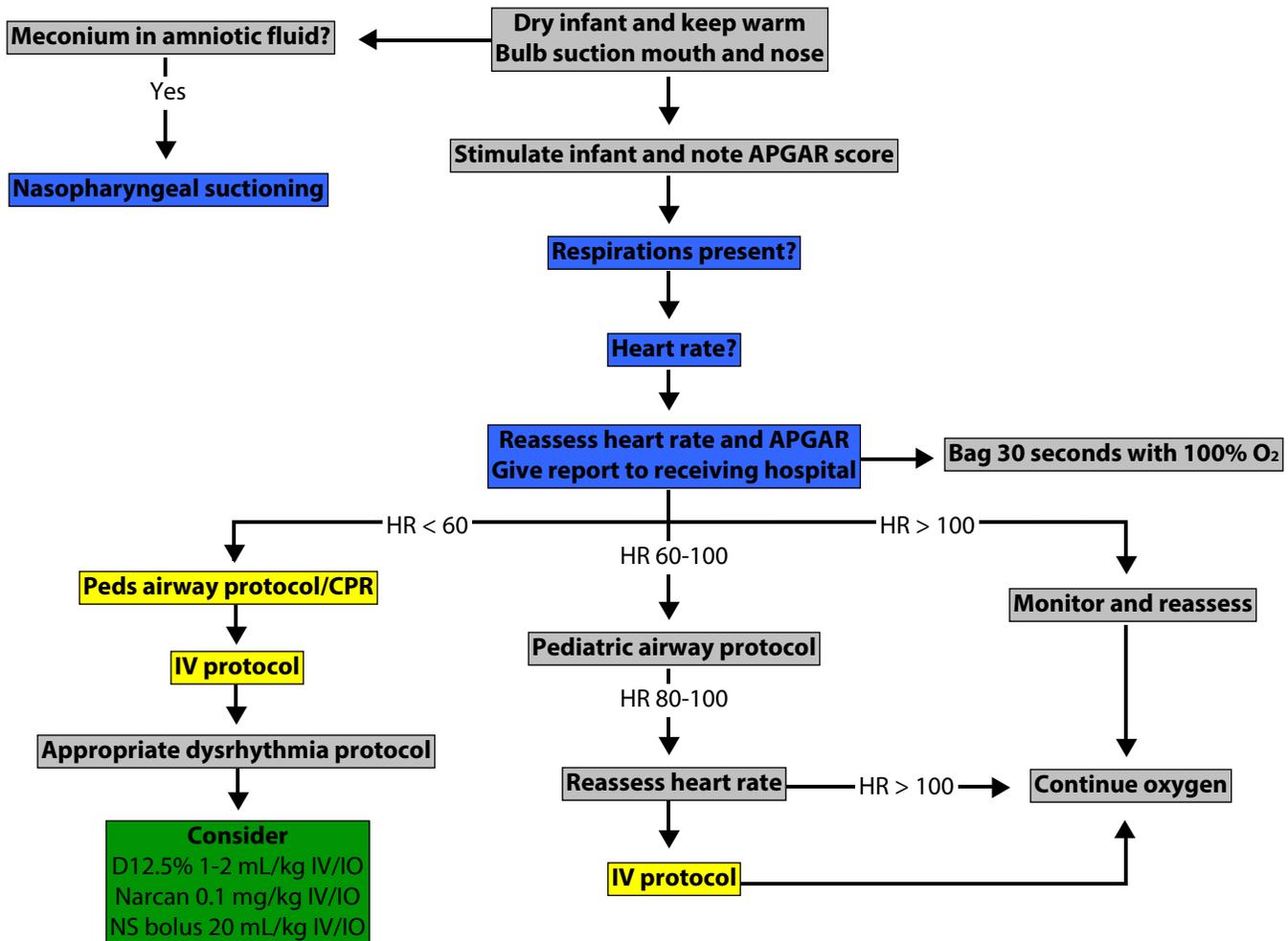
- Due date and gestational age
- Multiple gestation (twins, etc)
- Meconium
- Delivery difficulties
- Congenital disease
- Maternal medications
- Maternal risk factors
  - Smoking
  - Substance abuse

### 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



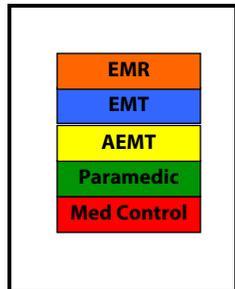
### Pearls

- 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)

### Score

	<u>0</u>	<u>1</u>	<u>2</u>
Appearance	Blue central	Blue extremities	Pink
Pulse	0	< 100	> 100
Grimace	None	Grimace	Pulls away
Activity	Absent	Arm/leg flexed	Active movement
Resp	Absent	Slow	Crying, good

# Lima Memorial Health System EMS System



## 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 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?

Narcan

0.1 mg/kg IV/IN/IM PRN

Beta blocker

Glucagon

0.025 mg/kg IV

Organophosphates carbamates?

Atropine

0.02 mg/kg IV PRN

Calcium channel blocker

Calcium chloride

20 mg/kg slow IV

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

Appropriate protocol

If fully alert and protecting airway activated charcoal 1 g/kg PO

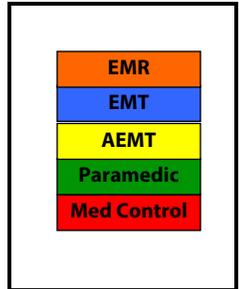
### Pearls

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

**Max dose:** Narcan 2 mg, glucagon 1 mg, Calcium Chloride 1 g, Charcoal 50 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 autoinjector

# Lima Memorial Health System EMS System



## Pain Control

**History**

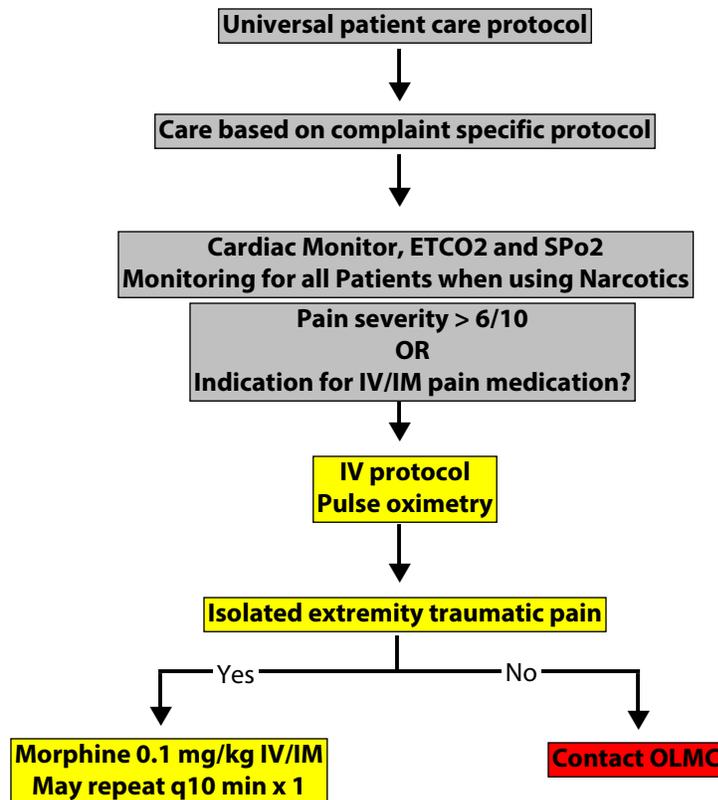
- Age
- Location
- Duration
- Severity (1-10)
- Past medical history
- Medications
- Drug allergies

**Signs and Symptoms:**

- Severity
- Quality
- Radiation
- Relation to movement
- Increased with palpation

**Differential:**

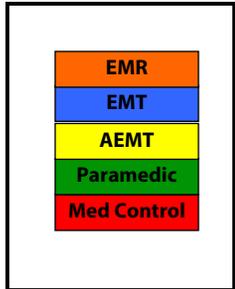
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural/respiratory
- Neurogenic
- Renal



**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

# Lima Memorial Health System EMS System



## Pulseless Arrest

### History

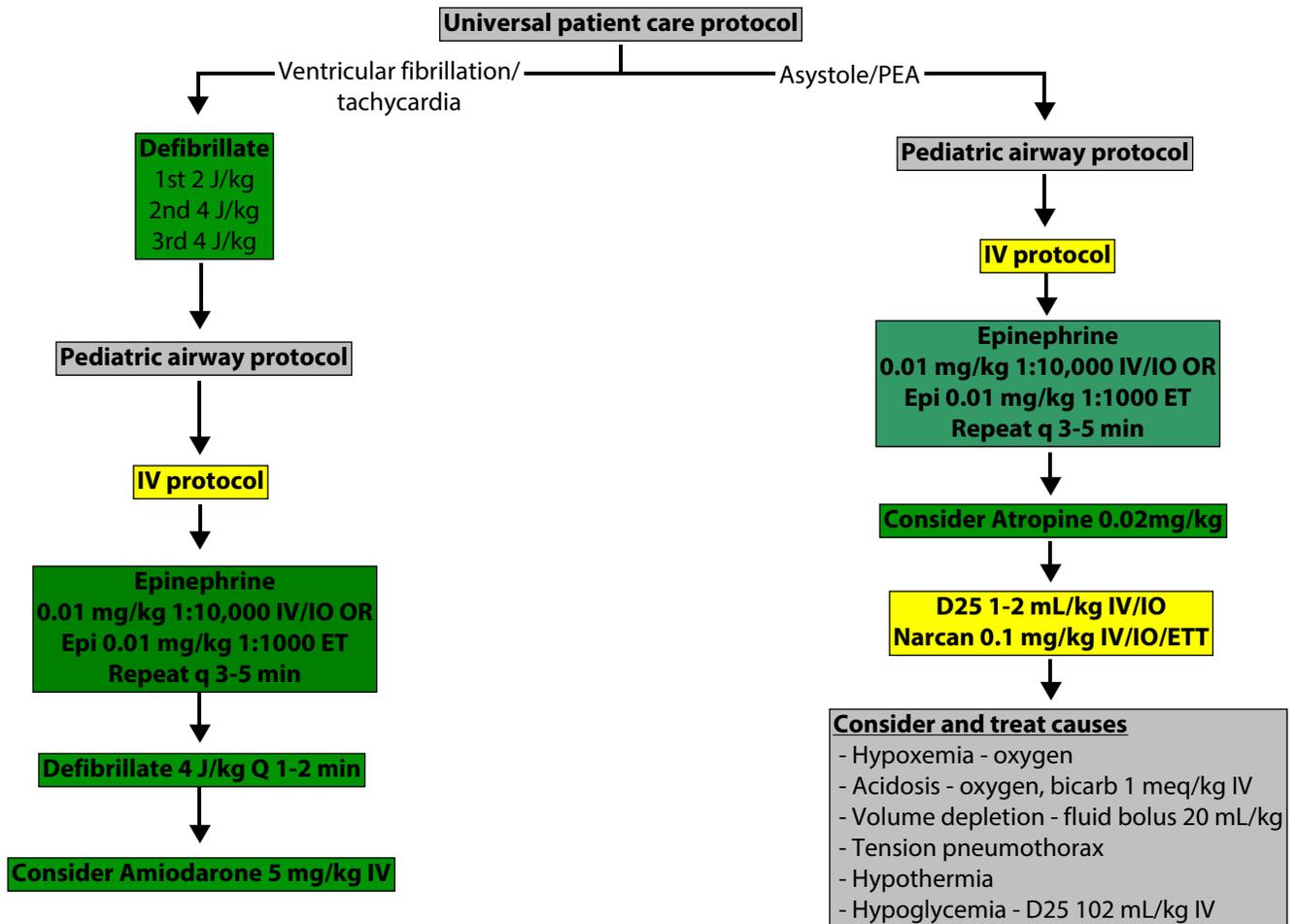
- Time of arrest
- Medical history
- Medications
- Foreign body?
- Hypothermia?
- Suspected abuse?
- SIDS

### Signs and Symptoms:

- Unresponsive
- Cardiac arrest

### Differential:

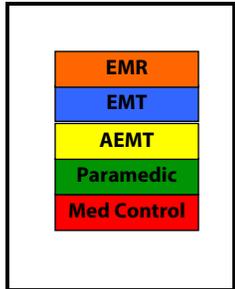
- Respiratory failure
  - Foreign body
  - Secretions
  - Infection
- Hypovolemia
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin ingestion
- Hypoglycemia
- Acidosis



### Pearls

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

# Lima Memorial Health System EMS System



## Respiratory Distress

### History

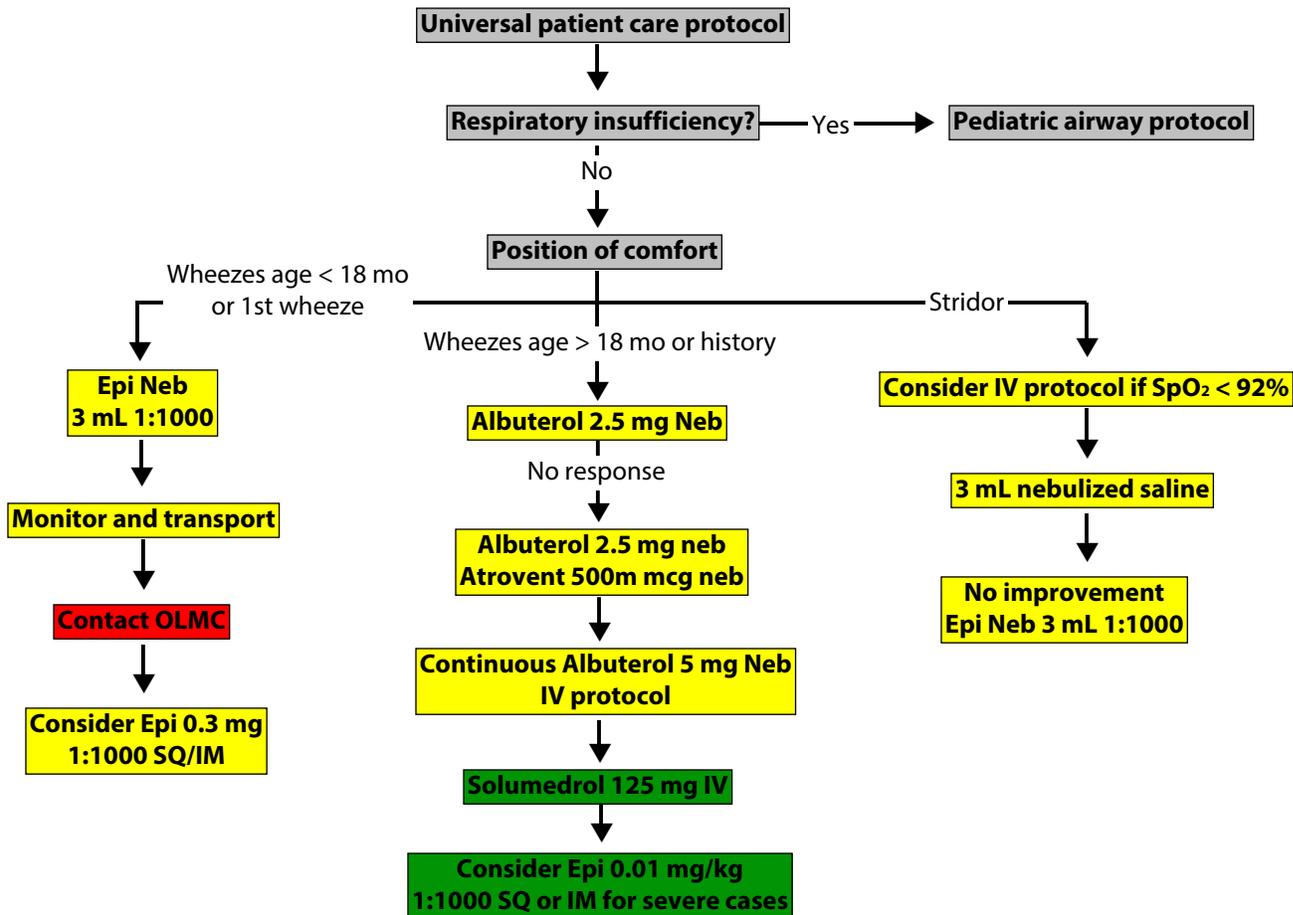
- Asthma
- COPD
- CHF
- Home treatment (oxygen/nebulizer)
- Meds (theophylline, steroids, inhalers)
- Toxic exposure
- Smoke inhalation

### Signs and Symptoms:

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

### Differential:

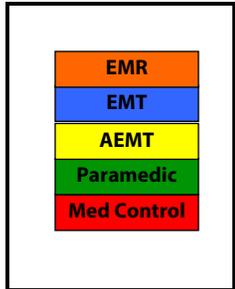
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pneumonia/pleural effusion
- Pneumothorax
- Cardiac (MI/CHF)
- PE
- Tamponade
- Hyperventilation
- Inhaled toxin



### 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) neb

# Lima Memorial Health System EMS System



## Seizure

**History**

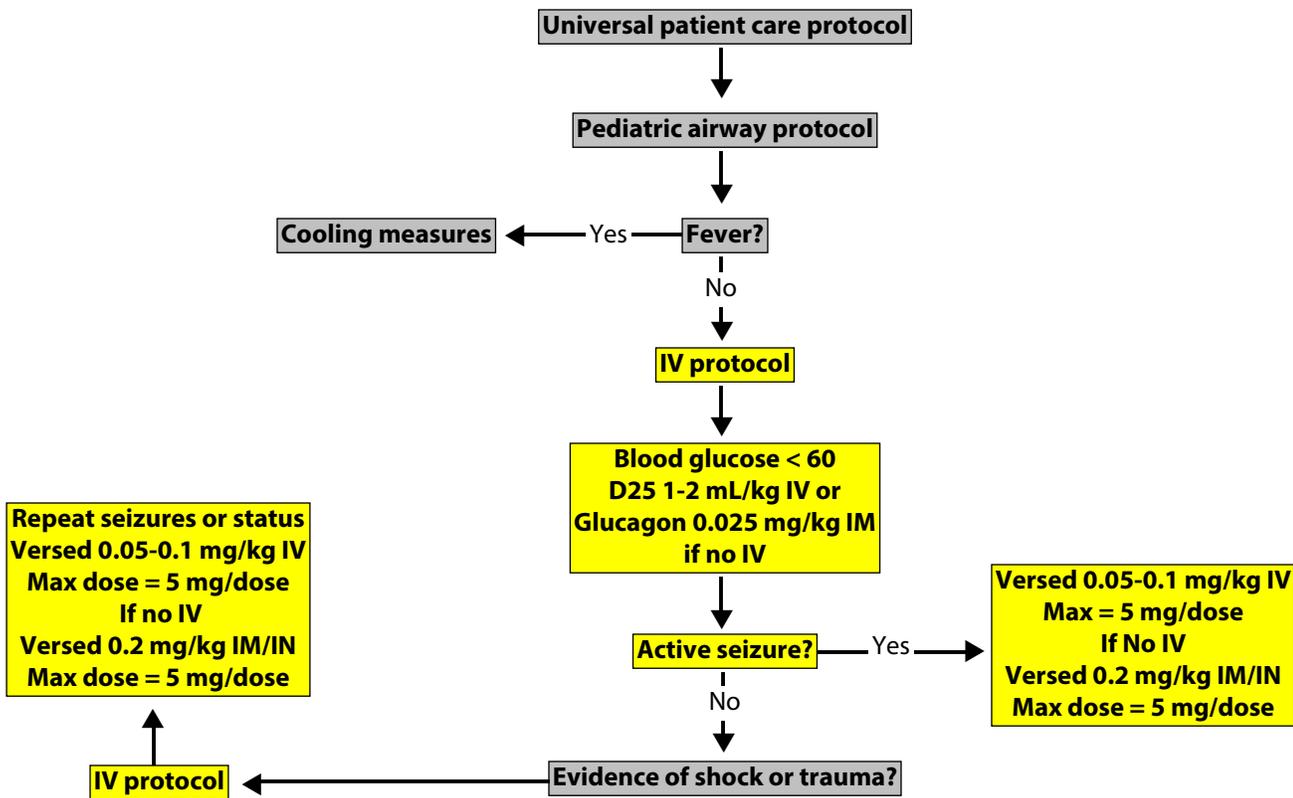
- Fever
- Previous seizure history
- Reported seizure activity
- History of recent head trauma
- Congenital abnormality

**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

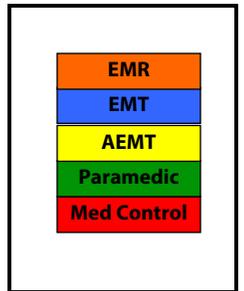


**Pearls**

- 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



# Lima Memorial Health System EMS System



## 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 Zofran  
0.2/kg IV up to 4mg

### Pearls

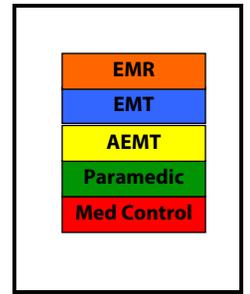
- Exam:** Mental status, skin, HEENT, neck, heart, lungs, abdomen, back, extremities, neuro
- Monitor frequently to reassess vascular status

# Lima Memorial Health System EMS System

## Standard Drug Formulary

**This list is intended to be an all-inclusive list of the medications that are allowed to be carried by any Emergency Medical Services Unit under Lima Memorial Health Systems Medical Control. Please refer to your department's specific drug inventory for the medications that your department currently stocks.**

<b>Brand Name</b>	<b>Trade Name</b>	<b>Strength</b>	<b>Supplied</b>	<b>NDC</b>
Adenocard	Adenosine	3mg/ml	Injectable Solution	0573170232
Aspirin, Children's	Aspirin, Low Dose	81mg	Tablet; Chewable	0128431310
Atropine Sulfate	Atropine Sulfate	0.1mg/cc	Injectable Solution	0000744911
Benadryl	Diphenhydramine	50mg/ml	Injectable Solution	0000714259
Calcium Chloride	Calcium Chloride	100mg/ml	Injectable Solution	0000744928
Cardizem	Diltiazem HCL	5mg/ml	Injectable Solution	0000881790
Cardarone	Amiodarone HCL	150mg/ml	Injectable Solution	0000080814
Dextrose 25%	Dextrose 25%	2.5GM/10ml	Injectable Solution	0000747898
Dextrose 50%	Dextrose 50%	25Gm/50ml	Injectable Solution	0000744902
Epinephrine	Epinephrine	1mg/ml	Injectable Solution	0000080263
Epinephrine	Epinephrine	0.1mg/cc	Injectable Solution	0000744921
Epinephrine 1:1000	Epinephrine 1:1000	1mg/ml	Injectable Solution	0005171130
EpiPen Auto Injector	Epinephrine	0.3mg/0.3ml	Injectable Solution	0002680301
EpiPen Jr Auto Injector	Epinephrine	0.15mg/0.3ml	Injectable Solution	0002680302
Etomidate	Etomidate	2mg/ml	Injectable Solution	0553900762
Fentanyl Citrate	Fentanyl Citrate	05mg/ml	Injectable Solution	0000749093
Glucagon	Glucagon	1mg/ml	Injectable Solution	0000021450
Intropin	Dopamine	40mg/ml	Injectable Solution	00009400040
Lidocaine HCL	Lidocaine HCL	20% I	Injectable Solution	0000746249
Lidocaine HCL	Lidocaine HCL	10mg/ml	Injectable Solution	000744903
Lidocaine HCL/Dextrose	Premix	1mg/250ml	Injectable Solution	0000747931
Ativan	Lorazepam	2mg/ml	Injectable Solution	0000241155
Magnesium Sulfate	Magnesium Sulfate	4mEq mg/ml; 20ml	Injectable Solution	00409216802
Morphine Sulfate	Morphine Sulphate	10mg/ml	Injectable Solution	0000080656
Narcan	Naloxone HCL	1mg/ml	Injectable Solution	0005900368
Nitro-Lingual Spray	Nitroglycerine	0.4mg	Sublingual Spray	0520370820
Nitrostat	Nitroglycerine	0.4mg	Tablet; Sublingual	0000710570
Norcuron	Vecuronium	1mg/ml	Injectable Solution	0000520441
Oxygen	Oxygen	100%	Inhalant	0100190001
Pitressin	Vasopressin	20U/ml	Injectable Solution	0000714200
Pronestyl	Procainamide	100mg/ml	Injectable Solution	0000030759
Proventil	Albuterol	2.5mg/3ml	Inhalant	0000850209
Romazicon	Flumazenil	0.2mg/ml	Injectable Solution	000046912
Sodium Bicarbonate	Sodium Bicarbonate	50mEq/50ml	Injectable Solution	0000746637
Sodium Chloride	Sodium Chloride	0.9%	Injectable Solution	0000744888
Sodium Chloride	Sodium Chloride	0.9%	Solution; Irrigation	0000747138
Solu-Medrol	methylprednisolone	125mg/ml; 2ml	Injectable Solution	00009004722
Anectine	succinylcholine	20mg/ml; 10ml	Injectable Solution	00781300995
Water, Sterile	Water, Sterile	100%	Solution; Irrigation	0000747139
Tetracaine HCL	Tetracaine HCL	10mg/ml	Solution	0000747243
Thiamine	Thiamine (Vit B-1)	100mg/ml	Injectable Solution	004631074
Versed	Midazolam	5mg/ml	Injectable Solution	0000041947
Zofran	Ondansetron HCL	2mg/ml	Injectable Solution	0001730442



# **Interfacility Transport Protocols**

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# Lima Memorial Health System EMS System

## 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, Levequin - Amoxicillin, Ampicillin, Penicillin - Doxycycline, Tetracycline - Acyclovir

### Contraindications:

· Allergy or hypersensitivity to medications.

### Procedure:

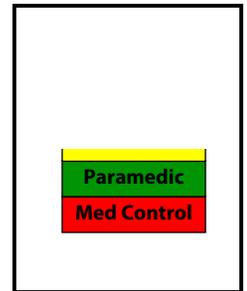
- 1) Paramedics may maintain antibiotic transfusions during inter-hospital transfers that are initiated by the referring facility. These may be peripheral IV lines or PICC lines.
- 2) Antibiotics/antivirals must be delivered as a piggy-back or secondary line. They should always be run with a compatible 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 EMT-P 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.

# Lima Memorial Health System EMS System

## 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.

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# Lima Memorial Health System EMS System

## 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 <100mmHg), 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.

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# Lima Memorial Health System EMS System

## 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.

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# Lima Memorial Health System EMS System

## 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:**

Paramedic's 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.

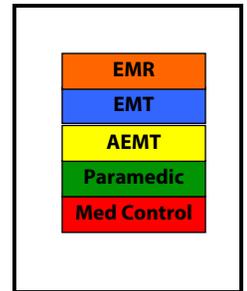
If the patient develops hypotension (SBP<100), turn drip off and contact On-Line Medical Control for orders.

The EMT-P may maintain an infusion begun through a PICC line

### **Certification Requirements:**

- Attend equipment in-services · Maintain knowledge of the indications, 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.

# Lima Memorial Health System EMS System



## Change Log

**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

# Lima Memorial Health System EMS System

