PREHOSPITAL TREATMENT PROTOCOLS

Effective July 1, 2015

Maine Emergency Medical Services
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AUTHORIZATION FOR PROTOCOLS

These protocols are issued by the Medical Direction and Practice Board and govern the practice of EMS licensees by the authority of 32 MRSA § 86.2-A. All Maine emergency physicians and the regional EMS programs were invited to participate in the review and adoption of these protocols through their MEMS Regional Councils.

The Regional Medical Directors agree that when treatments are adopted in their regions, they will be consistent with these protocol.

The protocols will be continually reviewed. New or revised protocols will be available on the Maine EMS website: www.maine.gov/ems

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Maine EMS Protocols are also available as an interactive application. The most current version of protocols is on the Maine EMS website EMS Providers are responsible for keeping both the paper and electronic versions of their protocols current.

2013 Maine EMS Protocols
Table of Contents

Purple (Definitions).....Purple 1-4/Pgs 1-4
Brown (Foreword).....Brown 1-6/Pgs 5-10
Maine EMS Statement on Rescue or Alternate Airways.....Blue 1/Pg 11
Confirmation and Monitoring of ETT.....Blue 2/Pg 12
Adult Airway Algorithm.....Blue 3/Pg 13
Maine EMS Failed Airway Algorithm.....Blue 4/Pg 14
Pediatric Airway Algorithm.....Blue 5/Pg 15
Respiratory Distress with Bronchospasm.....Blue 6-7/Pgs 16-17
Pulmonary Edema.....Blue 8/Pg 18
Chest Pain – General.....Red 1/Pg 19
Chest Pain – Suspected Cardiac Origin.....Red 2-3/Pgs 20-21
ST Elevation Myocardial Infarction.....Red 4/Pg 22
Chest Pain Check List.....Red 5/Pg 23
Chest Pain – Uncertain Etiology.....Red 6/Pg 24
Guidelines for Prehospital Use of 12 Lead.....Red 7/Pg 25
Cardiac Arrest or Dysrhythmia.....Red 8/Pg 26
Termination of Resuscitation.....Red 9-10/Pgs 27-28
Post Resuscitation Care.....Red 11-12/Pgs 29-30
VF/Pulseless VT.....Red 13-14/Pgs 31-32
Wide Complex Tachycardia.....Red 15/Pg 33
Asystole.....Red 16/Pg 34
Pulseless Electrical Activity.....Red 17/Pg 35
Bradycardia.....Red 18-19/Pgs 36-37
Narrow Complex Tachycardia.....Red 20/Pg 38
Cardiogenic Shock.....Red 21/Pg 39
Syncope.....Red 22/Pg 40
Allergy/Anaphylaxis.....Gold 1-4/Pgs 41-44
Adult Coma.....Gold 5/Pg 45
Adult Diabetic/Hypoglycemic Emergencies.....Gold 6/Pg 46
Adult Seizures.....Gold 7-8/Pgs 47-48
Acute Stroke.....Gold 9-11/Pgs 49-51
Medical Shock.....Gold 12-13/Pgs52-53
Abdominal Pain.....Gold 14/Pg 54
Adult Nausea and Vomiting.....Gold 15/Pg 55
Minimum Landing Zone Area.....Green 1-2/Pgs 56-57
Trauma Triage Protocol.....Green 3-5/Pgs 58-60
Spine Assessment Protocol.....Green 6/Pg 61
Spinal Management Protocol.....Green 7-8/Pgs 62-63
Glasgow Coma Scale.....Green 9/Pg 64
Chest Trauma.....Green 10/Pg 65

Hemorrhage.....Green 11/Pg 66
Head Trauma.....Green 12/Pg 67
Hypovolemic Shock.....Green 13-14/Pg 68-69
Burns.....Green 15-16/Pgs 70-71
Pain Management in Trauma.....Green 17-18/Pgs 72-73
Prehospital Termination of Resuscitation in Trauma.....Green 19/Pg 74
Toxins.....Yellow 1-3/Pgs 75-77
Antidotes for Specific Toxins: Cyclic Antidepressants.....Yellow 4/Pg 78
Antidotes for Specific Toxins: Opioids.....Yellow 5/Pg 79
Antidotes for Specific Toxins: Organophosphates.....Yellow 6/Pg 80
Hypothermia.....Yellow 7-8/Pgs 81-82
Hyperthermia Heat Exhaustion.....Yellow 9/Pg 83
Hyperthermia Heat Stroke.....Yellow 10/Pg 84
Ophthalmology.....Yellow 11/Pg 85
Combative Patient Protocol.....Yellow 12/Pg 86
Known or Suspected Cyanide Exposure.....Yellow 13-14/Pgs 87-88
Drowning/Submersion Injuries Adult and Pediatric.....Yellow 15/Pg 89
Apparent Life Threatening Events.....Pink 1/Pg 90
Pediatric Nausea and Vomiting.....Pink 2/Pg 91
Pediatric Pain Control.....Pink 3-4/Pgs 92-93
Pediatric Coma.....Pink 5/Pg 94
Pediatric Seizures.....Pink 6-7/Pgs 95-96
Pediatric Respiratory Distress.....Pink 8/Pg 97
Pediatric Respiratory Failure.....Pink 9/Pg 98
Pediatric Respiratory Distress with Wheezing.....Pink 10-11/Pgs 99-100
Pediatric Respiratory Distress with Stridor.....Pink 12/Pg 101
Pediatric Diabetic Emergencies.....Pink 13/Pg 102
Pediatric Medical Shock.....Pink 14-16/Pgs 103-105
Pediatric Cardiac Arrest.....Pink 17/Pg 106
Pediatric Cardiac Arrest Medication Dosages.....Pink 18/Pg 107
Child Birth.....Pink 19/Pg 108
APGAR Scoring.....Pink 20/Pg 109
Neonatal Resuscitation.....Pink 21/Pg 110
Normal Pediatric Vital Signs.....Pink 22/Pg 111
Pediatric Specific Equipment Sizes.....Pink 23/Pg 112
Operations.....Grey 1-23/Pgs 113-132
Telephone Contacts.....Grey 21-23/Pgs 133-135
Non-EMS System Medical Interveners.....Black 1/Pg 136

DEFINITIONS

"ACLS" means advanced cardiac life support.

"Advanced Airway" means the skills of endotracheal intubation and use of other airway modalities such as Blind Insertion Airway Devices performed only by those who have completed practical training in each of these skills.

"AEMT" (Advanced EMT) means the ability to provide Advanced-EMT level care (previously called Intermediate-EMT).

"AHA" means the American Heart Association

"ALS" (Advanced Life Support) means the ability to provide advanced level of medical care, which in the prehospital realm means EMT-Critical Care or EMT-Paramedic. The ALS skills may include the following: IV access, advanced airway, cardiac monitoring, and/or oral or parenteral medications.

"ALS (Advanced Life Support) If Available" means that the patient shall receive the highest appropriate ALS intervention as soon as possible. The decision in this realm as to which interventions may be appropriate rests with the critical care technician or paramedic, if available. If any skills other than basic life support are deemed necessary or initially implemented, an ALS response should be sought, with simultaneous dispatch if possible. The use of a medical priority dispatching program, approved by the state medical director, is encouraged. When this cannot happen, the crew in attendance should bring ALS care and the patient together in the fastest of three ways: (1) ALS back-up at the scene; (2) ALS back-up met en route; or (3) ALS by hospital staff in the emergency department if prehospital rendezvous is not possible.

The BLS providers on the scene may modify the ALS response as appropriate.

"Automatic Ventilation" Automatic ventilators (time-cycled, pressure controlled), approved by Maine EMS, may be used to assist ventilations when a BIAD or ETT is in place by the Advanced EMT, critical care, or paramedic provider during transport from a scene response to the hospital. These devices may also be used to deliver facemask ventilations. During inter-facility transport, use of these devices is limited to critical care capable transport systems.

"AVPU" means Alert, Responsive to Verbal stimuli, Responsive to Painful stimuli, or Unresponsive.

"BP" in these protocols refers to the *systolic* blood pressure.

"Central Lines" means any IV catheter device, which gains access to a patient's central circulation. EMS providers, within their scope of practice, may monitor an indwelling central line (such as a Port-a-cath) which has been accessed or established prior to EMS transport and may monitor the medications being administered through these lines.

"Critical Care Technician/Paramedic Back-up" means use of an advanced life support resource when a presenting patient needs more than basic life support. As noted above, in the prehospital setting this indicates a critical care technician or paramedic response. An ALS back-up agreement should be written between EMS provider services routinely offering and accepting ALS back-up support. This would establish medical/operational/ liability expectations of both services. These protocols cannot mandate any service to routinely offer or receive back-up. However, any decision in this regard, particularly to refuse to offer or accept ALS back-up, should be grounded in reasonable medical, operational, or financial considerations and should be reviewed by the individual service's legal counsel.

"Emergency Department" means a hospital that provides an organized Emergency Service or Department that is available twenty-four (24) hours a day, seven (7) days a week and has the capability to provide On-Line Medical Control, to evaluate, treat, stabilize, and to refer to an appropriate outside resource all persons who present themselves for treatment.

"EMS Provider" means any person or service licensed by Maine EMS to provide emergency medical services.

"Fluid Bolus" indicates maximum fluid administration achievable without pumps or other special equipment in the field setting. Specifically, running a large bore IV wide- open until the desired clinical condition or until a desirable blood pressure, based on the patient's underlying condition, is achieved. A true IO bolus, at the appropriate dose with a syringe/3-way stop-cock assembly or pressure bag, is acceptable. Pediatric boluses are 20 ml/kg, and may be repeated one time if patient remains hypotensive, unless a specific alteration is noted in the protocols.

"Greater/Less than" In these protocols ">" means "greater than," and "<" means "less than." Example: "BP <100" means "BP less than 100."

"IO" in these protocols, means intraosseous access. IO may be used by the Advanced EMT, Critical Care, or Paramedic in any patient if an IV is not established within two attempts or 90 seconds and that patient has one of the following:

a. Altered mental status (GCS less than or equal to 8)
b. Respiratory failure (SaO2 less than or equal to 90% after appropriate oxygen therapy, respiratory rate less than 10 or greater than 40 breaths per minute) with alteration of mental status.
c. Profound hypovolemia or hemodynamic instability with alteration of mental status or other evidence of shock – recall, the use of an IO for volume resuscitation requires the use of a pressure bag to achieve optimal flow rates.
d. Cardiac arrest (medical or traumatic)

With discussion with OLMC, may consider IO placement for the following conditions:

1. Profound hypovolemia (Systolic BP less than 90 mm Hg) without alterations in mental status or other evidence of shock
2. Burn patients with bilateral upper extremity burns

*IO is contraindicated in the following conditions:

a) Fracture of the tibia or femur in lower extremity placement or fracture of the humerus in upper extremity placement
b) Infection at insertion site
c) IO within the prior 24 hours
d) Knee replacement (identified by midline vertical scar over the patella)
e) Tumor near site
f) Inability to locate landmarks
g) Excessive tissue at insertion site
h) IO access is not intended for prophylactic use.

Approved Sites (one per bone):

a) Anterior/medial tibia
b) Lateral humerus
c) Medial malleolus/distal tibia

Critical Care/Paramedic: If infusion of medications or fluids causes significant pain, consider the following:

1) Adult: Consider lidocaine 2% (preservative free) 40 mg bolus followed by 10 ml Normal Saline flush. If pain continues, contact OLMC for OPTION of additional 20 mg bolus.

2) Pediatric: Consider lidocaine 2% (preservative free) 0.5 mg/kg (MAX 40 mg) slow push followed by 10 ml Normal Saline flush. If pain continues, contact OLMC for OPTION of additional 0.25 mg/kg (MAX 20 mg) slow push.

"IV" means any balanced electrolyte solutions may be used, such as Lactated Ringers, Normal Saline and 5% Dextrose. IV solutions, as defined in this document DO NOT include other additives (such as potassium) or medications. Normal Saline is the fluid of choice for patients with history of renal failure, not Lactated Ringers. Recommended catheter size for rapid fluid resuscitation in adults is 14-18 gauge. If rapid fluid resuscitation is not required, smaller catheter sizes and heparin/saline locks may be used. Heparin used for this procedure is not considered a medication.

"MDPB" means Maine EMS Medical Directions and Practice Board, which consists of the six Regional Medical Directors, a Physician representing the Maine Chapter of the American College of Emergency Physicians, and the State EMS Medical Director.

"NR" means a non-rebreather oxygen mask.

"O_2" means oxygen therapy as appropriate for patient.

"On Line Medical Control" ("OLMC") refers to the on-line physician/physician assistant/ nurse practitioner who is licensed by the State of Maine and authorized by a hospital to direct emergency medical services persons consistent with the protocols developed by the MDPB.

"Other Appropriate Destination" means a facility that has been approved by the Board of EMS to receive via ambulance patients who are in need of emergency care.

"Pediatric Patient" in these protocols, means prepubertal (without pubic, axillary, or facial hair).

"PPV" means positive pressure ventilation device such as (in order of preference): two- person bag-valve-mask technique with oxygen, one-person bag-valve-mask technique with oxygen, mouth-to-mask ventilation with oxygen, and mouth-to-mask ventilation without oxygen.

FOREWORD

These protocols were developed for the following reasons:

1. To provide the EMS provider with a quick field reference, and
2. To develop written standards of care which are consistent throughout the State of Maine.

Users of these protocols are assumed to have knowledge of more detailed and basic patient management principles found in EMS textbooks and literature appropriate to the EMS provider's level of training and licensure.

EMS providers are encouraged to contact OLMC in any situation in which advice is needed, not only in situations as directed by theses written protocols.

To use these protocols as they were intended, it is necessary to know the philosophy, treatment principles, and definitions, which guided the physicians and other EMS providers who drafted these protocols:

1. **Delays in treatment should very RARELY delay transport!** This is especially true for trauma patients, patients with chest pain and patients with suspected stroke. IV's should be started en route except in those situations where treatment at the scene is in the patient's best interest, such as shock, with prolonged extrication, or a cardiac patient when full ACLS care is available. Delays in transport should be discussed with OLMC.

2. **Inability to establish voice contact with OLMC**. There are rare situations where the patient is unstable and delay in treatment threatens the patient's life or limb. If, after good-faith attempts, the EMS Provider cannot contact OLMC, then the EMS Provider is authorized to use any appropriate treatment protocols as if they were standing orders. In such cases treatments must still be consistent with the EMS Provider's training and licensure. Continue attempts to contact OLMC and document these attempts on the patient run record.

3. **Transports and transfers.** During transports and transfers, ambulance crews will follow these MEMS protocols, including use of only those medications and procedures for which they are trained and authorized by protocol.

4. **Hospital destination choice.** If a patient needs care which the ambulance crew, in consultation with OLMC, believes cannot be provided at the most accessible hospital, the patient will be transported to the nearest facility capable of providing that care upon the patient's arrival. If, with OLMC consultation, a patient is believed to be too unstable to survive such a diversion, then the patient will be transported to the most accessible hospital with an emergency department. Diversion is also non-binding, and if a patient insists or if the crew deems that bypass is not in the patient's best interest, then going to a hospital "on diversion" is appropriate. If OLMC contact is not possible, the ambulance crew is authorized to make this determination. OLMC cannot legally refuse these patients.

5. **Regional destination.** Each region has the authority to develop protocols, which designate the appropriate destination for patients transported from the scene. Any such protocol should be patient-centric and created exclusively to offer patients emergent care only available at selected regional sites. Examples of such protocols include the Maine EMS Trauma System.

6. **Treatments/drugs should be given in the order specified:** However, the MDPB recognizes that often treatments are delivered simultaneously and more than one protocol may be used. OLMC may request treatments/drugs out of sequence for medical reasons.

7. **MEMS patient/run record** will be legible and thoroughly completed for each call or for each patient when more than one patient is involved in a call. This document is our legacy of patient care <u>and holds information valuable to hospital providers and information invaluable to patient care and patient safety.</u> Services <u>must</u> provide a patient care document before leaving the hospital. In MOST circumstances, this document will be a completed copy of the patient run report, although, in rare circumstances, when it is not possible to complete the electronic patient care record before leaving the hospital, services may provide the hospital with a Maine EMS approved, one page, patient care summary. THIS DOCUMENT DOES NOT REPLACE THE COMPLETED RUN REPORT. <u>These documents may become part of the patient's hospital record and, in an effort to ensure excellent patient care, all information on this written summary must reflect the information in the electronic run report</u>. Services must still complete the electronic patient care report and make the report available to the hospital as soon as possible.

8. **Quality Assurance.** All EMS providers and services must be in compliance with the Regional and State Quality Improvement Program to the satisfaction of the Regional Medical Director.

9. **Assuming and Reassessing care already provided: EMS providers who will be assuming the responsibility for patient care will also be responsible for assessing the care provided before their arrival, and for all subsequent care after they arriv**e up to and including their level of training and licensure. **If an EMS provider has not been trained in a particular treatment listed at his level, or if that treatment is not within the EMS provider's scope of practice, the provider may not perform the treatment.**

10. **If there is a paramedic on scene that is willing to:**
    a. Accompany the AEMT on the call, and
    b. Accept responsibility for the AEMT's actions,

    Then the paramedic may direct the AEMT to administer medications that are within the AEMT's scope of practice. This may be accomplished without contacting OLMC as long as the medication administration would not require OLMC for the paramedic. If the paramedic is unwilling to accept the above responsibilities, then the AEMT's **must contact OLMC before administering any medications.**

11. **Defibrillations: Advanced EMTs** are expected to follow these protocols within the limitations of the monitor/defibrillator available to them.

12. **Carbon monoxide monitors: Carbon Monoxide monitors** may be used for informational purposes only. Any alterations of treatment based on pulse carboximetry readings must be approved by OLMC.

13. **Medical Control permission: If a treatment is listed as requiring Medical Control permission** at one level and is listed again without requiring OLMC permission at a higher level, the higher-level EMT need not seek OLMC permission.

14. **Deviation from protocols: These protocols represent a consensus of the MDPB. In unusual situations, OLMC may deviate from these protocols if done in the patient's best interest. The deviation in care ordered must be within the scope of practice, training and skill of the EMS provider.** The reasons for deviating from these protocols must be documented in the patient's chart. Under such circumstances, if the ALS provider agrees, the ALS provider will verify and will comply with OLMC orders, will fully document the deviation on the patient run record, and will not consider the care rendered to be an emergency medical treatment to be routinely repeated.

15. **Arrival of officially dispatched EMS personnel: Once EMS personnel have arrived on the scene, they may interact with other medical personnel on the scene who are not a part of the organized EMS system responses in the following manner:**

    a. ***Maine EMS licensees not affiliated with one of the responding services may only provide care within their scope of practice with the approval of the ambulance crew-member in charge of the call.***

    b. The patient's own physician, physician assistant, or nurse practitioner may direct care as long as they remain with the patient (in their absence, direction of care is subject only to these protocols and OLMC). You may assist this person within the scope of your practice and these protocols. Only a physician, physician assistant authorized to offer OLMC by their hospital, or independent nurse practitioner may give orders outside of the MEMS protocols (refer to #14 above). Questions in this regard should be resolved by OLMC. You may show this person Protocol page "Black 1" ("Non-EMS System Medical Interveners") to assist with your explanation.

    c. Other unsolicited medical interveners must be Maine licensed physicians, nurses, nurse practitioners or physician assistants whose assistance you request. Protocol page "Black 1" describes this, and should be shown to such interveners.

    d. **Other health care providers in the home:** Other health care providers in the home attending the patient (e.g. R.N., L.P.N., C.N.A., Nurse Midwife, etc.) are bystanders who may be a valuable source of information. Any aid or treatment they wish to give must be authorized by OLMC. Any dispute over treatment/transport should be settled by OLMC.

16. **Home health care devices and appliance:** Many patients will have devices and appliances (drains, ports, LVAD, etc.) with which they are routinely discharged home. Patients (or their licensed care providers or previously instructed family members), are expected to maintain them on their own. These devices have some risks associated with them, but are generally considered safe in the home environment. As such, EMS providers are not restricted in the care or transfer of these patients based solely on the presence of these devices or appliances. If an issue arises and unfamiliarity with, or any questions concerning these devices that cannot be immediately resolved by the patient or caregivers, it should be referred to OLMC.

17. **Left Ventricular Assist Device (LVAD):** A surgically implanted pump to assist left ventricular function. An LVAD can be a bridge to a heart transplant (although used for chronic care as well). Inform OLMC as soon as possible when interacting with a patient with an LVAD, as diversion to a hospital with a higher level of care may be suggested. Direct contact with the cardiac service responsible for this patient is also suggested at the earliest possible moment. The patient or patient's family should have this contact information readily available. No cardiac arrhythmia should be treated if the LVAD is functioning, as judged by an audible sound or pulse, without medical control approval for any treatment. Be sure to bring the patient's batteries (including the 24 hour battery), the large battery charger and all other accessories. Local EMS services may receive specialized training and protocol exemptions to extend help to these patients by working with regional EMS medical directors and MEMS.

18. **Graduates with a current certification from a Maine EMS approved wilderness EMT course** may apply the principles of care taught in that course with the approval of the service medical director and when patient arrival at a definitive care setting will be more than 2 hours.

19. **Repeated Treatment: Unless otherwise indicated,** any treatment included in these protocols may be repeated after reassessment **and** with OLMC permission.

20. **External Pacing** (where indicated in these protocols) should be performed if a pacer is available. Pacers are not required equipment.

21. **Oxygen supplementation** will be by nasal cannula or non-rebreather mask as appropriate.

22. **Patient Sign-Offs –** There exist three origins for patient sign offs: 1) a patient refuses transport and the provider agrees transport is not warranted, 2) the patient refuses transport but the provider does not feel this is safe, and 3) the patient requests transport but the provider refuses (this final example is called an EMS System initiated sign off). Patient initiated sign offs should only be considered in patients with decision making capacity and resources available to care for themselves and when non-transport is considered safe. These sign offs do not require discussion with On Line Medical Control. In situations which the patient requests sign off but the EMS provider deems inappropriate, please refer to OLMC. **EMS System initiated patient sign offs (i.e.: when the patient requests transfer but the EMS provider refuses) are tremendously risky interactions and are not permissible. These sign offs must be approved by OLMC and the service is expected to review all of these events through the service's quality assurance mechanism. Patient medical records must be completed for all of these interactions.**

23. **Maine EMS Special Circumstance Protocols:** Maine EMS protocols are intended to address the vast majority of medical emergencies encountered by an EMS provider. While intended to be comprehensive, certain patients exist with rare medical conditions that require highly specialized emergent care. In such situations, Maine EMS has created the "Special Circumstance Protocols". These are prearranged medical protocols specialized to individual patients, suggested by the patient's medical provider and ratified by the EMS service medical director. Patients will present with a "Maine EMS Special Circumstance Protocol Form" that outlines the patient's individual protocol and is signed by both the patient's physician and the EMS service medical director. These special circumstance protocols should be made known to local EMS services and providers. In cases of question or uncertainty regarding the nature of the protocol, please refer to OLMC.

24. During transport, patients should be secured to the stretcher utilizing both lateral and shoulder straps.

TASER PROBES

The use of a TASER does not automatically necessitate an EMS response or involvement. In assessing such patients, be cognizant of the potential for underlying metabolic dysfunction. TASER probes may be removed from the subject by the deploying officer. Probes that are imbedded in a sensitive area (e.g. face, neck, breast, and genital area) may need to be removed by medical personnel. In these cases, the subject should be transported to the hospital for examination and removal of the probes by medical personnel at the hospital. Other adverse affects, if any, (e.g. respiratory difficulty, seizures, etc.) should be treated as appropriate by the applicable protocol(s).

Maine EMS Statement on "Rescue" or "Alternate" Airway Devices

Maine EMS recognizes 2 major classes of Blind Insertion Airway Devices (BIAD's). The first class, periglottic devices, includes the LMA® and Cobra PLA®. The second class, transglottic or potentially transglottic devices, includes the Combitube® and King LT®.

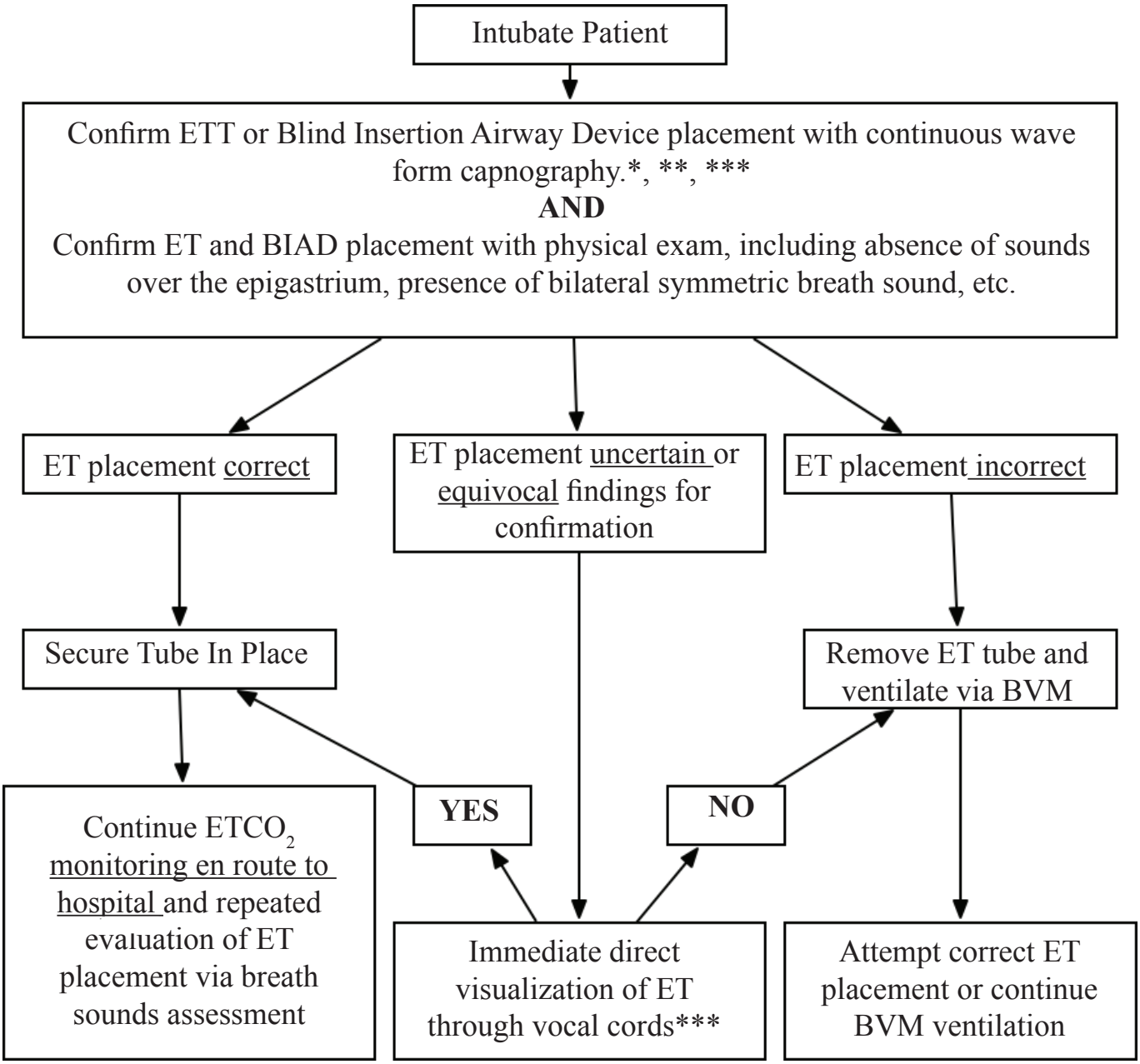
Any FDA approved devices from these classes are approved for use. It is recommended that agencies select only one device to minimize purchase costs and initial and ongoing education.

If an agency selects a transglottic/potentially transglottic device, continuous capnography must be used to confirm and monitor placement. A C-spine collar should be considered to help protect placement of all endotracheal intubations, periglottic, and transglottic airway devices.

There are periglottic devices on the market that can be used to facilitate endotracheal intubation (e.g. ILMA®, IMA®). If these devices are placed without an attempt at endotracheal intubation, they may be treated as any other periglottic device. If they are used to assist in placing an endotracheal tube, that tube must be treated and confirmed as any other endotracheal intubation.

It is recommended to have *NO MORE THAN* one device per class (periglottic and transglottic), and if a service elects to have multiple options per class, then training and maintenance in proficiency for all devices available is required.

Confirmation and Monitoring of Endotracheally Intubated Adults

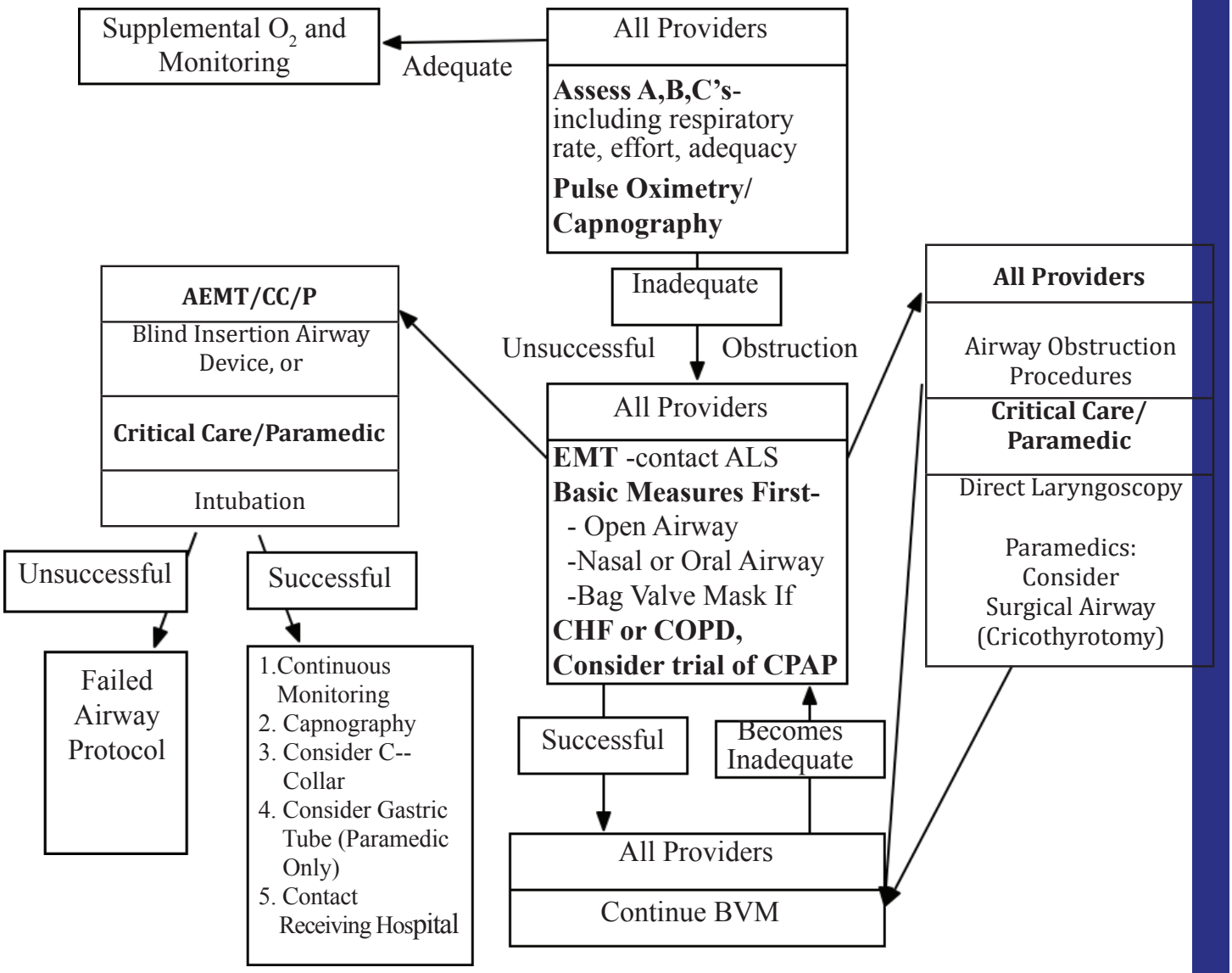


* For cardiac arrest patients, consider placement of the ET tube as well as lack of pulmonary circulation in the interpretation of $ETCO_2$ findings.

** Depending on the device used, $ETCO_2$ devices may not be applicable to the pediatric patient.

*** Nasotracheally-intubated patients should be assumed to have an incorrect placement if findings of breath sounds or $ETCO_2$ results are uncertain or equivocal

Adult Airway Algorithm

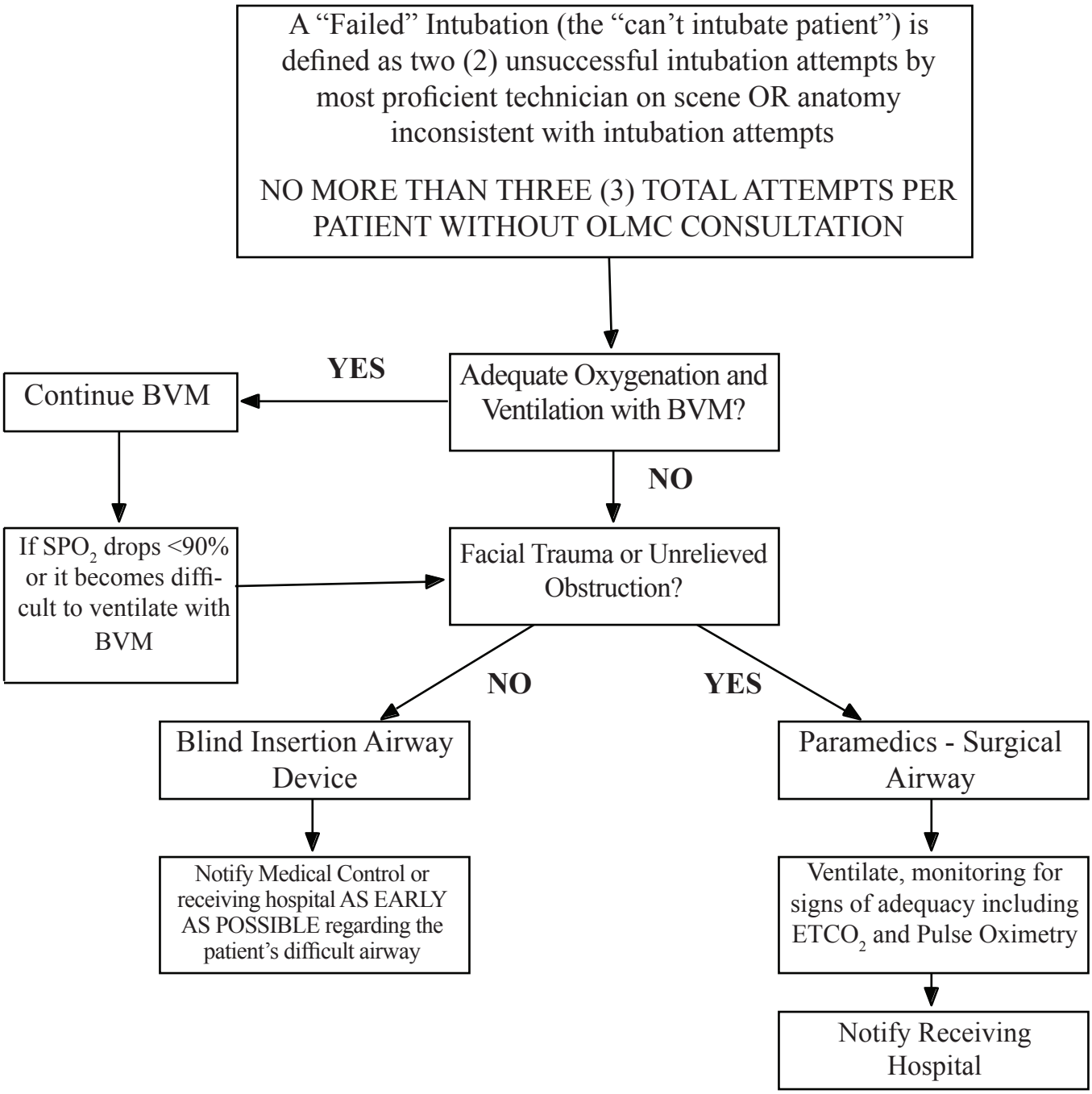


PEARLS for Endotracheal Intubation

* Position the airway for best view of the cords – raise head to the sniffng position (i.e.: earlobe in line with sternal notch)
* Preparation: (four cornerstones)
  1) ET tube with loaded stylette,
  2) laryngoscope with backup blade,
  3) suction,
  4) Bougie
* Always have a back-up plan should the primary strategy fail

- This protocol is for use in patients whose age is > 12 or patients longer than the Broslow Tape (or equivalent)
- Continuous Capnography is mandatory with all patients with BIAD or Endotracheal Tube -A/CC/P - If prolonged use of BVM, consider use of capnography
- The goal of Airway Management is adequate Oxygenation, Ventilation, and Airway Protection. If an effective airway is being maintained by BVM with OPA or NPA, it is acceptable to continue with basic airway measures rather than BIAD or Intubation.
- An Intubation attempt is defined as passing a Bougie or the endotracheal tube past the teeth or inserted into the nasal passage

Maine EMS Failed Intubation Algorithm

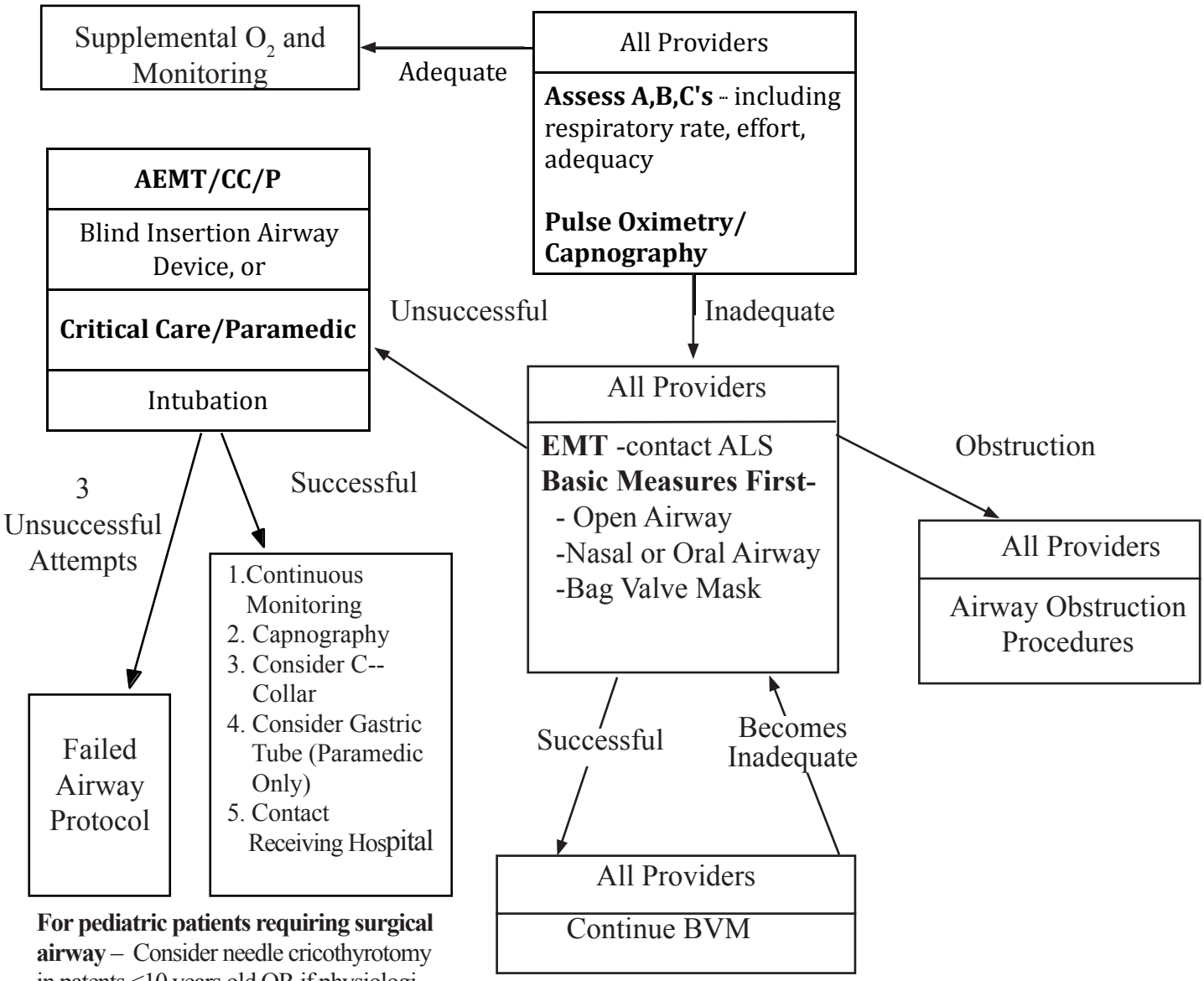


Continuous Pulse Oximetry and $ETCO_2$ monitoring should be utilized in all patients with difficult airways or respiratory distress

Notify Medical Control or receiving hospital AS EARLY AS POSSIBLE about the patient's difficult airway

FOR PEDIATRIC PATIENTS REQUIRING SURGICAL AIRWAY – Consider needle cricothyrotomy in patients < 10 years old OR if physiologically young enough that surgical landmarks are NOT identifiable

Pediatric Airway Algorithm



For pediatric patients requiring surgical airway – Consider needle cricothyrotomy in patents <10 years old OR if physiologically young enough that surgical landmarks are NOT identifiable

- Continuous Capnography is mandatory with all patients with BIAD or Endotracheal Tube -A/CC/P - If prolonged use of BVM, consider use of capnography
- The goal of Airway Management is adequate Oxygenation, Ventilation, and Airway Protection. If an effective airway is being maintained by BVM with OPA or NPA, it is acceptable to continue with basic airway measures rather than BIAD or Intubation.
- An Intubation attempt is defined as passing a Bougie or the endotracheal tube past the teeth or inserted into the nasal passage

PEARLS for Endotracheal Intubation/ Advance Airway

* Position the airway for best view of the cords – raise head to the sniffing position (i.e.: earlobe in line with sternal notch)
* Preparation: (four cornerstones) 1) ET tube with loaded styleBe, 2) laryngoscope with back up blade, 3) suction, 4) Bougie
* Always have a back-up plan should the primary strategy fail
* When advanced airways are placed, that the tube be secured with either a commercial tube holder or tape, rather than being held manually by hand

Respiratory Distress with Bronchospasm #1
(COPD, emphysema, chronic bronchitis, asthma)

E

CAUTION: RESPIRATORY DISTRESS MAY BE DUE TO MULTIPLE OTHER CAUSES FOR WHICH OTHER TREATMENTS MAY BE INDICATED, INCLUDING THE FOLLOWING:

Pulmonary Edema see page 18 "Blue 8"
Anaphylaxis see page 41 "Gold 1"
Chest Trauma see page Page 66 "Green 10"

EMT

1. O_2 as appropriate
2. If needed, assist ventilations with PPV using 100% O_2
3. Request ALS if available

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4. For EMT level providers – assist with self-administered bronchodilator inhaler. Tell OLMC the name of the inhaler. OLMC will prescribe number of puffs

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A

ADVANCED EMT

5. Cardiac monitor
6. Manage airway as needed See "Blue 3 & 5"

---

7. Contact OLMC to administer albuterol, 2.5 mg by nebulization (use 3 ml premix or 0.5 ml of 0.5% solution mixed in 2.5 ml of normal saline)

---

8. Consider CPAP in patients > 18 y/o without asthma– Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm. The AEMT, in consultation with OLMC, may modify the Paramedic response as appropriate.

P

CRITICAL CARE / PARAMEDIC

9. Adult/Pediatric –
   a. Albuterol 2.5 mg by nebulization. **May repeat 1 time**; or
   b. Ipratropium bromide 0.5 mg / albuterol sulfate 3 mg nebulizer if greater than 1 year of age and more significant respiratory distress, and may repeat one time;
10. Consider CPAP - in patients > 18 y/o without asthma– Recall that CPAP should never take the place of bronchodilators and should be used only after or in concert with inhaled bronchodilators in patients with acute bronchospasm.

Respiratory Distress with Bronchospasm #2
(COPD, emphysema, chronic bronchitis, asthma)

P

10. Contact OLMC for the following OPTIONS:
    a. Repeated or continuous albuterol by nebulization or inhaler.
    b. Methylprednisolone 125 mg IV x 1 dose
    c. For asthma only – **pediatric** – epinephrine: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh
    d. For asthma only - **adult** – epinephrine 0.3 mg IM of 1:1,000 solution every 20 minutes

Pulmonary Edema (without shock)

Do not give nitroglycerin if patient has taken erectile dysfunction medication (such as sildenafil [Viagra], tadalafil [Cialis], or vardenafil [Levitra]) within the past 48 hours. Contact OLMC for options in patients who have taken such medicines.

If initial systolic BP is less than 100 mm Hg, refer to Cardiogenic Shock.

See page 39 "Red 21".

E

EMT

1. O_2 as appropriate. Assist ventilations (PPV) if needed.
2. Assess for shock. If BP greater than 100 mm Hg, place in sitting position.
3. Request ALS if available

ADVANCED EMT

4. Cardiac monitor
5. IV en route
6. Manage airway as needed See "Blue 3 & 5"

A

7. Contact OLMC for administration of nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 100 mm Hg and remove nitroglycerine ointment 2% if BP less than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 48 hours.

---

8. Consider use of CPAP

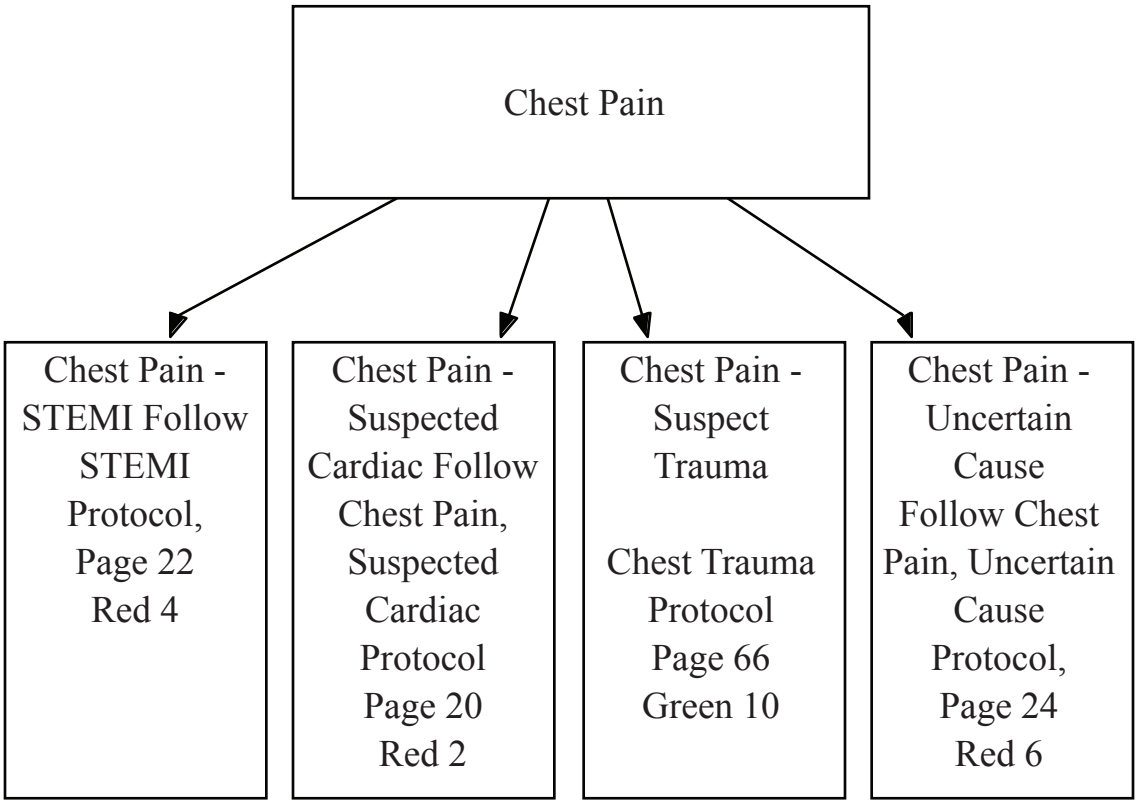
P

CRITICAL CARE / PARAMEDIC

9. Nitroglycerin 0.4 mg or 1 spray SL. Repeat nitroglycerin at 2 minute intervals if systolic BP greater than 100 mm Hg. After initiation of SL nitroglycerin, may place 1 inch of nitroglycerine ointment 2% to the chest wall if BP greater than 100 mm Hg and remove nitroglycerine ointment 2% if BP less than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin. Do not administer nitroglycerin if patient has taken erectile dysfunction medication within the past 48 hours.
10. Consider use of CPAP

Chest Pain - General

For all patients with chest pain, evaluation for acute coronary syndromes should occur. Commonly, it is difficult with the tools available to EMS providers to completely rule out a cardiac cause of chest pain. All patients therefore should be transported for Emergency Medical evaluation. Cardiac disease is but one of the many causes of chest pain and the EMS provider should consider various causes to include, but not limited to the following (pulmonary embolism, esophageal, chest wall, spontaneous pneumothorax, etc.). Patients commonly fall into one of four categories; STEMI, suspected cardiac, suspected trauma, or uncertain cause of chest pain.



Chest Pain - Suspected Cardiac Origin #1

Do not give nitro if patient has taken erectile dysfunction medications (such as sildenafil [Viagra], tadalafil [Cialis], or vardenafil [Levitra]) within the past 48 hours. Contact OLMC for options in patients who have taken such medicines.

E

EMT

1. O_2 as appropriate.
2. Treat for shock if indicated
3. Request ALS
4. If patient has not taken an aspirin: administer chewable aspirin 324 mg PO, if not contraindicated by allergy. ALS back-up still mandatory despite use of aspirin.

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5. For EMT level providers – Contact OLMC for the OPTION of assisting with the administration of patient's own nitroglycerin

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A

ADVANCED EMT

6. IV en route
7. Cardiac monitor and 12 lead EKG if so trained see page 25 "Red 7"
8. Chewable aspirin, 324 mg PO, if not contraindicated by aspirin allergy

---

9. Contact OLMC for administration of Nitroglycerin 0.4 mg SL or 1 spray, SL. May repeat two times at 5 minute intervals if BP greater than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin.

The AEMT, in consultation with OLMC, may modify the Paramedic response as appropriate.

P

CRITICAL CARE / PARAMEDIC

10. Obtain 12 lead EKG (within first 10 minutes of patient contact)
11. Nitroglycerin 0.4 mg SL or 1 spray, SL. May repeat two times at 5 minute intervals if BP greater than 100 mm Hg. If the patient has had nitroglycerin before and no IV is established, and systolic BP is greater than 100 mm Hg, then it is OK to give nitroglycerin.
12. Chewable aspirin, 324 mg PO, if not contraindicated by aspirin allergy

P

13. Contact OLMC for OPTIONS:
    a. Additional nitroglycerin
    b. Fentanyl 1 microgram/kg IV, IM, or IN to a maximum dose of 100 micrograms

14. If patient develops a dysrhythmia, refer to appropriate protocol. Recall, inferior MIs and right-sided MIs in particular are commonly associated with bradycardia and blocks. Be wary of these dysrhythmias and refer to appropriate protocol.

ST Elevation Myocardial Infarction (STEMI)

E A

Inclusion Criteria:

Patient with symptoms of suspected cardiac etiology and has one of the following in a diagnostic quality EKG:

1. Anterior, Inferior, or Lateral MI: ST elevation greater than 1 mm in two or more contiguous leads **AND** QRS complex is narrower than 0.12 (3 small boxes) seconds (if Left Bundle Branch Block, you are unable to diagnose as STEMI)
2. Posterior MI: ST depression greater than 1 mm in V1 and V2 with an R/S ratio of greater than or equal to 1 **AND** QRS complex is narrower than 0.12 (3 small boxes) seconds **OR** ST segment elevation in leads V8/V9
3. NEW Left Bundle Branch Block: If patient has in his/her possession a previous EKG with narrow QRS to demonstrate that the wide complex is a new change.

TREATMENT:
EMT / ADVANCED EMT:

1. Follow Chest Pain Protocol page 20. "Red 2"

Critical Care/ Paramedic only:

P

2. Follow chest pain protocol for nitrates, aspirin and pain management. Obtain EKG within 10 minutes of first contact.
3. If patient meets above STEMI criteria, contact OLMC at receiving hospital (local hospital notification) and alert the receiving facility of impending arrival.
4. If the patient meets one of the above condition sets for STEMI inclusion criteria refer to local or regional cardiac systems of care for destination decision support.
5. Patients who present with inferior MI, clear lung sounds, and BP < 90, give a fluid bolus of NS. For additional bolus, contact OLMC.

Chest Pain Check List

For chest pain of suspected cardiac origin, initiate therapy per protocol "Red 2 and 4", including the early use of aspirin and nitroglycerin if not contraindicated.

Use the Chest Pain Check list or local equivalent if available. Report the information as soon as practical to the receiving ED.

1.. Is systolic BP less than 180 mm Hg? **YES** NO

2. Is diastolic BP less than 100 mm Hg **YES** NO

3. Has pain persisted for greater than 15 minutes? **YES** NO

---

4. CVA or other serious central nervous system problems in preceding 6 months? YES **NO**

5. Surgery or major trauma in preceding 2 weeks? YES **NO**

6. Any bleeding problems? (e.g. ulcers, hemophilia) YES **NO**

7. Pregnant? YES **NO**

You may copy and use this page as your checklist, or you may use a check-list recommended by your usual receiving hospital which contains at least these questions.

Chest Pain - Uncertain Etiology

E

For ALL patients with chest pain, consider the possibility of cardiac disease no matter what the history and physical suggest, however there are other sources of non cardiac chest pain to consider (pulmonary embolism, esophageal, chest wall, spontaneous pneumothorax, etc.)

If trauma suspected, refer to page 61 Chest Trauma "Green 8"

EMT:

1. Administer O_2 as appropriate
2. Transport in position of comfort
3. REQUEST ALS

A

ADVANCED EMT:

4. Establish IV at TKO AND REQUEST CRITICAL CARE/PARAMEDIC
5. Perform 12 Lead EKG (If so trained)

The AEMT, in consultation with OLMC, may modify the paramedic response as appropriate.

P

CRITICAL CARE/PARAMEDIC:

6. Perform 12 lead EKG
7. IF 12 lead indicates STEMI, refer to STEMI protocol
8. For non traumatic chest pain in a stable patient with a normal level of consciousness and no evidence of STEMI or Acute Coronary Syndrome, CONTACT OLMC TO CONSIDER DEVIATION FROM "CHEST PAIN-SUSPECTED CARDIAC PROTOCOL" AND FOR THE FOLLOWING OPTIONS:
   A. If appropriate: administration of fentanyl 1 microgram/kg IV/IN to a maximum dose of 100 microgram
   B. For nausea or vomiting, refer to page 56 the Nausea and Vomiting Protocol "Gold 16".

Guidelines to the Prehospital Use of 12 Lead EKG by the ALS Provider

1. Prehospital 12-lead EKG is now a standard of care for increasing diagnostic information regarding the chest pain/cardiac patient.

2. Acquisition of a 12-lead EKG should be done in all patients with chest pain or a potential cardiac complaint/diagnosis such as syncope or shortness of breath. Given the frequency of atypical presentation in the elderly, responders must have a high index of suspicion in elderly patients.

3. Transmission of 12-lead EKG or presentation of pre-hospital 12-lead EKG to treating personnel at the receiving ED is intended to augment patient triage and facilitate rapid identification of a potential thrombolytic or PTCA candidate.

4. In the case of STEMI, notify receiving ED immediately.

Advanced EMT and Use of 12 Leads: The purpose of this is to get baseline data ASAP and acquire 12 lead EKG if available.

1. If trained, place 12 lead stickers and acquire 12 lead EKG
2. This is intended to have the Advanced EMT present this to the Paramedics or receiving facilities
3. This must not modify the ALS response

Cardiac Arrest or Dysrhythmia

E

EMT

1. O_2 as appropriate. Ventilate if patient is in respiratory arrest.
2. Initiate CPR immediately in cardiac arrest until AED available
3. Attach AED if cardiac arrest. Do not withhold CPR while waiting for defibrillation equipment.
4. Request ALS.

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

5. Cardiac monitor and treat arrhythmias following the appropriate algorithm and your training and level of licensure.
   a. Ventricular Fibrillation/Pulseless Ventricular Tachycardia "Red 13" pg 31
   b. Wide Complex Tachycardia "Red 15" pg 33
   c. Asystole "Red 16" pg 34
   d. Pulseless Electrical Activity "Red 17" pg 35
   e. Bradycardia "Red 18" pg 36
   f. Narrow Complex Tachycardia "Red 20" pg 38

6. Manage airway as needed, See "Blue 3 & 5," consider basic measures only (including BVM with NPA or OPA*) with a ventilatory rate of 8-12 breaths/ min until ROSC. Establish IV or IO (Advanced EMT's en route), per specific arrhythmia protocol.

A P

REMEMBER: Effective chest compressions are one of the most important therapies for the pulseless patient – Effective is defined as: a rate of at least 100 compressions/minute, depth of at least 2 inches, allow for complete chest recoil, no interruptions, and avoid excessive ventilations. Also, the MDPB recommends resuscitating the patient on scene rather than moving to the ambulance, when appropriate, as the effectiveness of chest compressions is decreased during patient movement.

Use capnography during resuscitation for confirmation and monitoring of advanced airways and for prolonged use of BVM as well as monitoring effectiveness of chest compressions and return or loss of spontaneous circulation.

Note: The algorithms for cardiac arrest or arrhythmias in the following pages reflect the MEMS Medical Direction and Practices Board's interpretation of ACLS guidelines, as they should be used in the prehospital setting.

*Hasegawa, et al. "Association of Prehospital Advanced Airway Management With Neurologic Outcome and Survival in Patients With Out-of-Hospital Cardiac Arrest" JAMA Jan 2013, Vol 309, No 3

Termination of Resuscitation #1

Resuscitation should be terminated under the following circumstances:

Unwitnessed Arrest:

1. When the patient regains pulse/respiration.
2. When the patient remains in a non-shockable rhythm (PEA or asystole) for greater than 20 minutes OR is unresponsive to advanced cardiac life support with a non-shockable rhythm after 20 minutes of resuscitation.
3. In the absence of ALS, when the same Maine EMS licensed crewmember has documented the absence of all vital signs for 20 minutes, in spite of BLS, except in the case of hypothermia.
4. When irreversible signs of death, such as dependent lividity, pupils fixed and dilated, palpable hypothermia (not from exposure) and no audible heart sounds are noted in patient with unknown downtime or downtime > 20 minutes.
5. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over.
6. When it is found that the patient has a DNR order or other actionable medical order (e.g. POLST/MOLST, etc.) form.
7. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation.
8. Continuation of resuscitation beyond these protocols must be in consultation with OLMC*.

Witnessed Arrest:

1. When the patient regains pulse/respiration
2. When the patient remains in a non-shockable rhythm (PEA or asystole) for greater than 20 minutes OR is unresponsive to advanced cardiac life support with a non-shockable rhythm after 20 minutes of resuscitation.
3. In the absence of ALS, when the same Maine EMS licensed crew member has documented the absence of all vital signs for 20 minutes, in spite of BLS, except in the case of hypothermia.
4. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over.
5. When it is found that the patient has a DNR or other actionable medical order (e.g. POLST/MOLST, etc) form.
6. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation.
7. Continuation of resuscitation beyond these protocols must be in consultation with OLMC*.

Termination of Resuscitation #2

If Resuscitative Efforts are Terminated:

1. Focus attention on the family or bystanders. Explain the rationale for termination.

2. Consider accessing support for family members to potentially include other family, friends, or social support such as clergy.

3. If termination of resuscitation occurs, one must consider management of patient remains. No one option is correct for all circumstances and factors on scene will likely dictate the best option. Refer to page 116, "Grey 3". If questions remain regarding disposition of the patient's remains, refer to OLMC.

* Survival and functional neurologic outcomes are unlikely if ROSC is not obtained by EMS. It is dangerous to crew, pedestrians and other motorists to attempt to resuscitate a patient during ambulance transport. If circumstances do not allow termination of resuscitation for safety or other reasons, notify OLMC.

Adult Post Resuscitation Care #1

E

EMT

1) Manage airway with goal to keep O_2 sat greater than or equal to 94% Avoid excessive ventilations and hyperoxia. Maintain ventilatory rate between 10-12.
2) Request ALS

A

Advanced EMT

3) Provide advanced airway management if indicated and initiate capnography if available. Avoid excessive ventilation. Aim for ventilatory rate between 10-12 breaths per minute
4) Obtain IV access and treat hypotension with fluid boluses
5) Perform 12 Lead

P

Critical Care/Paramedic

Goal #1 - Identify STEMI

6) If evidence of STEMI persists on 12 lead, refer to STEMI protocol and follow local STEMI referral patterns

Goal #2 - Aggressive Management of Hypotension

7) Goal Systolic Blood Pressure after return of spontaneous circulation is greater than or equal to 90 mmHg. For post resuscitation hypotension, administer Normal Saline boluses. Total volume should not exceed 2000 ml.

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8) If hypotension persists contact OLMC for the following OPTION:
   a. NOREPINephrine:
      i. Preparation – mix NOREPINephrine 8 mg in 250 ml NS.
      ii.. Dosing - Starting dose is NOREPINephrine 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min.
   b. Titrate to maintain systolic BP greater than 100 mm Hg.
   c. NOREPINephrine infusions in adults and pediatrics must be administered via a Maine EMS approved medication pump.

Goal #3 - Consider Therapeutic Hypothermia

Indications:

1) Return of spontaneous circulation after cardiac arrest not related to trauma or hemorrhage in the ADULT patient
2) Initial temperature greater than 34 degrees C (93.2 degrees F)
3) Advanced airway in place
4) Patient remains comatose (no purposeful movement or response to verbal stimuli)
5) Quantitative waveform capnography is greater than 20 mmHg

Post Resuscitation Care #2

If Patient meets inclusion criteria for therapeutic hypothermia, consider the following:

9) Record baseline temperature.
10) Apply cold packs to axilla, groin, and neck.
11) Cold normal saline (4 degrees C [40 degrees F]) bolus 30 ml/kg to max of 2000 ml. Saline must be cooled to the above parameters.

If Shivering Develops:

12) Midazolam 2.5 mg IV may repeat once every 5 minutes to a max of 10 mg, or; 5 mg IM, may repeat once in 10 minutes to a max of 10 mg.

13) If patient suffers loss of spontaneous circulation and re-arrests, refer to appropriate guideline

P

PEARLS for Post Resuscitation Care:

1) Recognition and treatment of a STEMI are critical in the post resuscitation patient. Consider transport of patient to the most appropriate facility that is capable of maintaining/initiating therapeutic hypothermia as well as treating STEMI based on local/regional guidelines. If questions arise, please refer to OLMC.
2) Avoid hyperventilation as it increases intrathoracic pressures, potentially worsening hemodynamic instability
3) Once ROSC is achieved, taper high flow oxygen down to goal SPO2 94-99%. This will ensure adequate oxygenation without risking toxic effects of hyperoxia.
4) Consider treatable causes of arrest, such as overdose, hypoglycemia, cardiogenic shock and STEMI
5) This is an extremely unstable period. The patient should be monitored closely and frequently. Recurrent arrhythmias, hypotension, and re-arrest are not uncommon occurrences. Avoid hyperthermia and hyperventilation.
6) Patients develop metabolic acidosis with cooling. Do not hyperventilate.
7) When exposing a patient for cooling, undergarments may remain in place. Be mindful of your environment and take steps to preserve the patient's modesty.
8) Do not delay transport for the purpose of cooling.
9) Pediatric patients in the post arrest state are currently being maintained normothermic and DO NOT receive therapeutic hypothermia.

Ventricular Fibrillation/Pulseless Ventricular Tachycardia #1

E

EMT

1) Check Pulse, if no pulse then:
   a. CPR until AED is available
   b. Analyze with AED, follow AED instructions*
   c. If severe hypothermia, go to "Yellow 7"
   d. Manage airway**
2) REMEMBER: Effective chest compressions are one of the most important therapies for the pulseless patient – Effective is defined as: a rate of at least 100 compressions/minute, depth of at least 2 inches, allow for complete chest recoil, no interruptions, and avoid excessive ventilations. The MDPB recommends resuscitating the patient on scene rather than moving to the ambulance, when appropriate, as the effectiveness of chest compressions is decreased during patient movement.
3) After defibrillation, immediately resume chest compressions, analyze with AED after 2 minutes of CPR.
4) Request ALS.
5) Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post-Resuscitation Protocol "Red 11" as necessary.

A

ADVANCED EMT

6) Continue CPR for 2 minutes if no pulse is present. After 2 minutes, perform pulse and AED/manual defibrillator check—defibrillate as indicated X 1 at 360 J (monophasic) or equivalent biphasic
7) Manage airway**
8) Establish IV/IO enroute

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9) Call for Critical Care/Paramedic Back-up

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10 Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post-Resuscitation Protocol "Red 11" as necessary.

P

CRITICAL CARE/PARAMEDIC

11) Continue CPR if no pulse—after 2 minutes of CPR, do rhythm and pulse checks and consider next intervention listed in order—do one medication intervention at each 2 minute re-assessment.
12) Rhythm Check
    a. If VF or pulseless VT, then defibrillate X 1 at 360 J (monophasic) or equivalent biphasic or AED.
13) Manage airway**
14) Establish IV/IO

Ventricular Fibrillation/Pulseless Ventricular Tachycardia #2

15) Epinephrine 1:10,000 1 mg IV/IO push—repeat every 3-5 minutes
16) Give 2 minutes of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J (monophasic) or equivalent biphasic if VF or VT
17) Amiodarone 300 mg IV/IO push, may consider additional 150 mg IV/IO one time
18) Give 2 minutes of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J (monophasic) or equivalent biphasic if VF or VT
19) Give 2 minutes of CPR, then do rhythm and pulse checks – defibrillate X 1 at 360J (monophasic) or equivalent biphasic if VF or VT

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20) Contact OLMC for OPTION of alternate therapies such as sodium bicarbonate

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21) Upon successful Return of Spontaneous Circulation:
    a. Refer to Post-Resuscitation Care protocol page 29, "Red 11"
    b. Contact OLMC for options of:
        i. Post resuscitation amiodarone bolus
        ii. Post resuscitation amiodarone drip
            1. RECALL, amiodarone is contraindicated in patients with 2nd degree Type II AV block, 3rd degree AV block, or prolonged QT Interval (greater than 0.5 s)
22) Refer to Termination of Resuscitation protocol as indicated page 26, "Red 9"

* If return of spontaneous circulation (ROSC) is established, contact OLMC and follow appropriate protocol for patient rhythm

** See Airway Algorithm Protocol: "Blue 3 and 5" consider basic measures only (including BVM and NPA or OPA) with a ventilatory rate of 8-12 breaths/min until ROSC.

P

Wide Complex Tachycardia (probable VT)
If no pulse, treat as VF/Pulseless VT

Pulse Is Present

Heart Rate is greater than 150 and patient is alert, comfortable and not hypotensive

EMT

1. Airway Management as indicated
2. Request ALS

ADVANCED EMT

3. Establish IV/IO
4. Cardiac Monitor/Perform 12 Lead EKG if available
5. Request Critical Care/Paramedic
6. Contact OLMC

Critical Care/Paramedic

7. In UNDIFFERENTIATED wide complex tachycardia: consider adenosine ONLY IF REGULAR AND MONOMORPHIC
   a. Adenosine 6 mg IV rapid bolus at centrally located peripheral IV with rapid saline flush
   b. May repeat adenosine x1 at 12 mg IV rapid bolus at centrally located peripheral IV with rapid saline flush
8. Consider amiodarone 150mg IV/IO over 10 minutes
9. Synchronized cardioversion if unstable at any time
   a. Consider sedation with either midazolam 3 mg IV/IO or fentanyl 1 mcg/kg to a max initial dose of 100 mcg

10. Contact OLMC for further options

Heart rate is greater than 150 and patient has hypotension, altered level of consciousness, signs of shock, ischemic chest pain, or acute heart failure

EMT

1. Airway Management as indicated
2. Request ALS

ADVANCED EMT

3. Establish IV/IO
4. Cardiac Monitor/Perform 12 Lead EKG if available
5. Request Critical Care/Paramedic
6. AED or manually defibrillate x 1 at 360 J or biphasic equivalent
7. Contact OLMC

Critical Care/Paramedic

8. Consider synchronized cardioversion
   a. Consider sedation with midazolam 3 mg IV/IO or fentanyl 1 mcg/kg IV/IO to max of 100 mcg in initial dose
   b. If unable to sync or in the case of patient instability or polymorphic VT, defibrillate x 1 at 360 J or equivalent biphasic

Contact OLMC for further options including amiodarone drip

For Polymorphic Ventricular Tachycardia or Torsades: Contact OLMC and consider magnesium sulfate 1-2 grams IV over 5 minutes. Do NOT give adenosine to a patient with Polymorphic Ventricular Tachycardia or Torsades. Do NOT give amiodarone to a patient converted from Polymorphic Ventricular Tachycardia UNLESS QT interval is lessthan 0.500 s. If QT interval is greater than 0.500 s, contact OLMC for options.

Asystole

E

A

P

Should be confirmed in two leads. If rhythm is unclear and possible ventricular fibrillation (VF), then treat as VF.

EMT

1) Check Pulse, if no pulse then:
   a. CPR until AED is available
   b. Analyze with AED, follow AED instructions
   c. If severe hypothermia, refer to hypothermia protocol
   d. Manage Airway*
2) 2 minutes of CPR and then reassess with pulse check and AED check
3) Request ALS
4) Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post-Resuscitation Protocol "Red 11" as necessary

ADVANCED EMT

5) Continue CPR for 2 minutes, if no pulse is present perform pulse and AED/ manual defibrillator check—defibrillate as indicated
6) Manage airway*
7) Establish IV/IO enroute

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8) Call for Critical Care/Paramedic Back-up/Intercept

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9) Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post- Resuscitation Protocol "Red 11" as necessary

CRITICAL CARE / PARAMEDIC

10) Continue CPR if no pulse—after 2 minutes of CPR, do rhythm and pulse checks and consider next intervention listed in order
11) Establish IV/IO and consider treatable causes, including the AHA's "H's + T's" and treat per appropriate protocol.
12) Epinephrine 1:10,000 1 mg IV/IO Push—repeat every 3-5 minutes
13) Give 2 minutes of CPR, then do rhythm and pulse checks
14) Manage airway*
15) Give 2 minutes of CPR, then do rhythm and pulse checks
16) Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post-Resuscitation Protocol "Red 11" as necessary

*See Airway Algorithm Protocol

Pulseless Electrical Activity

E

EMT

1) Check Pulse, if no pulse then:
   a. CPR until AED is available
   b. Analyze with AED, follow AED instructions
   c. If severe hypothermia, refer to hypothermia protocol
   d. Manage Airway*
2) 2 minutes of CPR and then reassess with pulse check and AED check
3) Request ALS

A

ADVANCED EMT

4) Continue CPR for 2 minutes, if no pulse is present perform pulse and AED/ manual defibrillator check—defibrillate as indicated
5) Manage airway*
6) Establish IV/IO enroute and give IV normal saline bolus

---

7) Call for Critical Care/Paramedic Back-up/Intercept

P

CRITICAL CARE / PARAMEDIC

8) Continue CPR if no pulse, after 2 minutes of CPR, do rhythm and pulse checks and consider next intervention listed in order
9) Manage airway*
10) Establish IV/IO and consider treatable causes, including the AHA's "H's + T's" and treat per appropriate protocol.
11) Epinephrine 1:10,000 1 mg IV/IO Push—repeat every 3-5 minutes
12) Give 2 minutes of CPR, then do rhythm and pulse checks
13) Manage Airway*
14) Give 2 minutes of CPR, then do rhythm and pulse check
15) Refer to page 27 - Termination of Resuscitation "Red 9" or page 29 Post-Resuscitation Protocol "Red 11" as necessary

*See Airway Algorithm Protocol: Blue 3 and 5

PEARLS for Asystole and PEA

Recall the "H's and T's" when considering the causes of arrest with asystole or PEA. The AHA also calls these "reversible causes", and they include the following:

1) Hypovolemia
2) Hypoxia
3) Hyper/Hypokalemia
4) Hypothemia
5) Hydrogen ion (Acidosis)
6) Tension Pneumothorax
7) Tamponade (cardiac)
8) Toxins
9) Thrombosis (Pulmonary Embolism)
10) Thrombosis (Myocardial Infarction)

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Bradycardia #1
(Heart Rate Less Than 50 Beats per Minute)

E A P

Concerning Signs or Symptoms: Blood pressure less than 100 mm Hg, altered mental status, syncope/pre-syncope, chest pain, dyspnea, or cyanosis/pallor.

A) If NO concerning signs or symptoms, then all levels (EMT/Advanced EMT/ Critical Care/Paramedic) may do the following:

1) O_2 as appropriate
2) Advanced EMT/Critical Care/Paramedic ONLY – consider fluid bolus

B) If ANY concerning signs or symptoms, then:

E

EMT

1) O_2 as appropriate
2) Request ALS

A

ADVANCED EMT

3) IV en route and fluid bolus as required
4) Cardiac monitor
5) Call for Critical Care/Paramedic Back-up/Intercept

P

CRITICAL CARE/PARAMEDIC

6) Atropine 0.5 mg IV/IO*,**; give in repeat doses every 3-5 minutes up to a maximum dose of 0.04 mg/kg** (or up to a total of 3 mg in the adult patient)
7) Apply external pacer—Initiate transcutaneous pacing (TCP) for patients who do not respond to atropine; if serious signs or symptoms, do not delay TCP while awaiting IV/IO access or for atropine to take effect. Consider premedicating with midazolam (Versed) 3 mg IV/IO OR fentanyl 1 mcg/kg IV/IO to a maximum first dose of 100 mcg. Notify OLMC as soon as possible.

---

8) If continued signs or symptoms, then contact OLMC for options of the following:
   a. Repeat atropine
   b. NOREPINephrine (8 mg in 250 ml NS). Starting dose 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min. Titrate to maintain systolic BP greater than 100 mm Hg. NOREPINephrine infusions must be administered via a Maine EMS approved medication pump.

Bradycardia #2
(Heart Rate Less Than 50 Beats per Minute)

P

PEARLS for Bradycardia:

Application of TCP should be considered if deterioration is anticipated because of the following:

a. Observed sinus pauses
b. Episodes of 2nd degree Type II, or 3rd degree AV Block.

* Transplanted, denervated hearts will not respond to atropine. Proceed to pacing, catecholamine infusion, or both

** Atropine should be used with caution in 2nd degree Type II AV block and new 3rd degree AV block with wide QRS complexes.

Pearls for Use of Norepinephrine:

i. Preparation – mix NOREPINephrine 8 mg in 250 ml NS.

ii. Dosing - Starting dose is NOREPINephrine 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/ kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min.

iii. Titrate to maintain systolic BP greater than 100 mm Hg.

iv. NOREPINephrine infusions in adults and pediatrics must be administered via a Maine EMS approved medication pump.

Narrow Complex Tachycardia

NOTE: For all cases, attempt to identify and treat the underlying cause of the patient's tachycardia which may include, maximizing oxygenation or (for Advanced EMT's/Critical Care/Paramedics) maximizing hemodynamics. If uncertainty exists between sinus tachycardia and SVT, please contact OLMC.

<u>Heart Rate is greater than 150 and patient is alert, comfortable and not hypotensive</u>

EMT

1. Airway Management as indicated
2. Request ALS

ADVANCED EMT

3. Establish IV access
4. Cardiac Monitor/Perform 12 Lead EKG if available
5. Request Critical Care/Paramedic

Critical Care/Paramedic

6. Valsalva Maneuver
7. Adenosine 6 mg IV rapid bolus at centrally located peripheral IV with rapid saline flush
   a. May repeat adenosine x1 at 12 mg IV rapid bolus at centrally located peripheral IV with rapid saline flush

If rhythm persists, contact OLMC for further options

<u>Heart rate is greater than 150 and patient has hypotension, altered level of consciousness, signs of shock, ischemic chest pain, or acute heart failure</u>

EMT

1. Manage airway as indicated
2. Request ALS

ADVANCED EMT

3. Establish IV access and perform fluid bolus
4. Cardiac Monitor/Perform 12 Lead EKG if available
5. Request Paramedic

Paramedic

6. Rate control for A Fib/A Flutter ONLY, contact OLMC for option of metoprolol 5 mg IV over 5 minutes. *REMEMBER, metoprolol must not be used in hypotension.*
   a. Repeat with metoprolol 5 mg IV over 5 minutes after consult with OLMC
7. If unstable narrow complex tachycardia, consider synchronized cardioversion. First attempt at 50-100 J or biphasic equivalent. Subsequent attempts if needed progress to 100 J, then 200 J, then 300 J, 360 J (or biphasic equivalents)
   a. Consider premedication with fentanyl 1 microgram/kg IV push to a maximum initial dose of 100 micrograms OR midazolam (Versed) 3 mg IV bolus. Have a running IV in place of NS or LR.

Cardiogenic ShocK

E

EMT

1. O_2 as appropriate
2. Request ALS

ADVANCED EMT

3. Cardiac monitor
4. IV en route
5. Call for Critical Care / Paramedic Back-up / Intercept

A

6. Contact OLMC with following information:
   Vital signs, lung sounds, cardiac rhythm, pedal edema assessment for OPTION OF:
   a. Fluid bolus

CRITICAL CARE / PARAMEDIC

7. Fluid bolus

P

8. Contact OLMC for the following OPTION:
   a. NOREPINephrine:
      i. Preparation – mix NOREPINephrine 8 mg in 250 ml NS.
      ii. Dosing - Starting dose is NOREPINephrine 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min.
      Absolute max dose is 3 mcg/kg/min.
   b. Titrate to maintain systolic BP greater than 100 mm Hg.
   c. NOREPINephrine infusions in adults and pediatrics must be administered via a Maine EMS approved medication pump.

PEARLS for Cardiogenic Shock

Pediatric patients suffering from suspected cardiogenic shock should receive boluses of 10 ml/kg with frequent reassessment for tolerance and need for additional fluids.

Syncope

E

EMT

1. Obtain history (seizure, stroke, fluid loss, palpitations, chest pain, dizzy, trauma) Consider spinal immobilization if appropriate
2. O_2 as appropriate
3. Obtain blood glucose if trained
4. Treat for shock if appropriate
5. Request ALS

A

ADVANCED EMT

6. Establish IV access
7. Cardiac monitor and 12 lead EKG (if so trained)
8. Fluid bolus if appropriate,
9. Obtain Blood Glucose
10. Call for Critical Care/ Paramedic Back-Up/Intercept

P

CRITICAL CARE / PARAMEDIC

11. Cardiac monitor
12. Obtain Blood Glucose
13. 12-lead EKG

NOTE: At any time, if relevant signs/symptoms found, go to appropriate protocol

PEARLS for Syncope

* Syncope is defined as loss of consciousness accompanied by loss of postural tone.
* All of these patients should be transported for emergency evaluation.
* More than 25% of geriatric syncope is cardiac dysrhythmia based.
* 12 Leads and cardiac monitoring are important for this patient population. Because of proximity to the event, EMS providers may be the only providers able to capture cardiac causes of syncope
* Consider other causes including GI bleed, ectopic pregnancy, seizure, stroke, hypoglycemia, shock, toxicologic (alcohol), and medications.

Allergy/Anaphylaxis #1

E

EMT

1. Manage airway as appropriate
2. If shock present, refer to medical shock protocol Page 53 "Gold 13"
3. Request ALS if available
4. Consider local measures to prevent absorption
5. If anaphylaxis identified, assist administration of patient's own anaphylaxis kit, or, administer an adult or pediatric (as applicable) epinephrine auto-injector in the anterolateral thigh if the service is authorized and the personnel so trained

A

ADVANCED EMT

6. IV en route
7. Cardiac monitor
8. If shock present, perform fluid bolus
9. If anaphylaxis identified:
   a. Adult: Epinephrine 0.3 mg, 1:1,000 IM in anterolateral thigh, or
   b. Pediatric dose of epinephrine which is as follows: < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) IM in anterolateral thigh

---

AEMT, in consultation with OLMC, may modify the paramedic response as appropriate in circumstances in which the patient has required only one dose of IM epinephrine (self provided or provided by EMS) with complete resolution of symptoms

---

P

CRITICAL CARE / PARAMEDIC

10. Manage airway as needed See Adult or Pediatric Airway Protocol "Blue 3 & 5"
11. Epinephrine:
    a. Adult: 0.3 mg (0.3 ml of 1:1,000) IM in anterolatral thigh (Use autoinjector, when available)
       i. Consider glucagon 1 mg IV q 5 minutes for patients taking beta blockers
       ii. Since kids are much, much less likely to be taking beta blockers
    b. Pediatric: < 25 kg, 0.15 mg IM (0.15 ml of 1:1,000), > 25 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh (Use autoinjector, when available)
12. Diphenhydramine (Benadryl)
    a. Adult: 25-50 mg IV/IO/IM
    b. Pediatric: 1-2 mg/kg IV/IO/IM

13. Albuterol 2.5 mg by nebulization; Consider repeat times 1 as needed or nebulizer of 5 ml of 1:1,000 Epinephrine

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14. Contact OLMC for repeat options and/or IV DRIP of epinephrine for shock or cardiovascular compromise, which may typically be dosed the following way:
Preparation - Add 1ml (1mg) epinephrine 1mg/ml (1:1000) to 250 ml bag NS. This results in a 1 mg/250 ml = 4 mcg/ml mix.
Dose - Start at 0.05 mcg/kg/min. Titrate by 0.05 mcg/kg/min every 5 min. Titrate to desired blood pressure.
Usual dose is 0.05-0.5 mcg/kg/min. Absolute maximum dose is 0.5 mcg/kg/min
This must be performed under OLMC and only with a Maine EMS approve pump.

P

PEARLS for Allergy/Anaphylaxis:
Children with a known recent exposure to common triggers of allergic reactions (peanuts, medications, bee stings) should be considered at risk for having an allergic reaction or anaphylaxis.

Children with asthma should be considered high risk for a severe reaction.

Severity should be differentiated between anaphylaxis and non-anaphylaxis (ie: Allergic reaction only). Only patients with anaphylaxis (as defined above) should receive epinephrine

Anaphylaxis in children should be treated for those exhibiting hypotension after exposure to a known allergen, respiratory compromise with acute onset of skin or mucosal involvement, or two or more of the following after exposure to a likely allergen: gastrointestinal symptoms, skin/mucosal involvement, respiratory compromise, or hypotension

Evidence does not support the routine use of cardiac monitoring for patients who receive one dose of epinephrine

Allergy/Anaphylaxis #3

P

PEARLS for Allergy/Anaphylaxis:

1) Anaphylaxis is highly likely when any ONE of the following 3 criteria is fulfilled: Acute onset of an illness (minutes to several hours) with involvement of the skin, mucosal tissue, or both (eg, generalized hives, pruritus or flushing, swollen lips-tongue-uvula) AND AT LEAST ONE OF THE FOLLOWING: a. Respiratory compromise (eg, dyspnea, wheeze-bronchospasm, stridor, reduced PEF, hypoxemia) b. Reduced BP or associated symptoms of end-organ dysfunction (eg, hypotonia [collapse], syncope, incontinence)

   Two or more of the following that occur rapidly after exposure to a likely allergen for that patient (minutes to several hours): a. Involvement of the skin-mucosal tissue (eg, generalized hives, itch-flush, swollen lips-tongue-uvula) b. Respiratory compromise (eg, dyspnea, wheeze-broncho-spasm, stridor, reduced PEF, hypoxemia) c. Reduced BP or associated symptoms (eg, hypotonia [collapse], syncope, incontinence) d. Persistent gastrointestinal symptoms (eg, crampy abdominal pain, vomiting)

   Reduced BP after exposure to known allergen for that patient (minutes to several hours): a. Infants and children: low systolic BP (age specific) or greater than 30% decrease in systolic BP* b. Adults: systolic BP of less than 90 mm Hg or greater than 30% decrease from that person's baseline

2) In every case when anaphylaxis is identified, epinephrine should be provided. The best route of administration is via the IM route in the anterior, lateral thigh

3) Patients may require repeated doses of epinephrine. Typically, these repeated doses are also provided via the IM route.

4) When errors occur in epinephrine delivery, it is commonly due to providers falling to check that they are using the proper concentration of epinephrine. Be careful to recheck when using epinephrine and ensure that the desired concentration is being utilized.

Allergy/Anaphylaxis #4

P

PEARLS for Allergy/Anaphylaxis:
IV epinephrine infusion drip, utilizing a pump, should be started for patients unresponsive to IM epinephrine administration in either of the following settings:
-Cardiovascular collapse (hypotension with altered mental status, pallor, diaphoresis, or delayed capillary refill)
OR
-Hypotension that is unresponsive to 60 ml/kg isotonic fluid boluses and repeat doses of IM epinephrine

Evidence does not support the prophylactic use of epinephrine in the asymptomatic patient, after exposure to a known allergen

Children experiencing cutaneous signs of an allergic reaction with no systemic symptoms be evaluated by a medical provider.

Children experiencing anaphylaxis in the prehospital setting who receive epinephrine require EMS transport

Adult Coma
(Decreased Level of Consciousness)

E

Assess for trauma, drugs, diabetes, breath odor, needle tracks, medical alert tags suspected seizure. Refer to appropriate protocol for specific suspected conditions.

EMT

1. Immobilize spine if indicated
2. Manage airway as appropriate
3. Request ALS if available
4. If shock present, refer to page 51 Medical Shock Protocol Page 53 "Gold 13"
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program
   a. If respirations less than 12 per minute AND narcotic overdose suspected, treat per Yellow 5 Antidotes for specific toxins: Opiates

A P

ADVANCED EMT/CRITICAL CARE / PARAMEDIC

6. IV en route
7. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
8. Cardiac monitor

Adult Diabetic/Hypoglycemic Emergencies

E

EMT

1. Manage airway as appropriate
2. Request ALS if available
3. If patient is a known diabetic, has a known low blood sugar, or has an altered mental status, and if the patient is conscious and able to swallow, give glucose orally
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program
   Glucose paste is to be administered as soon as possible in patients presenting with the signs/symptoms of diabetic emergency.

A

ADVANCED EMT

5. IV en route
6. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device
7. Cardiac monitor
8. If blood glucose is less than 60 mg/dL,
   a. If patient is conscious and able to swallow, give glucose orally

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   b. Contact OLMC for OPTION of administering dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.
   c. If IV unavailable, DO NOT PLACE IO.
      i. Contact OLMC for OPTION of glucagon 1 mg IM.

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9. If blood glucose greater than 300 mg/dL, give NS fluid bolus

P

CRITICAL CARE / PARAMEDIC

10. Dextrose
    a. If blood glucose less than 60 mg/dL administer dextrose for adult coma and diabetic emergencies
       i. If patient is conscious and able to swallow, give glucose orally.
       ii. If patient unable to tolerate oral glucose, administer dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV.
       iii. If IV unavailable, DO NOT PLACE IO.
          1. Administer glucagon 1 mg IM
11. If blood glucose greater than 300 mg/dL, give NS fluid bolus
12. Repeat glucose measurement in 5 minutes.

Contact OLMC for OPTION of repeating dextrose, repeating glucagon, or placing an IO - If IO placed, administer 250 ml of D10W via IO

Adult Seizures #1

PEARLS for Seizures: — Most seizures are self-limited. Unless a specific underlying condition exists (i.e. diabetes with hypoglycemia), treatment of a seizure or multiple seizures with a total duration of less than 5 minutes should focus on patient protection and oxygenation.

E

EMT

1. Manage airway as appropriate
2. Left lateral recumbent position and protect patient from injury
3. Spinal immobilization if indicated See page 60 Spine Assessment Protocol page 63 "Green 6"
4. Request ALS if available
5. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program

A

ADVANCED EMT

6. Manage airway as needed See "Blue 3 & 5"
7. Cardiac monitor
8. IV en route
9. Draw blood as IV established or do finger stick, to measure blood glucose using MEMS approved technique/device

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10. Contact OLMC for the following OPTIONS:
    a. If blood glucose less than 60 mg/dL, refer to page 45 Diabetic/ Hypoglycemic Protocol page 46 "Gold 6"

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11. If shock present, refer to page 52 Medical Shock Protocol "Gold 12"

P

CRITICAL CARE / PARAMEDIC

12. If blood glucose less than 60 mg/dL, refer to page 45 Diabetic/ Hypoglycemic Protocol page 46 "Gold 6"
13. If the patient has a single seizure lasting greater than 5 minutes OR status epilepticus, administer IM midazolam if no IV is established. If an IV is established, administer midazolam via the IV route.:
    a. Intramuscular dosing – midazolam (Versed) 10 mg IM
    b. Intravenous/Intraosseous dosing - midazolam (Versed) 5 mg
    c. If Seizures continue, repeat Midazolam (Versed) 5 mg IV/IO/IM q 5 min until resolution of seizure, or a total of 3 doses of Midazolam (Versed) have been provided
       i. Contact OLMC if additional Midazolam (Versed) necessary
       ii. Monitor oxygenation and ventilation with O2 saturation and End Tidal Capnography, especially if providing repeated doses of Midazolam (Versed).
       iii. Manage the patient's airway as necessary

14.. For patients visibly pregnant or less than 2 weeks post partum
   a. Magnesium sulfate 4 gm IV / IO over 10 minutes
      i. If IV/IO not available, magnesium sulfate 8 gm IM (4 gm in each buttock)

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15. Contact OLMC for the following OPTIONS:
   a. If repeated doses of Midazolam (Versed) necessary, unable to stop seizure activity, or if therapy beyond these protocols are necessary.

PEARLS for Seizures:
References for dosing of medications in seizures are in part from the article:
*Silbergleit, et al. "Intramuscular versus Intravenous Therapy for Status Epilepticus" , New England Journal of Medicine, Feb 16, 2012, Vol. 366, No. 7

Acute Stroke #1

E

Stroke should be suspected if any of the following have appeared in the last few hours or days: weakness on one side of face, weakness in one arm or leg, abnormal speech (slurred, incoherent, absent).

Refer to the next page for early hospital notification process for patients who are potential stroke patients.

See page 45 Adult Coma "Gold 5"if warranted
See page 45 Diabetic Emergencies "Gold 6" if warranted

EMT

1. Manage airway as appropriate
2. Request ALS if available
3. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

ADVANCED EMT

4. Cardiac monitor
5. IV en route
6. Draw blood as IV established or do a finger stick, to measure blood glucose using MEMS approved technique/device.

A

7. If blood glucose is less than 60 mg/dL,
   a. Contact OLMC for OPTION of administering dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV.
      i. If IV unavailable DO NOT PLACE IO. Contact OLMC for option of IO.
         A. If IO placed, administer 250 ml of D10W via IO

CRITICAL CARE / PARAMEDIC

8. If blood glucose less than 60 mg/dL
   a. If patient is conscious and able to swallow, give glucose orally
   b. If patient unable to tolerate oral glucose, administer dextrose 25 gm (50 ml of 50% solution or 250 ml of 10% solution) IV
   c. If IV unavailable, DO NOT PLACE IO. Administer glucagon 1 mg IM

P

      i. Contact OLMC for OPTION of repeating dextrose, repeating glucagon, or placing an IO
         A. If IO placed, administer 250 ml of D10W via IO.

   d. Recheck blood glucose in 5 minutes.

Acute Stroke

1. Perform the *Cincinnati Prehospital Stroke Scale* and assess mental status. If any element is abnormal, proceed to Step 2
   a. *Cincinnati Prehospital Stroke Scale:*
      i. **Speech:** Have patient state "You can't teach an old dog new tricks"
         1. Abnormal = wrong word, slurred, or absent speech
      ii. **Facial droop** when asked to show teeth or smile
         1. Abnormal = one side does not move as well as other
      iii. **Motor:** Have patient close eyes and hold out both arms
         1. Abnormal = arm cannot move or drifts down when held out
   b. Also assess **Level of consciousness**
      i. Abnormal = lethargic, stuporous, comatose
2. Determine blood glucose level. If it is greater than 60 mg/dL, proceed to Step 3.
   a. EMT's may only check blood glucose if they have completed the MEMS BG Monitoring Training program
   b. If blood glucose is less than 60 mg/dL treat per MEMS protocols. Recheck the blood glucose in 5 minutes and, if it is greater than 60 mg/dL, repeat the *Cincinnati Prehospital Stroke Scale,* if it is positive (1 or more positives) proceed to Step 3.
3. Determine time of "Last Seen Normal."
   a. Get history from the patient and all available bystanders
   b. "Time Last Seen Normal" starts with the onset of first symptoms or, if the symptoms improved or went away, the time the symptoms returned or got worse again.
   c. Make sure to record contact information (cell phone, number etc.) for the individual able to identify the exact time when the patient was last asymptomatic
4. As early as possible, alert the receiving hospital of a "Code Stroke"
   a. Relay the following information:
      i. Patient age and gender
      ii. Identify the patient as a potential stroke patient
      iii. The patient's neurologic deficits and the findings of the *Cincinnati Pre-hospital Stroke Scale*
      iv. The "Time Last Seen Normal"
      v. The patient's mental status
      vi. The patient's vital signs and finger stick blood glucose results
      vii. ETA

Acute Stroke #3
Stroke Checklist

Time of symptom onset/Time Last Seen Normal: _____

Yes	No	
☐	☐	History of intracranial hemorrhage?
☐	☐	Known arteriovenous malformation, neoplasm, or aneurysm?
☐	☐	Witnessed seizure at stroke onset?
☐	☐	Active internal bleeding or acute trauma (fracture)?
☐	☐	Intracranial or intraspinal surgery, serious head trauma, or previous stroke within the past 3 months?
☐	☐	Current use of warfarin (Coumadin) or received heparin within the last 48 hours?
☐	☐	Arterial puncture at a noncompressible site within past 7 days?

Adapted from - Anonymous. "Table 3: Fibrinolytic Checklist" from Part 9: Adult Stroke. Circulation 2005; IV: 116.

Medical Shock #1

See page 39 Cardiogenic Shock "Red 21" if appropriate
See page 68 Hypovolemic Shock "Green 12" if appropriate
See page 41 Allergy and Anaphylaxis "Gold 1" if appropriate
See page 13 Adult Airway Algorithm "Blue 3" if appropriate

Definition of Severe Inflammatory Response Syndrome (SIRS), Sepsis, Severe Sepsis and Septic Shock		
Variable	Definition	
SIRS	Greater than or equal to 2 of the following	Temp > 38.3°C or < 36°C HR > 90 bpm Respiratory rate > 20 bpm Hyperglycemia > 120 mg/dl[1] Altered Level of Consciousness Decreased capillary refill Lactate > 2 mmol/L
Sepsis	SIRS + a presumed or identified source of infection	
Severe Sepsis	Sepsis + one or more organ dysfunction[2], hypotension before fluid challenge, or Lactate > 4 mmol/L	
Septic Shock	Severe sepsis + hypotension[3] despite fluid bolus	

Table adopted from 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference.

[1]*Hyperglycemia without history of diabetes, Hypoglycemia, without diabetes, in an immunocompromised patient increases suspicion of infection.*

[2]*Organ dysfunction can be defined as: respiratory failure, acute renal failure, acute liver failure, coagulopathy, or thrombocytopenia. Laboratories that will suggest organ dysfunction include: PaO2 (mmHg)/FiO2 <300, Creatinine >2.0 mg/dl OR Creatinine Increase >0.5 mg/dL, INR >1.5, PTT >60 sec, Platelets < 100,000/uL. Total bilirubin >4 mg/dL*

[3]*Systolic Blood Pressure < 90 mmHg or Mean Arterial Pressure < 65 mmHg*

E

EMT

1. Attempt to identify cause (i.e. allergic reaction)
2. Manage airway as appropriate
3. Request ALS intercept
4. Transport

A P

ADVANCED EMT

5. Consider causes
   a. Massive GI bleed, vaginal bleeding, vomiting, diarrhea, ruptured aneurysm - Treat per Hypovolemic Shock Protocol
   b. Cardiogenic Shock Protocol
   c. Anaphylaxis Protocol
   d. Severe Sepsis
      i. Assess for acute pulmonary edema. If present, refer to page 39 cardiogenic shock "Red 21"
      ii. If available and trained perform point of care lactate:
         A. If POC lactate > 4 and no evidence of pulmonary edema, administer 1000 ml NS bolus

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      iii. If POC lactate not available and no evidence of pulmonary edema
         A. Contact OLMC for OPTION of 500 ml NS bolus

      iv. Notify receiving hospital that the patient is a "Code Sepsis"

CRITICAL CARE / PARAMEDIC

P

6. For anaphylactic or presumed septic shock
   a. If no response to initial treatment:

      i. Contact medical control to discuss additional fluid bolus versus initiating norepinephrine infusion. Norepinephrine infusions in adults and pediatrics must be administered via a Maine EMS approved medication pump.
      A. Preparation – mix NOREPINephrine 8 mg in 250 ml NS.
      B. Dosing - Starting dose is NOREPINephrine 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min.
      C. Titrate to maintain SBP greater than 90 mm Hg

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7. Additionally, if the patient is found to have Adrenal Insufficiency (via medic alert bracelet, patient records, or family/staff reports), administer methylprednisolone (Solu-Medrol) as follows:
   a. Adults – methylprednisolone (Solu-Medrol) 125 mg IV, IM, or IO x 1 dose
   b. May provide patient's own dose of solucortef (Cortef) at the patient's physicians prescribed dose if patient provided medications are available

Abdominal Pain

E

Many diseases cause abdominal pain. While it is almost impossible to diagnose the cause of abdominal pain in the EMS environment, it is important to be prepared for the patient to suddenly become very ill. If the patient is in shock, refer to the medical shock protocol.

EMT

1. Manage airway as appropriate
2. If evidence of shock, refer to page 52 Medical Shock "Gold 12"

A

ADVANCED EMT

3. Establish IV
4. Perform 12-lead EKG (If so trained) under the following circumstances: 1) The patient has a history of cardiac disease or risk factors for cardiac disease, or 2) based on the provider's discretion.

P

CRITICAL CARE / PARAMEDIC

5. Complete 1-4 as above, plus
6. Perform pain-rating score on 1-10 scale
7. For non-traumatic abdominal pain in a stable patient with a normal level of consciousness:
   a. If appropriate, administer fentanyl 1 mcg/kg IV or IN for a maximum dose of 100 mcg.
      i. If repeated doses necessary, contact OLMC
   b. For nausea or vomiting, refer to page 55 Nausea and Vomiting protocol "Gold 15"

Nausea and Vomiting

E

A

P

Nausea and vomiting are symptoms of some other illness. Therefore, this is a supplemental protocol to be used in addition to other relevant protocols

EMT

1. Transport in position of comfort

ADVANCED EMT

2. Perform 12-lead EKG (if so trained) under the following circumstances:
   1) The patient has a history of cardiac disease or risk factors for cardiac disease, or 2) based on the provider's discretion.
3. Establish IV Access
4. Consider fluid bolus if active vomiting

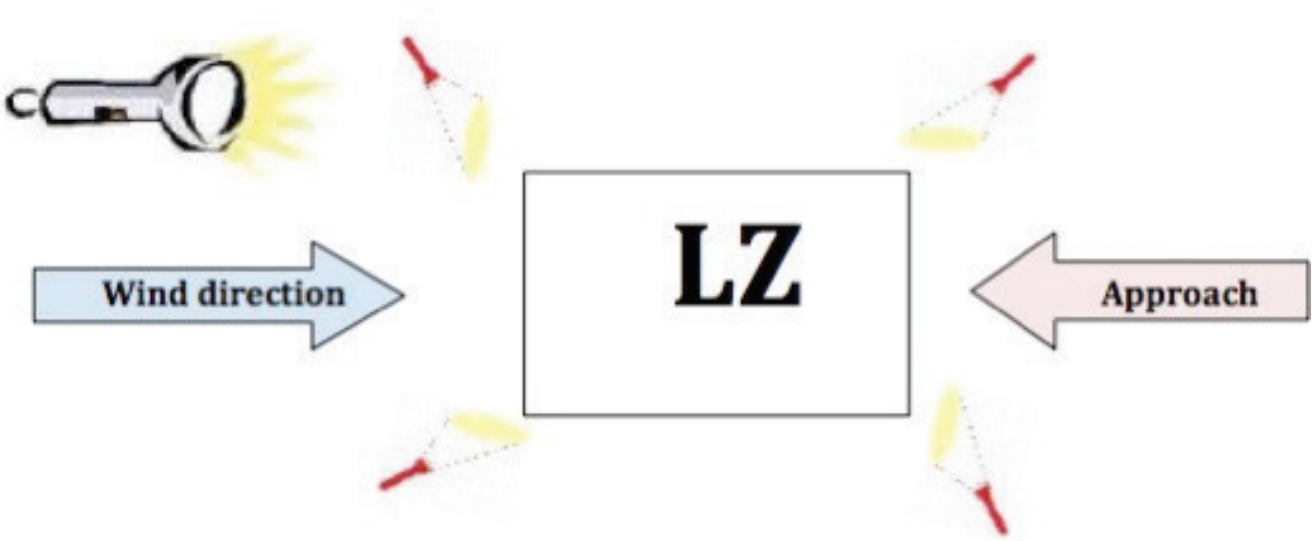
CRITICAL CARE / PARAMEDIC

5. Complete 1-4 as above, plus
6. Adults, administer ondansetron (Zofran) 4 mg IV or ondansetron (Zofran) 4 mg ODT tablet
   a. May repeat once after 15 minutes as needed.
7. For Pediatric Patients, refer to page 88 Pediatric Nausea and Vomiting Protocol "Pink 2"

Contact Online Medical Control for dosage question, abnormal vital signs, or coincident drug use (including alcohol) by patient.

Minimum Landing Zone (LZ) Area #1

Mark Wind Direction At Night



Aircraft Arrival

- ❏ Identify Scene and LZ Incident Command
- ❏ Establish radio communications prior to landing
- ❏ State Fire or State EMS are the default frequencies
- ❏ Advise pilot of terrain conditions, vertical obstructions, and wind direction
- ❏ Secure LZ and identify personnel to guard tail rotor guards
- ❏ Notify pilot if patient is packaged and ready for hot load

Operating Around Helicopter

- ❏ Approach aircraft with crew escort only
- ❏ Approach aircraft 90 degrees to door only
- ❏ Avoid tail boom and rotor at all times
- ❏ Eye and ear protection should be worn
- ❏ Do not carry anything above shoulder height
- ❏ Secure all loose medical and personnel equipment
- ❏ Spotlights, headlights, and/or handheld lights should not be pointed directly at the helicopter

Minimum Landing Zone (LZ) Area #2

Terrain: ❏ Flat, firm, free of debris ❏ Consider dust and snow ❏ LZ should be downwind of accident scene ❏ Free of vehicles and people ❏ Any markers must be able to withstand 60 mph winds ❏ Approach path only from down slope of aircraft	**Vertical Obstructions:** ❏ Mark towers, antennas, poles, tall trees with vehicle ❏ Check the wind, helicopter must land and take off into the wind ❏ Ideal = clear approach and departure angle 8:1 (200‘ to 25’ vertical obstruction)
Wires: ❏ Electrical and utility wires are greatest single hazard to helicopters ❏ Search LZ area for wires ❏ Mark all wires, high-tension lines, guide wires with vehicles ❏ Notify pilot of all wires in proximity to landing zone	**Lighting:** ❏ Never shine light directly at aircraft ❏ All emergency lights on until aircraft overhead ❏ Shut down vehicle strobes and white lights when aircraft on approach ❏ Keep working lights on minimum

Aircraft Departure

❏ Keep LZ clear for at least 5 minutes after helicopter departure
❏ In case of emergency the helicopter may have to return to LZ
❏ Keep communications open with pilot

REMEMBER – EVERYONE IS RESPONSIBLE FOR SAFETY

Trauma Triage Protocol #1
(Patient with Blunt or Penetrating Trauma)

Assessment #1
(Assess Physiologic Compromise)

Determine
Glasgow Coma Scale
Respiratory Rate
Systolic Blood Pressure

↓

GCS ≤ 13
Systolic Blood Pressure < 90 mmHg
Respiratory Rate < 10 or > 29 breaths per minute
(< 20 in infant aged < 1 year old) or need for ventilator support

NO ↓

ASSESSMENT #2
ASSESS ANATOMIC INJURY

DO ANY OF THE FOLLOWING CONDITIONS EXIST?

a. Penetrating injury to head, neck, torso and extremities (proximal to the elbow)
b. Chest wall instability or deformity (e.g. flail chest)
c. Two or more proximal long bone fractures
d. Crushed, de-gloved, mangled or pulseless extremity
e. Amputation proximal to the wrist or ankle
f. Pelvic fractures
g. Open or depressed skull fractures
h. Paralysis

NO
Go to Next Page

YES ↓

YES ↓

Go to nearest Regional Trauma Center (CMMC, EMMC, MMC) if total transport time is less than 45 minutes, otherwise go to closest ED which is a trauma system participating hospital; any questions, then contact OLMC

Trauma Triage Protocol #2
(Patient with Blunt or Penetrating Trauma)

ASSESSMENT #3

ASSESS MECHANISM OF INJURY AND EVIDENCE OF HIGH ENERGY IMPACT

a. Falls
   i. Adults: > 20 feet (one story is equal to 10 feet)
   ii. Children: > 10 feet or 2-3 times the height of the child
b. High Risk Auto Crash
   i. Intrusion, including roof: > 12 inches occupant site, > 18 inches any site
   ii. Death in same passenger compartment
   iii. Ejection (partial or complete) from the automobile
   iv. Vehicle telemetry data consistent with high risk injury
c. Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact
d. Pedestrian thrown or run over by vehicle
e. Motorcycle crash greater than 20mph

NO → **ASSESSMENT #4**

YES → Consider transport to nearest Regional Trauma Center (CMMC, EMMC, MMC) if total transport time is less than 45 minutes vs. transport to the closest ED, which is a trauma system participating hospital; any questions, then contact OLMC

ASSESSMENT #4

ASSESS SPECIAL PATIENT OR SYSTEM CONSIDERATIONS

Older Adults
- ❏ Risk of injury/death increases after age 55 years
- ❏ SBP < 110 might represent shock after age 65 years
- ❏ Low impact mechanisms (e.g. ground level falls) might result in severe injury

Children
- ❏ Should be triaged preferentially to a pediatric capable trauma center

Anticoagulant and bleeding disorders
- ❏ Patients with head injury are at high risk for rapid deterioration

Burns
- ❏ Without other trauma mechanism: triage to burn facility
- ❏ With trauma mechanism: triage to trauma center

Pregnancy > 20 weeks

EMS Provider Judgment

YES → Consider transport to nearest Regional Trauma Center (CMMC, EMMC, MMC) if total transport time is less than 45 minutes vs. transport to the closest ED, which is a trauma system participating hospital; any questions, then contact OLMC

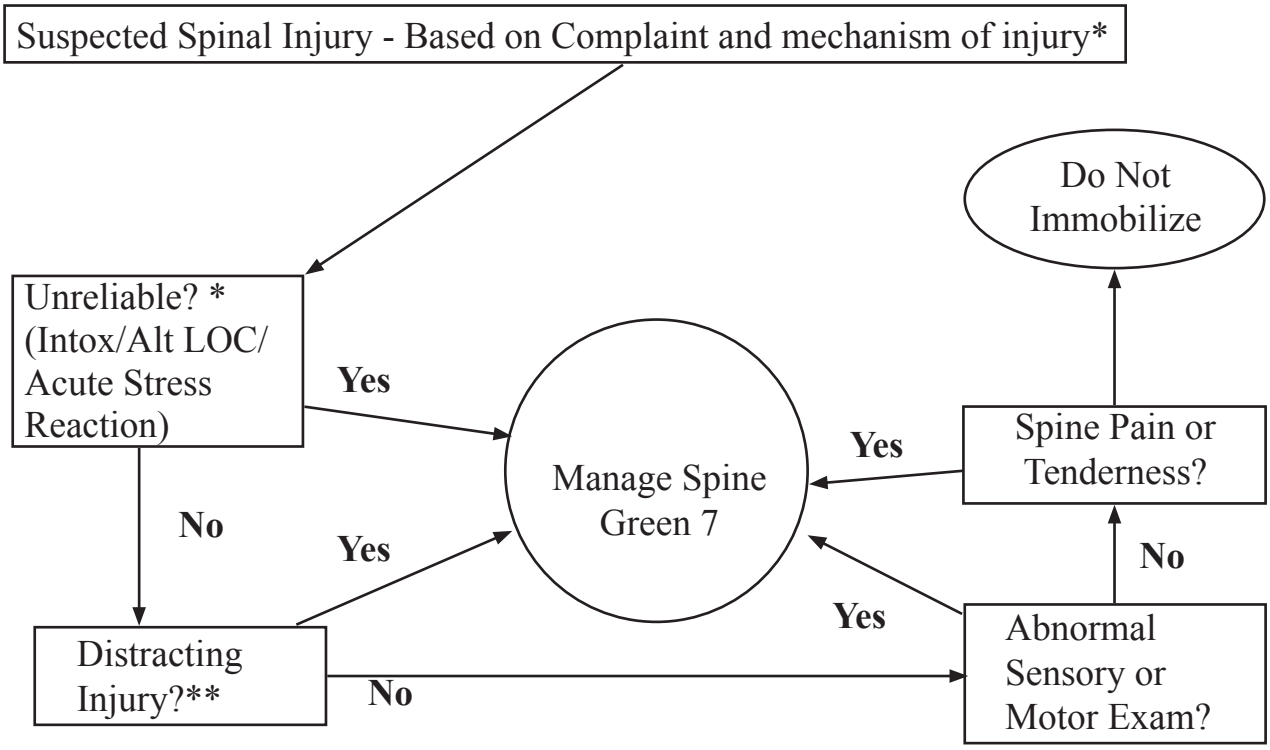
NO → Transport to Trauma System Participating Hospital

Trauma Triage Protocol #3
(Patient with Blunt or Penetrating Trauma)

1. OLMC considers patient transport to Regional Trauma Center (RTC) using the following guidelines:
   a. If patient would best be served by RTC and transport time less than 45 minutes, then OLMC may direct you to the RTC
   b. If patient requires RTC but transport time greater than 45 minutes or patient requires life saving interventions, patient to go to the closest ED
2. If upon arrival in ED;
   a. Facility is not a RTC and;
   b. Patient continues to satisfy criteria of assessments One and Two, and;
   c. Patient can be stabilized for further transport, then the sending ED clinician should follow the regional/state trauma plan

If prehospital providers are unable to definitively manage the airway, maintain breathing or support circulation, begin transport to most accessible hospital and simultaneously request ALS intercept or tiered response.

Spine Assessment Protocol



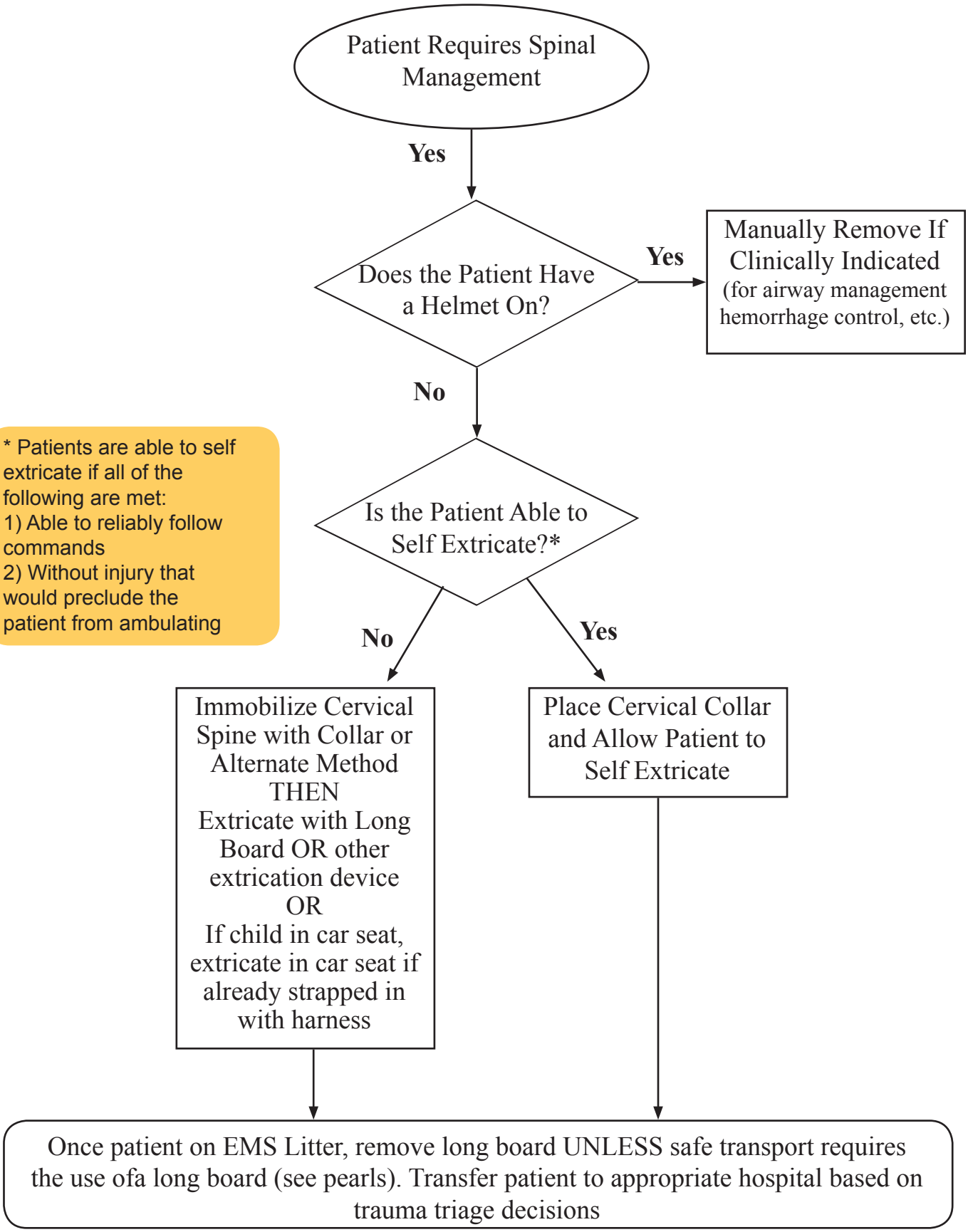
*** High Risk Mechanisms of Injury in the pediatric population include, but are not limited to, the following — risk motor vehicle collisions, recreational vehicles (all-terrain vehicles and snowmobiles), axial loading, substantial torso injuries, and falls greater than 10 feet**

**** Clearance of the spine requires the patient to be calm, cooperative, sober, and alert. Note that the smell of alcohol on the breath is not necessarily the same thing as intoxication; a single beer can be detected on the breath, but does not necessarily cause significant intoxication. The real question is not about the presence or absence of any alcohol, etc.; it is whether or not the patient and the exam are reliable**

***** Distracting injury includes any injury that produces clinically apparent pain that might distract the patient from the pain of a spine injury. The real question is not about the presence or absence of any other injuries, it is whether or not the patient and the exam are reliable**

Remember that patients can fracture the spine at any level, not just the C-spine. If a fracture at another level of the spine is suspected, the entire spine must be immobilized, including the cervical spine. Patients with thoracic or lumbar fracture will commonly have associated cervical spine injuries.

Spine Management Protocol #1



Spine Management Protocol #2

PEARLS for Spine Management

Role of Backboards - While the MDPB is attempting to limit the use of backboards, pre-hospital and hospital providers should recognize there remain circumstances in which use of a backboard is appropriate. Backboards should be utilized to extricate patients from vehicles or other situations when they are unable to extricate themselves (critical patients, patients with lower extremity injuries, severe head injuries, etc.). In most instances, once on the EMS litter, the backboard is redundant and can be removed. However, in some settings, it may be appropriate for the backboard to remain. Those settings include, but are not limited to the following:

1) Cases in which the backboard is being utilized as an element of the splinting strategy (such as multiple long bone fractures)
2) Cases in which the patient is at risk for vomiting but unable to protect their own airway (such as intoxication, head injury, etc.) and may need to be turned to the side for airway protection during transport.
3) Cases in which the patient is unresponsive or agitated (i.e.: head injury)
4) Cases in which removal of the backboard would otherwise delay transport to definitive care in a critical patient.

Inter-Facility Transport - Long backboards do not have a role in the transport of patients between hospitals EVEN IF SPINE INJURY IS DIAGNOSED. Use of long boards during inter facility transport is associated with increased pain and potential for pressure sores and ulcers. Patients should instead be managed with cervical collar (if appropriate) and firmly secured to the EMS stretcher. If a sending facility has placed the patient on a long board or requests use of a long board, EMS providers should discuss the option of foregoing backboard use with the sending physician. If a back board is used, it must be padded adequately to maximize patient comfort.

Penetrating Injury - The incidence of incomplete, unstable spine injury in penetrating trauma is low. Spine immobilization on a backboard is associated with an increased risk of death in patients with penetrating injuries to the neck, especially gun shot wounds, due to unrecognized hemorrhage and airway compromise. Spine immobilization does not appear to prevent progression of neurologic injury in cases of penetrating cervical trauma and may negatively affect patients with vascular and airway injuries. Penetrating trauma such as a gunshot wound or stab wound should not be immobilized on a long board and should instead be secured firmly to the EMS litter. Emphasis should be on airway and breathing management, treatment of shock, and rapid transport to a Level 1 or 2 Trauma Center.

Pediatric Considerations

* Caution should be exercised in older patients (e.g. 65 years and older) and in very young patients (e.g. less than 3 years of age), as spinal assessment may be less sensitive in discerning spinal fractures in these populations. However,age alone should not be a factor in decision-making for prehospital spinal care, yet the patient's ability to reliably provide a history should be considered
* In children using a booster seat or lap/shoulder belt during a motor vehicle collision, consider allowing the patient to self-extricate him/herself after applying a cervical collar, if needed. For the infant or toddler who is already strapped in a car seat with a built-in harness, extricate the child while strapped in his/her car seat.
* Children who do not require spinal immobilization or lying flat may be safely transported when restrained in an age-appropriate car seat secured to the stretcher. Children who do require spinal immobilization or lying flat should be directly secured to the stretcher.

Helmet Use - Padding should be applied, if necessary, to maintain neutral cervical spine positioning - depending on the type of sports and presence or absence of shoulder pads

Management - In patients who have suffered a potential spinal injury and need to be moved onto or off of a backboard, consider using the lift and slide technique rather than the log roll technique, when feasible.

Glasgow Coma Scale

Adult	Pediatric	Score
Eye Opening Response:	Same as Adult	
Open spontaneously on own		4
Open to voice command		3
Open to painful stimuli		2
Eyes remain closed		1
Best Motor Response:	Same as Adult	
Moves on command		6
Pushes painful stimuli away		5
Withdraws from painful stimuli		4
Decorticate (flexion)		3
Decerebrate (extension)		2
No motor response to pain		1
Best Verbal Response:		
Oriented	Appropriate words or social smile, fixes and follows	5
Confused	Cries but consolable	4
Inappropriate words	Persistently irritable	3
Incomprehensible sounds	Restless, agitated	2
No sounds	None	1
Total		3-15

Chest Trauma

E

EMT

1. O_2 as appropriate
2. Assist ventilations (PPV) if needed
3. Request ALS if available
4. Impaled Objects
   a. Secure in place with bulky dressings
5. Open Chest wound
   a. Cover with thick, bulky dressing (i.e. abd pad or bulky trauma dressing) and secure in place
      i. Monitor for persistent air leak and add additional dressings or consider occlusive dressing as one way valve if needed
6. Flail segment with paradoxical movement and respiratory distress
   a. Consider PPV

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ADVANCED EMT

8. IV en route
9. If shock present, perform fluid bolus
10. Cardiac monitor and consider ECG.
11. Request Paramedic if available

P

PARAMEDIC

12. For presumed tension pneumothorax, perform chest decompression

NOTE: Chest decompression will be performed on the involved side using a Maine EMS approved device at the second or third intercostal space on the mid-clavicular line, or fifth or sixth space on the anterior-axillary line.

Hemorrhage

E

EMT

1. Ascertain all sites of bleeding and control with pressure
2. If life-threatening bleeding is on extremity and uncontrolled with pressure, consider applying a Maine EMS Approved tourniquet
   a. Tourniquets should be applied proximally on the affected limb for the following reasons:
      i. Injuries are commonly more proximal than anticipated, and
      ii. Double bone structures lower in both the forearm and the leg effectively splint the arteries and prevent tourniquets from working properly
   b. Tourniquets should be as tight as possible
      i. Due to associated pain, request ALS if available
   c. If hemorrhage continues after application of the tourniquet, ensure the tourniquet is applied as tightly as possible. If hemorrhage continues, consider placement of a second tourniquet, proximal to the first. Experience has shown applying two tourniquets greatly reduces the incidence of hemorrhage, especially in injuries to the lower extremity.
3. If life-threatening bleeding is not controlled by the above or is located in an area not amenable to placement of a tourniquet, consider applying a Maine EMS approved hemostatic agent by packing the agent in the wound and applying /maintaining pressure over the agent for a minimum of 5 minutes. Check for ongoing bleeding. If bleeding has stopped, bandage appropriately, if bleeding continues, reapply pressure for a minimum of 5 minutes. If bleeding continues after the second period of pressure, remove the initial hemostatic agent and repeat with a new hemostatic agent. Remember, for these agents to have maximal effectiveness, they must be packed inside the wound as close to the bleeding tissue as possible.
4. Treat for shock if indicated and manage airway as appropriate
5. If amputation, rinse severed part briefly and gently with sterile saline to remove debris
   a. Wrap severed part in sterile saline gauze, moisten with sterile saline (do not soak), place in a water-tight container. Place container on ice (do not use dry ice). Do not put part directly on ice. If necessary, use ice packs to provide some level of cooling.
6. Request Paramedic if bleeding cannot be controlled, patient demonstrates signs or symptoms of shock, or the patient requires pain management due to tourniquet placement

A P

ADVANCED EMT /CRITICAL CARE / PARAMEDIC

7. IV en route (see page 68 hypovolemic shock “Green 13”).
8. Cardiac monitor

Head Trauma

E

EMT

1. Consider immobilizing entire spine on long spinal immobilization device
2. O_2 as appropriate. If necessary, airway management as per page 12 & 14 Airway Management Protocol "Blue 3 & 5"
3. If necessary to support ventilation, provide PPV at 10-12 breaths per minute (BPM) ** It is important to neither hypoventilate or hyperventilate these patients**
4. If not in shock, elevate head of long spinal immobilization device while maintaining full spinal immobilization
5. Treat for shock if indicated
6. Request ALS if available and patient has altered mental status or abnormal vital signs

A P

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

7. IV en route
8. If shock present, perform fluid bolus to maintain BP greater than 90 mm Hg
9. Cardiac monitor
10. Manage airway as needed See Airway Management Protocol
11. Manage seizures as per page 47 Adult Seizures "Gold 7" or page 95 Pediatric Seizures "Pink 6"

Hypovolemic Shock #1

E

If history of illness or mechanism of injury consistent with signs/symptoms of shock (elevated pulse, elevated respiratory rate, cool/pale skin, altered LOC, anxiety, sweating or lowered BP) then transport as soon and as efficiently as possible.

If the cause of the shock is:
Anaphylaxis, see page 41 Anaphylaxis Protocol "Gold 1"; Cardiogenic, see page 39 Cardiogenic Shock Protocol "Red 21"; Tension Pneumothorax see page 65 Chest Trauma Protocol "Green 10"; Medical Shock, see page 52 Medical Shock Protocol "Gold 12"

EMT

1. Control bleeding refer to page 66 Hemorrhage Protocol "Green 11"
2. Manage airway as appropriate - See "Blue 3 & 5"
3. If patient in third trimester of pregnancy:
   a. Place patient on left lateral recumbent side and re-evaluate
   b. If shock is secondary to trauma, immobilize patient on a spinal board before placing in left lateral recumbent position (manually displace uterus to the left if tilting the board not possible)
4. Request ALS

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

A P

5. IV en route
6. Cardiac monitor
7. If shock present (see below table), perform fluid bolus according to the following guidelines:
   a. Pediatrics – establish IV access and perform 20 ml/kg fluid bolus. Repeat, as needed, within 15-30 min.
   b. Uncontrolled Bleeding: for suspected internal bleeding or uncontrolled bleeding, fuid bolus to maintain target systolic BP of 90 mm Hg.
   c. Suspected TBI/CNS injury: fluid bolus to maintain BP greater than 90 mm Hg.

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8. Contact OLMC if patient is greater than 65 years of age for a fluid bolus order
9. Contact medical control if systolic blood pressure remains less than 90 after boluses of normal saline

Hypovolemic Shock #2

If the cause of hypovolemic shock is felt to be secondary to acute unstable pelvic fracture, the EMT, AEMT, Critical Care or Paramedic may consider using a Maine EMS approved pelvic stabilization device. If Maine EMS approved pelvic binder is not available, consider immobilization with a sheet.

Classification of Hemorrhagic Shock

	Compensated Shock	Mild Shock	Moderate Shock	Severe Shock
Blood Loss	< 15% (<1000ml)	15-30% (1000-1500 ml)	30-40% (1500-2000 ml)	> 40% (> 2000 ml)
Pulse	Normal	Elevated (>100)	Elevated (>120)	Elevated (>140)
Blood Pressure	Normal	Orthostatic change	Marked fall	Profound fall
Cap Refill	Normal	May be delayed	Usually delayed	Always delayed
Respiration	Normal	Mild increased	Moderate tachypnea	Marked tachypnea and respiratory collapse
Mental Status	Normal or agitated	Agitated	Confused	Lethargic/ Obtunded

Burn #1

E

EMT

1. Remove burned clothing and jewelry unless adhered to patient
2. O_2 as appropriate
3. Give highest priority to airway problems and major trauma
4. Manage shock if indicated
5. If burn area is less than 10% Body surface area (BSA), cover with dressing soaked in normal saline or other commercially prepared moist burn dressing
6. If burn area is greater than 10% BSA, cover with dry dressing, sterile sheet, or commercially prepared dry dressing
7. Request ALS if available; where there is a possibility of respiratory compromise, shock, burns greater than 10% BSA or need for pain medications

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ADVANCED EMT

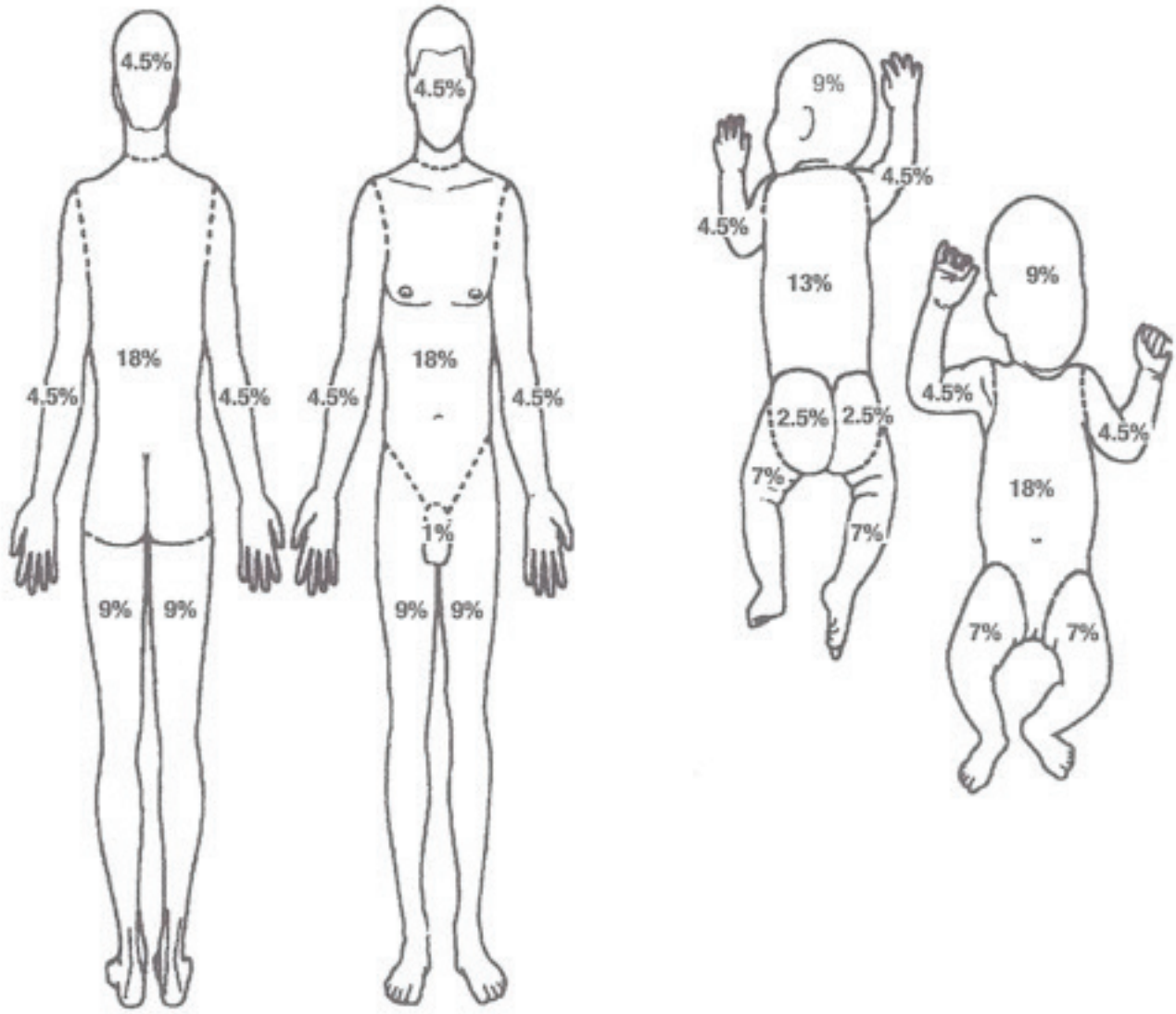
8. Venous access en route (avoid placing IV/IO in burned skin if possible)
9. Cardiac monitor (avoid placing leads on burned skin)
10. If shock present, perform fluid bolus
11. If Shock NOT present, deliver normal saline as follows:
    a. 0.25 x wt (kg) x % BSA Burn = ml/hr (this represents the patient's fluid requirements each hour for the first 8 hours after the burn)

P

CRITICAL CARE / PARAMEDIC

12. See page 72 Adult Pain Management in Trauma Protocol "Green 17" or page 92 Pediatric Pain Control "Pink 3" for pain control

Rule of 9's
Estimation of Burned Body Surface (Percent)



Remember: The patient's palm (hand minus fingers) is about 1% of the patient's body surface area.

Pain Management In Trauma #1

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EMT

1. Reassurance
2. Splinting as needed, provide inline stabilization. Consider ice application in isolated extremity trauma if hypothermia/frostbite is not an issue.
3. Evaluate pain using age appropriate pain scale
4. Request ALS if available for pain management

ADVANCED EMT

5. Consider IV access in preparation for ALS pain management

CRITICAL CARE / PARAMEDIC

6. For all Traumatic Pain EXCEPT those with Head Injuries, Mental Status Changes, or Unstable Vital Signs use the following, otherwise go to number "7" below
   a. For trauma in a stable adult patient, consider the use of fentanyl 1 mcg/ kg IV, IM or IN initially with an initial maximum dose of 100 mcg then, if pain persists fentanyl 0.5-1 micrograms/kg (MAX dose 100 mcg) IV, IM or IN every 5- 10 minutes titrated to effect with cumulative maximum dose of 5 mcg/kg.
   b. Alternative pain control: 50% nitrous oxide/oxygen mixture self administered (such as Nitronox).
      i. NOTE: Patients should NOT receive opioids AND Nitronox together for pain control due to additive adverse affects with adminsitration of combined medications

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   c. Contact OLMC if further dosing needed or vital signs are not stable.For dosage question, abnormal vital signs, coincident drug use (including alcohol) by patient, or if IV cannot be established, contact OLMC before administering medication.

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   d. For nausea or vomiting, administer ondansetron (Zofran) 4 mg IV or ondansetron (Zofran) 4 mg ODT and may repeat once after 15 minutes if needed. For dosage question (for pediatric dosing, refer to the Pediatric Pain Control Protocol), abnormal vital signs, coincident drug use (including alcohol) by patient, contact OLMC before administering medication.

7. **Contact OLMC** before using any narcotic, antiemetic, or anxiolytic for isolated trauma involving head, any patient with mental status changes or in patients with unstable vital signs (including SBP less than 100 mm Hg). Use narcotics, antiemetics, and anxiolytics with caution in those with hypotension, bradypnea, or if coincident drug use (including alcohol) by patient. If IV cannot be established, OLMC can help with IM drug doses.
   a. Consider the use of fentanyl 1 microgram/ kg IV, IM or IN initially with an initial maximum dose of 100 micrograms then 25-75 micrograms IV, IM or IN every 5- 10 minutes titrated to effect with cumulative maximum dose of 5 mcg/kg.
   b. For nausea or vomiting, administer ondansetron (Zofran) 4 mg IV and may repeat once after 15 minutes if needed.
   c. Consider self-administered fixed dose of 50% nitrous oxide/oxygen mixture delivered by commercially available device (such as Nitronox). (contraindicated in suspected pneumothorax).
      i. NOTE: Patients should NOT receive opioids AND Nitronox together for pain control due to additive adverse affects with adminsitration of combined medications

Prehospital Termination of Resuscitation For Traumatic Cardiac Arrest (Adult and Pediatric)

E A P

Exclusion Criteria: (patients for whom this protocol does not apply):

Hypothermic patients see page 80 Hypothermia Protocol "Yellow 7"

Drowning patients see page 90 Drowning Protocol "Yellow 15"

Patients whose presentation is consistent with a medical cause of cardiac arrest see page 26 Cardiac Arrest Protocol "Red 8"

Inclusion criteria: Cardiac arrest from blunt or penetrating trauma in adult and pediatric patients

EMT/Advanced EMT/Critical Care/Paramedic

1. Do not initiate cardiac arrest resuscitation if any of the following exist:
   a. Injuries incompatible with life
   b. Evidence of significant time lapse since pulselessness
      i. Dependant lividity, rigor mortis, or decomposition
2. Do not initiate resuscitation in blunt trauma patients who are apneic and pulseless
3. Do not initiate resuscitation in penetrating trauma patients who are pulseless and apneic
   a. CONSIDER resuscitation and transport ONLY if, transporting in a safe and prudent manner, you can deliver the patient to a hospital within 15 minutes of the TIME OF ARREST.

Paramedic

4. If resuscitation initiated, consider the following:
   a. Bilateral needle decompression of the chest to alleviate tension pneumothorax (See page 65 Chest Trauma Protocol "Green 10")
   b. Fluid Bolus

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Toxins #1

Call Poison Control (1-800-222-1222) to receive either medical control directly from a toxicologist or guidance on patient care and so that information on the toxin can be faxed to ED prior to patient's arrival.

This protocol refers to toxins that are:
- Ingested
- Inhaled
- Absorbed
- Injected (envenomation)

This protocol refers to toxins that are:
- Systemic effects
- Local effects
- Both systemic and local effects

E

I. GENERAL ASSESSMENT

What: Identify specific toxin and amount of exposure if possible
Bring pill bottles, vomitus samples, MSDS sheets, placard info, shipping manifests, etc.
When: Identify time of exposure if possible
Why: Identify reason for exposure if possible

II. GENERAL ASSESSMENT

EMT

1. Scene safety: protect rescuers and patients from immediate danger and contamination. Toxic exposures might require special precautions, including HAZMAT precautions, before patient treatment begins.
2. O_2 as appropriate
3. Clear airway as necessary with suction and position
4. Ventilate as necessary
5. Consider local measures for treatment
6. Request ALS if available

A P

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

7. Manage airway as necessary See "Blue 3 & 5"
8. If patient is hypotensive – IV en route – perform fluid bolus

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III. SPECIFIC TREATMENTS TO REMOVE AND DILUTE TOXINS
Initiate measures to remove and dilute toxin

For Ingested Toxins:

EMT

1. O_2 as appropriate
2. Clear airway as necessary with suction and position
3. Ventilate as necessary
4. Consider local measures for treatment

ADVANCED EMT / CRITICAL CARE

5. Manage airway as necessary See "Blue 3 & 5"
6. If patient is hypotensive – IV en route – perform fluid bolus

ADVANCED EMT / CRITICAL CARE

7. Contact OLMC for OPTION:
   a. Activated charcoal without sorbitol 1 gm/kg PO
   b. Contraindications to charcoal include:
      i. Ingestion of caustic substance
      ii. Hydrocarbons
      iii. Seizures
      iv. Patient is unable to swallow/protect airway

Toxins #3

E A P

For Inhaled Toxins:

EMT / ADVANCED EMT / CRITICAL CARE / PARAMEDIC

1. Remove the patient from exposure site
2. Deliver 100% oxygen if possible

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For Absorbed Toxins:

EMT / ADVANCED EMT

1. Flush skin vigorously and continuously with water
2. Flush eyes continuously with water, saline, or LR

CRITICAL CARE / PARAMEDIC

3. Consider pain medication see pg 72 Adult Pain Management in Trauma "Green 17," page 92 Pediatric Pain Management "Pink 3" or analgesic for eye pain see page 85 Ophthalmology "Yellow 11"

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For Injected Toxins:

There is no effective method of removing/diluting toxins that have already been injected through the skin. Avoid further exposure to injected toxins.

Antidotes for Specific Toxins: Cyclic Antidepressants

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IV. ANTIDOTES FOR SPECIFIC TOXINS

Some examples of cyclic antidepressants include: amitriptyline, desipramine, doxepin, imipramine, nortriptyline, **notify OLMC.**

EMT

1. Manage airway as needed See "Blue 3 & 5"
2. Request ALS if available

ADVANCED EMT

3. Perform fluid bolus if hypotensive

CRITICAL CARE / PARAMEDIC

In patients with known cyclic overdose, with low BP, seizures, ventricular dysrhythmias, or wide QRS complex:

4. Administer sodium bicarbonate 1 mEq/kg IV

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5. Contact OLMC if further direction needed for conditions such as arrhythmias.

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6. IV fluid bolus if hypotensive

Antidotes for Specific Toxins: Opiates

NEVER GIVE NALOXONE TO A NEONATE

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EMT

1. Administer O_2 as appropriate
2. Manage airway as needed See "Blue 3 & 5
3. Request ALS if available
4. If respirations less than 12 per minute AND narcotic overdose suspected:
   a. Adults and Pediatric patients: Naloxone (Narcan) 0.5 mg IN. Titrate to effect by providing 0.5 mg in one nostril. The beneficial outcome is effective oxygenation and ventilation with one important parameter being a respiratory rate of greater than 12. Continue to manage the airway while assessing for effect. If the patient remains apneic or continues to have ineffective oxygenation and ventilation in 2-5 minutes after provision of the first dose of naloxone, provide a second of naloxone 0.5 mg in the same nostril. Repeat 0.5 mg of naloxone every 2-5 minutes in the other nostril.
   b. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as prolonged release opioids, buprenorphine or methadone may require doses greater than 4 mg.

A P

ADVANCED EMT/ CRITICAL CARE / PARAMEDIC

5. Establish IV access as needed
6. Alternate Naloxone route of administration:
   a. Naloxone (Narcan) 0.1 – 2 mg IV/ IO/IM. Titrate to improved respiratory drive.
   b. In Pediatric Patients: Naloxone (Narcan) Less than 20 kg: 0.1 mg/kg. If greater than 20 kg or 5 years old or greater, 0.1–2 mg IV/IO/IM. Titrate to improved respiratory drive.
   c. NOTE: Patients abruptly and fully awakened from narcotic overdose may become combative or suffer acute narcotic withdrawal symptoms. Some drugs such as prolonged release opioids, buprenorphine or methadone may require doses greater than 4 mg.
   d. Cardiac monitor

PEARLS for Management of Opioid Overdose:

* Recall, the patient suffering from opiate overdose requires immediate oxygenation and ventilation. This should be the priority for these patients and is accomplished by airway management. Narcan may be applied, but only after initiate of airway management practices.

Antidotes for Specific Toxins: Organophosphate/Carbamate

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PEARLS for Organophosphate Poisoning: WARNING: SKIN CONTACT WITH THIS TOXIN CAN BE FATAL TO RESCUER

* Assess for SLUDGEM (Salivation, Lacrimation, Urination, Defecation, GI Distress, Emesis, Muscle Twitching/Miosis – [constricted pupils]) and the Killer- B's (Bradycardia, Bronchorrhea, Bronchospasm)
* If you suspect a Bio-Terrorism/WMD threat, See page 118 "Gray 22"

In unstable patients with known organophosphate/carbamate poisoning:

EMT

1. O_2 as appropriate
2. Vigorous suctioning may be necessary
3. Request ALS if available

A

ADVANCED EMT

4. IV en route
5. Manage airway as appropriate. Ventilatory support can be critical in these poisonings See "Blue 3 & 5"
6. Cardiac monitor

CRITICAL CARE / PARAMEDIC

7. If Apnea/Seizures/Unconsciousness/Flaccid Paralysis:
   a. Adult: 3 Atropine Auto-Injectors IM OR atropine 6 mg IM
8. If Dyspnea/Twitching/Nausea/Vomiting/Sweating/Confusion/Constricted Pupils
   a. Adult: 1 Atropine Auto-Injector IM or Atropine 2 mg IM
9. In Pediatrics – treat the presence of any SLUDGEM symptoms with:
   a. Pediatric: age less than 1 y/o – 1 Pediatric Atropine Auto-Injector IM OR atropine 0.5 mg IM
   b. Pediatric: age greater than 1 y/o – 1 Adult Atropine Auto-Injector IM OR Atropine 2 mg IM

P

10. In all cases, continue to monitor closely for worsening symptoms
11. If seizures are present, refer to page 47 "Gold 7" or page 96 "Pink 6" – Adult or Pediatric Seizure Protocol.

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12. Contact OLMC for OPTIONS:
    a. Repeat dose, as necessary, every 5 minutes
    b. Administer other selected antidotes

Hypothermia #1

E

Classification Table

Classification	Core Temp	Clinical Presentation	
Normal	>95/	**Cold sensation, shivering**	
Mild	90-95/ 32-35	Loss of fine or gross motor skills	Inability to complete simple thoughts.
Moderate	82-90/ 28-32	**≤90°F / 32°C: Shivering stops** **≤86° F / 30°C: AMS**	
Severe	≤82 / 28	Rigidity, Vital signs reduced / absent. Severe risk of V-fib with mechanical stimulation (rough handling)	
	≤77 / 25	Spontaneous V-fib cardiac arrest	

Bold indicates major thresholds between stages
Adapted from "State of Alaska Cold Injuries Guidelines" 2003

Treatment

Not in cardiac arrest

EMT

1. Prevent further heat loss
2. Pack thorax with wrapped heat packs
3. Consider warmed AND humidified 100% O2
4. High sugar oral fluids if tolerated (only in mild hypothermia)

A P

Advanced EMT/ Critical Care/ Paramedic

5. Consider one to two 500 ml (20 ml/ kg for peds) boluses of NS heated to 104-108° F (40-42° C).

6. Contact OLMC for additional boluses

Hypothermia #2

E

Severe hypothermia without signs of life
Note: Assess for pulse and respirations for 1 minute

Note: Definitive treatment for severe hypothermia without signs of life is rewarming with cardiopulmonary bypass. Do not delay transport of these patients. Do not initiate CPR if it will delay transport.

Do not initiate resuscitation if the patient meets any of the criteria of "Gray 1 Section II.A" OR Rescuers are exhausted or in a dangerous situation. These patients are deceased.

EMT

1. Initiate CPR after 1 minute pulse/respiration assessment
2. Defibrillate as appropriate (AED or manual)
3. Rewarm using techniques as listed under Treatment: Not in Cardiac Arrest (above)
4. If no ROSC after 20 minutes CPR/ rewarming, consider termination of resuscitation. Contact OLMC if possible

Advanced EMT/ Critical Care/ Paramedic

5. Consider one to two 500 ml (20 ml/ kg for peds) boluses of NS heated to 104-108° F (40-42°C).

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6. Contact OLMC for additional boluses

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7. Otherwise treat as per normothermic cardiac arrest management for the patient's dysrhythmia see page 26 Cardiac Arrest "Red 8"

A P

Hyperthermia - Heat Exhaustion

E

HEAT EXHAUSTION — Volume depletion due to sweat loss

ASSESSMENT:
If core temperature is obtained, it will be variable, but always below 105°F (40.6°C).
Clinical pattern is essentially that of compensated hypovolemic shock:

- Weakness and vomiting
- Skin is variable. Core shell shunt to increase heat loss competes with shell core shunt to protect volume. Skin is usually pale and moist with variable skin temperature.
- Sweating
- Normal consciousness and CNS function

TREATMENT: Goal is to reduce sweating and to restore volume

EMT

1. Protect the patient from heat challenge. Stop exercise and put patient at rest in a cool, shady place.
2. Oral fluids can be effective if the patient is not vomiting. Use dilute (less than 5% sugar) fluids given in small sips. Appropriate fluids to use include the World Health Organization's Oral Rehydration Solution OR a "homemade" solution using 1 teaspoon of salt and 8 teaspoons of sugar per 1 liter of water.

A P

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

3. IV Perform fluid bolus

Hyperthermia - Heat Stroke

E

HEAT EXHAUSTION — A true medical emergency that requires radical field treatment, usually, but not always, associated with heat exhaustion. Heat stroke is characterized by multisystem organ injury and failure.

ASSESSMENT:
If core temperature is obtained it is 105°F (40.6°C) or greater. Abnormal consciousness and/or CNS function; seizures are common. **Any acute change in consciousness/CNS function in the context of a significant heat challenge should be managed as heat stroke without delay.** Skin and sweating are variable, depending on volume status. Note that red, dry skin is not a dependable sign of heat stroke.

TREATMENT:
Immediate radical cooling is the urgent priority, followed by volume replacement.

EMT

1. Cool the patient immediately by any means practical, such as:
   a. Initiate Radical Cooling which includes - Immerse the patient up to the neck in cold water
   b. Also consider non-radical cooling which includes, ice packs, wet patient, cool wet sheets, and air conditioning en route
   c. Consider, moisten the skin and fan vigorously. This method is effective only at low ambient humidity.
2. Discontinue radical cooling if:
   a. Shivering begins
   b. Core temperature falls to 102°F (38.8°C).

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

3. IV Perform fluid bolus

A P

E A

Eye Pain from Chemical Exposure

EMT / ADVANCED EMT

1. Flush eye with sterile saline or clean water source continuously

CRITICAL CARE / PARAMEDIC

2. If no penetrating eye trauma and if the patient has no allergy to local anesthetics: Administer 2 drops tetracaine ophthalmologic drops every 5 minutes as needed to affected eye to facilitate eye flushing. This may be repeated for a total of three doses. For further dosing, please contact medical control.
   a. This is to be provided by the Critical Care /Paramedic/provider only and not provided to the patient for ongoing use.
3. To facilitate flushing, the paramedic may use a Morgan lens if trained to do so.

P

Eye pain all other sources

CRITICAL CARE / PARAMEDIC

If no penetrating eye trauma and if the patient has no allergy to local anesthetics (lidocaine, novicaine, bupivicaine, etc.): Administer 2 drops tetracaine ophthalmologic drops every 5 minutes as needed to affected eye. This may be repeated for a total of three doses. For further dosing, please contact medical control.

Combative Patient Protocol

E

EMT

1. Maintain crew safety; ask for law enforcement assistance if available.
2. If altered mental status, check oxygen saturation and option to perform finger stick to measure blood glucose using MEMS approved technique/ device limited to providers who have completed the MEMS BG monitoring training program.

A

ADVANCED EMT

3. Consider blood glucose if patient with altered mental status. If blood glucose is less than 60 mg/dL, establish IV and contact OLMC for Option of administering dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.

P

CRITICAL CARE / PARAMEDIC

4. Consider blood glucose if patient with altered mental status. If blood glucose is less than 60 mg/dL, establish IV and administer dextrose 25 gm (50 ml of 50% solution IV or 250 ml of 10% solution IV). Recheck blood glucose in 5 minutes.
5. If IV unavailable and blood glucose less than 60 mg/dL, consider administer glucagon 1 mg IM.
6. Consider: midazolam (Versed) 4 mg – 10 mg IM for patient safety and comfort. First dose should be based on patient size and the circumstances causing agitation.

Contact OLMC for dosing questions or if patient requires repeat dosing.

Known or Suspected Cyanide Exposure #1

Don appropriate PPE if necessary, assess patient after evacuation
****Remove patient from source of smoke/inhalation****

Assessment
Vital Signs
Evidence of Major Trauma, Major Burns, Inhalation Injury
Check Finger CO if Possible

→ Proceed to Appropriate Trauma or Airway Management Protocol

Severity of Exposure Definitions (CO, CN, or Combined)

Mild Exposure
*Transient Neuro Changes
*GCS 14 or 15
*No Cardiovascualar Symptoms

↓ Do Step 1

Moderate Exposure
* Ongoing Neuro Changes
* Severe Confusion
* GCS 8-13
+/- Hypotension
+/- Chest Pain/SOB

↓ Do Step 1 & 2
If antidote considered, CC/P contact OLMC
Report CO Levels > 10%

Severe Exposure
* Coma
* Severe Confusion
* GCS less than 8
+/- Hypotension
* Apnea

↓ Do Step 3

Treatments

Step 1
EMT/AEMT/CC/P
1) Administer high flow O_2 via non-rebreather mask
2) Pulse Ox may be inaccurate in exposure to CO/CN or methemoglobinemia

AEMT/CC/P
3) Monitor Rhythm

Step 2
AEMT/CC/P
1) Manage airway as appropriate
2) Collect rainbow blood sample tubes for blood gas, electrolytes, CBC
3) If hypotensive, administer IV bolus 20 ml/kg, may repeat x 1
4) 12 Lead ECG

Step 2- CC/P
1) Adult: Cyanokit - 5 g IV, may repeat x 1 for partial response
2) Peds: Cyanokit - 70 mg/kg, 2.5 g for < 30 kg

Known or Suspected Cyanide Exposure #2

PEARLS for Cyanide Exposure

1) Carbon monoxide (CO) and Hydrogen cyanide (HCN) gases are chemical asphyxiants that can kill rapidly. Carbon monoxide is odorless. Only 40% are able to detect the almond smell of CN. Cyanide is generated by combustion of synthetic materials present in many structural fires.
2) Appropriate PPE includes self-provided air/oxygen source e.g. SCBA. Scene safety is the top priority. No patient decon is required for victims evacuated from CN gas exposure.
3) It is rare for viable CO exposed patients to have persistent unconsciousness requiring intubation.
4) Sources of CN: Structural fire (HCN), industrial cyanide salts*, unripe cassava, apricot pits, laetrile, etc.
5) If CPR in progress or injuries incompatible with life, DO NOT GIVE ANTIDOTE.

*may persist on skin, however water decon may liberate HCN gas.

Drowning/Submersion Injuries
Adult and Pediatric

E

EMT / ADVANCED EMT

1. If C-Spine injury suspected, stabilize c-spine
2. Obtain specific history including time, temperature, associated injury, etc.
3. Begin resuscitation efforts while removing patient from the water
4. Consider hypothermia - See "Yellow 7"
5. Remove wet clothes and warm the patient
6. Conscious patients with submersion injuries should be transported to the hospital for further evaluation
7. If water temperature is estimated to be less than 43° F and submerged
   a. Less than 90 minutes - initiate full resuscitation
   b. Greater than 90 minutes - consider not initiating resuscitation or termination of resuscitation
8. If water temperature is estimated to be greater than 43° F and submerged
   a. Less than 30 minutes - initiate full resuscitation
   b. Greater than 30 minutes - consider not initiating resuscitation or termination of resuscitation

A P

Advanced EMT/Critical Care/Paramedic

9. Consider CPAP to supplement the patient's own respiratory effort
10. Reassure anxious patients
11. If near drowning incident involves scuba diver, suggesting barotrauma, contact OLMC and consider hyperbaric treatment facility

PEARLS for Drowning:

1) Fresh and salt water drowning are treated the same in the field; treatment must be directed toward correcting severe hypoxia.
2) Factors affecting survival include the patient's age, length of time submerged, general health of the victim, type and cleanliness of liquid medium and water temperature that may contribute to the effectiveness of the mammalian diving reflex (decreased respirations, decreased heart rate, and vasoconstriction, with maintenance of blood flow to the brain, heart and kidneys).
3) All drowning/near drowning victims with suspected barotrauma/decompression sickness should be transported in the left lateral Trendelenburg position to prevent any emboli in the ventricles from migrating to the arterial system.
4) Even patients that are conscious and appear well after a submersion event require hospital level evaluation and observation as they may develop delayed symptoms

Reference - Michael J. Tipton, Frank St. C. Golden, November 2010."A proposed decision-making guide for the search, rescue and resuscitation of submersion
(head under) victims based on expert opinion" - R*esuscitation 82 (2011) 819– 824*

E A P

PEARLS for Apparent Life Threatening Events:
Apparent Life Threatening Events (ALTE) - Involves a frightening episode in a child less than 2 years old, and involves some combination of apnea, color change, limpness, or choking.

Note: Most children who experience an ALTE have a normal physical exam when assessed by responding prehospital personnel; BUT almost 50% will have an underlying condition requiring comprehensive medical care.

EMT/ADVANCED EMT /PARAMEDIC:

1. Obtain medical history
   a. Determine the severity, nature, and duration of the episode.
   b. Was the patient awake or sleeping at the time of the episode?
   c. Include details of the resuscitation, if applicable.
2. Keep the child warm and transport to the hospital.
3. Contact Medical Control for assistance if the parent/guardian refuses medical care and/or transport.

Pediatric Nausea and Vomiting

E A

Nausea and vomiting are symptoms of some other illness. Therefore, this is a supplemental protocol to be used in addition to other relevant protocols

EMT/ADVANCED EMT

1. Transport in position of comfort

CRITICAL CARE / PARAMEDIC

For Pediatric Patients:

2. If over 4 years old, Ondansetron (Zofran) ODT 4 mg
3. If nausea not controlled by Ondansetron (Zofran) ODT or child under the age of 4,
   a. Consider IV placement and:
   b. Ondansetron 0.1 mg/kg IV or IM (maximum single dose 4 mg)
   c. Consider 10-20 ml/kg 0.9% NS IV fluid bolus for dehydration even if vital signs are normal.

Contact OLMC for dosing questions, abnormal vital signs, or coincident drug use (including alcohol) by patient

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E A

EMT/ADVANCED EMT

1. Place the patient in a position of comfort, if possible.
2. Give reassurance, psychological support, and distraction.
3. Use ample padding for long and short spinal immobilization devices.
4. Use ample padding when splinting possible fractures, dislocations, sprains, and strains. Elevate injured extremities if possible. Consider the application of a cold pack for 30 minutes
5. Have the patient rate his/her pain from 0-10, or on an another appropriate pain scale:
   a. Ages less than 4 – FLACC Scale
   b. Ages 4-12 – Wong Baker "Faces" Scale
   c. Avoid coaching the patient; simply ask him/her to rate his/her pain on a scale from 0-10, where 0 is no pain at all, and 10 is the worst pain ever experienced by the patient.
6. FLACC Scale: Objective measurement of pain in younger children

The FLACC Behavioral Pain Assessment Scale

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

Each of the five categories is scored from 0-2, resulting in a total score between 0 and 10.

E A

7. Wong-Baker "Faces " Scale: The faces correspond to the numeric values from 0-10. The scale can be documented with the numeric value or the textual pain description.

8. Reassess the patient's pain level and vital signs every 5 minutes.

CRITICAL CARE/PARAMEDIC

9. Fentanyl 1 microgram/kg IV/IN every 5 minutes for moderate to severe pain. Reassess every 5 minutes. If pain persists, fentanyl 0.5-1 microgram/kg (MAX dose 100 micrograms) IV/IN every 5-10 minutes titrated to effect with cumulative maximum dose of 5 micrograms/kg.
10. Alternative pain control: 50% nitrous oxide/oxygen mixture self administered (such as Nitronox).

NOTE: Patients should NOT receive opioids AND Nitronox for pain control due to additive adverse affects with administration of combined medications

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Contact OLMC if further dosing needed or vital signs are not stable.
For dosage questions, abnormal vital signs, coincident drug use (including alcohol) by patient, if not isolated extremity trauma, contact OLMC before administering medication.

PEARLS

Intranasal application of fentanyl is the preferred route of administration unless an IV needs to be established for other reasons. If a nasal atomizer is not available AND an IV cannot be established, paramedic providers may use the intramuscular route as follows: Fentanyl 1 microgram/kg IM every 5 minutes for moderate to severe pain. Reassess every 5 minutes. If pain persists, a nasal atomizer remains unavailable and the transport time dictates, the IV route is preferred for repeated doses of medications. Repeat IV doses of fentanyl may be provided as above

Pediatric Coma
(Decreased Level of Consciousness)

NEVER GIVE NALOXONE TO A NEONATE

E

EMT

1. Manage airway as appropriate, PPV if needed
2. Spinal immobilization if indication of trauma
3. Option to perform finger stick to measure blood glucose using MEMS approved technique/device if so trained.
4. Request ALS if available
5. If respirations less than 12 AND narcotic overdose suspected, refer to page 79 Antidotes for Specific Toxins: Opiates "Yellow 5"

A P

ADVANCED EMT/ CRITICAL CARE / PARAMEDIC

6. Cardiac monitor en route
7. IV/IO, TKO en route (18 or 20 gauge catheter is acceptable for IV)
8. Draw blood as IV established, or do finger stick to measure blood glucose, using MEMS-approved technique/device
9. If suspected diabetic, refer to page 102 Pediatric Diabetic Emergencies "Pink 13"

Pediatric Seizures #1

E

EMT

1. Open, protect and maintain airway, O_2, and manage airway as appropriate
2. Spinal immobilization if indicated
3. Protect the patient from self-injury
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.
5. Request ALS if available if history of seizures, if seizure continues, or if unstable vital signs

A

ADVANCED EMT

6. Manage airway as needed See "Blue 3 & 5"
7. Cardiac monitor
8. IV access en route
9. Draw blood as IV established, or do finger stick, to measure blood glucose using MEMS-approved technique/device

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10. Contact OLMC for the following options:
    a. If blood glucose less than 60 mg/dl, refer to Pediatric Diabetic Emergencies

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CRITICAL CARE / PARAMEDIC

11. Administer IM midazolam if no IV is established. If an IV is established, administer midazolam via the IV route.:
    a. Intramuscular dosing – midazolam (Versed) 0.2 mg/kg IM to maximum dose of 10 mg
    b. Intravenous dosing - midazolam (Versed) 0.1 mg/kg IV maximum 5 mg
    c. Alternate routes to IM/IV dosing:
        a. Intranasal dosing – midazolam (Versed) 0.2 mg/kg IN over 15 sec – one half of dose into each nostril – to a maximum dose of 6 mg

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    d. Contact OLMC if repeat dosing of versed by any route (IM/IV/IN) is necessary.

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12. Monitor oxygenation and ventilation with O_2 saturation and End-Tidal Capnography in all patients receiving midazolam (Versed), especially if providing repeated doses of Midazolam (Versed).
13. Manage the patient's airway as necessary

PEARLS for Seizures:
Intranasal dosing must be performed with concentrated midazolam. The maximum volume of medication absorbed per nostril is 1 ml

E

EMT

1. If adequate ventilation, let child assume position of comfort
2. O2 – allow patient or parent to assist in administration
3. Attempt to discern between upper airway respiratory distress (stridor) or lower airway respiratory distress (wheezing)
   a. If stridor is found, proceed to page 101 Pediatric Respiratory Distress with Stridor Protocol "Pink 12". If wheezing is found, proceed to page 99 Pediatric Respiratory Distress with Wheezing Protocol "Pink 11".
4. Request ALS if available
5. If inadequate ventilation:
   a. If foreign body suspected, use the AHA Foreign Body Airway Obstruction protocol
   b. IF CHILD HAS INSPIRATORY STRIDOR, ESPECIALLY IF LEANING FORWARD OR IN THE SNIFFING POSITION, THEN:
      i. Put child in position of comfort
      ii. **DO NOT ATTEMPT** ANY PROCEDURE/MANEUVER (INCLUDING EXAMINATION OF OROPHARYNX) WHICH MAY INCREASE CHILD'S ANXIETY AND THEREBY RAISE CHANCES OF LARYNGOSPASM UNLESS ABSOLUTELY NECESSARY TO PRESERVE AIRWAY
6. Open airway if needed, ventilate with bag-valve-mask if inadequate ventilation. In epiglottitis, this may require forceful ventilation, including closure of pop-off valve on BVM, and use of cricoid pressure (Sellick's maneuver) to prevent gastric distention.
7. Constantly monitor airway for patency in any unconscious child

A P

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

8. Proceed to Pediatric Respiratory Failure see page 98 "Pink 9" as necessary.

Pediatric Respiratory Failure
(with or without obstruction)

E

Prehospital providers should consider patient age, diagnosis, transport time, provider experience, and effectiveness of ongoing bag-mask ventilation in considering whether to continue with bag-mask ventilation versus proceeding to further airway management procedures. Bag-mask ventilation has been shown to be equivalent to endotracheal ventilation in pediatric patients in most situations with short transport times. If suspected opiate overdose, refer to naloxone dosing under Pediatric Coma Protocol "Pink 5"

EMT

1. Follow AHA Respiratory Arrest procedure utilizing bag valve mask and 100% O_2 for ventilation. Use the AHA foreign body obstructed airway procedure as necessary.
2. Request ALS if available

A

ADVANCED EMT

3. Secure airway, including airway management as needed See "Blue 3 & 5"
4. Cardiac monitor IV/IO en route
5. Pulse oximetry if available

P

CRITICAL CARE/PARAMEDIC

6. Magill forceps if indicated
7. OG Tube(Paramedic only)

Pediatric Respiratory Distress with Wheezing #1

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Wheezing in the child less than 2 years old is very commonly due to bronchiolitis. Bronchiolitis is a self-limited viral illness of the bronchioles, marked by edema but not smooth muscle contraction. Bronchiolitis is the most common cause of wheezing in children under the age of 2. The treatment goals are to maintain oxygenation and hydration and to monitor for apnea and respiratory distress. Because the etiology is different than asthma, the treatment options are also very different. Patients suffering from bronchiolitis should not receive inhaled albuterol or intravenous steroids. Instead, provide oxygen to ensure O2 sats greater than or equal to 90% and nasal suctioning with bulb syringe. Patients who fail these measures or decompensate may benefit from nebulized epinephrine. Monitor for apnea or respiratory distress and, if encountered, manage the patient's airway as indicated per BLUE 5 - Pediatric Airway Algorithm

---

EMT

Contact OLMC for the following OPTIONS:

1. Assist the patient in self-administering 5 puffs of their rescue inhaler.
2. If uncertainty regarding the type of inhaler, contact OLMC for permission to assist patient with self-administered bronchodilator (using spacer if available*). Inform OLMC of the name of the inhaler. OLMC will prescribe the number of puffs.

<u>* If Spacer unavailable and Advanced EMT/Critical Care/Paramedic present, they should use nebulizer instead</u>

ADVANCED EMT

3. Contact OLMC to administer albuterol, 2.5 mg by nebulization (use 3 ml premix or 0.5 ml of 0.5% solution mixed in 2.5 ml of normal saline)

A

CRITICAL CARE / PARAMEDIC

4. If expiratory wheezing with spontaneous ventilation, use the following OPTIONS:

   a. Albuterol 2.5 mg by nebulization. **May repeat 1 time**

   Or

   (Paramedic only)

   b. Ipratropium bromide 0.5 mg /albuterol sulfate 3 mg nebulizer if greater than 1 year of age and more significant respiratory distress, and may repeat one time

   c. For patients know to have asthma: Methylprednisolone (Solu-Medrol) 2 mg/kg IV x 1 dose

---

5. Contact OLMC for the following options:

   a. Epinephrine: If < 30 kg, 0.15 mg IM (0.15 ml of 1:1,000), If > 30 kg, 0.3 mg IM (0.3 ml of 1:1,000) in anterolateral thigh OR inhalation of nebulized solution of 1 ml of 1:1,000 epinephrine mixed with 2 ml normal saline solution. *

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* Nebulized epinephrine may be contraindicated in children with a history of congenital heart disease.

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Pediatric Respiratory Distress with Inspiratory Stridor

E A

Inspiratory stridor may be due to many causes in the pediatric population, including croup, foreign body aspiration, or epiglottitis.

Stridor refers to upper airway obstruction as in laryngotracheitis/croup, and is often accompanied by hoarseness and/or a barking cough (seal-like cough).

As stridor worsens in severity, the following may also be observed: tachypnea, retractions, accessory muscle use, nasal flaring, fatigue from respiratory effort, and cyanosis.

EMT / ADVANCED EMT

1. Humidified O_2, if available, as appropriate with upright posture
2. If needed, assist ventilations with PPV using 100% O_2
3. Request ALS if available

CRITICAL CARE / PARAMEDIC

4. Contact OLMC for the following OPTION:
   a. Inhalation of nebulized solution of 1 ml 1:1,000 epinephrine mixed with 2 ml normal saline solution.*

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* Nebulized epinephrine may be contraindicated in children with a history of congenital heart disease.

P

E

EMT

1. Manage airway as appropriate
2. Request ALS if available
3. If patient is conscious and able to swallow, give glucose orally
4. Option to perform finger stick to measure blood glucose using MEMS approved technique/device limited to providers who have completed the MEMS BG monitoring training program.

Glucose paste is to be administered as soon as possible in patients presenting with the signs/symptoms of diabetic emergency.

A

ADVANCED EMT

5. IV en route
6. Draw blood as IV established or do finger stick, to measure blood glucose, using MEMS-approved technique/device
7. Cardiac monitor

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8. If blood glucose less than 60 mg/dL contact OLMC for OPTION of administering 10% dextrose (D10W) IV/IO. Recheck blood glucose in 5 minutes.
9. If blood glucose greater than 300 mg/dL, give 10 ml/kg NS fluid challenge.

Use the following table for D10 dosing:

Weight (Kg/Lbs)	Volume to be infused
10/22	50 ml
20/44	100 ml
30/66	150 ml
40/88	200 ml

AEMT, in consult with OLMC, may modify the Paramedic response as appropriate.

P

CRITICAL CARE / PARAMEDIC

10. Dextrose
    a. 10% dextrose (D10W) IV/IO according to the above table. Recheck blood glucose in 5 minutes.
    b. If blood glucose greater than 300 mg/dL, give 10 ml/kg NS fluid bolus.
    c. If IV, IO access is unavailable administer glucagon: if less than 20 kg = 0.5 mg IM. Greater than 20 kg = 1 mg IM
11. Repeat glucose measurement

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12. Contact OLMC for OPTION of repeating dextrose

Pediatric Medical Shock #1

Pediatric shock is well established before the appearance of classic signs and symptoms. The earliest signs and symptoms of pediatric shock include delayed capillary refill, alterations in mental status, rising pulse, and increasing respiratory rate. By the time blood pressure drops, circulatory collapse is near. Consider sepsis in certain high-risk clinical settings.

PEARLS for High Risk Features:
High-risk features for invasive infection include malignancy, bone marrow or solid organ transplant, asplenia, presence of indwelling central line/catheter, or other situation with immune deficiency, compromise or suppression.

See page 68 "Green 13" Hypovolemic Shock if appropriate See page 41 "Gold 1" Allergy and Anaphylaxis if appropriate See page 15 "Blue 5" Pediatric Airway Algorithm if appropriate

Definition of Severe Inflammatory Response Syndrome (SIRS), Sepsis, Severe Sepsis and Septic Shock		
Variable	Definition	
SIRS	Greater than or equal to 2 of the following	Temp > 38.3°C or < 36°C * HR or Respiratory Rate greater than expected for age * Hyperglycemia > 120 mg/dl1 * Altered level of consciousness * Decreased capillary refill * Lactate > 2 mmol/L
Sepsis	SIRS + a presumed or identified source of infection	
Severe Sepsis	Sepsis + one or more organ dysfunction2, hypotension before fluid challenge, or Lactate > 4 mmol/L	
Septic Shock	Severe Sepsis + Hypotension3 despite fluid challenge	

Table adopted from 2001 SCCM/ESICM/ACCP/ATS/SIS International Sepsis Definitions Conference.

[1]Hyperglycemia without history of diabetes, Hypoglycemia, without diabetes, in an immunocompromised patient increases suspicion of infection.

[2]Organ dysfunction can be defined as: respiratory failure, acute renal failure, acute liver failure, coagulopathy, or thrombocytopenia. Laboratories that will suggest organ dysfunction include: PaO2 (mmHg)/FiO2 <300, creatinine >2.0 mg/dl OR creatinine Increase >0.5 mg/dL, INR >1.5, PTT >60 sec, Platelets < 100,000/uL. Total bilirubin >4 mg/dL

[3]Systolic Blood Pressure < 90 mmHg or Mean Arterial Pressure < 65 mmHg

E

EMT

1. Attempt to identify cause (i.e. allergic reaction)
2. O_2 and airway management as appropriate
3. Keep child warm and dry
4. Request ALS Transport

A

ADVANCED EMT

6. Consider causes
   a. Massive GI bleed, vomiting, diarrhea, - Treat per "Green 11" Hypovolemic Shock
   b. Cardiogenic Shock - Treat per "Red 21"
   c. Anaphylaxis - Treat per "Gold 1"
   d. Undifferentiated Shock or Suspected Severe Sepsis
      i. Assess for pulmonary edema (crackles in the lungs)
      ii. If available and trained, perform point of care lactate
      iii. Administer 20 ml/kg NS bolus over 5 – 15 minutes. Immediately reassess patient. If needed, repeat up to 2 times (total of 60 ml/kg).
      iv. Notify receiving hospital

CRITICAL CARE / PARAMEDIC

7. For presumed septic shock or shock of unknown origin
   a. Treat as per Advanced EMT 6 above
   b. If no response to initial treatment:

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   i. Contact medical control to discuss additional fluid bolus versus initiating norepinephrine infusion. NOTE: NOREPINephrine in the pediatric patient MUST be infused by a pump.
      A. NOREPINephrine (8 mg in 250 ml NS). Starting dose 0.03 mcg/kg/min. Titrate by 0.03 mcg/kg/min every 3-5 minutes. Usual dose is 0.03-0.25 mcg/kg/min. Usual max dose is 0.6 mcg/kg/min. Absolute max dose is 3 mcg/kg/min.
      B. Titrate to maintain SBP greater than 80 mm Hg

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8. Additionally, if the patient is found to have Adrenal Insufficiency (via medic alert bracelet, patient records, or family/staff reports), administer methyl prednisolone (Solu-Medrol) as follows:
   a. Pediatrics - methylprednisolone (Solu-Medrol) 2mg/kg IV/IM/ IO x 1 dose
   b. May provide patient's own dose of solucortef (Cortef) at the patient's physicians prescribed dose if patient provided medications are available

P

PEARLS for Medical Shock:

Many pediatric patients with shock have associated hypoglycemia. Mortality is increased if this is not addressed. Also, the presenting symptoms of shock and those of hypoglycemia can be very similar.

Patients in shock require frequent reassessment. The following physiologic parameters are appropriate endpoints for therapy: normalization of heart rate, capillary refill, mental status, resolution of existing hypotension and, if available, presence of urine output.

In children under the age 6, prompt IO placement after one failed IV attempt should be considered, since timely, successful IV placement in this age group is shown to be difficult for prehospital providers

PEARLS for Cardiogenic Shock

Pediatric patients suffering from suspected cardiogenic shock should receive boluses of 10 ml/kg with frequent reassessment for tolerance and need for additional fluids.

Pediatric Cardiac Arrest (Non-Breathing, pulseless patient)

E

Pediatric cardiac dysfunction is usually due to a respiratory cause and is thus more likely to initially respond to effective oxygenation and ventilation; then fluid administration – and then medications may be needed. Defibrillation alone is rarely successful.

EMT

1. 100% O_2 and ventilate with bag valve mask
2. CPR first, and use AED per current AHA guidelines
3. Request ALS if available

ADVANCED EMT / CRITICAL CARE / PARAMEDIC

4. Manage airway as needed See "Blue 5" (consider possibility of foreign body obstruction)
5. IV/IO
6. Cardiac monitor and treat dysrhythmias according to protocol using pediatric dosages listed below
7. For traumatic cardiac arrest give IV/IO bolus of 20 ml/kg IV fluid. **May be repeated once.**

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8. Contact OLMC for option of medications, fluid boluses, defibrillations, or other ongoing interventions that may be necessary.

A P

Pediatric Cardiac Arrest Medication Dosages

Prehospital providers should consider patient age, diagnosis, transport time, provider experience, and effectiveness of ongoing bag-mask ventilation in considering whether to continue with bag-mask ventilation versus proceeding to endotracheal intubation. Bag-mask ventilation has been shown to be equivalent to endotracheal ventilation in pediatric patients in most situations with short transport times.

Atropine 0.02 mg/kg (indicated for use in Bradycardia)	**IV/IO:** Minimum dose: 0.1 mg Maximum single dose: 0.5 mg (child), may repeat once
Epinephrine (Doses in Bradycardia)	**IV/IO:** 0.01 mg/kg (1:10,000, 0.1 ml/kg) to a maximum single dose of 1 mg
Epinephrine (Doses in Asystole/Pulseless Arrest)	FIRST DOSE: **IV/IO**: 0.01 mg/kg (1:10,000, 0.1 ml/kg) Maximum single dose of 1 mg SUBSEQUENT DOSES: **IV/IO,** 0.01 mg/kg (1:10,000, 0.1 ml/kg) Maximum single dose of 1 mg Repeat every 3-5 minutes
Amiodarone	5 mg/kg IV/IO bolus; can repeat up to total dose of 15 mg/kg (2.2 grams in adolescents) maximum single dose: 300 mg

Synchronized cardioversion: 0.5 – 1 J/kg (initial); 2 J/kg (subsequent)
Defibrillation: 2 J/kg (initial); 4 J/kg (subsequent) or equivalent biphasic energy

E A P

EMT / ADVANCED EMT / CRITICAL CARE / PARAMEDIC

1. O_2 as appropriate
2. Encourage mother to NOT bear down
3. If hypotensive, roll patient onto left hip
4. If the presenting part is the cord, apply pressure to the baby with a sterile, gloved hand to keep pressure off the cord. Raise mother's hips onto pillows. Keep cord warm. Do not clamp or cut cord.
5. Request ALS if available and DO NOT DELAY TRANSPORT.
6. If baby's head is delivering:
   a. Do not hurry or slow delivery
   b. Check to see if cord is wrapped around neck. If so, attempt to unwrap the cord. Failing this, clamp and cut immediately and deliver child.
   c. Double clamp the cord at least 4 inches from baby and cut between clamps.
   d. Dry baby, examine and keep warm (may place next to mother's skin). As soon as possible, enable child to nurse at mother's breast.
   e. Assess APGAR SCORE at 1 and 5 minutes see "Pink 19"
   f. Do not externally massage the uterus en route until placenta has delivered
   g. Do not forcibly remove placenta
   h. If placenta is delivered, wrap and package with cord intact
7. If delivery has occurred, please transport the child on the mother's chest/abdomen in an effort to keep newborn warm

APGAR Score

Assess the baby at 1 minute and again at 5 minutes

DO NOT DELAY RESUSCITATION to obtain APGAR Score.

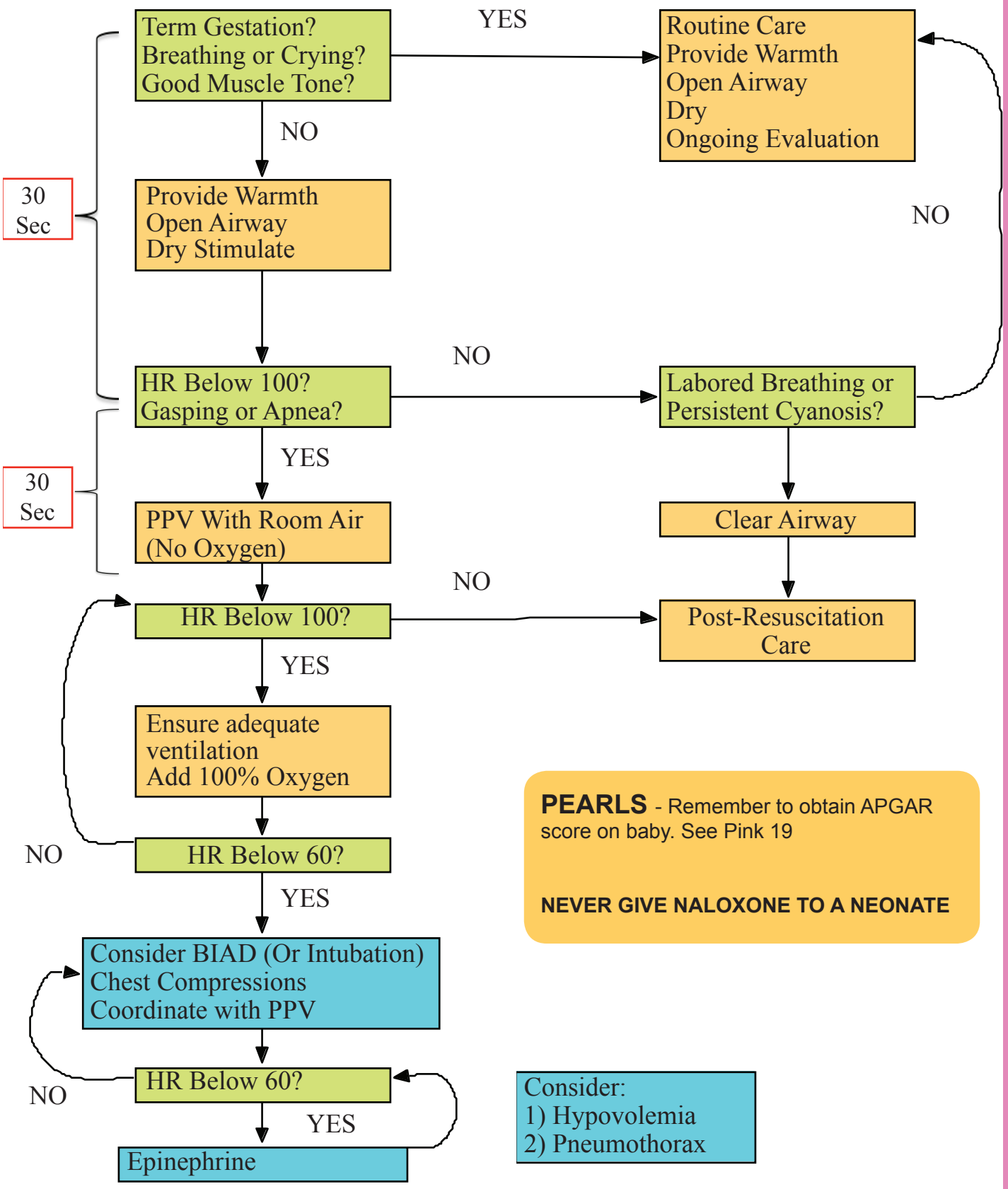
A score of less than 7 suggests need for resuscitation with suction, ventilation, and ALS back up.

SCORE

		0	1	2
A	Appearance	Blue or pale	Body pink Hands blue	Pink
P	Pulse	Absent	less than 100	greater than 100
G	Grimace*	None	Grimace	Cough
A	Activity**	Flaccid	Some	Good
R	Respiration	Absent	Weak	Good

* Tested by a suction catheter or bulb syringe tip gently placed in the nose or mouth.
** Amount of spontaneous flexion of extremities.

Neonatal Resuscitation



PEARLS - Remember to obtain APGAR score on baby. See Pink 19

NEVER GIVE NALOXONE TO A NEONATE

Consider:
1) Hypovolemia
2) Pneumothorax

Normal Pediatric Vital Signs

Normal Pediatric Vital Signs

	Systolic	Pulse Awake	Pulse Sleeping	Respirations
Newborn-3 months	>60mm Hg	85-205	80-160	30-60
3 months-2 years	>70mm Hg	100-190	75-160	24-40
2-10 years	See below	60-140	60-90	18-30
>10 years	>90mm Hg	60-100	50-90	12-16

Note: Estimated weight in kilograms: [2 x (age in years)] + 8
Typical Systolic BP for a child 1-10 years of age: 90 + (age in years x 2)
Lower Limits of Systolic BP for a child 1-10 years: 70 + (age in years x 2)

Modified GCS for Infants and Children

	Child	**Infant**	**Score**
EYE OPENING	Spontaneous	Spontaneous	4
	To speech	To speech	3
	To pain only	To pain only	2
	No response	No response	1
BEST VERBAL RESPONSE	Oriented, appropriate	Coos and babbles	5
	Confused	Irritable, cries	4
	Inappropriate words	Cries to pain	3
	Incomprehensible sounds	Moans to pain	2
	No response	No response	1
BEST MOTOR RESPONSE	Obeys commands	Moves spontaneously/purposefully	6
	Localizes painful sTImuli	Withdraws to touch	5
	Withdraws in response to pain	Withdraws in response to pain	4
	Flexion in response to pain	Abnormal flexion posture to pain	3
	Extension in response to pain	Abnormal extension posture to pain	2
	No response	No response	1

Pediatric Specific Equipment Sizes

Equipment	GREY 3-5kg	PINK Small infant 6-7 kg	RED Infant 8-9 kg	PURPLE Toddler 10-11kg	YELLOW Small child 12-14 kg	WHITE Child 15-18kg	BLUE Child 19-23kg	ORANGE Large Child 24-29kg	GREEN Adult 30-36kg
BVM	Infant or child	Infant or child	Infant or child	Child	Child	Child	Child	Child	Adult
Oral airway (mm)	50	50	50	60	60	60	70	80	80
Laryngoscope Blade (size)	1 straight	1 straight	1 straight	1 straight	2 straight	2 straight	2 straight or curved	2 straight or curved	3 straight or curved
ET Tube	3.5 uncuffed	3.5 uncuffed	3.5 uncuffed	4.0 uncuffed	4.5 uncuffed	5.0 uncuffed	5.5 uncuffed	6.0 cuffed	6.5 cuffed
ET Tube Insertion length (cm)	3 kg 9-9.5 4 kg 9.5-10 5 kg 10-10.5	10.5-11	10.5-11	11-12	13.5	14-15	16.5	17-18	18.5-19..5
Stylet	Pedi	Pedi	Pedi	Pedi	Pedi	Pedi	Adult	Adult	Adult
Suction Catheter (F)	8	8	8	10	10	10	10	10	10-12
BP Cuff	Neonate	Infant or child	Infant or child	Child	Child	Child	Child	Child	Small Adult
IO (Ga)	18/15	18/15	18/15	15	15	15	15	15	15
NG Tube (F)	5-8	5-8	5-8	8-10	10	10	12-14	14-18	16-18
LMA	1	1 1/2	1 1/2	2	2	2	2 1/2	2 1/2	3
KING	None available	None available	None available	None available	2	2	2	2.5	2.5

For ET size, pinky finger diameter in a child affords an acceptable approximation of OD. The formula is the following: "Age (in years) / 4 + 4" and the Broselow-Hinkle Tape may be used for ID determination. Using a tube one size larger or smaller than this guideline is also acceptable.

Do Not Resuscitate (DNR) Guidelines #1

I. When to Start Resuscitation:

As soon as the absence of pulse and respiration is established.

II. When Not to Start Resuscitation:

A. All Patients: Any patient displaying obvious and accepted signs of irreversible death such as rigor mortis, dependent lividity, decapitation, decomposition, incineration, other obvious lethal injuries, evidence of central freezing (such as ice in the airway), core temperature less than 50 degrees F, chest wall so stiff that compressions cannot be performed, or patients submerged in cold water (for specific recommendations in drowning, refer to drowning protocol – Yellow 15).

B. All Normothermic Patients: Major trauma victims who have no respiration and no pulse, no sign of life at the time of Maine EMS licensed crewmember arrival

C. When a Do Not Resuscitate (DNR) order is presented in one of three forms:

1. EMS DNR orders from other state EMS/DNR programs. If the order or device (e.g., plastic bracelet, jewelry, or card) appear to be in effect, and understandable to the crew, follow the order's specific instructions. If there are no specific instructions beyond "DNR", follow Maine EMS Comfort Care/ DNR Guidelines.

2. Non-EMS actionable medical order (e.g. POLST/MOLST, etc.) - A written order executed by a patient's personal physician/PA/NP should be honored if it is understandable to the crew and if it is dated within 1 (one) year. Follow the order as written. If it is non-specific as to care to provide or withhold, follow the MEMS Comfort Care/DNR guidelines.

3. Maine EMS Comfort Care / DNR Program -A Maine EMS Comfort Care/DNR order does not have an expiration date. Once activated, it remains in effect until the patient or someone acting on their behalf as described and authorized on the Comfort Care/DNR form cancels it. (Note: Although no longer distributed by Maine EMS, extant DNR/Comfort Care "orange" forms, wallet cards and plastic bracelets remain valid.)

D. When a signed Maine EMS Do Not Resuscitate Directive form or Maine EMS-approved Do Not Resuscitate Directive jewelry is presented to EMS personnel. Once executed by the patient and signed by a physician, physician's assistant or nurse practitioner, the Do Not Resuscitate Directive remains in effect until the expiration date on the form or, if no expiration date is noted on the form, until the patient cancels it.

E. A photocopy is acceptable as proof of the existence of valid DNR Order or DNR Directive, provided that the photocopy is legible and understandable by EMS personnel.

III. Treatment/Comfort Care

F. When treating a patient with a Maine EMS Comfort Care/DNR Order or Do Not Resuscitate Directive, the responding EMS provider should perform routine patient assessment and resuscitation or intervention until EMS personnel verify:

1. That an EMS Comfort Care/DNR Order or Do Not Resuscitate Directive exists; or,

2. That a Maine EMS-approved EMS Comfort Care/DNR wallet card, plastic bracelet or Maine EMS-approved DNR jewelry is present, intact and not defaced. The plastic bracelet may be worn on the wrist or ankle or on a necklace; or,

3. That Maine EMS-approved Do Not Resuscitate Directive jewelry is present, intact and not defaced; and,

4. The identity of the patient through family or friends present, or with photo ID such as a driver's license. A good faith effort only is required.

G. Follow these EMS Comfort Care/DNR procedures in all cases:

1. **These comforting interventions are encouraged:**
   a. Open the airway manually (NO intubation, No BVM unless invited by conscious patient);
   b. Suction and provide oxygen;
   c. Make the patient comfortable (position, etc.);
   d. Control bleeding;
   e. Pain and other medications of comfort to a conscious patient only (ALS per On Line Medical Control);
   f. Be supportive of the patient and family;
   g. Contact patient's physician/PA/NP or On Line Medical Control if questions or problems.

2. **Resuscitative measures to be avoided:** (to be withheld, or withdrawn if resuscitation has begun prior to confirmation of EMS Comfort Care/DNR Order or Do Not Resuscitate Directive status).
   a. CPR;
   b. Intubation (ET Tube, or other advanced airway management); surgical procedures;
   c. Defibrillation;
   d. Cardiac resuscitation medications;
   e. Artificial ventilation by any means;
   f. Related procedures per On Line Medical Control.

IV. Revocation, Documentation & When to Stop Resuscitation

H. Who may revoke an EMS Comfort Care/DNR Order or Maine Do Not Resuscitate Directive:

1. The patient (by destroying EMS Comfort Care/DNR Order Form, wallet card, plastic bracelet and DNR jewelry, or by destroying the Do Not Resuscitate Directive and DNR jewelry, or verbally with drawing the order or directive);

2. For the EMS Comfort Care/DNR Order form only:

   a. The patient's physician/PA/NP who signed the order;
   b. The Authorized Decision-Maker for the patient who signed the order.

Do Not Resuscitate (DNR) Guidelines #3

I. Documentation:

1. Use the Maine EMS patient/run report.
2. Describe assessment of patient's status.
3. Document which identification (i.e., form, wallet card, plastic bracelet or DNR jewelry) was used to confirm EMS Comfort Care/DNR or Do Not Resuscitate Directive status and indicate that it was intact and not canceled.
4. Indicate the patient's physician/PA/NP name, on the patient/run report.
5. If the patient has expired on arrival, comfort the family and follow your EMS agency's procedure for death at home. A Maine EMS patient/run report still needs to be completed.
6. If transporting the patient, EMS providers should keep the original EMS Comfort Care/DNR Order Form, wallet card, plastic bracelet, Do Not Resuscitate Directive Form or DNR jewelry with the patient.

J. When to Stop Resuscitation: Resuscitation should be terminated:

1. **Unwitnessed Arrest:**
   a. When the patient regains pulse / respiration
   b. When the patient remains in a non-shockable rhythm (PEA/Asystole) for > 20 minutes OR unresponsive to advanced cardiac life support with a non-shockable rhythm after 20 minutes of resuscitation.
   c. When irreversible signs of death, such as dependent lividity, pupils fixed and dilated, palpable hypothermia (not from exposure) and no audible heart sounds are noted in patient with unknown downtime or downtime > 20 minutes.
   d. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over
   e. When it is found that the patient has a DNR order or other actionable medical order (e.g. POLST/MOLST.etc) form.
   f. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
   g. Continuation of resuscitation beyond these protocols must be in consultation with OLMC
2. **Witnessed arrest:**
   a. When the patient regains pulse/ respiration
   b. When the patient remains in a non-shockable rhythm (PEA/Asystole) for > 20 minutes OR unresponsive to advanced cardiac life support with a non-shockable rhythm after 20 minutes of resuscitation.
   c. In the absence of ALS and AED, when the same Maine EMS licensed crew member has documented the absence of all vital signs for 20 minutes, in spite of BLS, except in the case of hypothermia.
   d. When the rescuers are physically exhausted or when equally or more highly trained health care personal take over.
   e. When it is found that the patient has a DNR or other actionable medical order (e.g. POLST/ MOLST.etc) form.
   f. Continue resuscitation if conditions on scene are NOT amenable to cessation of resuscitation
   g. Continuation of resuscitation beyond these protocols must be in consultation with OLMC

V. Management of Bodies

If resuscitation efforts are discontinued, follow your service's policy for disposition of patient remains. In cases of uncertainty, arrangements should be made with On Line Medical Control with regards to disposition of the body. Contact your local ED with regard to tissue donation options and procedures in advance.

Death Situation Guidelines for Emergency Responders #1

PURPOSE: Development of DEATH SITUATION PROCEDURES by Emergency Medical Services.

PREPARED JOINTLY BY: Attorney General, Office of Chief Medical Examiner, and Maine State Police.

GENERAL AIM: Preservation of scene, including body as found, for investigative purposes within practical limits consistent with the role and responsibilities of emergency medical care givers.

Death Situation Guidelines

I. **Preserve life:** While forensic guidelines emphasize that the scene should not be disturbed, the first and most important course of action is to follow all usual procedures to ensure the preservation of life.

II. **Once Death is confirmed:** *If the decedent is clearly dead,* ***the body should not be moved or disturbed*** *unless there is a danger that the body may be lost or further damaged.*
   a. Maine statutes do not require a pronouncement of death.
   b. The scene should be secured and left undisturbed.
      i. If the police are present, they should take charge in order to determine whether the case falls under the jurisdiction of the Office of Chief Medical Examiner (OCME) or may be certified by the private attending physician.
      ii. If there is no police officer present, EMS should call the local police or call the OCME directly to report the case, so that a determination may be made as to the need for further investigation into the cause and manner of death. OCME emergency line to report deaths: 1-800-870-8744.
      iii. If it is determined not to be an ME case, try to accommodate the family's request or contact OLMC for guidance.
      iv. Consider contacting the New England Organ Bank 1-800-446-6362
   c. **Tubes and Medical Devices** should be left in place. Certain reusable equipment may be removed to resupply the ambulance; however written documentation of any such action must be given to investigators.
   d. Any clothing or property should be left undisturbed.

III. **What is a Medical Examiner (ME) case?:**
   a. Any suspected HOMICIDE
   b. Any suspected SUICIDE
   c. Any death involving any ACCIDENT or INJURY
   d. Any death of a CHILD
   e. Any death in CUSTODY
   f. Deaths caused by SUSPECTED GROSS NEGLIGENCE during a Medical Procedure
   g. SUDDEN DEATH from an UNKNOWN cause or any death where there is no private attending physician
   h. UNIDENTIFIED persons
   i. OCCUPATIONAL Deaths (Work related)
   j. Unnatural Deaths in a Mental, Residential Care of DHS Facility
   k. Any death that might ENDANGER or THREATEN the Public Health

IV. Deaths in Children:

a. All deaths in children under the age of three automatically become medical examiner cases unless the death is expected based on previously diagnosed natural disease.
b. Determination of the cause of death in infants and children is very difficult. While the OCME understands the concerns of the parents, the child must be left undisturbed until investigating police officers have finished the initial investigation. SIDS is not an acceptable reason to transport a deceased infant or allow the infant to be moved prior to investigation.

V. Reports and follow-up on Medical Examiner cases:

a. If families have questions, they may be referred to the OCME. Families should call the office using the 24 hour business line at 207-624-7180
b. Copies of EMS run sheets should be given to police investigators and/or the OCME.
c. If any EMT wishes follow-up information on any specific case, or if there is a question of infectious exposures, call the OCME on the business line, 207-624-7180.

GENERAL RESPONSIBILITY FOR DECEASED PERSONS: The Office of Chief Medical Examiner is responsible for deceased victims of mass disasters including identification and removal from the scene. The Office of Chief Medical Examiner (1-800-870-8744, restricted emergency call number) should be informed immediately of any multiple fatality situations.

1. **BODIES SHOULD BE LEFT IN PLACE AT SCENE** except when they must be moved to preserve them from destruction or when they block access. The resting place of the victim may be critical for identification of the body and/or reconstruction of the incident. They can be tagged as fatalities to prevent other medical personnel from repeating examination.
2. **IF DEATH OCCURS EN ROUTE TO THE HOSPITAL,** the body need not be returned to the scene but can be brought to the hospital or other suitable storage place as determined by distances and needs of other patients in the ambulance. If the body is left anywhere other than the hospital or designated temporary morgue, the body should be tagged and the Office of Chief Medical Examiner should be advised.
3. **THE SITE A VICTIM IS REMOVED FROM SHOULD BE NOTED** on a tag along with the name and agency of the person who removed it whenever removal is needed and in cases of death after removal. Such information may be critical for identification of the body and/or reconstruction of the accident.
4. **IF AN IDENTIFICATION OF A PATIENT IS MADE**, a tag with at least the name and date of birth of the patient/deceased along with the identifier's name, relationship, address and where he/she can be located should be put on the body.
5. **PERSONAL PROPERTY SHOULD BE LEFT WITH THE BODY** including clothing removed from a patient if the victim dies. Nothing should be removed from those already deceased.

Consistent with New England EMS Council MCI Management the action priorities for the first medical crews arriving on the scene are:

1. Assess and avoid exposure to existing dangers
2. Notify dispatch of type of MCI and estimate of number and type of patients
   a. Request EMS, fire, police assistance
   b. Request hospital notification
3. First ambulance or other vehicle with medical frequencies becomes EMS command vehicle – locate near fire and police command vehicles. Strip equipment/supplies – place in equipment area (near planned patient collection/treatment area).
4. Designate, in the following order, the following positions as qualified personnel become available:

EMS CONTROL OFFICER – Reports to Incident Commander. Responsible for overall patient triage, treatment, and transportation. Procures EMS back-up, supplies, equipment, transport vehicles as needed, supervises and assigns all other medical personnel.

Mass Casualty/Disasters/HazMat #2

PRIMARY TRIAGE OFFICER – Rapidly assesses all patients then assigns personnel to provide treatment to those patients in most need of immediate treatment, who will most benefit from immediate care with the resources available. Treatment is limited to:

- Bleeding – rapid pressure dressing if severe
- Airway – reposition patient
- Shock – elevate extremities

SECONDARY TRIAGE OFFICER – Rapidly tags all patients, or assigns personnel to do tagging (with METTAGS, SMART Tags, or other locally approved Triage System) and, supervises immobilization after classification, and oversees transfer to collection/treatment area.

Tag categories are:

RED (I): Conditions requiring immediate transport by ambulance to prevent jeopardy to life or limb and which will not unduly deplete personnel/equipment resources (examples: progressive shock, major blood loss, major multiple injuries, severe respiratory distress. Cardiac arrest – only if personnel can be spared).

YELLOW (II): Not requiring immediate transport to prevent jeopardy to life or limb, but eventually will require ambulance transport to hospital for attention.

GREEN (III): Minor conditions probably not requiring ambulance transport to hospital.

BLACK (O): Are obviously dead, or dying from lethal injuries, or requiring CPR when no personnel available to do so without compromising other patients.

TREATMENT OFFICER – Sets up / supervises patient collection / treatment area. Reassesses and retags (if necessary) patients, assigns patients and personnel to treatment areas. Prioritizes for transport. Coordinates with Loading/Transport officer to make single radio transmission to receiving facility (pt. ID#, METTAG priority, nature of injury, ambulance, and ETA ONLY).

LOADING OFFICER – Stages ambulances in holding area. Instructs crews to put all available equipment in equipment area. Assigns patients to vehicles. Directs drivers to hospital(s). Instructs not to contact hospital unless OLMC required for condition change. Notifies hospital, or coordinates communication to hospital notification times, patient ID#'s and destination of all transporting vehicles.

Suggested Scene Organization (not for HazMat)

INCIDENT COMMAND POST

EMS CONTROL OFFICER

EQUIP-

AMBULANCE

LOADING

INCIDENT SCENE

RED

PRIMARY TRIAGE OFFICER

LOADING OFFICER

TREATMENT OFFICER

YELLOW

SECOND-ARY TRIAGE

GREEN

TRIAGE/HOLDING AREA

Sexual Assault Victim

ALL LEVELS

1. Treat any life-threatening emergency first and according to these protocols.
2. Try to attend to maintenance of forensic evidence. Try not to cut through tears or stains in clothing. Do not cleanse any skin area more than necessary to provide immediate care.
3. If the patient so desires and/or mandated reporting is indicated, police should be called if they have not already been notified.
4. If no life-threatening situation is present, prehospital care may require waiting for police to secure the scene which is a potential crime scene.
5. Victims of sexual assault commonly have much guilt, and may require psychological support. Please respect the stress that they are enduring.
6. By nature of this event, any touch may be traumatic for this patient. Overtly and repeatedly explain what you are doing to try to lessen the impact of procedures and touching.
7. Advise the patient not to eat, drink, smoke, bathe, change clothing or go to the bathroom if at all possible in order to preserve any forensic evidence. If they must urinate, request that they do not wipe.
8. If the patient has removed any clothing worn in the assault, each piece of clothing should be separately bagged in paper bags and brought to the hospital with the patient.
9. When transporting the patient, it is preferable whenever possible to have a same sex provider as the primary provider. If the assault is a same sex assault, than a provider of the opposite sex may be more comfortable for the patient.
10. To maintain privacy and confidentiality, use a landline for hospital reporting whenever possible and do not clarify the type of assault, only that you are transporting a "victim of assault."
11. The patient should be encouraged to go to the hospital for a sexual assault forensic examination that would allow not only the option to have collection of forensic evidence, but also treatment of possible injuries and the chance to obtain pregnancy and sexually transmitted disease prophylactic treatment.
12. If the patient refuses treatment and/or transportation to the hospital, document all findings and observations as completely as possible. When signing the patient off at the scene, try to have a police officer witness this sign off.

Child Abuse
Management and Reporting #1

CHILD ABUSE
(Title 22 MRSA, Chapter 1071, Subsection 4011-A)

All levels

- Child abuse and child neglect are sufficiently widespread to guarantee that virtually every EMS provider will encounter them at least once during his/her career.
- It is estimated that approximately 2-3 million cases occur each year or approximately 11 cases per every 1,000 children within the U.S. Each year at least 2,000 children die from physical abuse.
- The most commonly identified forms of abuse by the EMS provider are physical abuse and severe physical neglect, although sexual abuse may on occasion be observed.
- The EMS provider must at all times demonstrate and maintain a supportive and non-judgmental attitude with primary caregivers. Accusation and confrontation delay immediate treatment as well as transportation to a definitive care facility.
- When abuse is a possibility the healthcare professional has two major responsibilities: first, to provide medical care to the child; and second, to collect and document all information that may possibly establish the occurrence of abuse or neglect. Refrain from asking the child too many questions and specifically do not ask any leading questions – keep questions simple and open-ended such as "What happened?" and "Are you hurt?"
- As an EMS provider, you must report immediately to Child Protective Services any child whom you have "reasonable cause to suspect" has been abused or will be abused. Failure to do so is punishable as a civil violation. It is not enough to tell someone else of your suspicions. If a child is abused and unreported, there is a 50% chance that the child will be abused again and a 10% chance that the child will die from future abuse.

Possible Indicators of Abuse

1. Injured child under two years of age, especially hot water burns or fractures
2. Facial, mouth, or genital injuries
3. Multi-planar injuries (front and back, right and left) – especially when not over bony prominences
4. Poor nutrition or poor care
5. Delay in seeking treatment
6. Vague, inconsistent, or changing history
7. The comatose child, the child in shock, or the child in arrest See "Pink 5,14,17"

Treatment of suspected child abuse in the field

1. Suspect abuse but do not accuse the caretaker. Every time a child is encountered by the healthcare professional having a traumatic injury the question that should come to mind is, "Could this be abuse?" In most cases the answer will be an obvious "no;" however, enough uncertainty will exist in some cases to warrant further assessment.
2. Follow normal initial assessment priorities of the ABC's and mental status when caring for the child.
3. Provide the appropriate intervention procedures for any abnormal findings such as respiratory, trauma, or other medical emergencies; shock; or altered mental status.
4. EMS providers are in key positions to assess environmental conditions and the observable interactions of family and child. Environmental signs of possible abuse or neglect may include but not be limited to:
   unsanitary conditions; garbage scattered about the house; unsafe conditions such as open, unguarded windows or potentially dangerous objects within reach of children.

Child Abuse
Management and Reporting #2

5. Perform a detailed physical examination on any child in stable enough condition to allow for such. Examine all parts of the body for deformities, ecchymosis, lacerations, abrasions, punctures, burns, tenderness, and swelling. It is vitally important that injuries of the mouth and sternum be observed in detail prior to the initiation of resuscitative measures and documented that such injuries were found prior to resuscitation.
6. It is important to transport all children having evidence of abuse or neglect due to the possibility of additional injuries not immediately obvious. Transport of potentially abused or neglected children ensures that they receive the appropriate and necessary social service. Assistance may be necessary from law enforcement, OLMC, etc.
7. Convey your impressions and information to the hospital staff.
8. Write a detailed and descriptive report, which provides an accurate and clear record of all observations and treatment from the time of the initial call through transfer of the patient to the ED staff. Do not make a diagnosis of abuse, and refrain from including personal opinions, emotional overtones, or interpretations. Primary caregiver quoted statements must be documented as such with quotation marks, and exactly word for word as stated by the person. As well, this legal document must be legible.
9. You must contact Adult and Children's Emergency Services at 1-800-452-1999 to make a report. This is a 24-hour a day reporting number. You will be protected by law from civil liability for making such a report if made in good faith. Title 22 MRSA, Chapter 1071, Subsection 4014

Adult Abuse, and Intoxicated Drivers

ADULT ABUSE
(Title 22 MRSA, Chapter 958-A, Subsection 3477)

"Reasonable cause to suspect. The following persons while acting in a professional capacity…ambulance attendant, emergency medical technician or other licensed medical service provider, Unlicensed assistive personnel… shall immediately report to the department when the person knows or has reasonable cause to suspect that an incapacitated or dependent adult has been or is likely to be abused, neglected or exploited."

Call the Adult's and Children's Emergency Services: 1-800-452-1999 (24 hours a day). Similar protection from liability for reporting exists.

INTOXICATED DRIVERS
(Title 29-A)

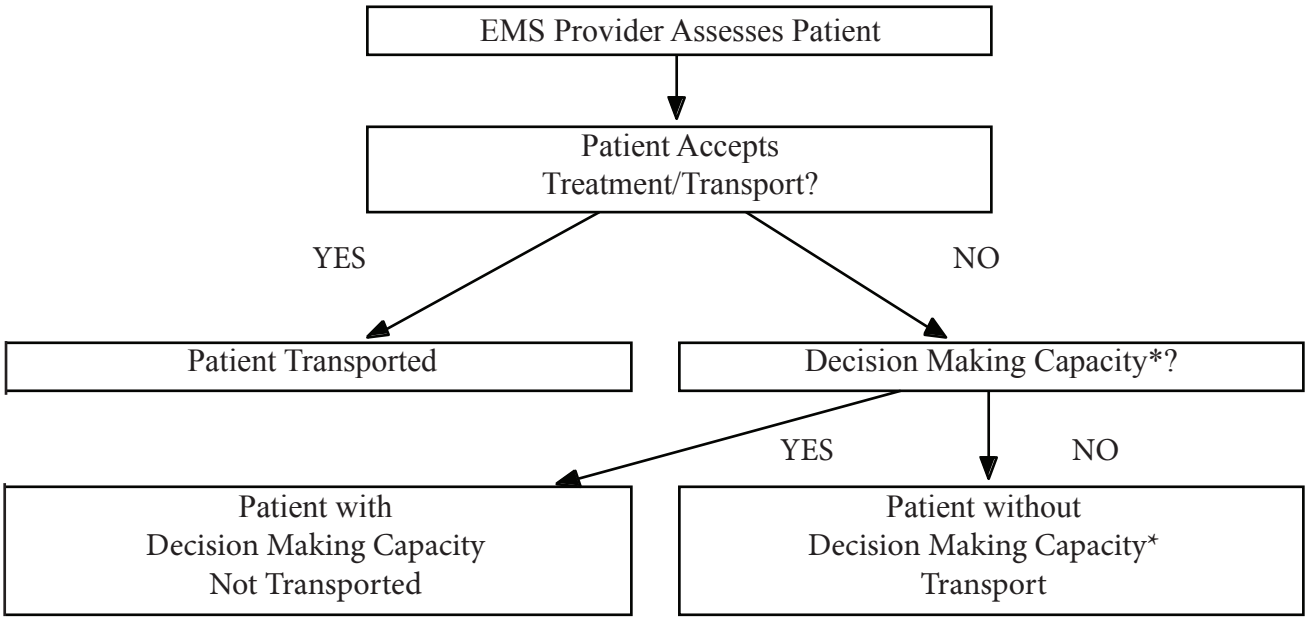
§ 2405 (1) "Persons who may report If, while acting in a professional capacity a...emergency medical services person…knows or has reasonable cause to believe that a person has been operating a motor vehicle, hunting or operating a snowmobile, all-terrain vehicle or watercraft while under the influence of intoxicants and that motor vehicle, snowmobile, all-terrain vehicle or watercraft or a hunter has been involved in an accident, that person may report those facts to a law enforcement official."

§ 2405 (2) Immunity from liability. A person participating in good faith in reporting under this section, or in participating in a related proceeding, is immune from criminal or civil liability for the act of reporting or participating in the proceeding.

§ 2524 (1) Persons qualified to draw blood for blood tests. "Only a physician, registered physician's assistant, registered nurse or person whose occupational license or training allows that person to draw blood samples may draw a specimen of blood for the purpose of determining the blood-alcohol level or the presence of a drug or drug metabolite."

§ 2528 Liability. "A physician, physician's assistant, registered nurse, person whose occupational license or training allows that person to draw blood, hospital or other health care provider in the exercise of due care is not liable for an act done or omitted in collecting or withdrawing specimens of blood at the request of a law enforcement officer pursuant to this chapter."

Transport Protocol #1



*A patient without decision making capacity would be one who has one of the following: an altered mental status or intoxicated, confused, delirious, psychotic, comatose, unable to understand the language, or is a minor, etc.

1. If there is a question of decision making capacity or the patient does not appear to understand the consequences of his/her refusal of transport, then contact OLMC.
2. The patient must be informed of the consequences of his/her refusal to be transported. This must be documented in the patient/run report.
3. This screening may typically arise when an ambulance is requested by someone other than the patient (e.g. the police, a bystander). The EMS run report must always be completed.
4. If the patient refuses transport and is judged to be without decision making capacity, the EMT must speak directly with OLMC. If unable to reach OLMC, the patient is transported.
5. **EMS System initiated patient sign offs are tremendously risky interactions and are not condoned by Maine EMS.**
6. **The service is expected to review all patient sign offs through the service's quality assurance mechanism. Patient medical records must be completed for all of these interactions, including the following information:**
   a. The patient must be calm, competent, sober, and alert with the absence of an acute medical/surgical or traumatic process that impairs the patient's capacity
   b. Greater than 18 years, emancipated, or contact with guardian
   c. Service(s) offered
   d. Reason service(s) declined
   e. Statement of risks and patient understanding of risk
   f. Discussion of alternatives to service offered and potential consequences of declining offered service
   g. Discussion with patient that EMS services may be accessed at any time, and that the patient had decision making capacity.

7. In some circumstances, patient transport is requested by an off site medical provider. Should a patient refuse transport and be found to have decision making capacity, EMS providers should communicate the discovery of decision making capacity and the patient's right to refuse transfer with invested parties. OLMC or the physician ordering transport must be contacted by EMS in this decision making process. It is suggested that the consulted physician discuss directly with the patient.
8. When the patient is found to lack decision-making capacity but continues to refuse transport, contact OLMC for assistance. Should the patient continue to refuse transport, consider accessing other community advocates and resources (such as family/friend when appropriate and/or police). Consider direct dialogue between OLMC and the patient or OLMC and law enforcement to assist in resolving the conflict.

Transport of Mentally Ill Patients

Maine EMS personnel are generally called to transport a mentally ill patient in one of two situations:

Emergency Transport
Safety for the patient and the crew is the primary concern in the transport of the mentally ill patient. Personnel should make sure they do a thorough evaluation of the patient to find and treat possible medical causes of the behavior. Refer to "Yellow 12" for Combative Patient Protocol.

EMS personnel are authorized under Maine law as physician extenders to physically restrain any patient who poses a threat to themselves or others. Providers are cautioned to use physical restraint as a last resort, preferably with the assistance of local law enforcement. Once the decision is made to restrain a patient, the patient should remain restrained until arrival at the emergency department, unless it interferes with the delivery of medical care.

Non-Emergency Transfer
Mentally ill patients who are being transferred usually fall into one of these categories:

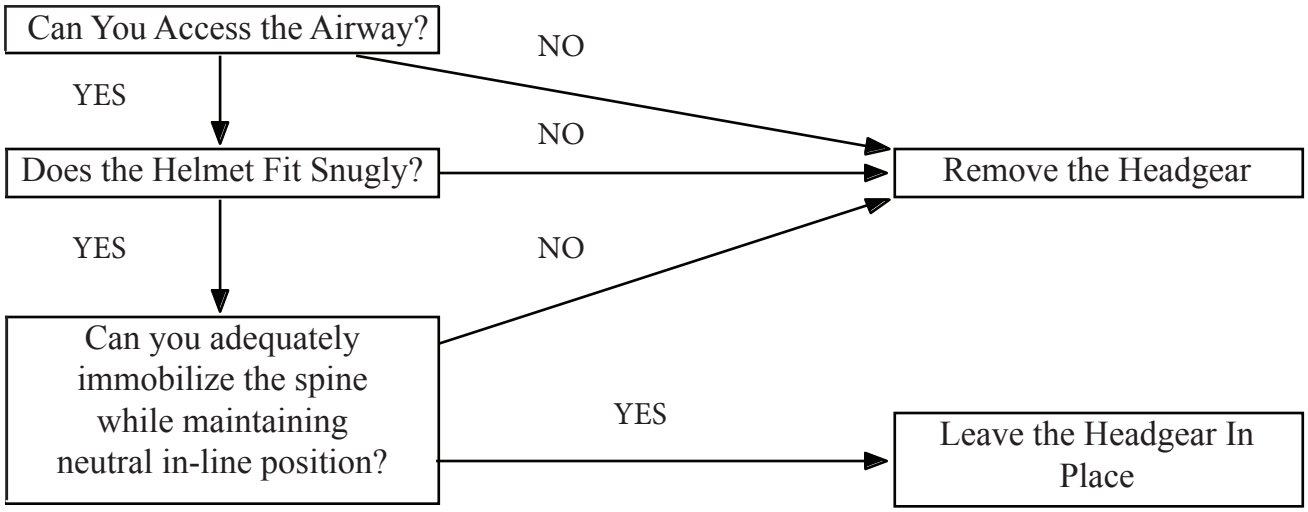
Voluntary Committal – These patients have agreed to be transferred to a facility for evaluation and treatment of an underlying mental illness. It is important to get a thorough report on the patient prior to transport to avoid surprises en route. Voluntary committal patients can change their mind during transport. In this case, it is the responsibility of the EMS personnel to discharge the patient at a safe location, *preferably at the originating facility.* If it is not possible to return the patient to the originating facility, notify local law enforcement to meet you at your location.

Involuntary Committal – Patients who are being committed involuntarily must have committal papers (blue papers) completed prior to transport. Between the hours of 7 a.m. and 11 p.m. a judge has to sign the committal papers. After 11 p.m. and before 7 a.m. the papers do not have to be signed except for Riverview Psychiatric Center (formerly AMHI) – this is known as the "pajama clause". Make sure that the transporting service is listed correctly on the papers. According to Maine law, the patient must be transported in the least restrictive form of transportation available. Make sure you get a thorough history to determine whether restraints will be necessary. *If the receiving facility refuses to accept the patient after evaluating them, the transporting service is required by law to transport the patient back to the originating facility.*

Protective Headgear Removal

The decision to remove protective headgear from an injured patient rests with the EMS provider on scene unless a Maine licensed physician is on scene and takes responsibility for the patient. It is important to immobilize the patient in a neutral in-line position, regardless of whether or not you choose to remove the helmet. This requires that you evaluate each patient and determine if other equipment (i.e. shoulder pads) must be removed or if additional padding under the shoulders or head is necessary. *In the case of an athletic injury, the EMS provider should consider input from athletic trainers. Disputes should be referred to OLMC for resolution.*

When deciding whether to remove protective headgear, please evaluate the following criteria:



Defibrillation/Cardioversion Setting

DEFIBRILLATION SETTING*

	Initial	Second	Third	Subsequent
Adult	360 J	360 J	360 J	360 J
Pediatric	2 J/kg	4 J/kg	4 J/kg	4 J/kg

*Adult 360 J monophasic or MEP or equivalent biphasic for all attempts

CARDIOVERSION SETTING**

	Initial	Second	Third	Subsequent
Adult (V-TACH)	100 J	200 J	300 J	360 J
Adult (V-TACH)	50 J	100 J	200 J	300 J
Pediatric	0.5 -1 J/kg	2 J/kg	2 J/kg	2 J/kg

** Use closest machine setting possible

For biphasic defibrillation device, use monophasic equivalents as noted above.

Drug Dosage Table

Weight (lb)	22	44	66	88	110	132	154	220
Weight (kg)	10	20	30	40	50	60	70	110
Adenosine IV/IO **Pedi dose**: 0.1 mg/kg; **Adult dose**: 6 mg initial dose; 2nd dose 12 mg	1	2	3	4	5 or 6	6	6	6
Albuterol (mg) 2.5 mg of 0.5% solution	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Albuterol MDI (puffs multi-dose inhaler) 5 puffs; **Pediatric dose**: 5 puffs	5	5	5	5	5	5	5	5
Amiodarone (mg) (V-fib, pulseless V-tach) **Adult dose:** 300 mg IV/IO push, then consider additional 150 mg IV/IO one time	NA	NA	NA	NA	300	300	300	300
Amiodarone (mg) (wide complex tachycardia with pulse) **Adult dose:** 150 mg infused over 10 minutes	NA	NA	NA	NA	150	150	150	150
Amiodarone (mg) **Pediatric dose:** 5 mg/kg IV/IO over 20-60 minutes (to a maximum dose of 300 mg)	50	100	150	200	NA	NA	NA	NA
Atropine (mg) **Pediatric dose:** 0.02 mg/kg (min dose 0.1 mg, max single dose: 0.5 mg)	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Dextrose (grams)	5	10	15	20	25	25	25	25
Diphenhydramine IM, IV (mg)	10	20	30	40	50	50	50	50
Epinephrine (mg) (VF / Pulseless VT) 1:10,000 IV					1	1	1	1
Fentanyl (mcg) **Adult dose:** 1 mcg/kg to a max. initial dose 100 mcg IV	5	10	15	20	50	60	70	100
Glucagon (mg) (**Pediatrics** < than 3kg give 0.3mg/kg)	1	1	1	1	1	1	1	1
Ipratropium Bromide/Albuterol Sulfate (mg/mg): Ipratropium 0.5 mg/Albuterol 3 mg **nebulizer** – may repeat once – age greater than 1 year	0.5/3	0.5/3	0.5/3	0.5/3	0.5/3	0.5/3	0.5/3	0.5/3
Ipratropium Bromide/Albuterol Sulfate (Combivent) **inhaler** 2 puffs if greater than 1 year of age; may repeat once if significant resp. distress	2	2	2	2	2	2	2	2
Magnesium (gram)(Cardiac)	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Methylprenisolone (mg) **Adult dose:** 125mg **Pedi dose:** 2mg/kg	20	40	60	80	125	125	125	125

Metoprolol (mg) **Adult dose:** 5 mg IV/IO over 5 minutes	NA	NA	NA	NA	5	5	5	5
Midazolam (mg) **Adult dose:** 3 mg IV/IO **Pediatric dose:** 0.15 mg/kg IV max dose 3mg	.15	.3	.45	.6	3	3	3	3
Naloxone (mg) Adult dose: .1-2 mg **Pediatric dose:** if <20kg give .1mg/kg ***NEVER GIVE NALOXONE TO A NEONATE**	1	0.1-2	0.1-2	0.1-2	0.1-2	0.1-2	0.1-2	0.1-2
Norepinephrine 8mg/250 ml NS Starting Dose = 0.03 mcg/kg/min titrate by 0.03 mcg/kg/min every 3-5 min Usual dose is 0.03 – 0.25 mcg/kg/min Usual max dose is 0.6 mcg/kg/min Absolute max dose is 3 mcg/kg/min	0.3 mcg/min	0.6 mcg/min	0.9 mcg/min	1.2 mcg/min	1.5 mcg/min	1.8 mcg/min	2.1 mcg/min	3.3 mcg/min
Ondansetron (Zofran) (mg) **Adult dose:** 4 mg IV/IO; may repeat once after 15 mins. **Pediatric dose:** 0.15 mg/kg IV/IO to a maximum dose of 4 mg	1.5	3	4	4	4	4	4	4
Ondansetron (Zofran) ODT Tablet Adult and Pedi > 4 y/o Dose = 4 mg tablet								

Maine EMS Medication List

The following are medications currently approved for use by Maine EMS licensees - as authorized by the Maine EMS Protocols. This list may be altered through protocol revision.

Prehospital Medications:

- **Activated Charcoal (without sorbitol)**
- **Adenosine**
- **Albuterol**
- **Amiodarone**
- **Aspirin**
- **Atropine**
- **Cyanide poisoning kit contents**
- **Dextrose (D10, D50)**
- **Diphenhydramine**
- **Epinephrine (1:1000, 1:10,000)**
- **Epinephrine Autoinjector**
- **Fentanyl**
- **Glucagon**
- **Hemostatic Agents**
- **Heparin Solution** (for use in maintaining IV access in a heparin lock only; otherwise this is not considered a prehospital medication. Approved also at Advanced EMT level).
- **Ipatromium Bromide (Combivent)**
- **Lidocaine 2% (preservation free)**
- **Magnesium Sulfate**
- **Methylprednisolone (Solu-Medrol)**
- **Metoprolol (Lopressor)**
- **Midazolam (Versed)**
- **Naloxone (Narcan)**
- **Nitroglycerin (Non-parenteral)**
- **Nitrous Oxide**
- **Norepinephrine**
- **Oxygen**
- **Ondansetron (Zofran) IV and ODT**
- **Tetracaine Ophthalmologic Drops**
- **Sodium Bicarbonate**

Telephone/Radio Reference/Contact Numbers #1

	NAME	RADIO FREQ	PHONE#
Hospital:			
Hospital:			
Hospital:			
Hospital:			
Hospital:			
Hospital:			
Dispatch:			

State wide EMS Frequency 155·385

Maine EMS Phone: 626-3860; Fax: 287-6251
e-mail: maine.ems@maine.gov www.maine.gov/ems

Jay Bradshaw, Director
Drexell White, Paramedic, EMD Coordinator
Alan Leo, EMT, Licensing Agent
Jonathan Powers, NR-Paramedic, Data & Preparedness Coordinator
Don Sheets, NR-Paramedic, Education & Training Coordinator
Medical Director: Matthew Sholl, M.D

Region 1 – Southern Maine EMS 741-2790
e-mail:smems@smems.org Andrea Thompson, Coordinator
Medical Director: Kate Zimmerman, D.O.

Region 2 – Tri-County EMS 795-2880
e-mail:lebrunj@cmhc.org Joanne LeBrun, Coordinator
Medical Director: Rebecca Chagrasulis, M.D.

Region 3 - Atlantic Partners EMS, INC. 877-0936
e-mail:office@apems.org Rick Petrie, Coordinator
Medical Director: Timothy Pieh, M.D.

Telephone/Radio Reference/Contact Numbers #2

Region 4 - Atlantic Partners EMS, INC. 974-4880
e-mail:office@apems.org Rick Petrie, Coordinator
Medical Director: Jonnathan Busko, M.D.

Region 5 – Aroostook EMS 492-1624
e-mail:arems@maine.rr.com Benjamin Zetterman, Coordinator
Medical Director: John Beaulieu, M.D.

Region 6 - Atlantic Partners EMS, INC. 877-0936
e-mail:office@apems.org Rick Petrie, Coordinator
Medical Director: Whitney Randolph, D.O.

Maine ACEP Representative
Kevin Kendall, MD

Bio-Terrorism / WMD
If you suspect a chemical or biological agent threat, call your local law enforcement agency immediately.

Maine Bureau of Health Emergency Reporting and Consultation	1-800-821-5821
Maine National Guard 11th Civil Support Team (WMD)	207-877-9623
Maine Emergency Management Agency	207-624-4400

To Report Workplace Injury:
Bureau of Labor

Business Hours	207-623-7923
Evenings & Weekends	**207-592-4501**

Additional Contact List

Adult Protective Services	1-800-624-8404	
Child Abuse Reporting	1-800-452-1999	
Divers Alert Network Emergency Hotline	1-919-684-9111	
New England Organ Bank	1-800-446-6362	
Office of the Chief Medical Examiner	1-800-870-8744	207-624-7180
Poison Control Center	1-800-222-1222	
Bureau of Labor Standards	207-623-7923	207-592-4501
Bureau of Health Emergency Reporting (DHHS)	1-800-821-5821	
Maine Emergency Management Agency	207-684-4400	

Trauma & Cardiac Centers

Maine Medical Center 207-662-2950
22 Bramhall St
Portland, ME 04102

Central Maine Medical Center 207-782-1110
300 Main St 207-795-2200
Lewiston, ME 04240

Eastern Maine Medical Center 207-973-8000
489 State St
Bangor, ME 04401

EMS Offices

Maine Emergency Medical Services 207-626-3860
45 Commerce Dr - Ste 1
152 State House Station
Augusta, ME 04333

Southern Maine EMS 207-741-2790
176 Narragansett St
Gorham, ME 04038

Tri County EMS 207-795-2880
300 Main St
Lewiston, ME 04240

Atlantic Partners (Kennebec Valley) EMS 207-877-0936
71 Halifax Ave
Winslow, ME 04901

Atlantic Partners (Northeast) EMS 207-974-4880
354 Hogan Rd
Bangor, ME 04401

Aroostook EMS 207-492-1624
111 High St - Ste 1
Caribou, ME 04736

Non-EMS System Medical Interveners

Thank you for your offer of assistance.

Please be advised that these Emergency Medical Technicians are operating under the authority of the State of Maine and under protocols approved by the State of Maine. These EMS providers are also operating under the authority of a Medical Control physician and standing medical orders.

If you are currently providing patient care,
you will be relinquishing care
to these EMS personnel **and their Medical Control physician.**

No individual should intervene in the care of this patient unless the individual is:

1. Requested by the attending EMT, **and**
2. Authorized by the Medical Control physician, **and**
3. Is capable of assisting, or delivering more extensive emergency medical care at the scene.

If you are the patient's own physician, PA, or nurse practitioner, the EMTs will work with you to the extent that their protocols and scope of practice allow.

If you are not the patient's own physician, PA, or nurse practitioner, you must be a Maine licensed physician who will assume patient management and accept responsibility. These EMT's will assist you to the extent that their protocols and scope of practice allow. They will not assist you in specific deviations from their protocols without Medical Control approval. This requires that you accompany the patient to the hospital and that their Medical Control physician is contacted and concurs.