

Lima Memorial Health System

EMS PROTOCOLS

LMHS EMS Protocols

Letter from the Medical Director

Introduction:

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

Foundations:

Definition of a Patient:

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

Rights of a Patient:

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

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

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

Regarding CONSENT:

1) Minors:

- a) Patients under the age of 18 may not consent to medical treatment or transport.

However, the following may consent for the treatment of a minor

- i) Mother or Father
- i) Legal Guardian
- i) An individual standing in *loco parentis*. Such persons may include a stepparent taking the responsibilities of a parent of the child.
- i) 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 *locoparentis* 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 directly contacting the Medical Director at (419) 346-9444. These events include the following:

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

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

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

I am happy to provide medical direction to your agency.

Sincerely,

Todd Brookens, DO, FACEP
Medical Director
Lima Memorial Health System
Emergency Medical Services

POLICIES

Air Ambulance Resource Utilization

Indications:

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

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

A helicopter may also be utilized when any of the following is present:

- ~ A situation approved by the medical director or medical control physician - or -
- ~ Mass Casualty Incident (MCI).

Procedure:

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

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Practitioner Disciplinary Procedure

In the Lima Memorial Health Systems EMS System, a practitioner's right to practice medicine is based on extension of the Medical Director's license to practice medicine. If, in the opinion of the Medical Director, an action (or failure to act) on the part of a practitioner is of such a nature that the action 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 and EMS Coordinator within three (3) working days of receipt of the Medical Director's issues/concerns. If no written explanation of the incident is sent to the Medical Director by that deadline, the Medical Director may base his decision upon such information that is available to him as of that deadline.
- 3) The Medical Director or the individual may request a second meeting to further discuss the issues/concerns. If this option is exercised, the meeting shall occur within five (5) working days of receipt of the request.
- 4) After reviewing all materials, the Medical Director will issue a disposition of the matter. The Medical Director may exercise one or more of the following options:
 - a) No action taken/matter resolved
 - b) Remediation training
 - c) Warning
 - d) Require to precept at the approved level again
 - e) Temporary suspension of all BLS/ALS practice privileges or suspension of specific BLS/ALS practice privileges
 - f) Revocation of BLS/ALS practice privileges

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

- 5) After the individual is notified in writing of the Medical Director's decision, he/she may appeal to the Medical Director. This appeal request must be presented within five (5) working days of the decision of the Medical Director to the Medical Director or the EMS Coordinator for referral to the EMS Liaison Team.

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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.

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Criteria for Death/With-holding Resuscitation

Indications:

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

Procedure:

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

Notes:

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

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

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Deceased Subjects

Indications:

One or more of the following is present:

- Rigor mortis and/or dependent lividity.
- Decapitation.
- Incineration
- If arrest is traumatic in origin, go to Trauma Arrest protocol.

Procedure:

1. Do not resuscitate any patient who meets the above criteria. If resuscitation efforts are in progress, consider discontinuing the resuscitation efforts (Paramedic Only).
2. Notify law enforcement of the patient's death (or a patient's physician if patient is in a medical facility with continual physician or nursing care during its hours of operation; e.g. hospital, nursing home, physician's office).

Note:

If you are unsure whether the patient meets the above criteria, resuscitate.

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Termination of Resuscitation (TOR) ALS and BLS

Policy:

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

Procedure:

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

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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:
 - Ohio DNR form
 - Effective date and expiration date filled out and current
 - Form signed by a physician, physician's assistant, or nurse practitioner
 - Patient in cardiac arrest
2. A valid DNR form may be overridden by the request of:
 - The patient
 - The guardian of the patient
 - An on-scene physician
3. A living will or other legal documentation that identifies the patient's desire to withhold CPR or ALS therapy may be honored with the approval of **Medical Control**. This should be done when possible in consultation with the patient's family and personal physician.

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

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Documentation of Vital Signs

Policy:

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

Purpose:

To insure:

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

Procedure:

- 1) An **initial** complete set of vital signs includes:
 - a) Pulse rate
 - b) Systolic **AND** diastolic blood pressure
 - c) Respiratory rate
 - d) Pain/severity (when appropriate to patient complaint)
- 2) When no ALS treatment is provided, palpated blood pressures are acceptable for **repeat** vital signs.
- 3) Based on patient condition and complaint, vital signs may also include:
 - a) Pulse Oximetry
 - b) Temperature
 - c) ETCO₂
 - d) Carbon Monoxide (CO) level if available
- 4) If the patient refuses this evaluation, the patient's mental status and the reason for refusal of evaluation must be documented. A patient disposition form must also be completed.
- 5) Document situations that preclude the evaluation of a complete set of vital signs.
- 6) Record the time vital signs were obtained.
- 7) Any abnormal vital sign should be repeated and monitored closely.

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Non-Transport by ALS

Indications:

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

Policy:

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

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

All personnel are encouraged to participate in patient care while on-scene; regardless of whom "attends" with the patient while 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. The transporting provider must write a narrative documentation that covers all aspects of assessment, care, and disposition. This should be done on one PCR.

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

- Postictal seizure patients due to the possibility of a re-occurrence of a seizure.
- Patients who have been medicated on the scene may only be transferred to a technician of lower certification whose formulary includes the medications that were administered.
- Any patient suffering from chest pain of suspected cardiac origin, respiratory distress, hypertensive emergencies, multiple trauma, or imminent childbirth.
- Any patient in which transport would be delayed by waiting for a unit with lesser certification to arrive.

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Non-Transport of Patients

All Levels of Certification

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

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Patient Self Medication

All Levels of Certification

Indications:

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

Procedure:

- Patient assisted Auto-Injector Epinephrine==>EMR and above
- Patient assisted Nitroglycerin==>EMT and above
- Patient assisted aerosolized/nebulized medications==>EMT and above

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Patients who present without a Protocol

Policy:

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

Purpose:

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

Procedure:

- 1) Treatment and medical direction for all patient encounters, which can be triaged into an EMS patient protocol, is to be initiated by protocol.
- 2) When confronted with an emergency or situation that does not fit into an existing EMS patient care protocol, the **Universal Patient Care Protocol** should be used to treat the patient, and a **Medical Control Physician** should be contacted for further instructions.

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Physician on Scene

Policy:

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

Indications:

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

Procedure:

- If a pre-existing "physician-patient" relationship does not exist, contact Medical Control for physician authorization; the Medical Control physician will decide if the on-scene physician will be allowed to take control of patient care and issue medical orders.
- If a pre-existing "physician-patient" relationship does exist, the physician is authorized to take control of patient care and issue medical orders.
- Follow the orders of the authorized physician even if they conflict with the existing local protocols provided they encompass skills and medications approved by both the Lima Memorial Health Systems Medical Director and the State Medical Board.

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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.

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Trauma Center Triage Criteria

- Goal:** To provide quality care to all trauma patients while maximizing utilization of resources in the most cost-efficient manner.
- Rationale:** Some trauma patients require a full range of trauma services while a percentage need only modified trauma resources. A tiered system will ensure availability of services based upon clinical presentation of the trauma patient.
- Procedure:** Pre-hospital personnel will provide clinical information to the Emergency Department. The Emergency Department Physician, in collaboration with pre-hospital personnel, will make a determination as to resources required by the patient, either full trauma resources or modified trauma resources. **The Emergency Department Physician will make the final decision on level of resources.**

Criteria for consideration of transport to a Trauma Center

Trauma Level I

Level I Criteria:

Trauma Physician within 15 minutes

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

Trauma Level II

Level II Criteria

Trauma Physician within 15 minutes

Open Fractures proximal to elbow or knee
Crush injury proximal to wrist or elbow
Pedestrian, bicycle struck by vehicle > 5 MPH impact
thrown over or run over
Motorcycle, ATV crash > 20 mph
Ejected from vehicle
High speed collision (> 60 MPH or > 40 MPH unrestrained) or major vehicle deformity (20")
Falls > 12' (Adult) or > 3 times a child's height
Trauma with burns > 5% and < 20% BSA
Death in passenger compartment
Extrication time of > 20 minutes
Emergency Center Physician Discretion
Hanging/traumatic asphyxiation

PROCEDURES

	EMT	
	AEMT	
	Paramedic	

12Lead ECG

Clinical Indications

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

Procedure:

- 1) Assess patient and monitor cardiac shunts
- 2) If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12Lead 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 mid axillary line
- 6) Instruct patient to remain still.
- 7) Press the appropriate button to acquire the 12Lead 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) STEMI Patients must be transported to closest STEMI Interventional Hospital.
- 10) Document the procedure, time, and results on/with the patient care report (PCR)
- 11) An EMT or EMT-A may transmit a 12Lead 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.

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	EMT	
	AEMT	
	Paramedic	

Airway-King LTD

Clinical Indications:

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

Absolute Contraindications:

- Deforming facial trauma

Relative Clinical Contraindications:

- Pulmonary fibrosis
- Morbid obesity

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

EMT: Pulseless AND Apneic patients

AEMT: Apneic patients + Pulseless and Apneic

Paramedic: Paramedic discretion

Procedure:

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

Certification Requirements:

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

Airway-Nasotracheal Intubation

Clinical Indications:

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

Contraindications:

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

Procedure:

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

Certification Requirements:

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

	AEMT	
	Paramedic	

Airway Orotracheal Intubation

Clinical Indications:

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

Contraindications:

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

Procedure:

- 1) Prepare, position and oxygenate the patient with 100% Oxygen.
- 2) Select proper ET tube (and stylette, if used), have suction ready.
- 3) Using laryngoscope, visualize vocal cords. (Use Sellick maneuver/BURP to assist you).
- 4) Limit each intubation attempt to 30 seconds with BVM between attempts. **AVOID HYPOXIA**
- 5) Visualize tube passing through vocal cords.
- 6) Inflate the cuff with 3 to 10 cc of air; secure the tube to the patient's face.
- 7) Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag-valve mask.
- 8) Consider using Supraglottic airway if ET intubation efforts are unsuccessful.
- 9) **Apply waveform capnometry and record readings on scene, enroute to the hospital, and at the hospital. Maintain ETC 02 between 35-45 mmHg. Avoid overventilation**
- 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.

	EMT	
	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 cricothyrotomy tube.

Procedure:

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

Certification Requirements:

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

LMHS EMS Protocols

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

Certification Requirements:

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

	EMT	
	AEMT	
	Paramedic	

Non-Invasive Ventilation-CPAP

Clinical Indications:

- CPAP indicated for patients over age 12 with pulmonary edema, COPD, Asthma, CHF, pneumonia, submersion injury, respiratory failure who is cooperative and has spontaneous respirations. These patients may demonstrate hypoxia ($SpO_2 < 90\%$), Tachypnea, retractions, accessory muscle use, rales (crackles) in lung fields

Contraindications:

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

Procedure:

- 1) Ensure adequate oxygen supply to ventilation device.
- 2) Explain the procedure to the patient.
- 3) Consider placement of a nasopharyngeal airway.
- 4) Place the delivery mask over the mouth and nose. Oxygen should be flowing at this point.
- 5) Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
- 6) Evaluate the response by the patient. Assess breath sounds, oxygen saturation, and general appearance of the patient.
- 7) Titrate oxygen to patient response. **5 cm H₂O for Asthma, COPD, Submersion injury, Pneumonia; 10 cm H₂O for CHF/ Acute Pulmonary Edema**
- 8) Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complication. The patient must be breathing on their own for optimal use of the CPAP device.
- 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.

LMHS EMS Protocols

	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 is 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.

LMHS EMS Protocols

Needle Chest Decompression

	AEMT	
	Paramedic	

Clinical Indications:

- Patients with hypotension (SBP < 90), clinical signs of shock, and at least one of the following signs:
 - Jugular vein distention.
 - Tracheal deviation away from the side of the injury (often a late sign).
 - Absent or decreased breath sounds on the affected side.
 - Hyper-resonance to percussion on the affected side.
 - Increased resistance when ventilating a patient
- ~ OR ~
- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

Procedure:

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

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

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

Certification Requirements:

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

Surgical Cricothyrotomy

Indications

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

Types of patients with obstructed airways that may need cricothyrotomy

- Direct trauma to larynx
- Anaphylactic reactions
- Food or other object in the airway (choking)

Procedure

- 1) Assemble all equipment (suction, BVM, ETT, Scalpel, end-tidal CO₂ monitor, oxygen)
- 2) Extend the head if not contra-indicated (spine fracture)
- 3) Identify landmarks (Thyroid cartilage, cricothyroid membrane)
- 4) Make vertical incision over the cricothyroid membrane with scalpel down to the cricothyroid membrane. Incision should be just big enough for the tube
- 5) Make horizontal incision through cricothyroid membrane and pass bougie through opening
- 6) Pass appropriately sized endotracheal tube over the bougie through incision into trachea. The bougie is then removed and tube left in place.
- 7) Ventilate patient and measure end-tidal CO₂
- 8) Secure tube in place. Avoid migration of tube and main-stem bronchus intubation
- 9) Control bleeding at site of incision with gauze and direct pressure
- 10) Contact Medical Control as soon as possible and transport to closest appropriate facility

Cardiopulmonary Resuscitation

Indications:

- * Basic life support for patient in Cardiac Arrest

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

- * Assess Level of consciousness (Not breathing, Abnormal breathing)
- * Bring AED to patient's side and activate
- * Begin CPR with adequate rate and depth and achieving complete chest recoil between compressions.
 - Minimize interruptions
 - Avoid over-ventilation
 - Push "hard and fast"
 - Utilize automated CPR device if available per manufacturer recommendations
- * C-A-B (not ABC's any more) Focus on effective Compressions, then position airway with oral airway; Place non-rebreather mask with high flow Oxygen. Avoid ventilations for first 4 cycles of CPR. Thereafter, Begin ventilations with low tidal volumes (400-600ml) slowly with ResQPod in place. 6-8 breaths/minute
- * Compression-Ventilation Ratio without an advanced airway 30-2 for one rescuer, and 15-2 for child/infant 2 or more Rescuers.

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

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

LMHS EMS Protocols

Defibrillation-Automated

Clinical Indications:

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

Contraindications:

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

Procedure:

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

If pulse returns:

See post resuscitation protocol.

Certification Requirements:

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

	AEMT	
	Paramedic	

Defibrillation-Manual

Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulse-less ventricular tachycardia.

Procedure:

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

Certification Requirements:

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

Transcutaneous Pacing

Paramedic

Clinical Indications:

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

Procedure:

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

Certification Requirements:

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

Intranasal Medication Administration

Clinical Indications:

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

Procedure:

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

Certification Requirements:

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

	EMT	
	AEMT	
	Paramedic	

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

Clinical Indications:

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

Contraindications:

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

Procedure:

- 1) Ensure the airway is adequate per airway protocol.
- 2) Place the ITD between the bag and the EtCO₂ detector (for intubated patients) or between the bag and mask (for patients ventilated with the BVM). The elbow O₂ device should be between the ITD and the bag.
- 3) Flip the red switch to the "on" position so that the respiratory timing lights flash.
- 4) Provide a low tidal volume breath (100 ml) after each flash on the LED timing lights.
- 5) Perform chest compression per the CPR procedure.
- 6) Once there is return of spontaneous circulation and the EtCO₂ climbs above 40, remove the ITD. Allow the EtCO₂ value to control your respiratory rate (bag faster if EtCO₂ > 50, bag slower if EtCO₂ < 30). The ITD should also be removed if the patient has spontaneous respirations.
- 7) Carefully monitor the placement of the endotracheal tube after movement of the patient, placement of the ITD, and/or removal of the ITD.
- 8) Document the procedure and results in the Patient Care Report (PCR).

Certification Requirements:

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

Rapid Sequence Intubation (Must have individual Medical Director Approval)

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

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

Initial step:

1. Hyper-oxygenate patient with NRB and 100% oxygen (3 minutes or 8 tidal volume breaths)
 - *If SpO₂ is not greater than 90% after above, add CPAP to pre-oxygenate
 - *Apply nasal cannula with 15 lpm oxygen to provide "apneic oxygenation" after sedation
2. Assure patency of IVs. (Preferably two large bore IV's).
3. Observe cardiac monitor; Pulse oximeter; End Tidal CO₂; Blood pressure
4. Consider **pre-medicating** patient:
 - Fentanyl 0.5-1 mcg/kg IV
 - Pediatric patients < 3 yo - Atropine .01 mg/kg IVP
 - Adults exhibiting bradycardia - Atropine 0.5 mg IVP
5. Administer Induction medication
 - Etomidate (Amidate)** 0.3 mg/kg IV
6. Administer Paralytic (must have IV established)
 - Rocuronium (Zemuron)** 1.0 mg/kg. DO NOT ADMINISTER PARALYTIC TO PATIENT THAT IS NOT ABLE TO BE VENTILATED
7. Reassess patient. Watch for the jaw to relax, making ventilation easier, indicating paralytic has taken effect.
8. Perform Intubation.
 - A. If unable to Intubate, apply Backward, Upward, Rightward Pressure to the thyroid cartilage (BURP maneuver) and again attempt to intubate.
DO NOT bag the patient. Use nasal cannula during intubation attempt to provide "apneic oxygenation" 15 lpm oxygen by nasal cannula
 - B. If still unable to intubate, immediately place King LTD airway. **Avoid Any Hypoxia**
9. Once intubation is complete, inflate the ETT cuff and confirm placement by auscultation, AND capnography. (Waveform capnography is the "gold standard" for confirmation.)
10. Once airway is secure, transport patient rapidly to the nearest appropriate facility.

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

Note: Patients who have been paralyzed cannot be fully assessed until medication wears off. Your assessment and communication of the assessment to the Emergency Department is critical.

	EMT	
	AEMT	
	Paramedic	

Permissive Hypotension and Impedance Threshold Device (ITD) - ResQGard

Clinical Indications:

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

Contraindication:

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

Procedure:

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

Certification Requirements:

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

LMHS EMS Protocols

Spinal Motion Restriction (SMR)

Goals: Minimize secondary injury to spine in patients who have, or may have an unstable spinal injury

Minimize patient morbidity from immobilization procedures

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

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

Treatment:

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

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

Patients likely to benefit from immobilization should undergo this treatment

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

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

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

Splinting

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

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

Procedure:

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

Certification Requirements:

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

	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:

- 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.
- The default procedure is always to transport the patient to the hospital by ambulance with a Law Enforcement Officer (LEO) in attendance.**
- Recognize that a TASER dart removal in the field should proceed only if **ALL** criteria for refusal of transport are met.
- 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 > 110bpm, a respiratory rate of > 12bpm, Systolic BP of > 100mmHg < 180mmHg
 - The patient has no other acute medical psychiatric conditions requiring physician evaluation
 - All TASER barbs have been accounted for
 - No tetanic muscle contractions
 - Patient does not request transport
 - Patient is > than 17 years of age
 - Patient has current Tetanus Booster and (If the patient has not had a Tetanus booster within 10 years or the status is unknown, LEO may transport to the hospital if all other criteria are met.)
- 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.

- 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.

Certification Requirements:

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

Venous Access-Existing Catheters

Clinical Indications:

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

Procedure:

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

Certification Requirements:

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

Venous Access-Extremity

AEMT

Medic

Clinical Indications:

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

Procedure:

- 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.
- Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access- Intraosseous procedure.
- Use the largest catheter bore necessary based upon the patient's condition and size of veins.
- 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.
- Rates are preferably:
 - Adult: KVO: 60cc/hr (1 gtt/6 sec for a macro drip set)
 - Pediatric KVO: 30cc/hr (1 gtt/12 sec for a macro drip set)
- If shock is present:
 - Adult: 500cc fluid boluses repeated as long as lungs are dry and BP < 90.
 - Consider a second IV line.
 - Pediatric: 20cc/kg boluses repeated PRN for poor perfusion.

Certification Requirements:

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

Venous Access- Intraosseous

AEMT

Medic

Clinical Indications:

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

Contraindications:

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

Procedure:

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

Certification Requirements:

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

Wound Care

Clinical Indications:

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

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

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

EMR
EMT
AEMT
Paramedic
Med Control

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:

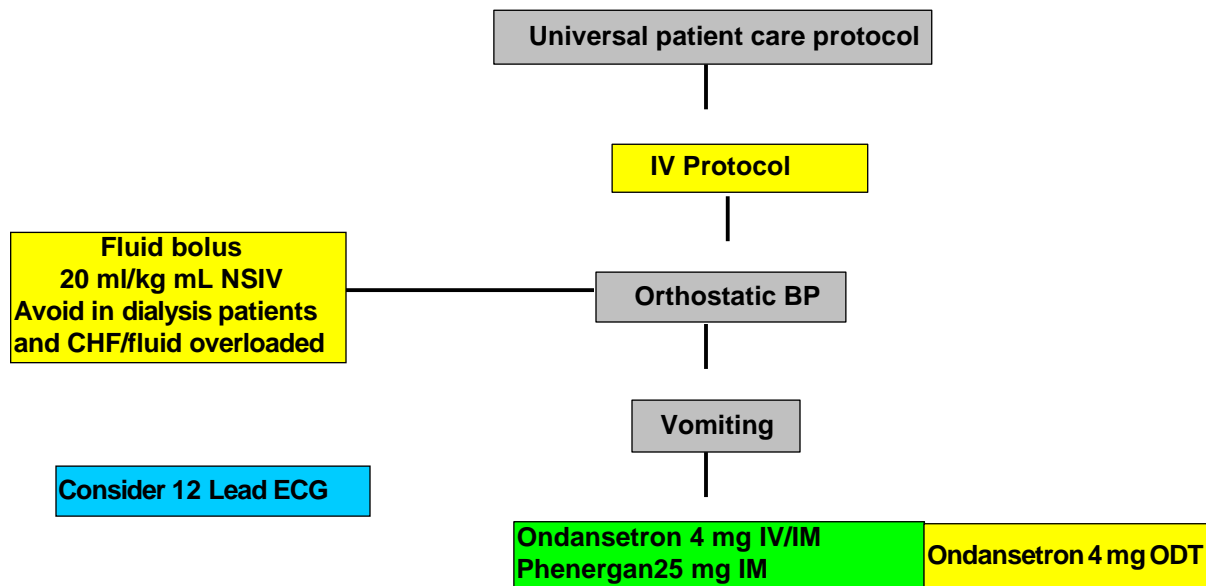
- Pain
- Tenderness
- Nausea/vomiting/diarrhea
- Dysuria
- Constipation
- Vaginal bleeding/discharge
- Pregnancy

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



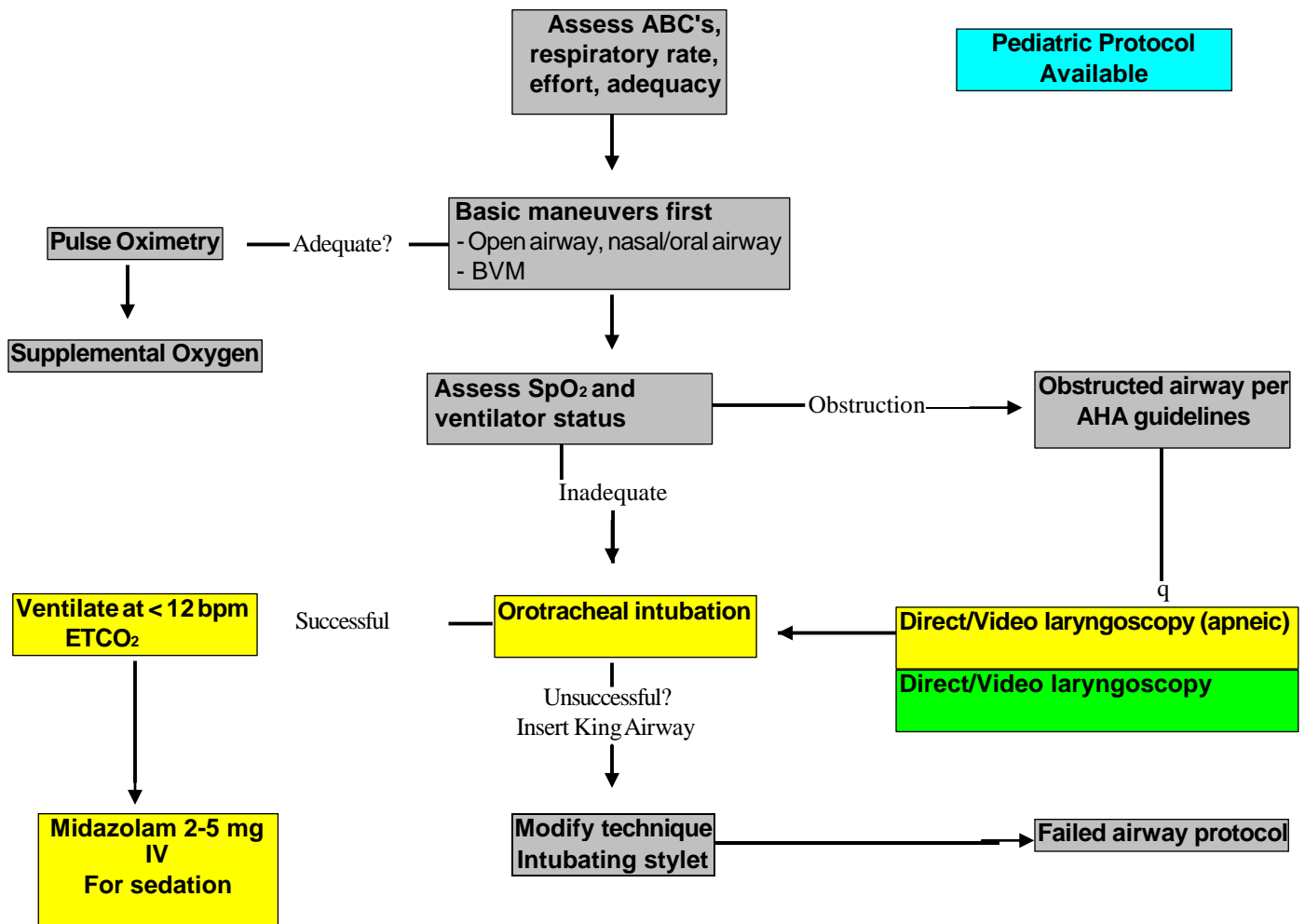
Pearls

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

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Airway



Pearls

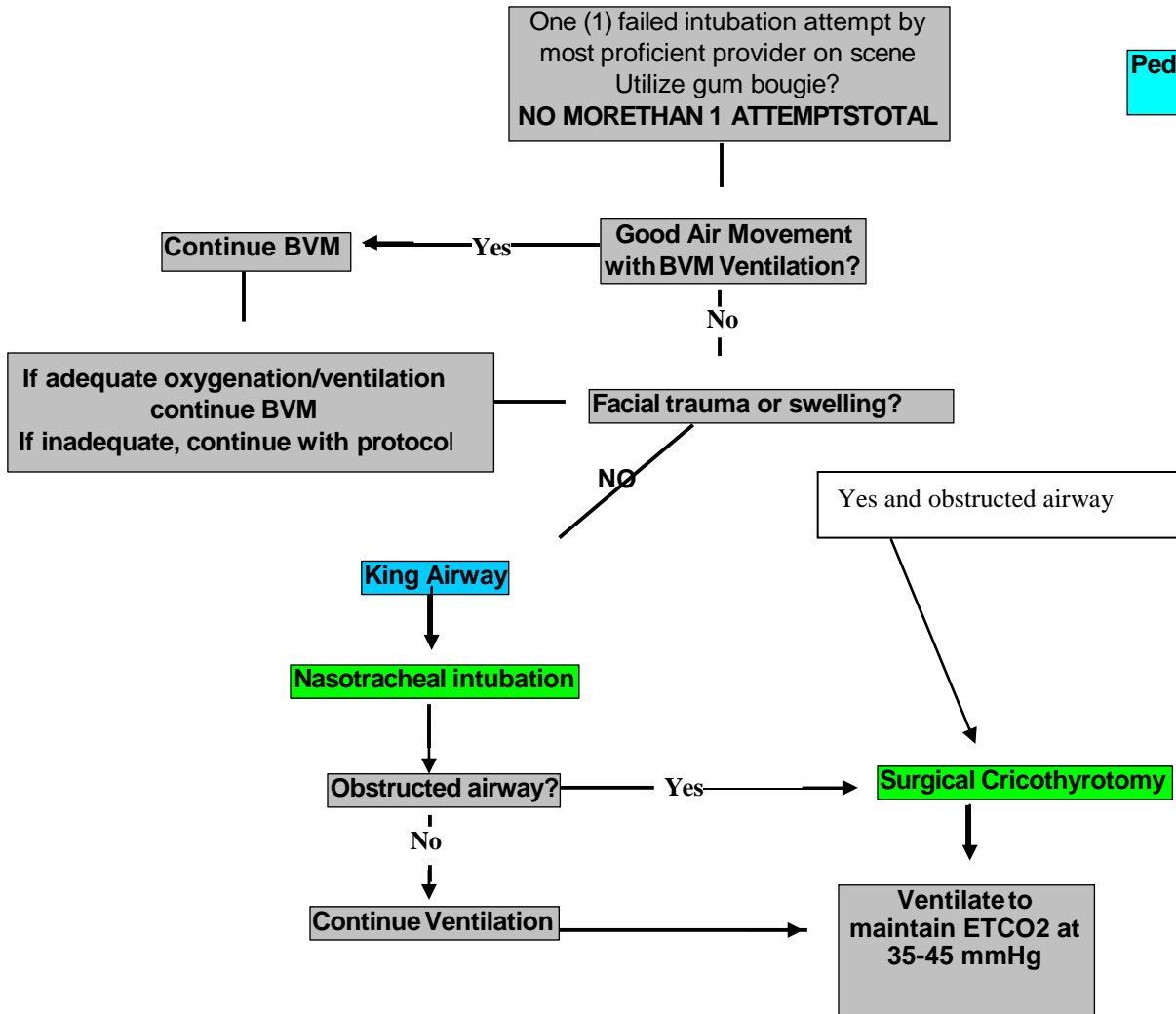
- For this protocol, Adult = 12 years or older
- Capnometry is mandatory with all methods of intubation. Document results.
- Continuous EtCO₂ monitoring is required for all intubated patients
- Do not assume hyperventilation is psychogenic - use oxygen
- BURP (Backward, Upward, Rightward, Pressure) maneuver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

LMHS EMS Protocols

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 EtCO₂ should be applied to all patients with respiratory failure and to all intubated patients
Providers should consider using a King airway when unable to intubate a patient
AEMTs and EMTs may use the King Airway only after attending approved in-service and completing practical examination
Notify OLMC as soon as possible about failed airway
Patient must have respiratory effort to perform naso-tracheal intubation

EMR
EMT
AEMT
Paramedic
Med Control

Allergic Reaction

History

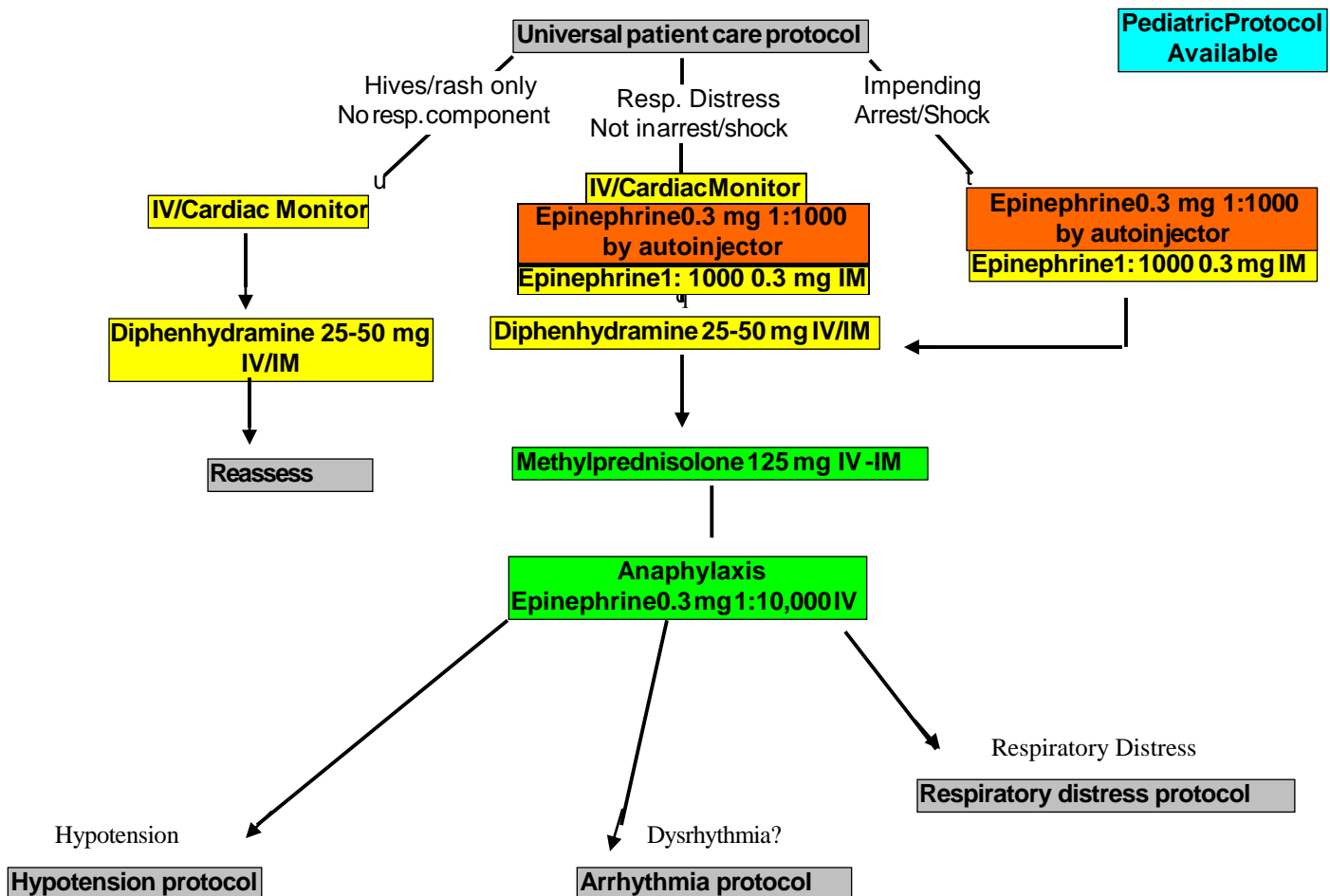
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

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. Use caution with patients who have underlying cardiac disease. Perform ECG.
- Shorter the onset = more severe the reaction

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Altered Mental Status

History

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

Signs and Symptoms:

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

Differential:

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

Consider spinal motion restriction

IV Protocol

Pediatric Protocol Available

Blood Glucose

Glucose < 60

Glucose 60-350

Glucose > 350 dehydration

Oral glucose, 15 grams
if airway not compromised

50% Dextrose 25 grams IV
Glucagon 1 mg IM -IN
Thiamine 100 mg IV

Naloxone 2mg IN

Normal Saline Bolus
1000 mL

Consider other
causes: Head injury
OD
CVA
Hypoxia

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

No

Return to baseline?

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

Pearls

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

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

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

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

IV/IO Protocol

H's and T's

- Hydrogen Ion (acidosis)
- Hypovolemia
- Hypothermia
- Hypoxia
- Hyperkalemia/Hypokalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker)
- Tension pneumothorax
- Tamponade
- Toxins
- Thrombosis-Pulmonary/Coronary

AT ANYTIME

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

Go to Post Resuscitation Protocol

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

Check rhythm every 2 minutes, SHOCKABLE??

Pearls:

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

Continue Epinephrine

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

EMR
EMT
AEMT
Paramedic
Med Control

Atrial Fibrillation

History

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

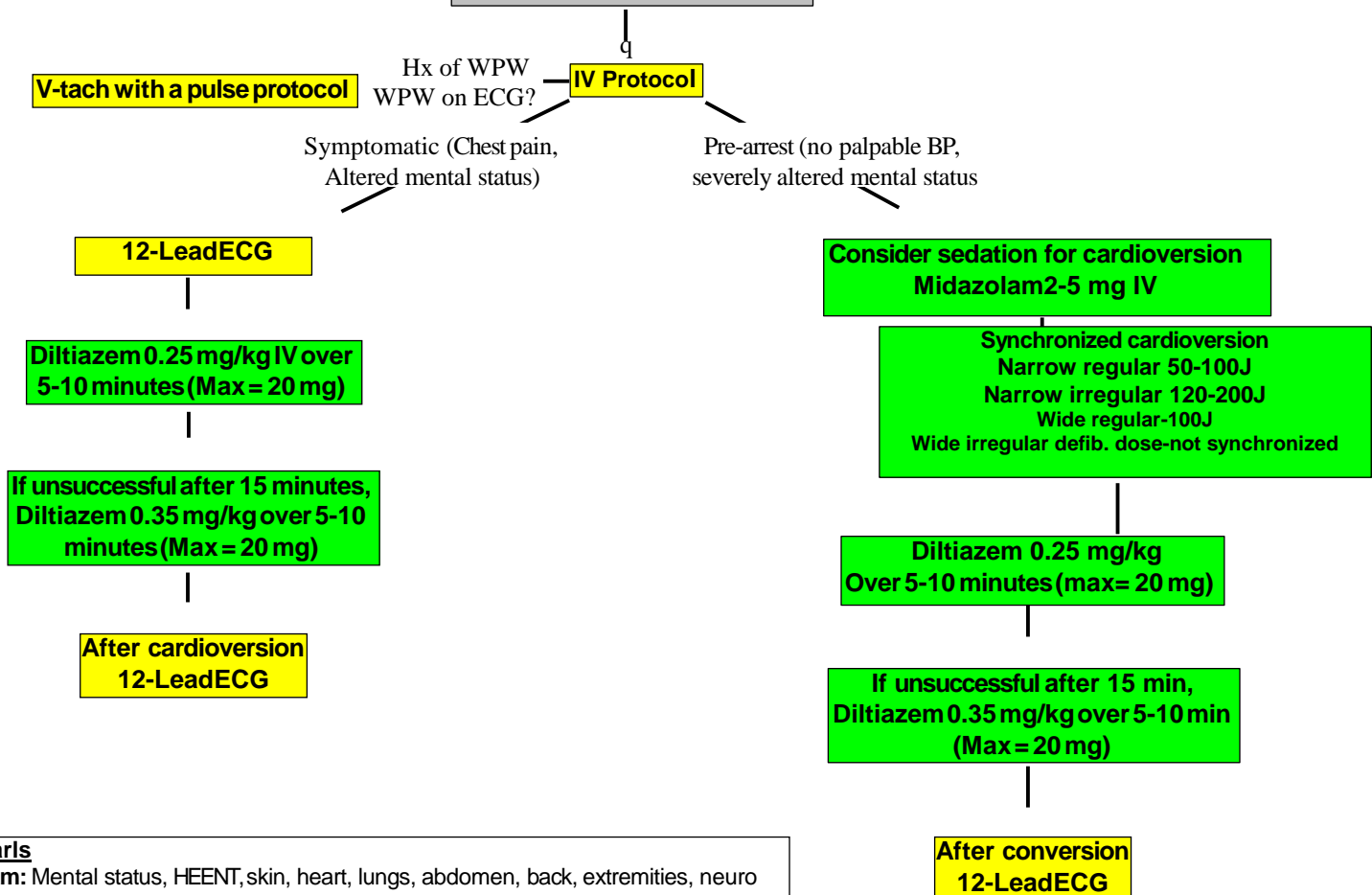
Signs and Symptoms:

- 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

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Back Pain

History

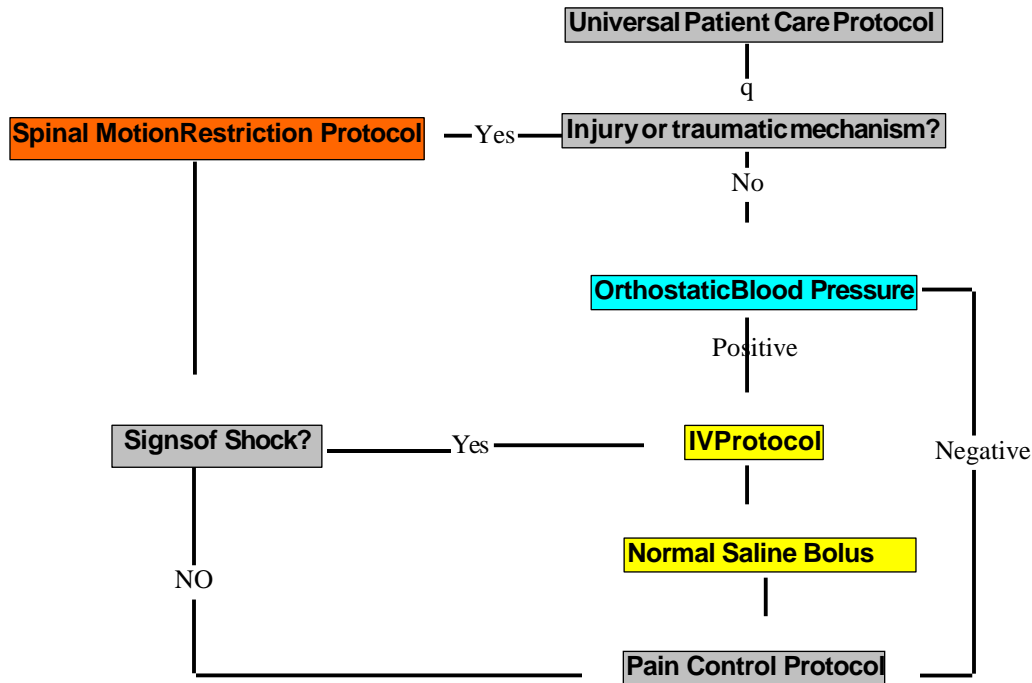
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain/injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Better or worse with activity

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

EMR
EMT
AEMT
Paramedic
Med Control

Behavioral/Agitated Delirium

History

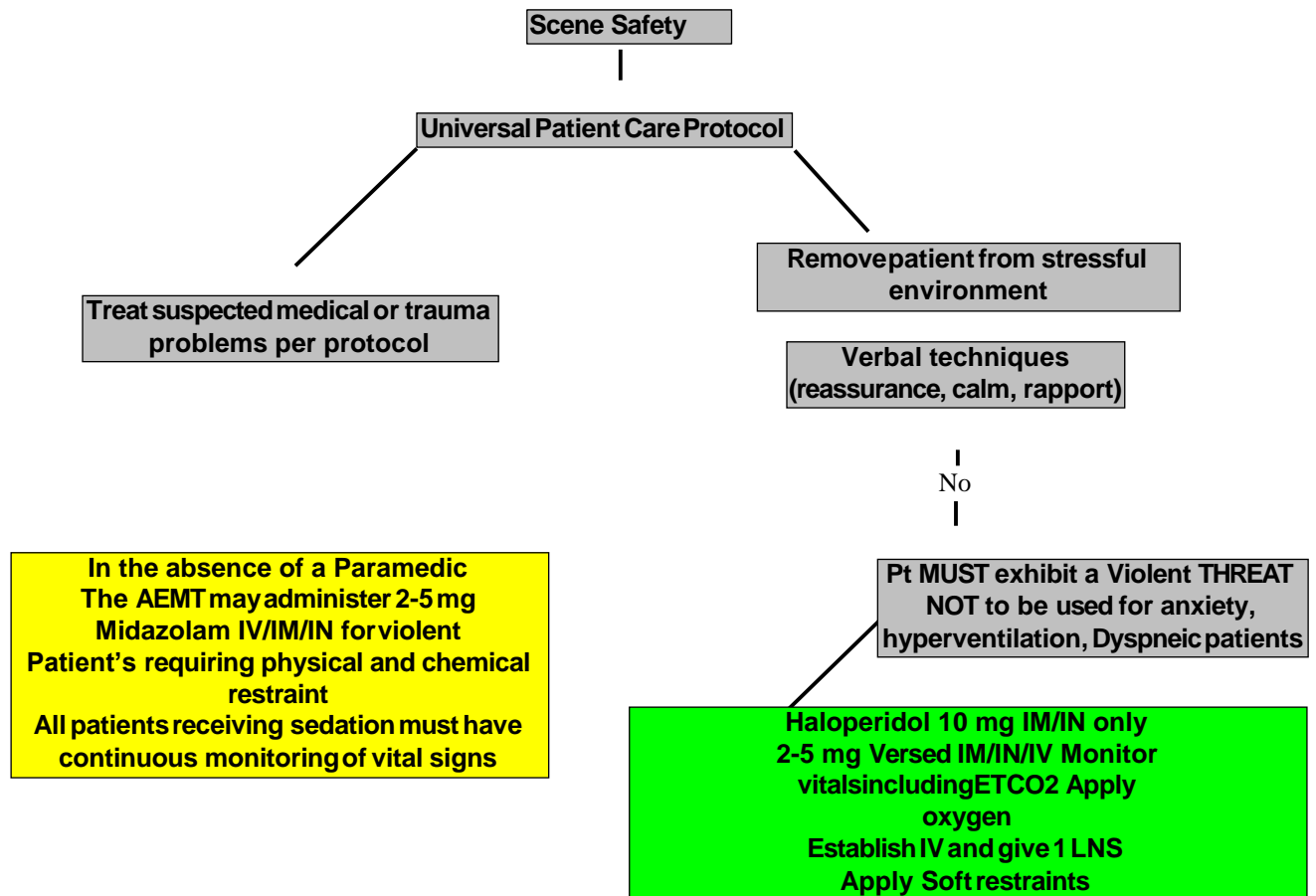
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medical alert tag
- Substance abuse/OD
- Diabetes

Signs and Symptoms:

- Anxiety
- Agitation
- Confusion
- Affect change
- Hallucinations
- Delusional thoughts
- Bizarre behavior
- Combative/violent
- Expression of suicidal/homicidal thoughts

Differential:

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



Pearls

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

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

EMR
EMT
AEMT
Paramedic
Med Control

Bites and Envenomation

History

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

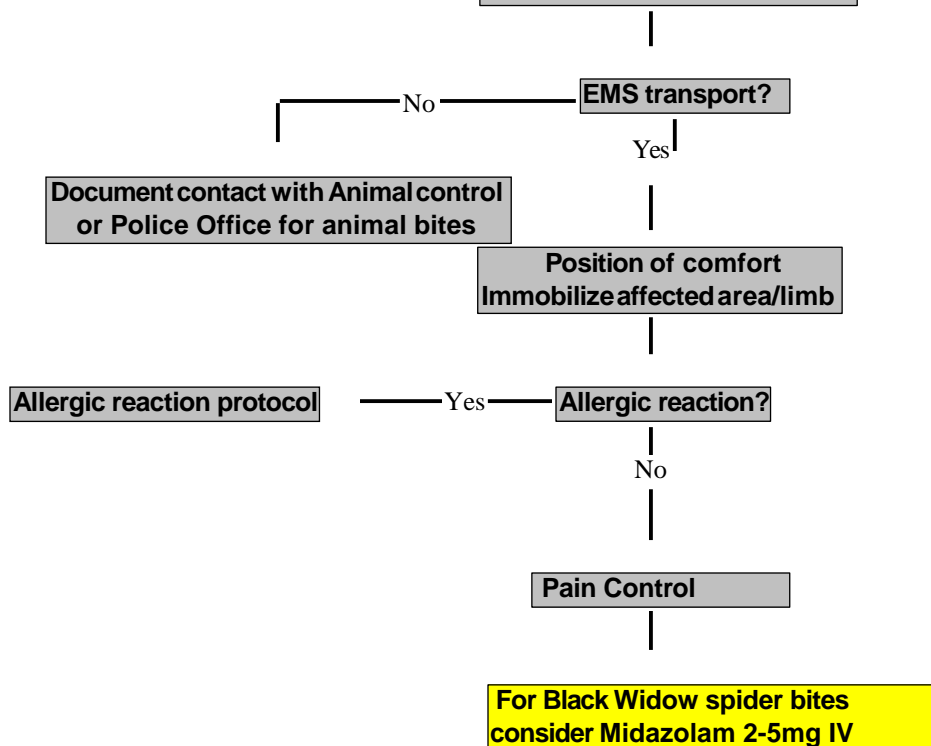
Signs and Symptoms:

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

Differential:

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

Universal Patient Care Protocol



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

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Bradycardia

History

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

Signs and Symptoms:

- HR < 60bpm
- 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

Hypotension SBP < 90 mmHg and/or symptomatic

2nd or 3rd degree block

Not 2nd or 3rd degree block

External transcutaneous pacing
Consider sedation with Midazolam 2mg IV

Monitor

Atropine 0.5-1mg IV up to 3mg

Atropine 0.5-1mg up to 3mg

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

External transcutaneous pacing
Consider sedation with Midazolam 2mg IV

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

Pearls

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

LMHS EMS Protocols

Burns

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal Patient Care Protocol

Remove rings, bracelets, and other constricting items

Thermal

Chemical

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

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

Cover with dry sterile sheet or dressings

IV Protocol

Pain control protocol

Eye involvement
Saline flush in affected eye
See eye protocol

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

Transport
To a nearest Trauma center

Pearls

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

Critical Burns: > 25%BSA; 3rd Degree burns > 10%BSA; 2nd or 3rd degree burns to face, eyes, hands or feet; electrical burns, respiratory burns, deep chemical burns, burns with extremes of age or chronic disease; burns associated with major traumatic injury. These burns require admission or transfer to a burn center.

Early intubation required in significant inhalation injuries

Treat potential CO exposure with 100% Oxygen

Circumferential burns to extremities are dangerous due to potential vascular compromise due to soft tissue swelling

Burn patients are prone to hypothermia

Do not overlook possibility of multi-system trauma

Do not overlook possibility of child abuse.

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Cardiac Arrest

History

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

Signs and Symptoms:

- Unresponsive
- Apneic
- Pulseless

Differential:

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

AT ANYTIME

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

Go to Post Resuscitation Protocol

Universal patient care protocol
"PITCREW" approach

Criteria for death-no resuscitation?

Begin continuous compressions

Advanced Life Support Available

No

Yes

Defibrillation Automated

Airway Protocol

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

Assess Rhythm

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

Pearls

Always Follow Current ACLS & AHA Guidelines

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

LMHS EMS Protocols

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
- GER reflux, hiatal hernia
- Esophageal spasm
- Chest wall pain
- Pleural pain
- Overdose (cocaine)

Universal patient care protocol

Aspirin 325 mg PO
Unless allergy to ASA

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

12-Lead ECG

Nitroglycerin 0.4 mg SL
Every 5 minutes if SBP > 90

*** If the patient has their own supply
*** EMTs 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

Nitroglycerin 0.4 mg SL
Every 5 minutes if SBP > 90

Hypotension/arrhythmia
Treat per protocol

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

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

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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

Universal patient care protocol

Left lateral position

Treat suspected medical or trauma problems per protocol

—Yes—

Hypertension?
Abnormal vaginal bleeding?

Visually inspect perineum for crowning
(No digital exam)

Crowning
> 36 weeks gestation

Monitor and reassess
Document frequency and
duration of contractions

IV Protocol

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

Pediatric protocol

Priority symptoms:
Crowning
< 36 weeks gestation
abnormal presentation
severe vaginal bleeding
Multiple gestation

**Early notification of
Hospital of impending delivery**

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

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Deceased Persons

History

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

Key Information:

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

Differential:

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

Patient meets criteria for obvious death? See Deceased Subject Protocol

Patient meets criteria for discontinuation/TOR guidelines

Law enforcement and/or EMS recognize suspicious death?

No

No

Attended death?

Yes

Contact made with primary care physician?

No

Yes

Confirm name of primary care physician from family. Give info to law enforcement

Describe case and obtain Name of physician

Release of body appropriate. Medical devices may be removed.

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

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.

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Drowning/Submersion

History

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

Signs and Symptoms:

- Unresponsive
- Mental status change
- Decreased or absent vital signs
- Vomiting
- Coughing

Differential:

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

Universal patient care protocol

Spinal Motion Restriction (SMR) Protocol

Adult airway protocol
OR
Respiratory distress protocol
OR
Other appropriate protocol

IV Protocol

Cardiac monitor
Pulse Ox
ETCO₂

CPAP 5 cmH₂O for respiratory distress
In awake patients able to maintain own airway

Pearls

Exam: Trauma survey, head, neck, chest, pelvis, back, extremities, skin, neuro

- With cold water there is no time limit – resuscitate all
- All victims should be transported for evaluation due to potential for worsening over next several hours
- All appropriately trained rescuers to remove victims from areas of danger
- With pressure injuries, consider transport to hyperbaric chamber (The Toledo Hospital) by air ambulance

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Paramedic
Med Control

Electrical Injuries

History

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

Signs and Symptoms:

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

Differential:

- Cardiac arrest
- Seizure
- Burns
- Multiple trauma

Scene safety

Universal patient care protocol

Spinal Motion Restriction Protocol

IV protocol

Focused history and physical exam
Look for entry and exit wounds

Pain control protocol

12-Lead ECG

Appropriate protocol
based on symptoms

Pearls

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

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Med Control

Epistaxis

History

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

Signs and Symptoms:

- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

Differential:

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

Universal patient care protocol

Upright position
Compress nostrils
together Ice pack

Hypotension and/or tachycardia

Yes

No

IV protocol

Normal saline bolus
500 mL

Consider hypertension
protocol

Pearls

Exam: Mental status, HEENT, neck, heart, lungs, neuro

- It is difficult to quantify the amount of blood loss in epistaxis
- Bleeding may be posterior and you may see the patient expel blood clots from the mouth
- Anticoagulants include: aspirin, Coumadin, Plavix, NSAIDS, Pradaxa, Eliquis, Xarelto, Lovenox

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Extremity Trauma

History

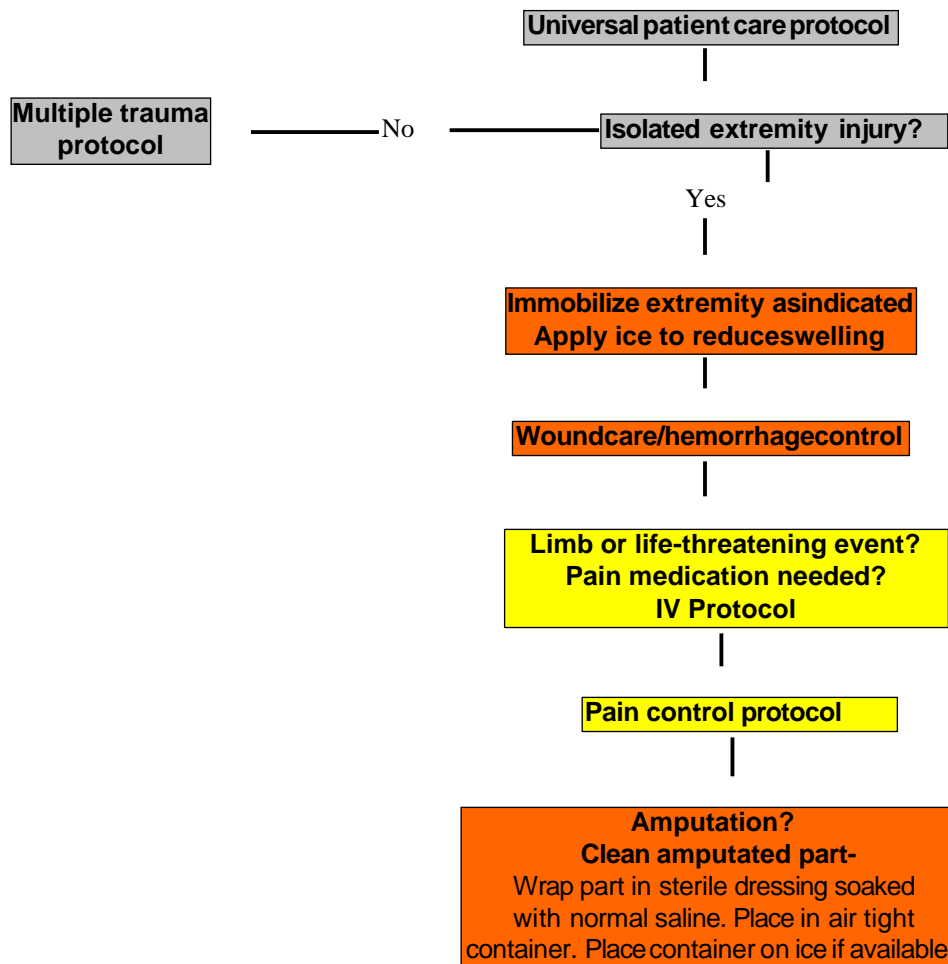
- Type of injury
- Mechanism: crush/penetrating/ amputation
- Time of injury
- Open vs. closed wound/fracture
- Wound contamination
- Medical history
- Medications

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 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

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Eye injury/Complaint

History

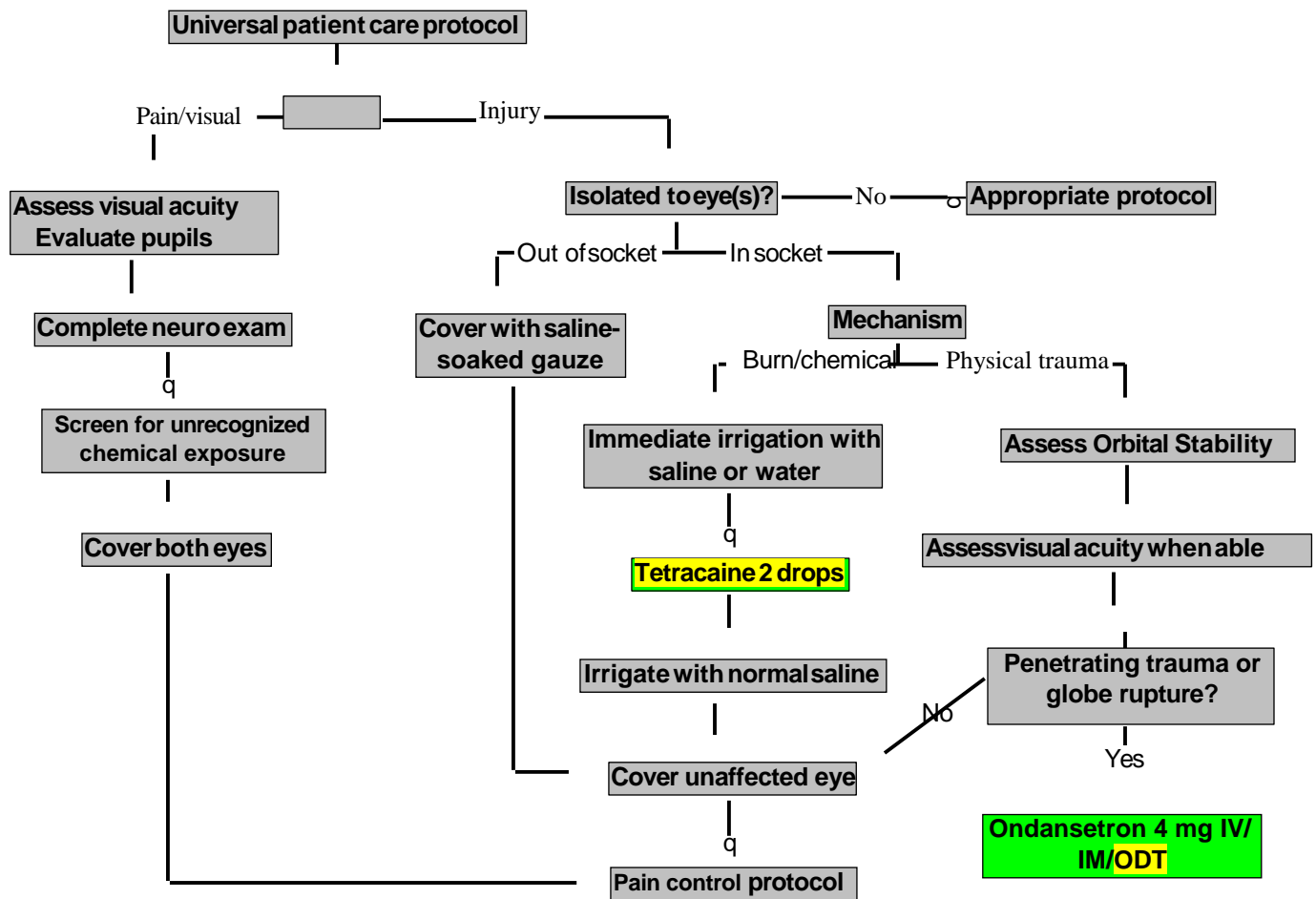
- Time of injury/onset
- Blunt/penetrating/chemical
- Open vs. closed injury
- Involved chemical/MSDS
- Wound contamination
- Medical history
- Tetanus status
- Normal visual acuity
- Medications

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

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Fever/Suspected Sepsis

History

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

Signs and Symptoms:

- Warm
- Flushed
- Sweaty
- Chills/rigors
- Myalgias, cough, chest pain
- Headache
- Dysuria
- Abdominal pain
- Mental status change
- Rash

Differential:

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

Universal patient care protocol

Consider droplet, airborne, contact precautions

Suspect Sepsis?
Pulse, RR, BP, ETCO₂, Temp

Yes No

Airway support

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

Monitor/trend vitals
limit on-scene time
Prevent hypothermia

Suspected Sepsis:

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

Notify receiving facility early
of suspected sepsis

Pearls

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

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

LMHS EMS Protocols

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Med Control

Head Trauma

History

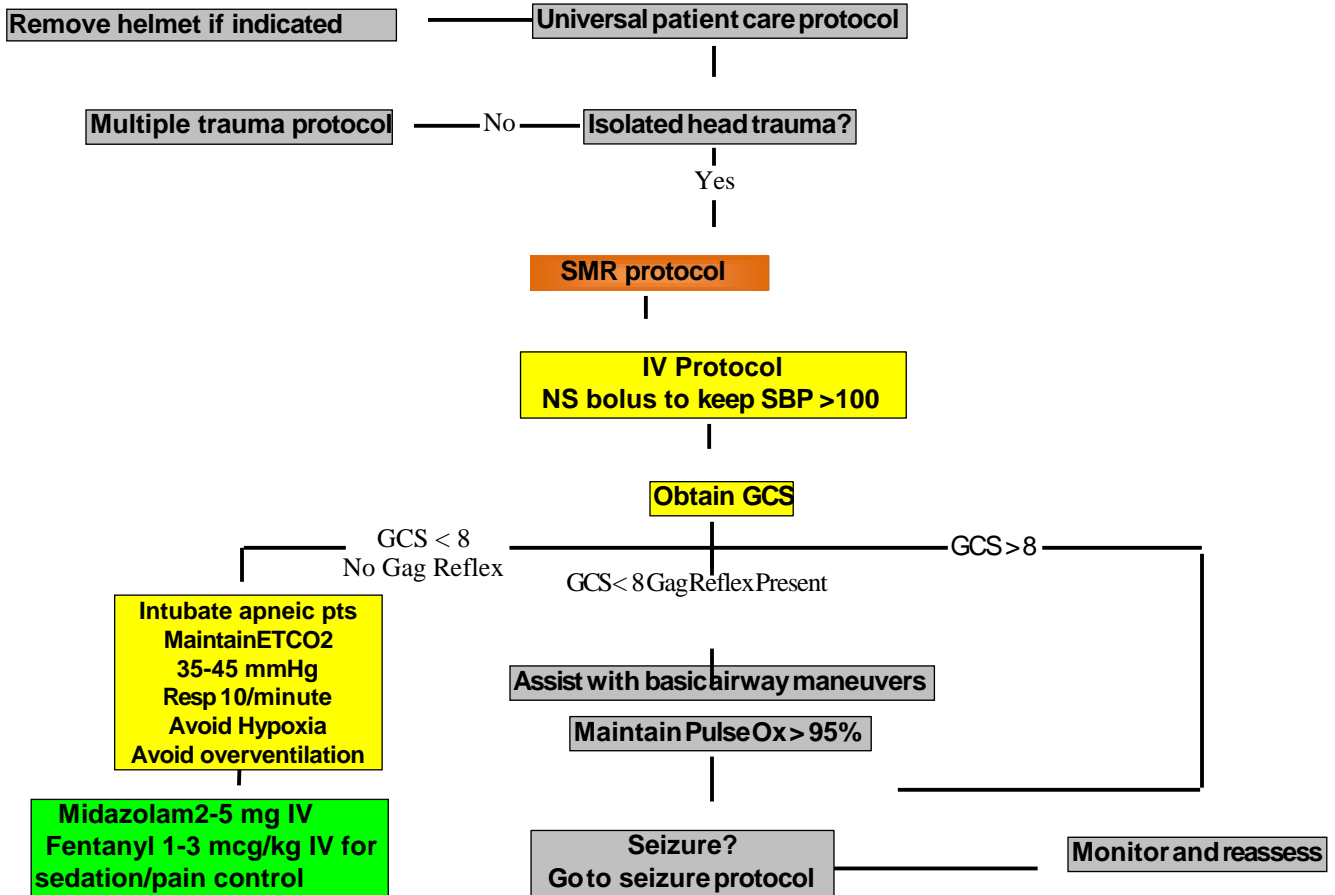
- Time of injury
- Mechanism: blunt/penetrating
- LOC
- Bleeding
- Medical history
- Medication
- Evidence of multi-trauma
- Helmet use/damage to helmet

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

EMR
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Paramedic
Med Control

Hypertension

History

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

Signs and Symptoms:

- Headache
- Nosebleed
- Blurred vision
- Dizziness
- Chest Pains

Differential:

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

Universal patient care protocol



Check BP in both arms



12-Lead ECG



IV protocol



Hypertension + End-organ damage

1) Acute coronary syndrome 2) 2)

2) Acute MI

3) Acute renal failure

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

Pearls

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

- Never treat elevated blood pressure based on one set of vital signs
- Symptomatic hypertension is usually revealed through end-organ damage to cardiac, CNS, or renal systems
- Transport symptomatic patients with hypertension with their head elevated

EMR
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Med Control

Hypotension/Shock -Non-Trauma

History

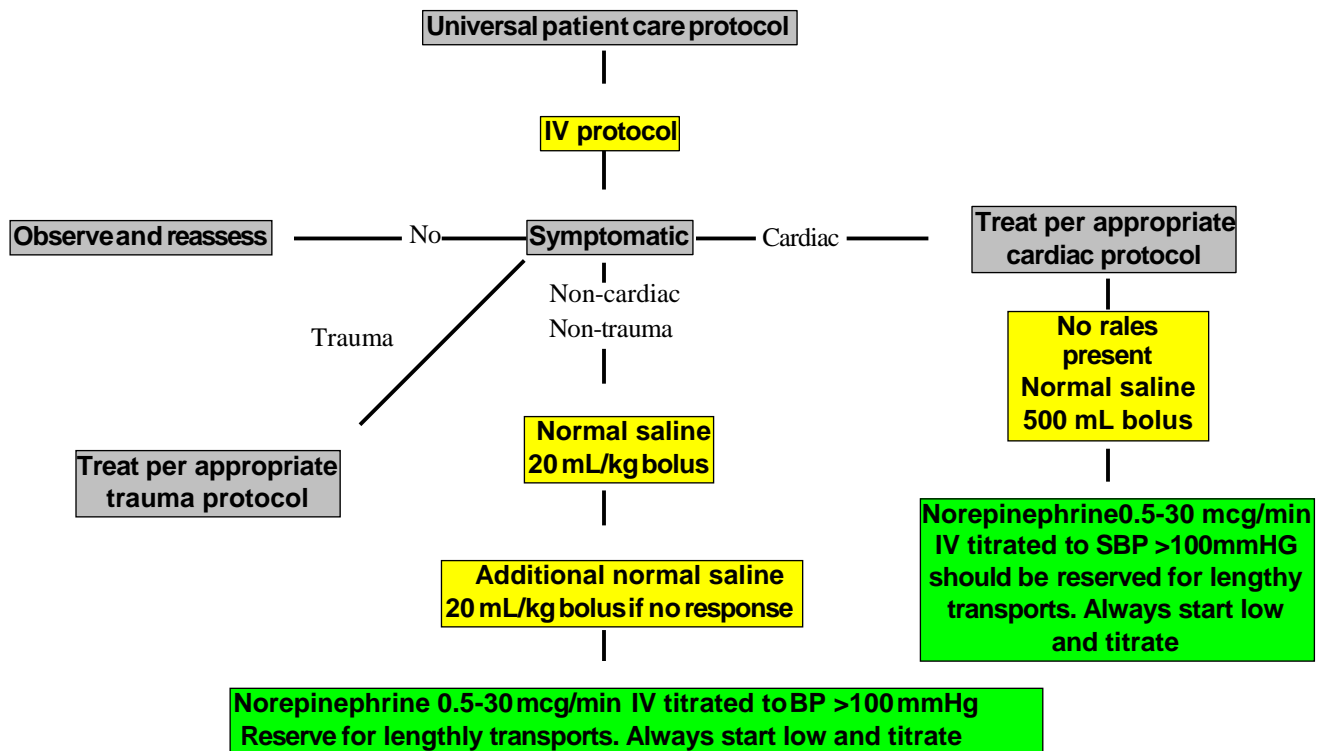
- Blood loss: GI, AAA ,Ectopic, Vaginal
- Fluid loss- Vomiting, diarrhea, fever
- Infection
- Cardiac: ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- Poor PO intake history

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
- Norepinephrine = Levophed. Use only in patients not responsive to Saline Bolus therapy; Must have large bore IV
- Monitor closely for extravasation; IV pump preferable. 4 mg ampule in 1000 ml Dextrose = 4 mcg/ml

EMR
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Med Control

Hypothermia

History

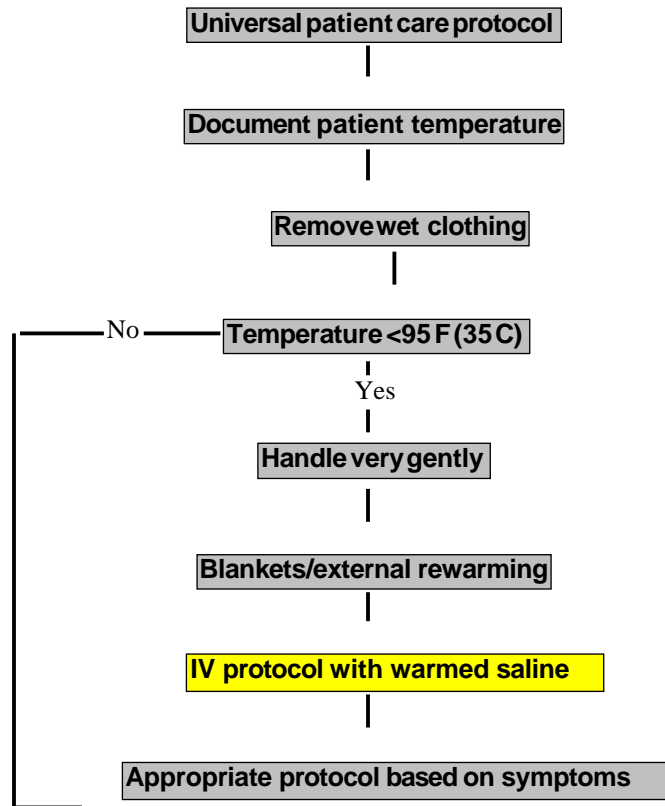
- Age
- Exposure to environment even in normal temperatures
- Past medical history/meds
- Exposure to extreme cold
- Length of exposure/wetness
- Drug use
- Infection/sepsis
- Extremes of age

Signs and Symptoms:

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

Differential:

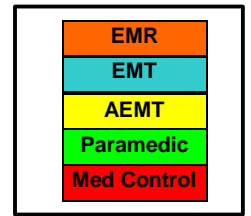
- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
- CVA
- Head injury
- Spinal cord injury



Pearls

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

- No patient considered dead until warm
- Core temperature < 35C (95 F)
- Extremes of age susceptible
- Temp. less than 31C (88 F) Vfib is common cause of death. Handle these patients gently to prevent Vfib
- Hypothermia may produce severe bradycardia
- Shivering stops below 32C (90 F)

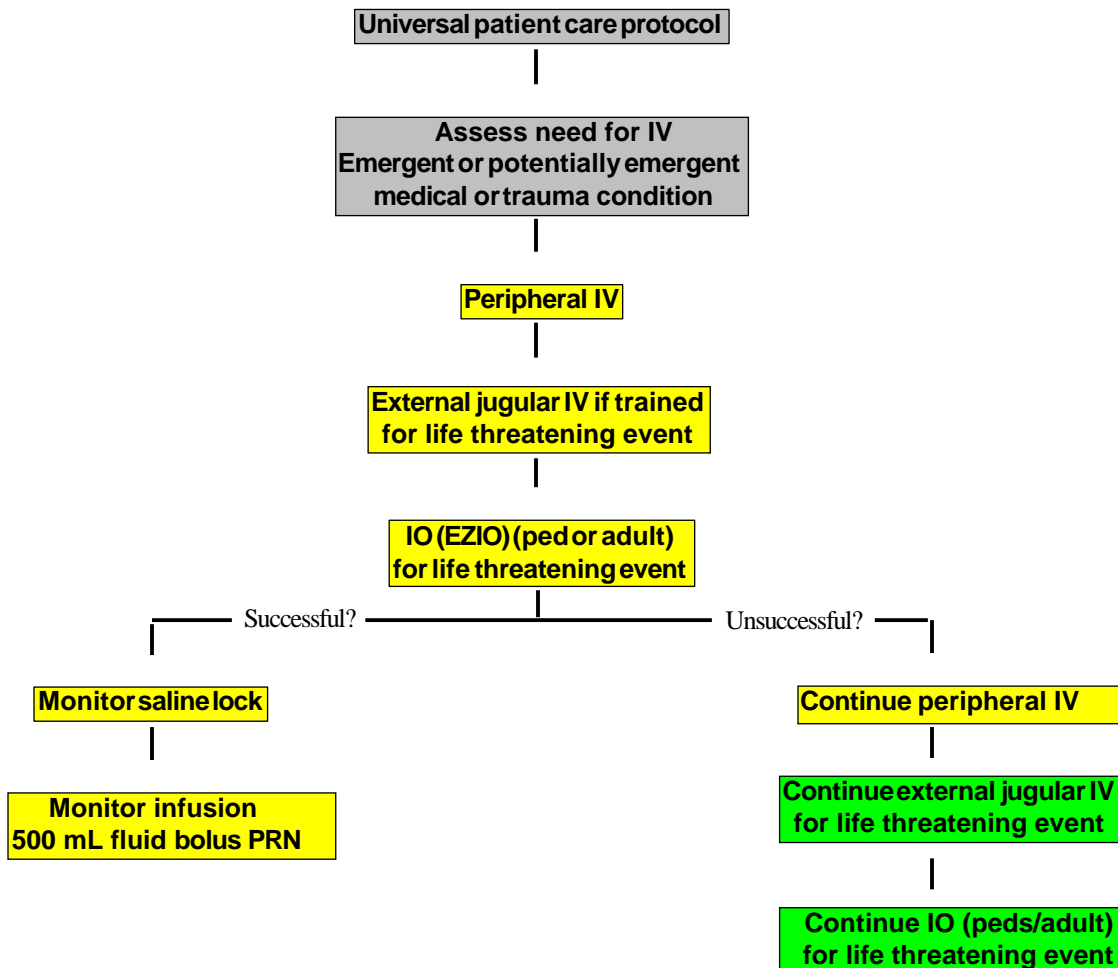


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LMHS EMS Protocols

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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 micro drips for patients under 6 years old
- External jugular lines can be attempted initially in life-threatening events with no obvious peripheral site
- In CARDIAC ARREST, pre-existing dialysis shunt or external central venous catheter may be used
- In patient who are hemodynamically unstable or in extremis, contact OLMC prior to accessing dialysis catheter or 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

LMHS EMS Protocols

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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

Universal patient care protocol

Rapid trauma assessment and GCS

Minimize on-scene time

Spinal Motion Restriction Protocol

IV protocol

Vital signs and perfusion?

Abnormal

Normal

NS bolus to maintain
SBP 60-90 for Hemorrhagic shock

Ongoing assessment

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

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

Consider needle chest decompression

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**

EMR
EMT
AEMT
Paramedic
Med Control

Obstetrical Emergency

History

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

Signs and Symptoms:

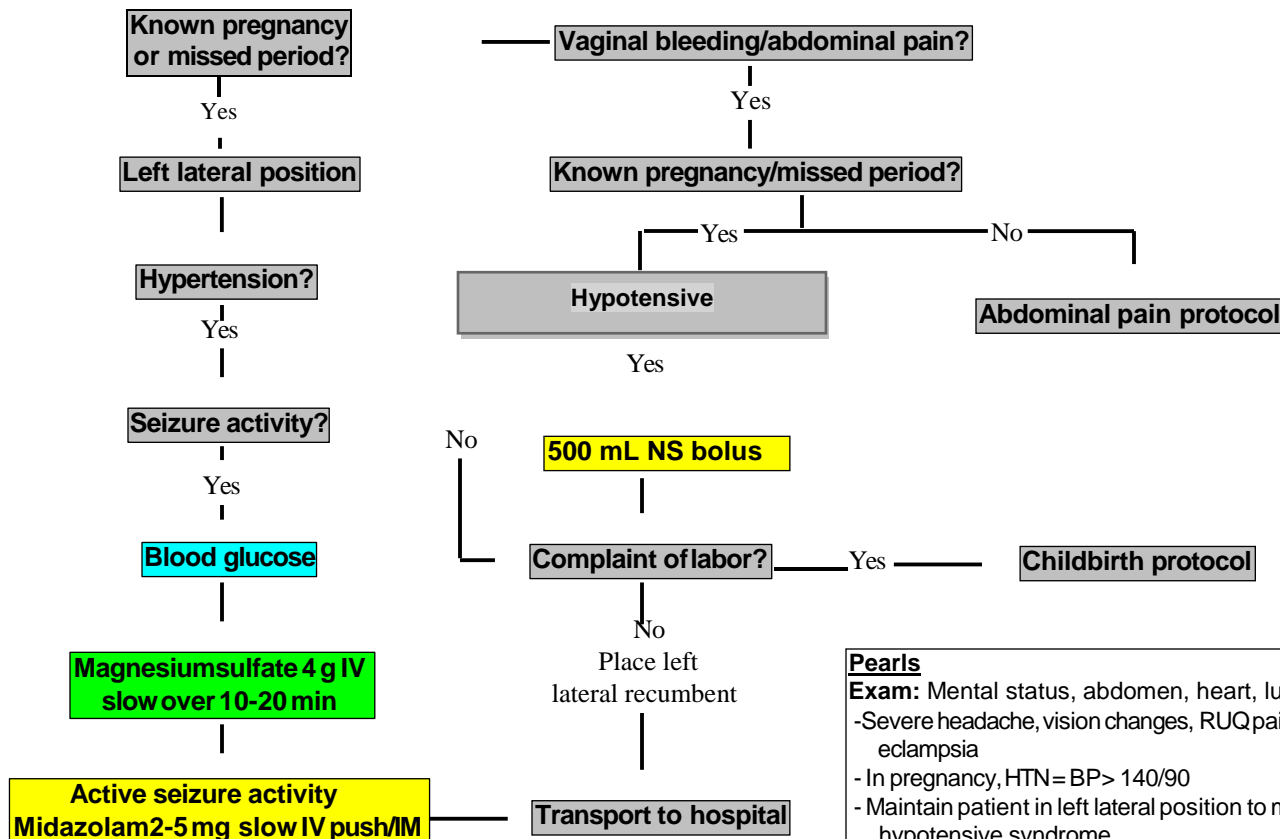
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Headache
- Visual changes
- Facial/hand edema

Differential:

- Pre-eclampsia/eclampsia
- Placenta-Previa
- Placenta-Abruptio
- Spontaneous abortion

Universal patient care protocol

IV Protocol



Pearls

Exam: Mental status, abdomen, heart, lungs, neuro

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

LMHS EMS Protocols

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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

Q

Tricyclic ingestion?
Sodium bicarbonate 1 meq/kg IV

Respiratory
Depression?

Chest pain?

Organophosphates
carbamates?

Other

EMR/EMT -Naloxone 2mg IN
AEMT/Medic Naloxone 2-8mg IV
or
Naloxone 2 mg IN

Chest pain protocol

Atropine
2 mg IV q 5 min
No max dose

Hypotension seizures
ventricular dysrhythmias or
mental status changes

Appropriate protocol

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 auto injector

LMHS EMS Protocols

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Pain Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal patient care protocol



Care based on complaint specific protocol



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



IV protocol
Pulse oximetry



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

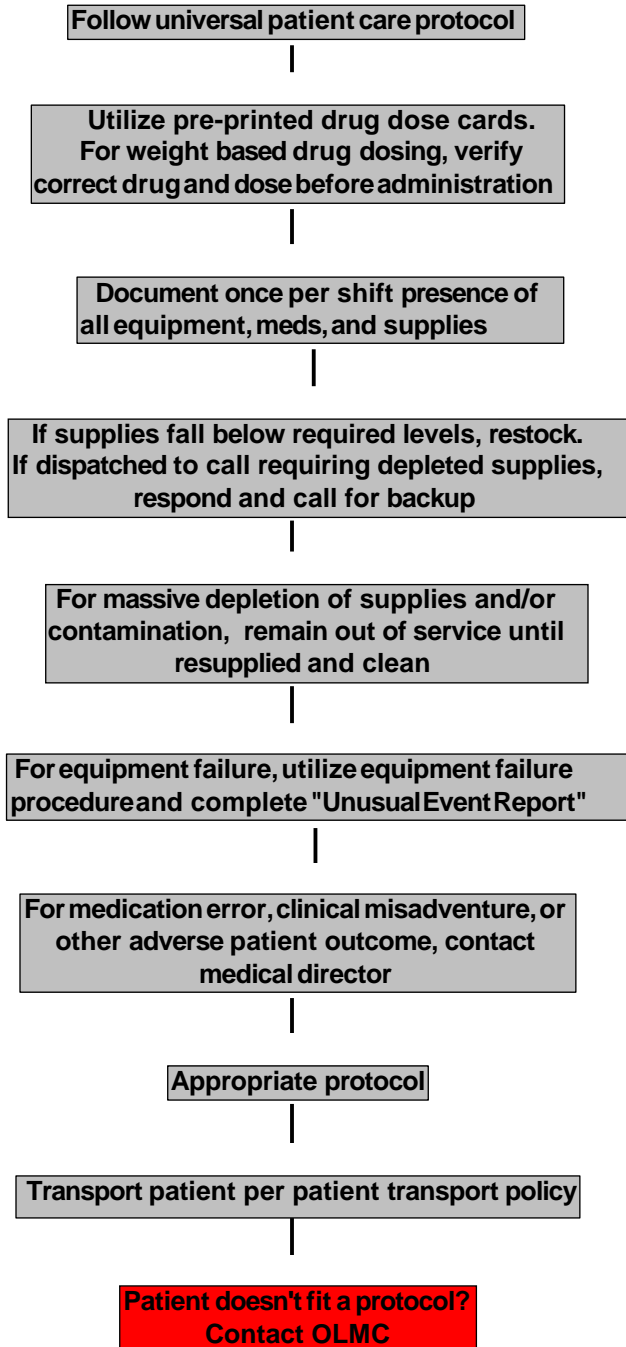
Pearls

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

LMHS EMS Protocols

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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

LMHS EMS Protocols

EMR
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Paramedic
Med Control

Police Custody

History

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

Signs and Symptoms:

- External signs of trauma
- Palpitations
- SOB
- Wheezing
- Altered mental status
- Intoxication/substance abuse

Differential:

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

Universal patient care protocol

Appropriate protocol

— Yes — **Traumatic injury or medical illness**

No

Use of pepper spray or taser?

Pepper spray

Taser

Irrigate face/eyes remove contaminated clothing

Significant injury from taser entry point or from fall after taser use?

— Yes —

Wheezing?

Yes

Resp Distress protocol and transport

NO

Cardiac history with pacemaker, chest pain or palpitations?

— Yes —

No

Agitated delerium?

— Yes —

Consider restraint procedure and/or chemical restraint

No

Coordinate disposition with patient and law enforcement

Goto Agitated Delirium Protocol

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

LMHS EMS Protocols

EMR
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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

Repeat primary assessment

Candidate for induced hypothermia?

Monitor ETCO₂ (>20 mmHg) with RR< 10/min. DO NOT HYPERVENTILATE
Remove ITD (ResQPod) if pulses return

IV Protocol

Monitor ECG, vitals, pulse oximetry

Hypotension

Bradycardia

Administer 1 LNS fluid bolus

Arrhythmia?

Treat per bradycardia protocol

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

Go to appropriate protocol

12-Lead ECG

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

Pearls

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

EMR
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Med Control

Pulmonary Edema/CHF

History

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

Signs and Symptoms:

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

Differential:

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

Universal patient care protocol



Obtain ETCO₂ and Pulse Ox



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



IV protocol



Apply CPAP

12-Lead ECG

Consider Morphine 2 mg slow IV

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

Pearls

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

- Early aggressive treatment of pulmonary edema with nitrates and CPAP avoids intubation

- Pre-hospital use of diuretics is no longer indicated

- Avoid Nitro in patient who has used Viagra, Levitra, Cialis in past 24 hours

- Consider myocardial infarction in all of these patients (cardiogenic shock)

- Careful monitoring of LOC, BP, respiratory status with above interventions is essential

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Med Control

Pulseless Electrical Activity (PEA)

History

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

Signs and Symptoms:

- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

Differential:

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

H's and T's

- Hydrogen Ion (acidosis)
- Hypovolemia
- Hypothermia
- Hypoxia
- Hyper/Hypokalemia
- Overdose (narcotics, tricyclics, calcium channel blocker, beta blocker)
- Tension pneumothorax
- Tamponade
- Thrombosis-Pulmonary/Coronary
- Toxins

Universal patient care protocol

q

Cardiac arrest protocol
attach ITD (ResQPod)

Airway and IV/IO protocols

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

AT ANYTIME

ROSC
(Return of Spontaneous
Circulation) remove ITD

Go to post resuscitation protocol

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 mcg/kg IV (TCA,
hyperkalemia, renal failure)**
norepinephrine 0.5mcg/min-30mcg/min
Needle decompression
Glucagon 1 mg IV (beta blocker)

Needle decompression
As indicated

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

Criteria to discontinue
Cease efforts
Contact OLMC for guidance
if needed

PEARLS:

Always Follow Current ACLS Guidelines

Always confirm asystole in more than one lead. Always address correctable causes

Attached ITD (Impedance threshold device) early in resuscitation to BVM and then to

ETT/King once advanced airway is placed.

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

LMHS EMS Protocols

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Respiratory Distress

History

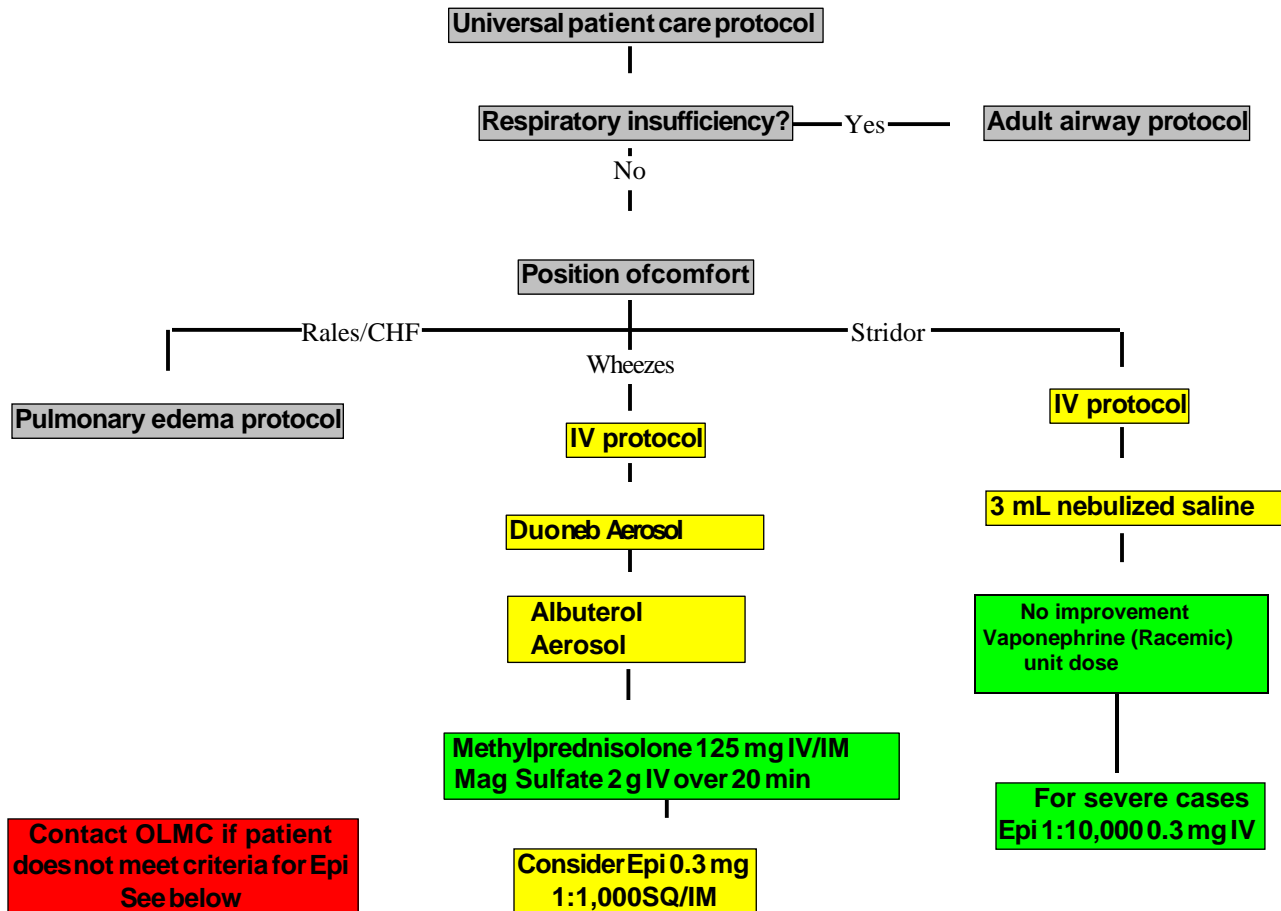
- Asthma
- COPD
- CHF
- Home treatment (oxygen/nebulizer)
- Meds (theophylline, steroids, inhalers)
- Toxic exposure
- Smoke inhalation

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
- CPAP may be used for patients with COPD, CHF, Pneumonia, Asthma as per protocol
- Contact OLMC prior to administering epinephrine to patients > 50 years old, have a cardiac history, or heart rate > 150. Perform 12-lead ECG on these patients
- Monitor ETCO2 continuously

LMHS EMS Protocols

Seizure

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal patient care protocol

Consider spinal motion restriction criteria

Status Epilepticus

Post-ictal

Airway protocol

Focused history/exam

IV protocol

Blood glucose

Glucose < 60

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

IV protocol

**Thiamine 100 mg IV
50% Dextrose 25 g IV
Glucagon 1 mg IM if no IV**

**Status/seizure recurs?
Midazolam 2-5 mg slow IV
OR Midazolam 5 mg IM/IN
may be repeated x1**

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

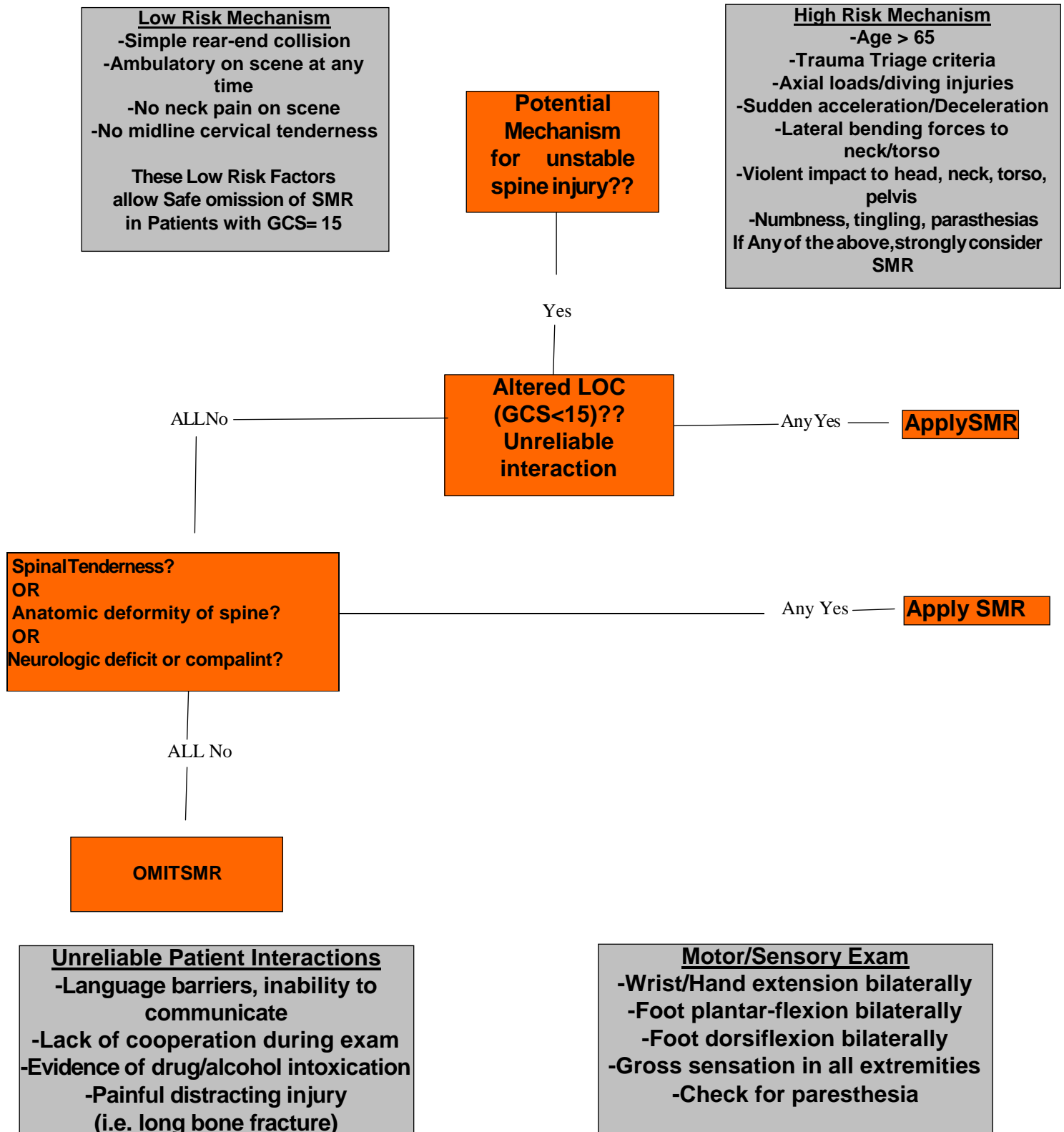
Jacksonian seizures: focal seizures that become generalized

- 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

LMHS EMS Protocols

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Med Control

Spinal Motion Restriction (SMR)



LMHS EMS Protocols

Suspected Stroke

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

Differential:

- See altered mental status
- TIA
- Seizure
- Hypoglycemia
- CVA
- Tumor
- Trauma

Universal patient care protocol

Cincinnati/ RACE pre-hospital stroke screen

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

< 60

Thiamine 100 mg IV
50% Dextrose 25 g IV
If no IV access
Glucagon 1 mg IM

Blood glucose

IV protocol

12-Lead ECG

Consider other protocols as indicated:

- Altered mental status
- Hypertension
- Seizure
- Airway protocol

Notify Stroke Center
Of Last Known Well
time

Pearls

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

- Cincinnati Pre-Hospital Stroke Screen-Arm drift, leg drift, facial drooping, slurred speech

- Minimize scene and transport time if symptom onset < 3 hours
- Onset of symptoms - last witnessed time the patient was symptom free
- Monitor for airway problems(swallowing, vomiting)
- Always assess for hypoglycemia
- Patients that are not malnourished do not require Thiamine
- Document strokescreen
- Document 12-Lead ECG

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Supraventricular Tachycardia

History

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

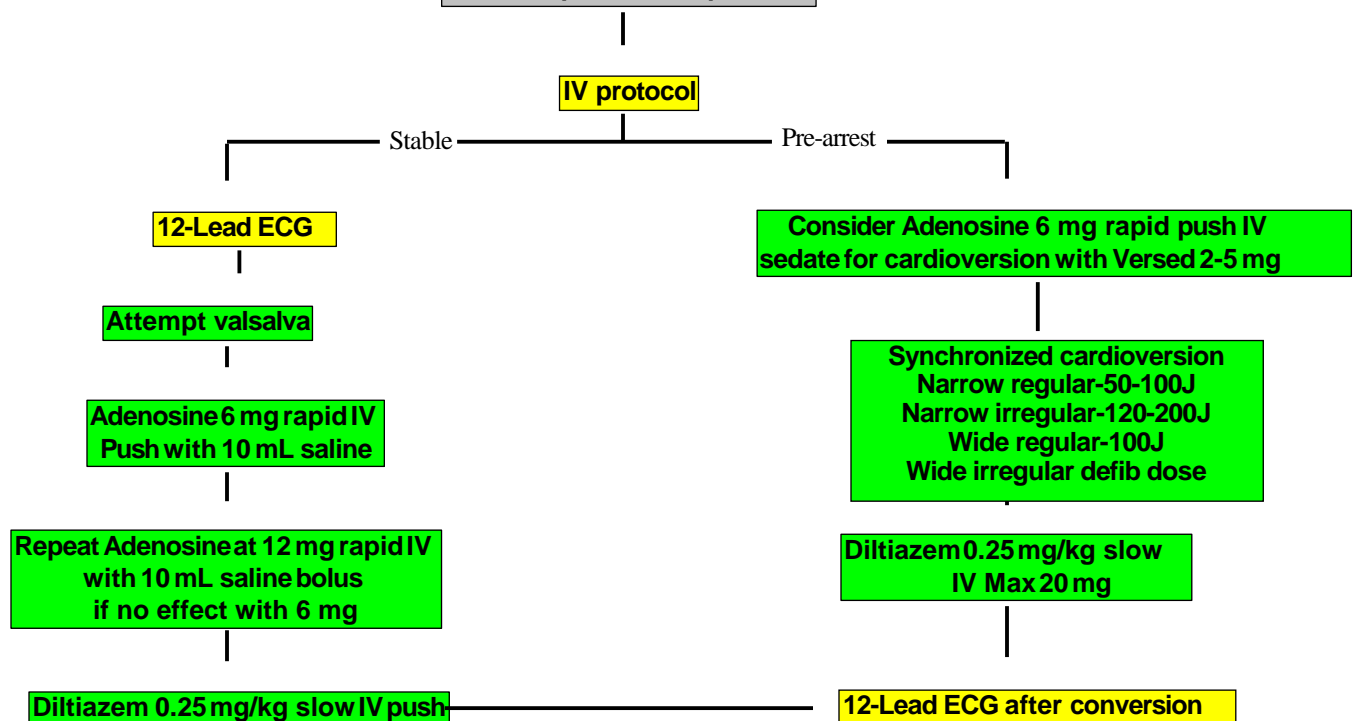
Signs and Symptoms:

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

Differential:

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

Universal patient care protocol



Pearls

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

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Syncope

History

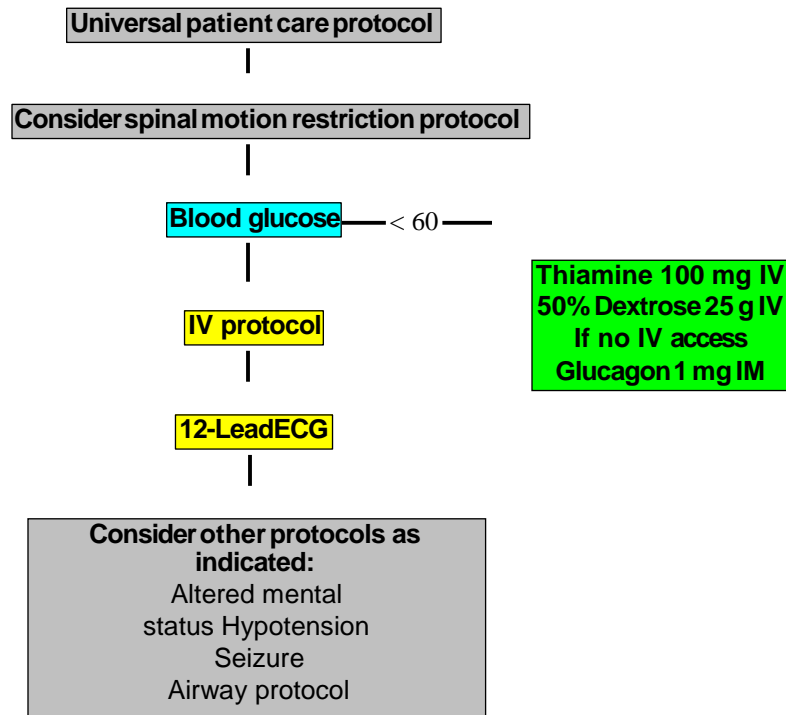
- Cardiac, CVA, seizures
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss, N/V/D
- Past medical history
- Medications

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
- Toxicology
- 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

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Paramedic
Med Control

Traumatic Cardiac Arrest (TCA)

History

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

Signs and Symptoms:

-Evidence of penetrating trauma
-Evidence of blunt trauma

Differential:

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

Universal patient care protocol

Do not attempt resuscitation
Contact law enforcement

—Yes—

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

No

Simultaneous Procedures:

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

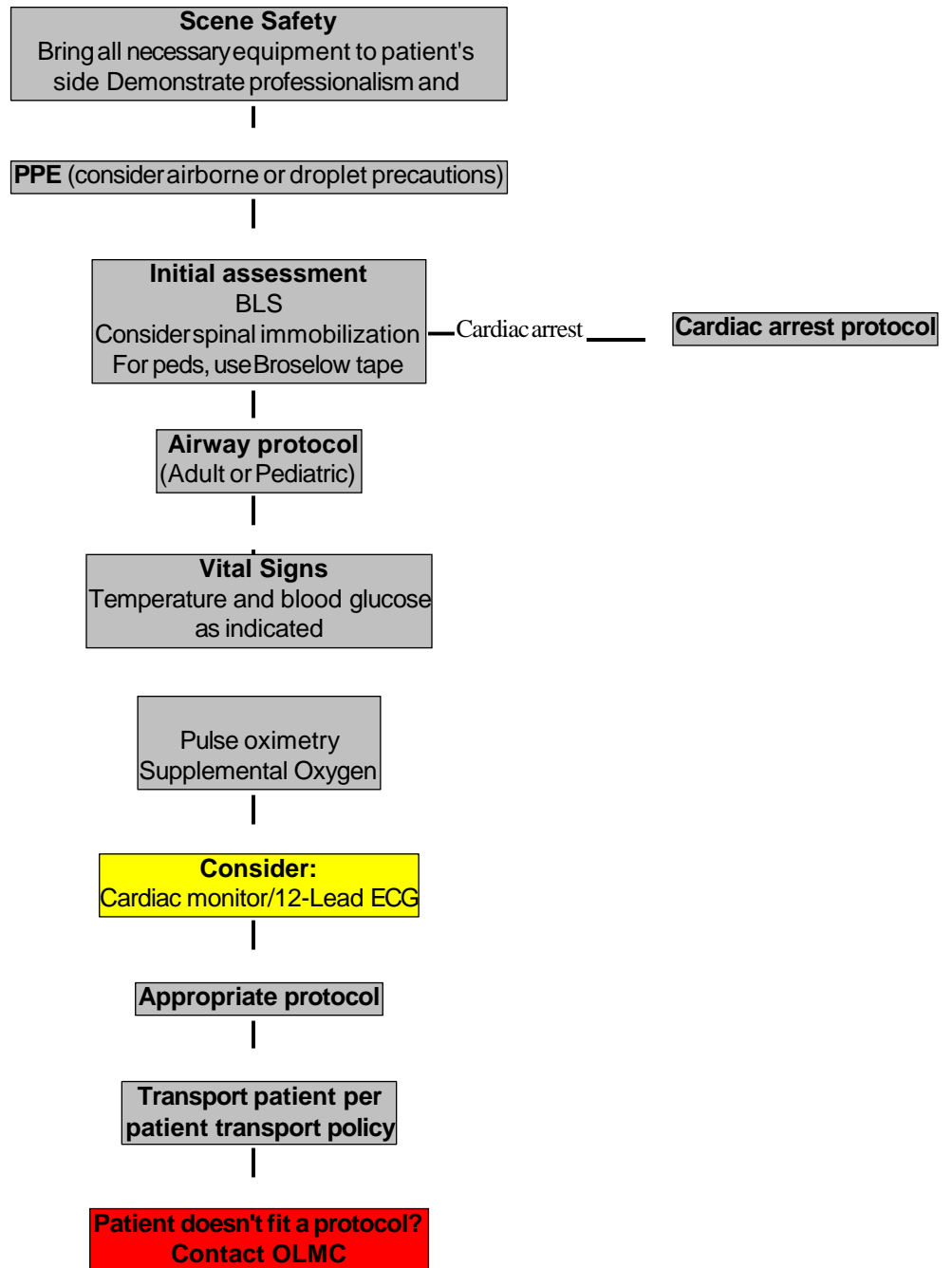
Pearls

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

LMHS EMS Protocols

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Universal Patient Care Protocol



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Med Control

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 @ 360J or equivalent biphasic immediately resume CPR
Reassess rhythm and repeat every 2 min

Airway protocol

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

IV/IO protocol

AT ANYTIME

ROSC

(Return of Spontaneous Circulation) remove ITD

Go to post resuscitation protocol

Epinephrine 1 mg 1:10,000 IV/IO

Repeat every 3-5 minutes

Amiodarone 300 mg IV/IO push

Amiodarone 150 mg IV/IO push

Consider 2 g Magnesium Sulfate

**Criteria to
discontinue
Cease efforts**

Pearls

ALWAYS FOLLOW CURRENT ACLS GUIDELINES

- Attach ITD (ResQPod) early in resuscitation. Remove if ROSC occurs.
- Wait 3-5 minutes after vasopressin dose to begin epinephrine and between other medication administrations
- **Airway: Avoid airway procedures during first 4 minutes of arrest; focus on chest compressions and defibrillation**
- For suspected **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 Supraglottic airway (King LTD)

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Med Control

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 150-180bpm
- QRS > 0.12sec

Differential:

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

Universal patient care protocol

Ventricular fibrillation/VT
without pulse protocol

No — Palpable pulse?

IV protocol

Stable — Pre-arrest

12-Lead ECG

Amiodarone 150 mg over 10 minutes
IV ONLY if QRS is regular and
monomorphic look for WPW
If irregular and wide and polymorphic, use procainamide

Procainamide 20mg/min
until conversion, QRS widens by 50%,
hypotension or max dose reached (17mg/kg)

If pt. becomes unstable
move to pre-arrest
portion

BP, altered mental status

Sedation for cardioversion
Versed 2.5 to 5 mg IV/IM/IN

Synchronized cardioversion
100 J

No response, repeat at 360 J
Repeat cardioversion as needed

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

Pearls

ALWAYS FOLLOW CURRENT ACLS GUIDELINES

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

- Torsades de Pointes may benefit from Magnesium Sulfate 2 gram IV
- For presumed hyperkalemia (renal failure, dialysis) administer 1 amp Sodium Bicarbonate
- 1 gram Calcium Chloride

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Med Control

Vomiting and Diarrhea

History

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

Signs and Symptoms:

- Pain
 - Constant, sharp, dull, etc.
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

Associated Symptoms:

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

Differential:

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

Universal patient care protocol

IV protocol

Pediatric Protocol Available

Orthostatic blood pressure

Blood sugar

**Normal saline bolus
500 mL**

Vomiting/severe nausea?

No

Monitor and reassess

Yes

**Ondansetron 4 mg IV/IM
Do not use in 1st TM pregnancy**

Ondansetron 4 mg ODT

Pearls

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

LMHS EMS Protocols

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Paramedic
Med Control

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

Patient has medical complaint or obvious trauma

Yes

Go to appropriate protocol and recommend transport

No

Obtain BP, Pulse, SpO₂

Pulse > 110
SBP > 200; DBP > 120
Pulse ox < 94%

Yes

Recommend transport for eval
Have patient sign refusal if transport

No

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

Pearls

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

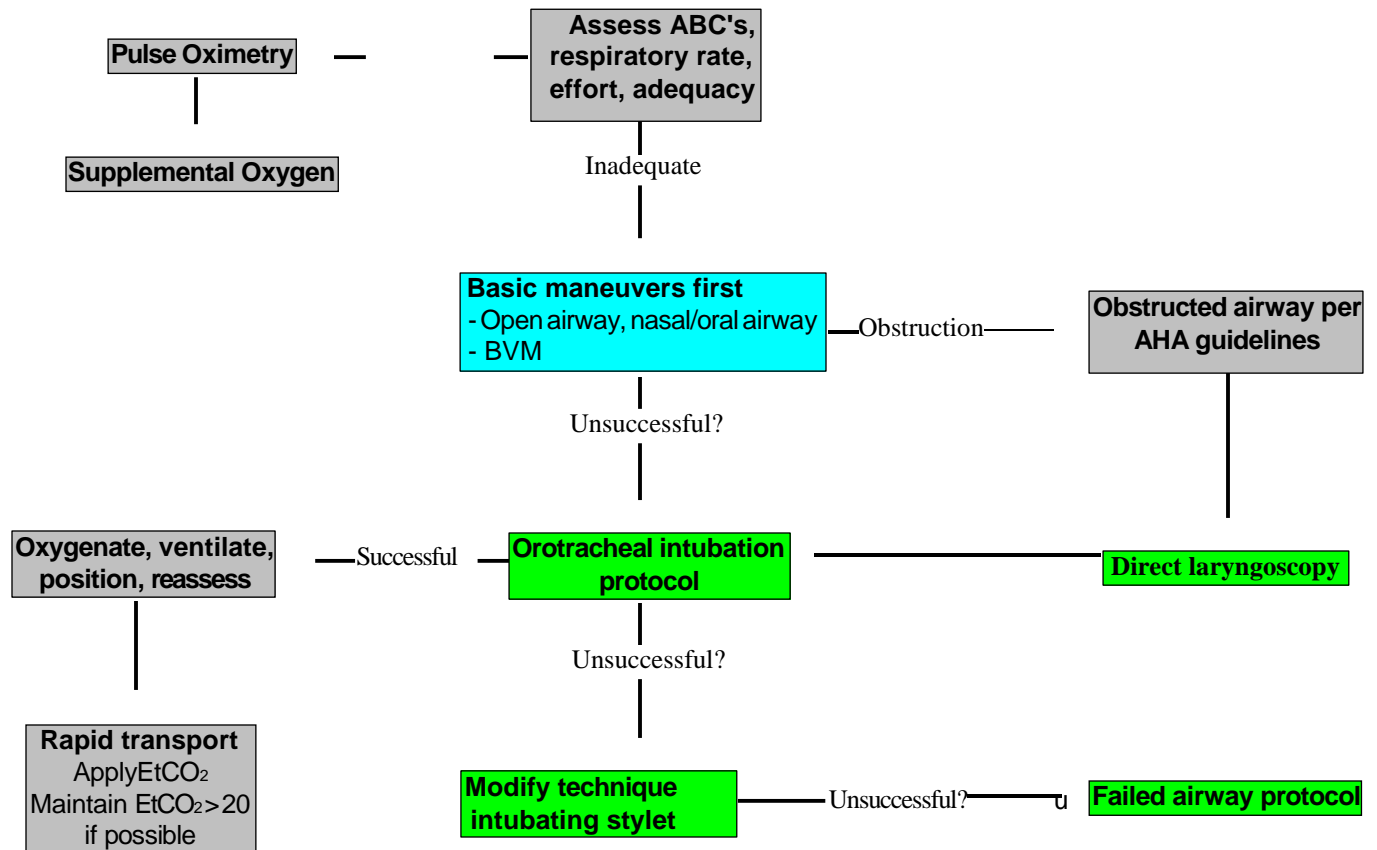
PEDIATRIC PROTOCOLS

LMHS EMS Protocols

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PEDIATRIC

Airway



Pearls

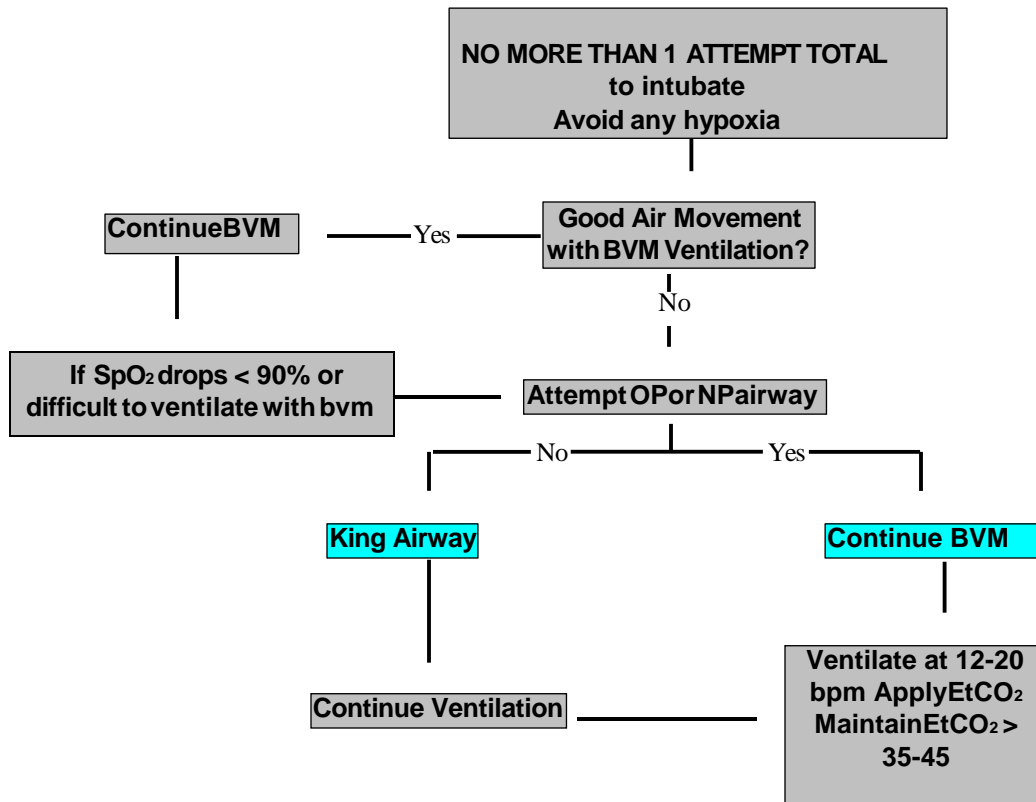
- For this protocol, pediatric = < 12 years old
- Capnometry is mandatory with all methods of intubation. Document results.
- If adequate oxygenation and ventilation with BVM, acceptable to defer intubation until arrival at hospital
- Nasal cannula EtCO₂ should be utilized to monitor BVM ventilations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

LMHS EMS Protocols

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Med Control

PEDIATRIC

Airway - Failed



Pearls

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

Continuous pulse oximetry should be used in all patients

Notify OLM Cas early as possible about difficult/failed airway

LMHS EMS Protocols

PEDIATRIC

Allergic Reaction

EMR

EMT

AEMT

Paramedic

Med Control

History

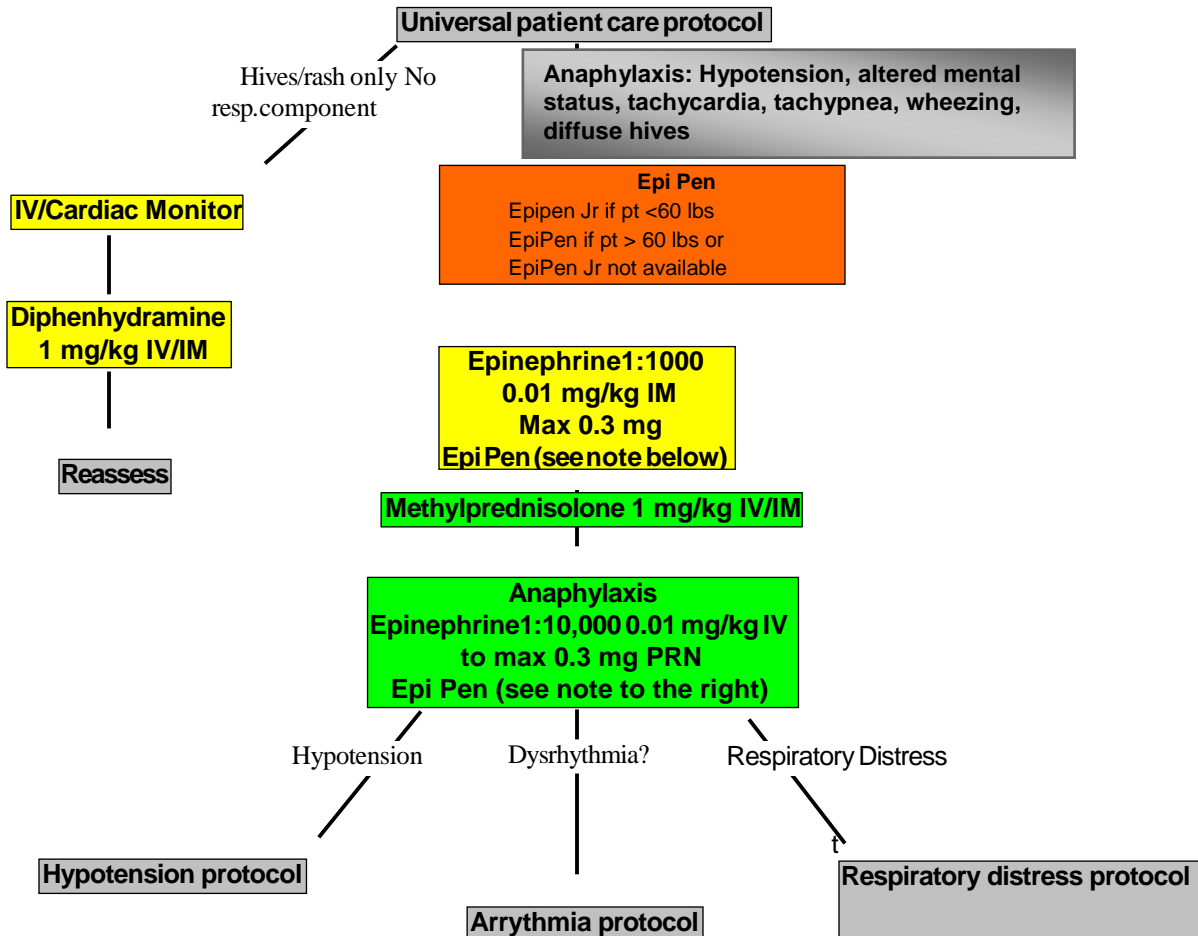
- Onset/location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap
- Past history
- Medication history

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

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Med Control

PEDIATRIC

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

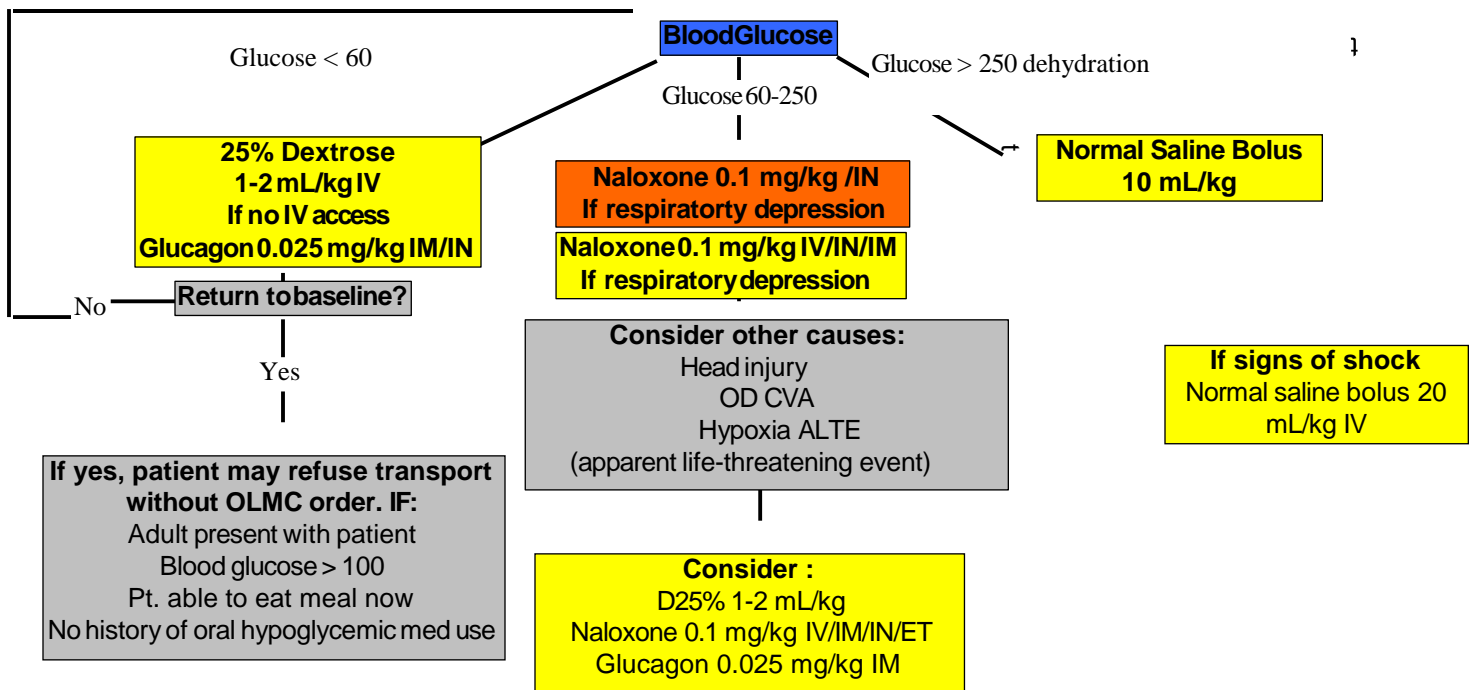
Differential:

- 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



Pearls

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

EMR
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AEMT
Paramedic
Med Control

PEDIATRIC

Bradycardia

History

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

Signs and Symptoms:

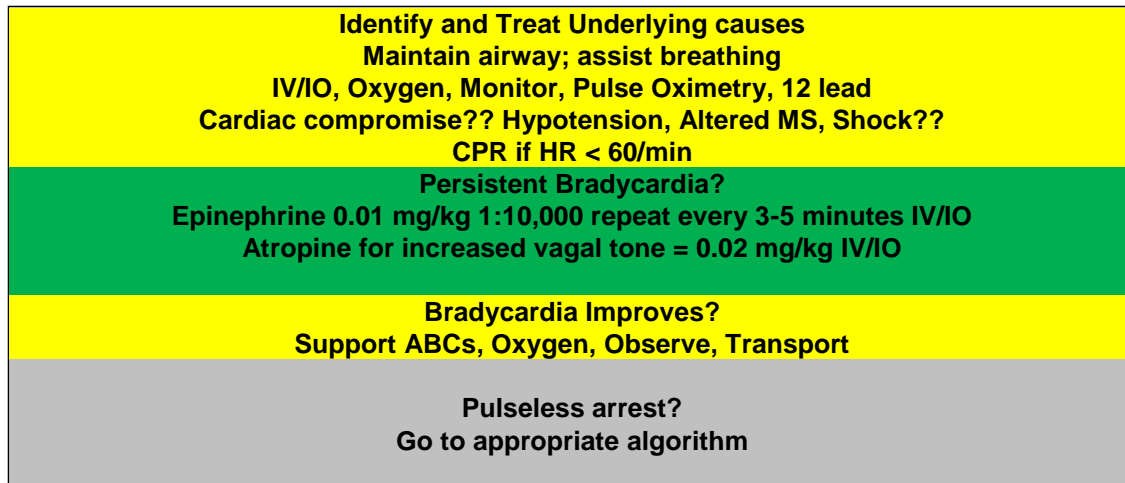
- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered LOC

Differential:

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

Universal Patient Care Protocol

Pediatric airway protocol



Pearls

- Exam:** Mental status, HEENT, skin, heart, lungs, abdomen, back, extremities, neuro
- Infant = < 1 year of age
 - Most maternal medications passthrough 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

LMHS EMS Protocols

PEDIATRIC

Burns

EMR

EMT

AEMT

Paramedic

Med Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal Patient Care Protocol

Remove rings, bracelets, and Other constricting items

Thermal

Chemical

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

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

Cover with dry sterile sheet or dressings

Eye involvement Saline flush in affected eye See eye protocol

IV Protocol

Pain Control:

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

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

Consider transport to nearest burn center. Nearest ED if airway involved.

Pearls

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

Critical Burns: > 20% BSA Age > 10; > 10% BSA Age < 10; 3rd Degree burns > 10% BSA; 2nd or 3rd degree burns to face, eyes, hands or feet; electrical burns, respiratory burns, deep chemical burns, burns with extremes of age or chronic disease; burns associated with major traumatic injury. These burns require admission or transfer to a burn center.

- Early intubation required in significant inhalation injuries
- Treat potential CO exposure with 100% Oxygen
- Circumferential burns to extremities are dangerous due to potential vascular compromise due to soft tissue swelling
- Burn patients are prone to hypothermia
- Do not overlook possibility of multi-system trauma
- Do not overlook possibility of child abuse.

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EMR
EMT
AEMT
Paramedic
Med Control

PEDIATRIC

Extremity Trauma

History

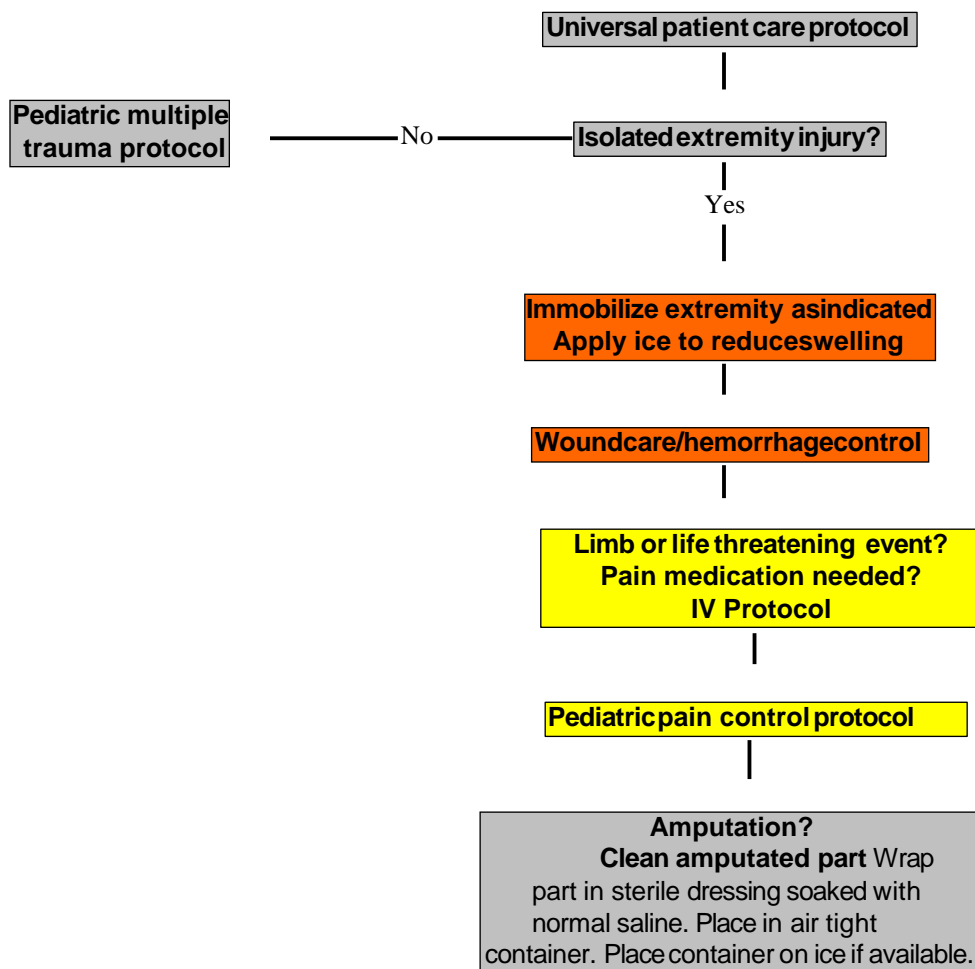
- Type of injury
- Mechanism: crush/penetrating/ amputation
- Time of injury
- Open vs. Closed wound/fracture
- Wound contamination
- Medical history
- Medications

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

LMHS EMS Protocols

PEDIATRIC

Head Trauma

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

Differential:

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

Remove helmet if indicated

Universal patient care protocol

Pediatric multiple trauma protocol

No

Isolated head trauma?

Yes

SMR Protocol

IV Protocol

NS bolus to keep SBP > 100

Obtain GCS

GCS < 8

No Gag Reflex

The paramedic may intubate non-apneic patients

Intubate (apneic)

Maintain ETCO₂ 35-40 mmHg

Consider Midazolam 0.1 mg/kg IV for sedation if intubated

GCS < 8 Gag Reflex Present

Assist with basic airway maneuvers

Maintain Pulse Ox > 90%

GCS > 8

Seizure?

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

Monitor and reassess

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

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Paramedic
Med Control

PEDIATRIC

Hypotension/Shock - Non-Trauma

History

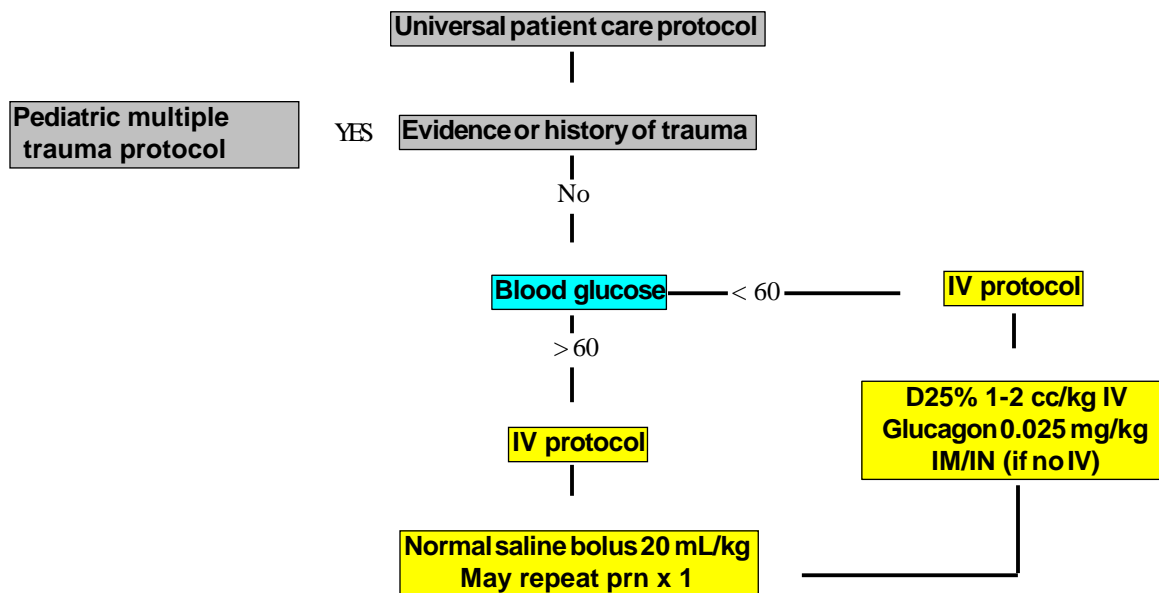
- Blood loss
- Fluid loss- Vomiting, diarrhea, fever
- Infection
- Medications
- Allergic reaction
- Poor PO intake history

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

LMHS EMS Protocols

PEDIATRIC

Multiple Trauma

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

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

Universal patient care protocol

Rapid trauma assessment and GCS

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

SMR Protocol

IV protocol

Vital signs and
perfusion?

Abnormal

Normal

NS bolus to maintain
SBP > 90

Ongoing assessment- Pain Control

Transport

Continued hypotension
Continue fluid bolus
Consider:

- Reduction of long bone fracture
- Pelvic binder for pelvic fracture
- Control of external hemorrhage

Consider chest decompression

Pearls

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

- Mechanism is the most reliable indicator of serious injury. Examine all restraints/protective equipment for damage
- In prolonged extrications/serious trauma, consider air transport
- Severe bleeding from an extremity not rapidly controlled may necessitate the application of a tourniquet
- Do not overlook the possibility of child abuse

LMHS EMS Protocols

PEDIATRIC

EMR
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AEMT
Paramedic
Med Control

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

Meconium in amniotic fluid?

Yes

Nasopharyngeal suctioning

Dry infant and keep warm
Bulb suction mouth and

Stimulate infant and note APGAR score

Respirations present?

Heart rate?

Reassess heart rate and APGAR
Give report to receiving hospital

Bag 30 seconds with 100% O₂

HR < 60

HR 60-100

HR > 100

Peds airway protocol/CPR

IV protocol

Appropriate dysrhythmia protocol

Consider

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

Pediatric airway protocol

HR 80-100

Reassess heart rate

HR > 100

IV protocol

Monitor and reassess

Continue oxygen

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

LMHS EMS Protocols

PEDIATRIC

Overdose/Toxic Ingestion

EMR

EMT

AEMT

Paramedic

Med Control

History

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

Signs and Symptoms:

- Mental status changes
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

Differential:

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

Universal patient care protocol

IV protocol

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

Respiratory
Depression?

Beta blocker

Organophosphates
carbamates?

Calcium channel
blocker

Naloxone
0.1 mg/kg /IN

Naloxone
0.1 mg/kg IV/IN/IM

Glucagon
0.025 mg/kg IV

Atropine
0.02 mg/kg IV PRN

Calcium chloride
20 mg/kg slow IV

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

Appropriate protocol

Pearls

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

Max dose: Narcan 2 mg, glucagon 1 mg, Calcium Chloride 1 g, Sodium Bicarbonate 50 meq, atropine 2 mg/dose (minimum = 0.1 mg)

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

LMHS EMS Protocols

PEDIATRIC

EMR
EMT
AEMT
Paramedic
Med Control

Pain Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal patient care protocol

Care based on complaint specific protocol

Cardiac Monitor, ETCO2 and SPO2
Monitoring for all Patients when using Narcotics

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

IV protocol
Pulse oximetry

Isolated extremity traumatic pain

Yes

No

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

Contact OLMC

Pearls

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

LMHS EMS Protocols

PEDIATRIC

Pulseless Arrest

EMR
EMT
AEMT
Paramedic
Med Control

History

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

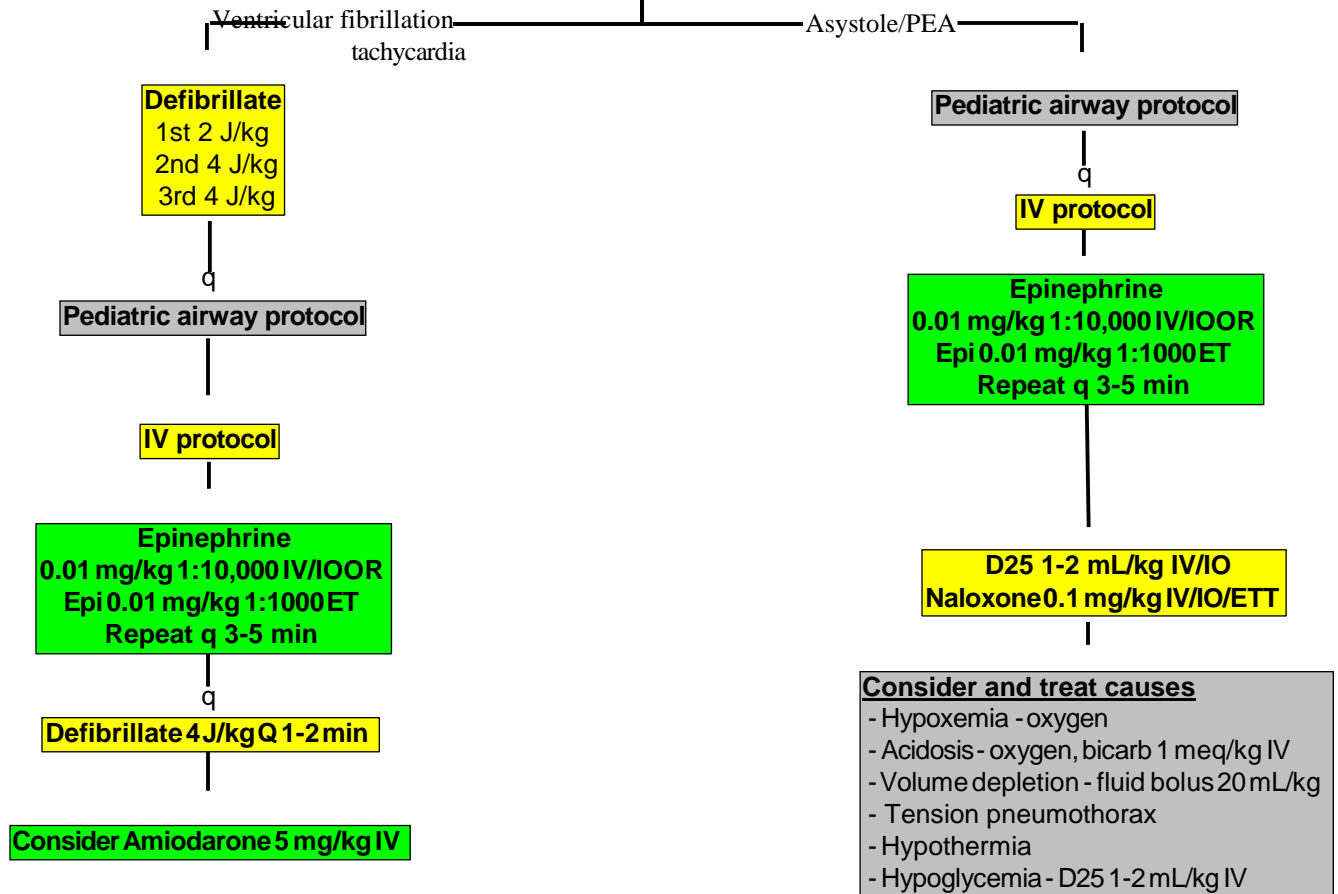
Signs and Symptoms:

- Unresponsive
- Cardiac arrest

Differential:

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

Universal patient care protocol



Pearls

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

PEDIATRIC

Respiratory Distress

EMR
EMT
AEMT
Paramedic
Med Control

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

Universal patient care protocol

Respiratory insufficiency?

No

Pediatric airway protocol

Position of comfort

Wheezes age < 18 mo or
1st wheeze

Epi Neb
3 mL 1:1000

Monitor and transport

Contact OLMC

Consider Epi 0.3 mg
1:1000 SQ/IM

Wheezes age > 18 mo or history

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

Continuous Albuterol 5 mg Neb
IV protocol

Methylprednisolone 1-2 mg/kg IV

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

Stridor

Consider IV protocol if SpO₂ < 92%

3 mL nebulized saline

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

Pearls

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

LMHS EMS Protocols

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LMHS EMS Protocols

PEDIATRIC

Seizure

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

- Observed seizure activity
- Altered mental status
- Hot, dry skin or elevated body temperature

Differential:

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

Universal patient care protocol

Pediatric airway protocol

Cool patient

Yes — Fever?

No

IV protocol

Blood glucose < 60
D25 1-2 mL/kg IV or
Glucagon 0.025 mg/kg IM
if no IV

Active seizure?

Yes

No

Midazolam 0.05-0.1 mg/kg IV
Max = 5 mg/dose
If No IV
Midazolam 0.2 mg/kg IM/IN
Max dose = 5 mg/dose

Repeat seizures or status
Midazolam 0.05-0.1 mg/kg IV
Max dose = 5 mg/dose
If no IV
Midazolam 0.2 mg/kg IM/IN
Max dose = 5 mg/dose

Evidence of Shock or Trauma?
Go to appropriate protocol

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

PEDIATRIC

Supraventricular Tachycardia

EMR
EMT
AEMT
Paramedic
Med Control

History

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

Signs and Symptoms:

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

Differential:

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

Universal patient care protocol

Continuous cardiac monitor Identify

Stable

Unstable

Vagal maneuvers

Ice pack to face or valsalva

IV protocol

Adenosine

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

Cardioversion

0.5J/kg Consider Midazolam 0.1 mg/kg IV/IN
up to max of 2 mg

Repeat cardioversion (1-2J/kg)

IV protocol

Adenosine

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

If rhythm changes go to appropriate protocol

Pearls

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

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Med Control

PEDIATRIC

Vomiting and Diarrhea

History

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

Signs and Symptoms:

- Pain
 - Constant, sharp, dull, etc.
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

Associated Symptoms:

- Fever, Headache, blurred vision, weakness, myalgias, cough, dysuria, mental status changes, rash

Differential:

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

Universal patient care protocol

Consider IV protocol

Blood Glucose
If < 60 go to altered mental status protocol

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

Vomiting/severe nausea?

No

Monitor and reassess

Yes

Consider Ondansetron
0.2/kg IV up to 4mg
2 mg ODT (1/2 tablet)

Pearls

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

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Drug Formulary List

EMR
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Med Control

Interfacility Transport Protocols

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Med Control

Interfacility Infusion Maintenance Antibiotics

PARAMEDIC LEVEL

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. - Ciprofloxacin, Cefazolin, Ceftoxime - Gentamycin, Vancomycin, Levaquin - Amoxicillin, Ampicillin, Penicillin - Doxycycline, Tetracycline - Acyclovir

Contraindications:

• Allergy or hypersensitivity to medications.

Procedure:

- 1) Paramedics may maintain antibiotic transfusions during inter-hospital transfers that are initiated by the referring facility. These may be peripheral IV lines or PICC lines.
- 2) Antibiotics/antivirals must be delivered as a piggy-back or secondary line. They should always be run with a compatible main IV line/PICC line such as Normal Saline or other compatible crystalloid IV solution.
- 3) Some people may have an allergic reaction to antibiotics, particularly Penicillin and similar medicines such as Cephazolin. They can develop side-effects such as a rash, swelling of the face and tongue, and difficulty breathing. This is called an **anaphylactic** reaction and it can be serious or even fatal.
- 4) During transport, if the patient develops signs or symptoms of an anaphylactoid reaction, turn off the antibiotic and remove bag from main IV line.
- 5) Establish a second IV line. Do not push any medications through any IV line that may contain residual Antibiotic.
- 6) Refer to **Anaphylaxis Protocol** and contact On-Line Medical Control for further orders.
- 7) No other medications may be administered through an antibiotic/antiviral infusion.
- 8) The Paramedic may transport a patient with an antibiotic/antiviral infusion running through a PICC line

Certification Requirements:

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

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Interfacility Infusion Maintenance Cardizem (Diltiazem)

PARAMEDIC LEVEL

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.

EMR
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Med Control

Interfacility Infusion Maintenance Dopamine

PARAMEDIC LEVEL

Clinical Indications:

- Treatment of hypotension.
- Improve renal perfusion/urine output.

Contraindications:

- Allergy or hypersensitivity to medications.
- Hypertension

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

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

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

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

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

Certification Requirements:

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

EMR
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Interfacility Infusion Maintenance Heparin

PARAMEDIC LEVEL

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.

EMR
EMT
AEMT
Paramedic
Med Control

Interfacility Infusion Maintenance Nitroglycerine

PARAMEDIC LEVEL

Clinical Indications:

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

Contraindications:

- Allergy or hypersensitivity to medications.
- Hypotension

Procedure:

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

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

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

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

Certification Requirements:

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

LMHS EMS Protocols

EMR
EMT
AEMT
Paramedic
Med Control

Interfacility Infusion Maintenance Potassium containing solutions Sodium Bicarbonate Infusions

PARAMEDIC LEVEL

The Paramedic may maintain the following infusions started at referring facilities:

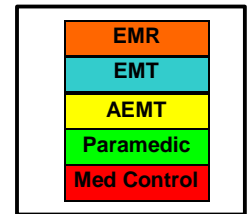
** IV Solutions containing Potassium such as D51/2NS with 20 Meq KCL

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

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

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

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



Interfacility Infusion Maintenance Amiodarone

Clinical Indications:

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

Contraindications:

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

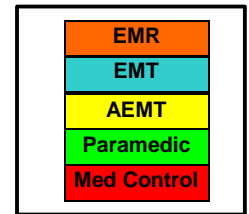
Procedure:

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

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LMHS EMS Protocols



Change Log

Version 1.6	January 2017 <i>Updated to include current ACLS, AHA, and PALS guidelines</i> <i>Added lateral needle decompression</i> <i>Added racemic epi for Respiratory distress</i>
Version 1.5	December 2015 Updated Narcan for all providers Updated RSI protocol Updated CHF/CPAP protocol Updated C-spine clearance protocol to include EMR's (Spinal Motion Restriction) Added sepsis protocol Modified VT with pulse protocol Added Norepinephrine for refractory hypotension (Deleted dopamine) Deleted Captopril from CHF protocol Added Sodium bicarbonate/potassium containing solutions for Interfac. Transports Added table of contents Termination of Resuscitation (TOR guidelines) updated to include BLS only crew configuration
Version 1.4	December 2013 Added Basic assist to Chest Pain Protocol Corrected Advanced EMT Colors for Epinephrine Added Narcan to IN route of administration
Version 1.3	August 2013 Added Interfacility Transport Protocol (Cardizem)
Version 1.2	June 2013 Added Interfacility Transport Protocols Corrected inappropriate Advanced EMT Medication chart colors Added Pain Medication to Chest Pain and Pain Management Protocols
Version 1.1	Not Released Format Changes
Version 1.0	April 2013 Initial Release