

TREATMENT PROTOCOL
Seaside Fire & Rescue

EMT-Paramedics

EMT-Intermediates

EMT-Basics

First Responders



JULY 2009-JULY 2010

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Section A

Introduction

The following pre-hospital care guidelines are intended as treatment guidelines for both Basic Life Support (BLS) and Advanced Life Support (ALS) technicians working under the direction of the Medical Director Sue Heineick.

They are intended to:

1. Standardize, as much as possible, pre-hospital care for Seaside Fire & Rescue
2. Provide the Emergency Medical Technician with a framework for pre-hospital care.
3. Provide the basic framework on which the Medical Director can audit the performance of both basic and advanced life support personnel.

They are not intended to:

1. Be absolute treatment doctrines, but rather guidelines with the understanding of sufficient flexibility to meet the needs of complex or atypical cases.
2. Be a teaching manual for First Responders, EMTs, or Paramedics; it is assumed that all pre-hospital care providers are trained to his/her level of certification and that he/she will continue to meet the requirements of the State for continuing education for re-certification.
3. Withhold life saving treatments in circumstances where on-line medical control is unable to be established.
4. Interfere with the wishes of the patient or family, or the wishes of the patient's physician(s).
5. Dictate details of care to advising physicians.
6. Warrant the pre-hospital care provider as an independent field practitioner.

It is expected that all pre-hospital care providers at Seaside Fire & Rescue will be familiar with that portion of the “ **Pre-hospital Care Protocols/Guidelines**” appropriate to their certification level. **Written** acknowledgment of the receipt of this document will be required.

Introduction (Continued)

These standing orders have been approved by Seaside Fire & Rescue physician advisor Sue Heineck. Oregon statutes requires that EMTs provide care under direction through standing orders or verbal communications of a physician.

This format recognizes that pre-hospital care is part of a continuum of care, which begins with access to the system and ends with the return of the patient to our community. No phase of this continuum can function ideally without communication between all the steps of the system. A seamless transfer of care between providers is the goal. Please remember to contact the receiving hospital as soon as possible in every acute situation.

These protocols represent a dynamic medical system and it is hoped that all providers will continue to be actively involved in their formulation and revision. Questions regarding the development, revision and implementation of these protocols should be directed to the Seaside Fire & Rescue EMS Officer

**Sue Heineck MD
Seaside Fire Rescue
Medical Director**

**Susan Agalzoff
Seaside Fire Rescue
EMS Officer**

Date: July 1, 2009
To: All Seaside Fire & Rescue EMT's and Paramedics
From: Susan Agalzoff EMS Officer

During the course of the year you attend many continuing education classes and are presented with many opinions on treating patients. You may also be presented with treatment suggestions in journals, videos and from your colleagues. Some of you may also work under a different physician supervisor at other times.

Protocol changes are made in January of each year after presentation at the annual in-services. On rare occasions, protocol changes are made during the year, but these changes are for only the most compelling reasons and when immediate patient care is in jeopardy.

Regardless of what you hear or read during the year, the protocols you receive from Seaside Fire & Rescue prevail and are the standard of care. Deviation from the protocols can occur only with the approval of On-Line-Medical-Control or when directed by a physician in attendance of their patient and when the physician is willing to maintain that responsibility during transport.

The protocols represent a dynamic medical system and it is hoped that each of you will continue to be actively involved in their formulation and revision. Questions regarding the development, revision and implementation of these protocols should be directed to the Seaside Fire & Rescue EMS Officer

Thank you.

Medical Control & Communications

Medical Control

PROTOCOL	LEVEL	REQUIREMENT OR SUGGESTION
Burn	P, I	More than 1000cc of NS if BP remains <90.
Chest Pain	P, I	Prior to giving Nitroglycerine if taken Viagra in last 24 hours
Cardiac Dysrhythmia – Tachycardia	P	In unstable tachycardia if cardioversion is not effective. In stable tachycardia if adenosine is not effective. Prior to giving Adenosine in pediatric patients
Cardiac Dysrhythmia – VT with Pulse	P	In unstable if cardioversion and Lidocaine are not effective. In stable if Lidocaine and Amiodarone are not effective.
Physician on Scene	P, I, B	For assistance if Physician is on scene.

Communications

1. H.E.A.R. Radio Information During Transport:

All users of the H.E.A.R. system are urged to transmit essential communications and keep air times as short as possible. The following protocols for advanced life support and basic life support communications should be used. If Medical Control feels additional communications are necessary, they may contact the transporting unit via the H.E.A.R. system.

Emergency Pre-hospital H.E.A.R. Report format:

- a. Unit identification;
- b. Age and gender of patient;
- c. Condition of patient;
- d. Chief complaint or reason for transport;
- e. **Very brief pertinent medical history**; 1-2 sentences if possible.
- f. Vital signs;
- g. Pertinent treatment rendered;
- h. Request for additional information or treatment;
- i. Estimated time of arrival (ETA).

The H.E.A.R. report should be provided as soon as possible once transport has begun. All reports should be given in this order and should be a maximum of thirty seconds. The H.E.A.R. report is not meant to be a full patient report and should relay only pertinent patient care information. Patient identification information is inappropriate to be given on the H.E.A.R. frequency. Where patient care at the hospital will be improved, patient identification information is appropriate to be given and is encouraged to be given by **telephone**. Format for trauma system patients will follow specific reporting format as indicated in Trauma Protocols. Advise Medical Control or receiving emergency department of changes in patient's condition en route and request for further treatment.

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Medical Control & Communications (continued)

2. Verbal Report to Emergency Physician or Nurse:

The verbal report to the emergency department physician and/or triage nurse should contain more detail than the radio report. Pre-hospital personnel now has the time to present thorough of the scene, appropriate complete assessment of the patient, and complete report on patient care and the result of care efforts.

- A. Name, age, gender and patient's physician;
- B. Chief complaint or injuries;
- C. If trauma, describe the trauma scene; i.e.; estimated blood loss, damage to vehicle, number of gun shots, etc.;
- D. Pertinent medical history;
- E. Vital signs and level of consciousness;
- F. Physical examination findings;
- G. Condition changes or trends in vital signs or level of consciousness during transport;
- H. Explain patient treatments and results of such.

3. Documentation/Written Reports:

Documentation of Patient Care Reports shall be done on every patient as soon as possible. These reports shall be done using SVFD software or paper pcr and shall include all pertinent medical information regarding patient condition, care and outcome.

General Guidelines For All Patients

Field Treatment for the Medical Patient

1. **Scene Size-up/Assessment;**
 - A. Body substance isolation per agency exposure control program;
 - B. Scene safety;
2. **Initial Patient Assessment;**
 - A. **A**irway - **B**reathing - **C**irculation;
 - a. If **EMS NO-CPR** form/bracelet intact, follow protocol for **EMS NO-CPR**
 - B. Consider ALS response if available
3. **Focused History and Physical Exam;**
 - A. Assess complaints and signs/symptoms, responsive patient;
 - a. **O-P-Q-R-S-T** assessment guidelines;
 - 1) **O**nset, **P**rovocation, **Q**uality, **R**adiation, **S**everity, **T**ime
 - b. Obtain **SAMPLE** history;
 - c. Conduct **AVPU** mental status exam as needed;
 - d. Intervention
4. **Perform Ongoing and/or Detailed Assessment as Needed;**
5. **Transport.**

Field Treatment for the Trauma Patient

1. **Scene Size-up;**
 - A. Body substance isolation per agency exposure control program;
 - B. Scene safety;
 - C. Assess for number of multiple patients;
 - D. Activate local emergency system as necessary.
2. **Initial Patient Assessment;**
 - A. **A**irway - **B**reathing - **C**irculation;
 - B. Establish patient care priorities as soon as possible;
 - a. Triage multiple patients (See Mass/Multi-casualty Section);
 - 1) Notify receiving facility
 - b. Follow the trauma triage procedures
 - 1) Notify receiving hospital as soon as possible
3. **Rapid or Focused History and Physical Exam;**
 - A. **DCAP-BTLS;**
 - 1) **D**eformities, **C**ontusions, **A**brasions, **P**unctures, - **B**urns, **T**enderness, **L**acerations, **S**welling
 - B. **P**ulse, **M**ovement, **S**ensation (**PMS**);
 - C. Vital Signs;
 - D. Obtain **SAMPLE** history;
 - E. Glasgow Coma Scale.
4. **Ongoing Assessment;**
 - A. Re-evaluate initial patient assessment items;
 - 1) Unstable patient a maximum of every 5 minutes
 - 2) Stable patient every 15 minutes

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General Guidelines For All Patients Continued

Field Treatment for the Trauma Patient (continued)

5. Transport;

- A. Prioritize patient transport;
- B. High priority patients transport to nearest hospital .
- C. For extended scene time secondary to difficult access or entrapment/heavy extrication of a trauma system entry patient, consider helicopter transport directly from scene (See Helicopter Triage Guidelines)
- D. Provide treatment, using appropriate protocols
- E. Use of lights and siren should be limited to the emergency transportation of critical patients only
- F. Destination determined by:
 - a. Trauma Triage Tool (when implemented);
 - b. Patient request;
 - c. Senior Medical Officer judgment *
 - d. MD-to-MD arrangement.

*Patient request and physician-to-physician referrals must, in general, be respected. However, if in the judgment of the Senior Medical Officer a critical patient requires transport to a nearer hospital for stabilization, it is the Senior Medical Officer's responsibility to explain this to the patient or physician. If a conscious patient or physician who, in the judgment of the Senior Medical Officer, is capable of making a rational decision persists in requesting transport to a different facility, the patient and/or physician request should be followed. Attempt to obtain a signature on a medical release form.

On-Scene Medical Authority:

1. Patient care at an incident is subject to the following ascending order of authority:
 - A. First Responder (first-arriving, on duty)
 - B. Emergency Medical Technician (first-arriving, on duty)
 - C. Paramedic or Flight Nurse (first-arriving, on duty)
 - D. Physician
 - E. Medical Control Physician.

Non-Transport of Patients

The decision to seek emergency medical services usually resides with the patient, family, or, in certain instances, with legal custodians. Similarly, the decision to transport or not transport should reside with the patient, family, or legal custodian. In General, the only reasons for non-transport are:

1. Signed refusal for transport completed by competent patient, family, or custodian. *
2. No patient (DOA, termination of resuscitation efforts, etc.) The Emergency Care provider may be of the judgment that the patient need not be transported by ambulance, but unless the patient and/or custodian agree with this judgment, transport will be accomplished.

***Note:** A competent patient must be oriented and understand the potential consequences of refusal. If a patient is not competent (i.e. confused, or obviously drug/substance altered) then Medical Control and/or law enforcement should be involved in patient disposition.

Patient Treatment Rights

Seaside Fire & Rescue EMS guidelines and protocols are intended for use with a conscious, consenting patient, or an unconscious (implied consent) patient. Patients refusing EMS care or transport represent a significant medical-legal risk for EMS agencies and their personnel. Adherence to medical release principles will minimize liability and maximize patient care.

Medical Release Principles:

The foundation principle for medical release is informed consent by the patient. The patient cannot be held to have refused treatment or care unless or until:

1. The patient has been fully informed of their condition
AND
2. The patient understands the information provided on their condition and the potential consequences of refusing treatment or care
AND
3. A medical release form has been read to, understood by, and signed by the patient.

Minimum Medical Incident Report Documentation:

1. Patient History *
2. Vital Signs *
3. Physical examination appropriate for the complaint *
4. Mental status documented as "alert and oriented" and no significant impairment of mental status, e.g., by drugs, alcohol, other organic causes, or mental illness
5. Informed consent: Risk of refusing care or transport explained to and understood by the patient
6. Seaside Fire & Rescue refusal form signed by the patient and attached to the PCR.

* If these criteria cannot be met, document refusal by patient.

** If a conscious patient who is irrational (or impaired by alcohol or drugs) or may harm themselves refuses treatment, the emergency care provider should contact law enforcement.

Notes and Precautions:

The more urgent the need for care, the higher the standard must be for refusal. A patient has the right to select the hospital to which he or she may be transported providing that, in your best judgment, transport to that hospital will not cause loss of limb or life.

Cancellation/Slow Down

The guideline is to describe how units responding to medical emergencies may either “slow down” or cancel other responding units. It is recognized that it is in the best interest of patient care and the public to slow or cancel units responding in the emergency mode to calls when it is determined that the patient does not require an additional emergency response.

1. ALS ambulances or fire/rescues staffed at the paramedic level may slow or cancel other responders once the patient has been evaluated at the scene and the determination is made that no other units are required in the emergency mode.
2. First responding EMS agencies may slow ALS or BLS ambulances when a patient does not require Advanced Life Support. They may cancel ALS or BLS ambulances when there is no patient or no transport required. (Agency policy to apply.)
3. Police agencies may cancel ALS or BLS ambulances when no patient is found.

Emergencies Requiring ALS Care

General Trauma

1. Injuries resulting in unstable vital signs, altered level of consciousness, or severe anatomic injuries.
2. Injuries associated with severe mechanisms or co-morbid factors which increase the likelihood of immediate complications or deterioration which would require immediate hospitalization or ALS intervention.

General Medical

1. Medical emergencies resulting in unstable vital signs or altered level of consciousness.
2. Medical emergencies associated with the potential for significant complications requiring immediate hospitalization or ALS intervention.

Specific Injury Conditions Requiring ALS Care

1. Vital Signs and Level of Consciousness:

- A. Shock: Systolic Blood Pressure < 100; **or**
- B. Respiratory Distress: Respiratory Rate <10 or >20; **or**
- C. Altered/Change in Mentation.

2. Anatomy of Injury:

- A. Penetrating injury of head, neck, torso, or groin; **or**
- B. Combination of burns >20% of total body surface or involving face, airway, hands, feet, and genitalia; **or**
- C. Amputation; **or**
- F. Flail chest; **or**
- D. Any bone fractures/dislocations requiring pain control.

3. Consider ALS Care if the Following Conditions Apply:

A. Biomechanics of Injury:

- Death of same car occupant; **or**
- Ejection of patient from enclosed vehicle; **or**
- Falls > 20 feet; **or**
- Pedestrian hit at > 20 mph
- Rollover; **or**
- Motorcycle, ATV, or bicycle accident; **or**
- Extrication time > 20 minutes; **or**
- Significant intrusion.

B. Co-morbid Factors:

- Extremes of age (< 12 years or > 60 years).
- Hostile environment (extremes of heat or cold).
- Medical illness (COPD, CHF, renal failure, etc.) - Presence of intoxicants.
- Second/third trimester pregnancy.

C. Emergency care provider judgment of injury severity

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Emergencies Requiring ALS Care Continued

Specific Medical Conditions Requiring ALS Care

1. Cardiopulmonary arrest
2. Acute myocardial infarction
3. Chest pain
4. Respiratory distress
5. Altered mental status.
6. Seizures
7. CVA/TIA
8. G.I. Bleeding
9. Allergic reaction/Anaphylaxis
10. Near drowning
11. Imminent birth
12. Abdominal Pain (Traumatic or Non-traumatic)
13. If an ALS assessment was indicated patient will remain in ALS care.

Field Resuscitation Guidelines

Withholding of CPR

1. CPR must be initiated on all cardiac arrest victims, unless a condition exists which warrants the withholding of CPR.
 - A. CPR may be withheld on **ADULT** or **PEDIATRIC** victims who present with any one of the following:
 - a. Decapitation
 - b. Total incineration
 - c. Decomposition
 - d. Dependent lividity
 - e. Rigor mortis without vital signs
 - f. Apnea in conjunction with separation from the body of either the brain, liver or heart
 - g. Mass casualty incidents where triage principles preclude CPR from being initiated on every victim
 - h. Documentation of "Do-Not-Resuscitate Orders" or POLST form.
 - B. CPR may be withheld on **ADULT** victims of unwitnessed medical cardiac arrest or witnessed/unwitnessed trauma arrest who present with **ALL** of the following:
 - a. No CPR in progress **and**
 - b. No vital signs **and**
 - c. Documented electrical asystole with documented evidence that monitor is functioning properly. (Asystolic patients with non-capturing pacemakers and conditions a and b meet this criteria.)
 - d. No evidence of Hypothermia, Drug Ingestion, or Poisoning.**
2. Notify appropriate law enforcement agency as soon as possible.
3. Complete a pre-hospital care record, documenting clinical conditions which warranted not initiating CPR and law enforcement agency notification.

Discontinuing CPR

1. Supervising physician should consider discontinuing CPR in the pre-hospital setting and pronounce a patient dead at the scene, provided certain conditions are met, including but not limited to, the following:
 - A. Brady-Asystole unresponsive to resuscitation with complete and appropriate South Pacific ALS protocol.
 - a. Asystole will be documented for thirty (30) seconds in two (2) leads with documentation that monitor is functioning properly (i.e., artifact due to manual compression or precordial thump).
 - b. Blood pressure, pulse, and respiration are absent.
 - B. Ventricular Fibrillation, which after ALS resuscitation is now Asystole or Agonal rhythm.
 - C. No evidence of Hypothermia, Drug Ingestion, or Poisoning.
2. Notify Medical Control Physician before discontinuing CPR. If unable to contact Medical Control Physician because of geographic isolation, the emergency care provider will contact the physician as soon as possible and document the reason for the delay of communication.
- 3.

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Field Resuscitation Guidelines Continued

Discontinuing CPR (continued)

3. Complete a pre-hospital record documenting the physician who was consulted and discontinued resuscitation.
4. Obtain an EKG strip with documented evidence of Asystole and attach to run report.
5. Notify appropriate law enforcement agency.
6. Notify appropriate support facility for family as needed.
7. When appropriate, remain with the family until other support has arrived for as long as necessary. If you are called for another emergency response, emergency care for the living must always assume priority.

Do Not Resuscitate Orders

1. Definitions:
 - A. A DNR (Do Not Resuscitate or No Code) Order is an order issued by a physician directing that in the event the patient experiences a cardiopulmonary arrest, (i.e., clinical death) cardiopulmonary resuscitation will not be administered.
 - B. A Living Will is a legally executed document expressing the patient's wish to not undergo ALS resuscitation.
 - C. Resuscitation includes attempts to restore failed cardiac and/or ventilatory function by procedures such as endotracheal intubation, mechanical ventilation, closed chest massage, defibrillation, and use of ACLS cardiac medications.
 - D. The Washington/Oregon State EMS-No CPR Directive was developed as recognition tools for EMS providers in cases in which a patient does not desire full resuscitation due to a rapidly deteriorating medical circumstance. It consists of a Washington State form and a bracelet. The form must be signed by the patient's physician and the bracelet, if used must be worn by the patient on either wrist, either ankle, or on a necklace or neck chain. The bracelet must be intact and not marred or defaced in any way to be valid.
 - D. The Washington/Oregon State DOH **Physician Orders for Life-Sustaining Treatment (POLST)** form has been developed for all medical technicians and practitioners. **POLST** outlines the specific care a patient wishes to receive. The form must include the patients name, date of birth, physician's name, signature and phone number and the signature of the patient or patient's surrogate. Follow all instructions on the form carefully. Any section of the form not completed implies full treatment for that section.
2. The responding EMS provider should perform routine patient assessment and resuscitation or interventions until they confirm the EMS-No CPR status in one of the following ways:

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Field Resuscitation Guidelines Continued

Do Not Resuscitate Orders (continued):

- A. Determine that the EMS-No CPR bracelet is intact and not defaced. The bracelet can be located on either wrist, either ankle, or on a necklace or neck chain, and worn by the patient.
 - OR**
 - B. If no bracelet is located, look for the **original** EMS-No CPR Directive at the bedside, on the back of the bedroom door, or on the refrigerator. In extended or intermediate care facilities, look for the directive with the patient's chart.
 - C. Begin resuscitation if bracelet is not attached, or if it has been defaced and no valid EMS-No CPR Directive is located.
 - D. Begin resuscitation if, in your medical judgment, your patient has attempted suicide or is a victim of attempted homicide.
3. After confirming that the patient has a valid EMS-No CPR Directive, the EMS provider should carry out these standard EMS-No CPR orders when indicated
 - A. Open the airway using AHA/ARC manual methods (do not provide positive pressure ventilation with a bag valve mask, pocket mask or endotracheal tube).
 - B. Clear airway (including stoma) of secretions with appropriate suction device.
 - C. Provide oxygen per nasal cannula at 2- 4 LPM.
 - D. Make patient comfortable and provide emotional support.
 - E. Control any bleeding.
 - F. Provide pain medication **as per protocol**.
 - G. Provide emotional support to the family.
 - H. Contact patient's physician or on-line Medical Control if questions or problems arise.
 4. If resuscitative efforts have been started before learning of a valid EMS-No CPR order, then the EMS provider should STOP these treatment measures:
 - A. Basic CPR
 - B. Intubation (leave the endotracheal tube in place, but stop any positive pressure ventilations).
 - C. Cardiac monitoring and defibrillation.
 - D. Administration of resuscitation medication.
 - E. Any positive pressure ventilation (through bag valve masks, pocket masks, endotracheal tubes).
 5. Other DNR Orders: We continue to encourage medical facilities to use the Department of Health EMS-No CPR Directive. Sometimes health care facilities prefer to use their own health care DNR orders. When EMS providers see other DNR orders, they should do the following:
 - A. Verify that the order has a physician signature requesting "Do Not Resuscitate".
 - B. Verify the presence of the patient's name on the order.

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Field Resuscitation Guidelines Continued

- C. Contact on-line Medical Control for further consultation. In most cases, on-line Medical Control will advise to withhold CPR following verification of a valid physician signed DNR order.
- 6. Revoking the EMS-No CPR Directive: The following people can inform the EMS system that the EMS-No CPR Directive has been revoked:
 - A. The patient (by destroying the directive and bracelet, or verbally revoking the directive).
 - B. The physician expressing the patient's revocation of the directive.
 - C. The legal surrogate for the patient expressing the patient's revocation of the directive.
- 7. Documentation:
 - A. Complete the Medical Incident Report (MIR)
 - B. State in the upper left hand corner of the narrative summary: "Patient identified as EMS-No CPR by directive, bracelet, or both".
 - C. Record the name of the patient's physician, and state whether you contacted the physician.
 - D. Record the reason why the EMS system was activated.
 - E. Comfort the family and bystanders when patient has expired.
 - F. Contact local law enforcement. Also contact, if appropriate the chaplain service.
- 8. Comfort Care Measures:
 - A. No CPR does not mean No Treatment or No Caring. Providing comfort care measures is an important responsibility and service you provide to patients and their families at a crucial moment in their lives.
- 9. Comfort care measures for the dying patient may include:
 - A. Suctioning the airway;
 - B. Administering oxygen;
 - C. Positioning for comfort;
 - D. Splinting;
 - E. Controlling bleeding;
 - F. Providing pain medications;
 - G. Providing emotional support;
 - H. Contacting patient's physician or on-line Medical Control if questions or problems arise.
- 10. Special Situations:
 - A. The patient's wishes in regard to resuscitation should always be respected. Sometimes, however, the family may vigorously and persistently insist on CPR even if a valid EMS-No CPR Directive or bracelet or POLST order is located. These verbal requests are not consistent with the patient's directive. However in such circumstances:
 - i. Attempt to convince family to honor the patient's decision to withhold CPR. If family persists, then;
 - ii. Initiate resuscitation efforts until relieved by paramedics (for First Responders and EMTs).

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Field Resuscitation Guidelines Continued

- iii. Advanced Life Support personnel should continue treatment and consult Medical Control.
11. Remember: Once death has occurred, the family and relatives become your patient(s).

Medications and Allergies

All medications in these protocols are to be administered only after ascertaining that the patient is **NOT** allergic to them. In critical situations when the patient has an altered level of consciousness, emergency care providers should question family, friends and look for medical alert identification and/or “Vial of Life” canisters.

Infectious Disease Precautions

1. Precautions to prevent transmission of infectious disease are especially important in the emergency care setting, where the risk of blood exposure is increased and the infection status of patients is usually unknown. Standard (Universal) blood and body fluid precautions shall be consistently used for all patients to prevent skin and mucous membrane exposure. All EMS personnel must remain current with Infectious Disease Continuing Medical Education according to the standards set forth by the Oregon/Washington State Department of Health Office of Emergency Medical and Trauma Prevention.
2. General Recommendations
 - A. Gloves shall be worn for:
 - a. Touching blood and body fluids, mucous membranes, or non-intact skin.
 - b. Handling items or surfaces soiled with blood or body fluids.
 - c. Performing venipuncture, other vascular access, or any other invasive procedure. Change gloves after contact with each patient. Wash hands immediately after removing gloves.
 - B. Masks, protective eyewear, and gowns shall be worn during procedures that are likely to generate droplets or splashes of blood or other body fluids.
 - C. Wash hands and other skin surfaces immediately if contaminated with blood or other body fluids.
 - D. Use mouth pieces, resuscitation bags, or other ventilation devices to avoid mouth-to-mouth contact.
 - E. Sharp instruments, needles, and scalpels shall be handled carefully during procedures, cleaning, and disposal. Needles shall not be re-capped, bent, broken, or removed from disposable syringes. Place used disposable syringes, needles, scalpels, and other sharp items in puncture-resistant containers for disposal. These precautions will afford protection to pregnant emergency care providers to **minimize** risk of prenatal transmission of infectious disease.
3. Emergency care providers who have open lesions, or weeping dermatitis shall refrain from direct patient care and from handling patient care equipment.
4. Personnel suspecting exposure to an infectious disease must inform their supervisor immediately.
 - A. If mouth, eyes, or an unprotected cut are directly exposed to blood or body fluids, or in the event of a needle stick injury, affected personnel should wash the area thoroughly and immediately seek medical attention.
5. After each patient contact clean all equipment used and vehicles according to the manufacturer recommendations or according to the most recent Department of Health or OSHA standards and guidelines.

Hazardous Materials Response

These guidelines are to be used in all incidents involving hazardous materials where there is an actual or potential exposure to any hazardous substance. Refer to the DOT Emergency Response Guidebook, or the Haz-Mat Team for general precautions and isolation/evacuation guidelines. As a general rule of thumb, isolate the hazard area for 100 feet for a minor incident and 500 feet for a major incident. If explosives are involved, evacuate the area for ½ (One Half) mile. Remember: The evacuation zone downwind or downhill of the incident will be much greater.

1. Call for help - Contact the nearest local fire jurisdiction.
2. Work with the Incident Commander as to procedures for securing access to the scene.\
3. Establish **SAFE** staging area uphill, upwind if possible. Notify all incoming response agencies of proper route for a **SAFE** scene approach to the staging area. Helicopters, when indicated, should be landed far enough away from the scene to avoid spread of contamination from prop wash.
4. Protect yourself and others from any significant exposure. **Do not attempt rescue unless you are Haz-Mat trained and have the appropriate protective gear.** Minimize continued exposure of any personnel and secondary contamination of rescue personnel by ensuring that proper decontamination has been completed prior to treatment or transport to a medical facility. Prevent unnecessary contamination of transport vehicles or equipment.
5. Obtain accurate information on health effects of the product(s) involved. Attempt to identify product(s) involved by placards, ID#, shipping papers, personnel on scene etc.
6. Provide appropriate pre-hospital care as to your certification level. In general, it is not recommended to begin any medical treatment without first referring to proper guidelines. (Interventions as automatic as providing oxygen may be dangerous if not compatible with the agent involved.)

Emergency Transport of the Physically Disabled And Their Service Guide/Dogs

A patient's service/guide dog should receive special considerations, provided that these measures will not adversely affect the provision of care to the patient.

1. If the animal is handled by the EMS provider, he/she will use extreme gentleness.
2. Care and the appropriate transport of the dog will be requested of family, friends, or other civil services.
3. Under rare circumstances, ambulance transport of the dog with its owner, if stable, may be considered.

Section-B
Cardiac Emergencies

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Section B
Cardiac Emergencies

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Chest Pain Suspected Angina/AMI

BLS:

First Responder:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;

EMT-B:

As Above;

6. **Confirm NO Viagra or like medication used by patient in past 24 hours, IF NOT**;
7. **Nitroglycerin, 0.4 mg spray or tablet** (See **Procedures**) if physician prescribed to that patient and **BP \geq 100 mm Hg systolic**. If patient's own physician prescribed Nitroglycerin not available provide **O₂** and transport;
8. **Nitroglycerin, 0.4 mg spray or tablet** (See **Procedures**) repeat **q 5 minutes x 2** if **BP \geq 100 mm Hg systolic** and pain not relieved;
9. Transport in position of comfort;

ILS:

As below

10. **IV Balanced Salt Solution @ TKO**;

ALS:

As above;

11. **ECG**, Treat dysrhythmias per protocol;
12. Perform 12 Lead ECG if available
13. If 12 Lead indicates ST elevation in Leads II, III, or AVF obtain Lead V4R. ST elevation in V4R may indicate **Right sided AMI, DO NOT ADMINISTER NITRATES**;
14. **Confirm NO Viagra** or like medication used by patient in past 24 hours, if the pt. has taken NTG contact OLMC. **IF NOT**;
15. **Nitroglycerin, 0.4 mg** (SL or spray) **Repeat q 3-5 minutes x 2** if EMT has not assisted patient with patient's own NTG. **2.0 inches of NTG Paste** may be used in place of 2nd and 3rd doses of SL or Spray (**Wipe off if BP drops below 100 mm Hg**).

Chest Pain Suspected Angina/AMI (continued)

17. **Chewable Aspirin 324 mg** (4 of 81 mg tablets) ASA contraindicated in: Allergy, Active GI bleed, Sinusitis, Asthma;
18. If systolic BP < 90 mm Hg, assess volume status. If lungs clear and/or 12 Lead EKG indicates Inferior Wall AMI, consider trial infusion of **Balanced Salt Solution**. If rales present and/or 12 Lead EKG indicates Anterior Wall AMI, consider **Dopamine infusion**;
19. Contact receiving facility ASAP if strong suspicion of AMI and/or 12 Lead EKG indicates AMI.

Asystole

BLS: EMT Basic Combitude

1. Assess Responsiveness and **ABCs**;
2. **Begin CPR** for 2 minutes.
3. Attach **AED or SAED** if available, press “analyze”;
4. If no shocks advised or AED is not immediately available, **Continue CPR**;
5. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
6. Get **Sample History** from family, friends or bystanders;
7. Continue CPR, package patient on **Long Backboard** and transport immediately;

ILS:

As above;

8. **Combitude.** 9. **IV Balanced Salt Solution, @ TKO; ECG # 12 # 13**

ALS:

As above;

10. **ECG**, Confirm asystole in two (2) leads;
11. Consider **Transcutaneous Pacing** if asystole was **witnessed** to follow any other cardiac rhythm;
12. **Epinephrine, 1.0 mg of 1:10,000 IVP/IO/ET q 3- 5 min.** Continue until vital signs are restored or resuscitation is terminated;
13. **Atropine, 1.0 mg IVP/IO/ET q 3- 5 min.** up to total of **3 mg**;

Ventricular Fibrillation / Pulseless Ventricular Tachycardia

BLS:

1. Assess Responsiveness and **ABCs**; EMT BASIC COMBITUBE
2. **Begin CPR** for 2 minutes (5 cycles);
3. Attach **AED or SAED**, press “analyze”;
4. **Defibrillate**;
5. Immediately after shock, resume **CPR for 5 cycles**;
6. Get **Sample History** from family, friends or bystanders;
7. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
8. Press “analyze” and if indicated;
9. **Defibrillate**;
10. Continue **CPR for 5 cycles**, package patient on Long Backboard and transport;
11. **Check pulse**, if no pulse:
12. Press “analyze”
13. Repeat **shocks** between **2 min. CPR** intervals;

ILS:

As above;

14. **Combitube.**

15. **IV Balanced Salt Solution # 16, 17, 18 , 20**

ALS:

As above;

16. If paramedic is first on scene; Start **CPR for 2 mins (5 cycles)**. If arrest is witnessed, **Defibrillate before starting CPR**;
17. Confirm pulseless VT/VF, **Defibrillate 200J (Biphasic), 360J (Monophasic)**, Continue **CPR immediately** after shock for 2 mins. (5 cycles) **Repeat Defib. q 2 mins. (Drug/Shock/Drug)**
18. **Epinephrine, 1.0 mg of 1:10,000 IVP q 3-5 min.** Repeat between doses of antiarrhythmic meds. until vital signs restored or resuscitation terminated;
19. **Amiodarone, 300 mg IV/IO.** Repeat one time between shocks **Amiodarone, 150 mg IV/IO** in no more than 5-10 minutes after the first dose prn;
20. If **Amiodarone is contraindicated** use **Lidocaine, 1.5 mg/kg IVP/IO/ET**, may repeat **q 5-10 min.** to total dose of **3.0 mg/kg**;
21. If VT/VF persists/recurs **Magnesium Sulfate, 2.0 gm IVP/IO** (Should be used as first line antiarrhythmic for Torsades de Pointe or known Hypomagnesemia);

- Continued Next Page -

Ventricular Fibrillation / Pulseless
Ventricular Tachycardia (continued)

22. If Defibrillation is successful after administering **Amiodarone** or **Lidocaine** a continuous infusion of the last medication given should be started as below:
 - A. **Amiodarone, 1.0 mg/min.**
 - B. **Lidocaine, 2.0- 4.0 mg/min.**
23. If V-Fib/Pulseless V-Tach persists or perfusing rhythm restored transport ASAP. If rhythm becomes Asystole consider **Termination of Efforts** (See “General Guidelines” section for “Field Resuscitation Guidelines”).

Pulseless Electrical Activity (P.E.A.)

BLS:

1. Assess Responsiveness and **ABCs**; EMT BASIC COMBITUBE
2. **CPR** for 2 minutes;
3. Attach **AED or SAED** if available, press “analyze”
4. If no shocks advised or AED is not immediately available **Continue CPR**;
5. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
6. Get **Sample History** from family, friends or bystanders:
7. Continue CPR, package patient on Long Backboard and transport;

ILS:

As above;

8. **COMBITUBE**

9. **IV Balanced Salt Solution @ TKO**; # 10, 11, 12,

ALS:

As above;

10. **Epinephrine, 1.0 mg of 1:10,000 IVP/IO/ET q 3- 5 min.** Continue until vital signs restored or resuscitation terminated;
11. If P.E.A. rhythm is < 60/min., **Atropine, 1.0 mg IVP/IO/ET q 3- 5 min.** up to a total of **0.04 mg/kg**;
12. Search for and treat frequent causes (If reversible):
 - Hypovolemia*
 - Hypoxia*
 - Hydrogen ion – Acidosis*
 - Hyper-/Hypokalemia*
 - Hypothermia
 - Hypoglycemia
 - Tablets (drug OD)*
 - Tamponade*
 - Tension Pneumothorax*
 - Thrombosis. Coronary
 - Thrombosis, Pulmonar
 - Toxins
 - Trauma
13. If rhythm persists or perfusing rhythm restored transport ASAP. If rhythm becomes asystole consider **Termination of Efforts** (See “General Guidelines” section for “Field Resuscitation Guidelines”).

* Hypovolemia – Rapid bolus NS 500 ml.

* Hypoxia – Ventilate.

* Acidosis – Ventilate, NaHCO₃.

* Hyperkalemia – See protocol.

* Drug OD – See drug-specific protocol.

* Cardiac Tamponade – Pericardial Centesis.

* Tension Pneumothorax – Needle Decompression.

Ventricular Tachycardia (VT) With Pulses

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History** from family, friends or bystanders;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution large bore catheter if possible, @ TKO;**

ALS: PARAMEDIC ONLY

As above;

8. **ECG Monitor;**

Unstable Patient with Ventricular Rate ≥ 150 : Patient with any or all of the following: chest pain, SOB, decreased LOC, hypotension, shock, pulmonary edema, CHF, ischemia or AMI.

9. Consider sedation: **Etomidate 0.3 mg/kg, no > than 20mg IVP, Do not delay cardioversion;**
10. **Synchronized Cardioversion** with; (Biphasic) 75J, 120J, 150J, 170J (Monophasic) 100J, 200J, 300J, 360J
11. If V tach persists/recurs: **Amiodarone 150mg slow IVP/IO (over 10 mins.)**. If VT persists/recurs after 10 mins: **Repeat Amiodarone 150 mg x 1**.
12. If Amiodarone is contraindicated use **Lidocaine 1.0-1.5 mg/kg IVP/IO/ET**. If VT persists after 10 mins. **Repeat Lidocaine 1-1.5 mg/kg**. If rhythm has converted, start **Lidocaine infusion 2.0-4.0mg/min.**;
13. If V-Tach persists/recurs; **Synchronized Cardioversion** start with energy dose previously used

Stable Patient:

1. **12 Lead ECG**
2. **Amiodarone 150 mg slow IVP/IO (over 10 mins.)**. If VT persists/recurs after 10 mins: **Repeat Amiodarone 150 mg x 1**.
3. If Amiodarone is contraindicated use **Lidocaine, 1- 1.5 mg/kg IVP/IO/ET**. If VT persists: **Lidocaine, 1.0-1.5 mg/kg IVP x 1** If rhythm converts following bolus start **Lidocaine infusion 2.0- 4.0mg/min.**;
4. If VT persists/recurs: **Magnesium Sulfate 2.0 gm slow IVP/IO (over 5-20 mins.)**;
5. If VT persists/recurs, **Synchronized Cardioversion**, as in unstable patients.

Wide-Complex Tachycardia (WCT) Uncertain Type

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution** large bore catheter if possible, @ TKO;

ALS:PARAMEDIC ONLY

As above;

8. **ECG Monitor**

Unstable Patient with Ventricular Rate ≥ 150 : Patient with any or all of the following: chest pain, SOB, decreased LOC, hypotension (systolic <90), shock, pulmonary edema, CHF, ischemia orAMI.

9. Consider sedation: **Etomidate, 0.3 mg/kg, no > than 20 mg IVP, Do not delay cardioversion;**
10. **Synchronized Cardioversion** with (Biphasic) 75J, 120J, 150J 170J (Monophasic) 100 J, 200J, 300 J, 360 J ;
11. If WCT persists/recurs: **Amiodarone 150 mg slow IVP/IO (over 10 mins.)**. If WCT persists/recurs: **Repeat Amiodarone 150 mg x 1**
11. If Amiodarone is contraindicated **Lidocaine, 1.0-1.5 mg/kg IVP**. If WCT persists/recurs **Repeat Lidocaine 1.0-1.5 mg/kg**. If rhythm converts after bolus start **Lidocaine infusion 2.0-4.0mg/min.** following bolus;
12. If V-Tach persists **Synchronized Cardioversion**, start with energy dose previously successful;

Stable Patient:

1. **12 Lead ECG**
2. **Amiodarone, 150 mg IVP/IO (given over 10 mins)**. If WCT persists after 10 mins. **Repeat Amiodarone 150 mg one time ;**
3. If Amiodarone contraindicated use **Lidocaine 1.0-1.5 mg/kg IVP/IO/ET**. If WCT persists **Repeat Lidocaine 1.0-1.5 mg/kg x 1**. If WCT converts after bolus start **Lidocaine infusion at 2.0- 4.0 mg/min.**
4. If WCT persists/recurs: **Magnesium Sulfate 2.0 gms slow IVP/IO (over 5-20 mins.)**;
5. If WCT persists/recurs **Synchronized Cardioversion**, as for unstable patients.

Supraventricular Tachycardia Heart Rate \geq 150

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution** large bore catheter if possible, @ TKO;

ALS:PARAMEDIC ONLY

As above;

8. **ECG Monitor**

Unstable Patient: Patient with any or all of the following: chest pain, SOB, decreased LOC, hypotension (systolic < 90), shock, pulmonary edema, CHF, ischemia or AMI;

9. Consider sedation **Etomidate 0.3 mg/kg, no > than 20 mg. IVP, Do not delay cardioversion**;
10. **Synchronized Cardioversion** with (Biphasic) 30J, 50J, 75J, 120J, (Monophasic) 50J, 100J, 200J, 300J, 360J prn ;
11. If the rhythm has not converted after shock, **Contact Medical Control** for further interventions.

Stable Patient:

1. Direct patient to perform **Valsalva Maneuver**. Carotid Sinus Massage may be performed on patients < 40 years of age, who have been checked for and do not have carotid bruits;
2. If SVT persists, **Adenosine, 6.0 mg rapid IVP/IO over 1- 3 seconds**, followed immediately by **Balanced Salt Solution 20 ml rapid IVP**, using the 2 syringe method;
3. If SVT persists after 2 min., **Adenosine, 12 mg rapid IVP/IO over 1- 3 seconds**, followed immediately by **Balanced Salt Solution 20 ml rapid IVP/IO**, using the 2 syringe method;
4. If SVT persists after 2 min., **Adenosine, 12 mg rapid IVP/IO over 1- 3 seconds**, followed immediately by **Balanced Salt Solution 20 ml rapid IVP/IO**, using the 2 syringe method;
5. If SVT persists **Diltiazem 0.25 mg/kg (usual adult dose 20 mg) slow IVP (over 2min.) */ *****
6. If SVT persists after 15 min. **Diltiazem 0.35mg/kg (usual adult dose 25 mg) slow IVP (over 2 min.)*/ ***** If hypotension occurs after administration of Diltiazem, give fluids as appropriate and **Calcium Chloride 250 mg IVP/IO**
7. If SVT persists **Synconized Cardioversion**, as for unstable patients.

* **Diltiazem contraindicated** in patients with WPW

*** **Caution:** Using **Diltiazem** on patients who are taking Beta Blockers.

Atrial Fibrillation Atrial Flutter

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution**, large bore catheter if possible, @ TKO;

ALS:PARAMEDIC ONLY

As above;

8. **ECG Monitor**;

Unstable Patient: Patient with a heart rate ≥ 150 /min. and any or all of the following: chest pain, SOB, decreased LOC, hypotension, shock, CHF, pulmonary edema, ischemia, or AMI;

1. Consider sedation **Etomidate 0.3 mg/kg**, no > 20 mg IVP/IO, Do not delay cardioversion;
2. **Synchronized Cardioversion** with: (**Biphasic**) 30J, 50J, 75J, 120J, (**Monophasic**) 50J, 100 J, 200J, 300J, 360J prn (If A-Fib. start out at 100J initially);
3. If heart rate still > 150/min. give **Diltiazem 20 mg slow IVP/IO (over 2 min.) */ *****
4. If heart rate still > 150/min. after 15 minutes give **Diltiazem 25 mg IVP (over 2 min.) */ *****

Stable Patient: Patient with heart rate ≥ 150 /min. without serious signs/symptoms;

1. **Diltiazem 20 mg slow IVP (over 2min.); */*****
2. If Heart rate still > 150/min. give **Diltiazem 25 mg slow IVP/IO (over 2 min.) */ *****
3. Wait 15-30 min. and if atrial fibrillation/flutter persists, call **Medical Control**.

* **Diltiazem** contraindicated for patients with WPW.

*** **Caution:** Using **Diltiazem** on patients taking Beta Blockers.

Bradycardia

BLS:

1. Assess Responsiveness and **ABCs**;
2. If pulse rate < 50/min. **and** unconscious **and/or** systolic BP is < 40 **Start CPR**
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed
5. **Vital Signs** (BP, Pulse, Respiration Rate);
6. Get **Sample History**;
7. Transport in position of comfort;

ILS:

As above;

8. **IV Balanced Salt Solution, @ TKO; # 11**

ALS:

As above;

9. **ECG Monitor**;

Unstable Patient: Heart rate < 60/min. and any or all of the following: chest pain, SOB, decreased LOC, hypotension, shock, pulmonary edema, CHF, ischemia or AMI;

10. **Rapid Sequence Intubation** if respiratory rate is < 8/min or if patient unable to control their own airway, (See "**Procedures**");
11. **Atropine* 0.5-1.0 mg IVP q 3- 5 min. Up to a total of 3.0 mg**
12. Do not delay **Transcutaneous Pacing (TCP)** while awaiting IV access or for Atropine to take effect if patient is symptomatic;
13. Consider sedation **Midazolam, 1.0- 5.0 mg IVP** before pacing if time permits;
14. If bradycardia persists **Dopamine infusion 5.0- 20 µg/kg/min.** titrated to systolic BP 90-100 mm/Hg;
OR
15. If bradycardia persists **Epinephrine infusion 2.0- 10 µcg/min.** Place **1.0 mg of 1:1,000 Epinephrine in 250 ml D₅W** and start @ 0.5 ml/min titrated to systolic BP 90-100 mm/Hg.

Stable Patient: Patient with heart rate < 60/min. without serious signs/symptoms;

Asymptomatic Bradycardia with Type II 2nd degree, or 3rd degree AV Heart Block:

1. Prepare for transcutaneous pacing;
2. If patient becomes symptomatic, **Begin Pacing.**

Asymptomatic Patient with Bradycardia, Not Type II 2nd degree, or 3rd degree AV Heart Block:

1. Observe and re-assess;
2. If patient becomes symptomatic treat as unstable patient.

* This medication may be administered via the endotracheal tube if IV access cannot be established. IV dose is double the IV dose.

Ventricular Ectopy

BLS:

1. Assess Responsiveness and **ABCs**;
2. If pulse rate < 50/min. **and** patient is unconscious **and/or** systolic BP is < 40 **Start CPR**;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed
5. **Vital Signs** (BP, Pulse, Respiration Rate);
6. Get **Sample History**;
7. Transport in position of comfort;

ILS:

As above;

8. **IV Balanced Salt Solution, @ TKO**;

ALS:PARAMEDIC ONLY

As above;

9. **ECG Monitor**;
10. Ventricular ectopy is defined as **PVC's, R on T phenomena, Coupling PVC's, or runs of V-Tach.**
11. PVC's in the **asymptomatic** patient should be treated with **O₂** and observed (**Except R on T phenomina**);
12. PVC's with **R on T** or that are **> than 6/min. and symptomatic** (ie.Hypotension, shock, Chest Pain, SOB, CHF, Pulmonary Edema, Decreased LOC), Should be treated with **Lidocaine 1.0-1.5mg/kg IVP/IO**;
13. If R on T or Symptomatic PVC's persist after 10 minutes give **Lidocaine 0.75 mg/kg**
14. If R on T or Symptomatic PVC's persist after 10 minutes, repeat **Lidocaine 0.5- 0.75 mg/kg**

Special Considerations

All doses of Lidocaine after the initial dose must be reduced to ¼ of the initial dose in patients with CHF, Shock, Hepatic Disease, or are > 70 years old.

Cardiogenic Shock

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. If BP < 90 mm Hg systolic, position patient **supine with legs only elevated 8 - 12 inches**, (not trendelenburg);
6. Get **Sample History**;
7. Transport ;

ILS:

As above;

8. **IV Balanced Salt Solution, large bore catheter if possible, Bolus 200- 300 ml** if no pulmonary edema;
9. Re-assess BP and lungs, if BP < 90 and lungs are clear, give **2nd Fluid Bolus 200- 300 ml**;
10. Monitor lung sounds carefully, if pulmonary edema develops at any time during fluid challenge discontinue bolus and reset IV to **TKO**;

ALS:PARAMEDIC ONLY

As above;

11. **ECG Monitor**;
12. **Rapid Sequence Intubation** if respiratory rate is $\leq 8/\text{min}$ or if patient unable to control their own airway, (See "**Procedures**");
13. Treat any dysrhythmias as per protocols;
14. If hypotension persists after fluid challenges, or pulmonary edema has developed, give **Dopamine 5.0- 20 $\mu\text{cg}/\text{kg}/\text{min}$** by infusion, **Titrate to BP ≥ 90 mm Hg Systolic.**

Congestive Heart Failure with Pulmonary Edema

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
4. Suction airway as needed;
5. **Vital Signs** (BP, Pulse, Respiration Rate);
6. Assess lung sounds (posterior if possible), if crackles auscultated sit patient and dangle legs, if possible;
7. Get **Sample History**;
8. Transport immediately;

ILS:

As above;

9. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;

ALS:PARAMEDIC ONLY

As above;

10. **ECG Monitor**;
11. **Rapid Sequence Intubation** if respiratory effort is inadequate or if patient unable to control their own airway, (See "**Procedures**")
12. Confirm pt has not taken Viagra, **Nitroglycerin 0.4 mg Spray or Tablet** if BP \geq 100 mm Hg systolic;
13. If BP remains $>$ 100 mm Hg and Pulmonary Edema persists, continue **Nitroglycerin 0.4 mg Spray or Tablet q 5 mins.**
14. If pt not taking Lasix, give: **Lasix 40 mg IVP/IO**. If taking Lasix give **Daily Dose no $>$ 100 mg**
15. If pulmonary edema is present and systolic BP is $<$ 100 mm Hg with signs of shock give **Dopamine infusion 5.0- 20.0 μ cg/kg/min.**

Section C
Respiratory Emergencies

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Section C
Respiratory Emergencies

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Chronic Obstructive Pulmonary Disease (COPD)

BLS:

First Responder:

1. Assess Responsiveness and **ABCs**;
2. Allow patient to assume position of comfort;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
5. Suction airway as needed;
6. **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History**;

EMT-B:

As above;

8. Assist patient with self administration of **Metered Dose Inhaler** (See **Procedures**) ONLY if medication was prescribed for patient by physician;

ILS:

As above;

9. **IV Saline Lock**, or **Balanced Salt Solution @TKO; # 10,11,12**

ALS:

As Above;

10. **ECG Monitor**
11. **Albuterol 2.5 mg /3cc with Atrovent 500 µgm or Levalbuterol 1.25 mg/3cc with Atrovent 500 µgms** per nebulizer or nebulizer to BVM;.
12. **Repeat Albuterol 2.5mg/3cc, OR Levalbuterol 1.25 mg/3cc without Atrovent**, per nebulizer may repeat prn until improved or ventricular ectopy develops;
13. **Rapid Sequence Intubation prn;** (See "Procedures")

Asthma

BLS:

First Responder:

1. Assess Responsiveness and **ABCs**;
2. Allow patient to assume position of comfort;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
5. Suction airway as needed;
6. **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History**;

EMT-B:

As above;

8. Assist patient with self administration of **Metered Dose Inhaler ONLY** if medication was prescribed for patient by physician (See **Procedures**);
9. Transport immediately;

ILS:

As above;

10. **IV Saline Lock, or Balanced Salt Solution @TKO; # 11,12,13**

ALS:

As Above;

11. **ECG Monitor**
12. **Albuterol 2.5 mg/3cc with Atrovent 500 µgm or Levalbuterol 1.25 mg/3cc with Atrovent 500 µgm** per nebulizer or nebulizer to BVM;
13. **Repeat Albuterol 2.5-5.0 mg/3cc or Levalbuterol without Atrovent** per nebulizer may repeat prn until improved or ventricular ectopy develops.
15. **Rapid Sequence Intubation** if necessary; (See "**Procedures**");
Note: Early intubation is to be avoided for pediatric asthma if at all possible and Discouraged in adult asthma.
16. If unable to ventilate, dilute **Albuterol 2.5 mg** in 5-10 ml normal saline via ET tube;
17. If patient is not responding to **Albuterol, AND**
 - a. Patient has severe symptoms,
 - b. Patient is < 40 years old,
 - c. Patient is not hypertensive,
 - d. Patient has no cardiac history
18. Consider **Epinephrine** by one of the following routes:
 - a. **Epinephrine 1.0 mg 1:1,000** in 250 ml of D₅W (4 µgm/ml), begin infusion @ **0.5 ml/ min** and titrate to effect (HR, BP, PVCs).

OR

 - b. **Epinephrine 0.3 mg 1:1,000 SQ,**

Toxic Inhalation with Respiratory Compromise

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
4. Suction airway as needed;
5. **Vital Signs** (BP, Pulse, Respiration Rate);
6. Assess lung sounds (posterior if possible), if crackles auscultated sit patient and dangle legs, if possible;
7. Get **Sample History**;

ILS:

As above;

8. **IV Saline Lock**, or **Balanced Salt Solution @TKO; # 9,10**

ALS:

As Above;

9. **ECG Monitor**
10. **Albuterol 2.5 - 5.0 mg or Levalbuterol 1.25 mg/3cc** per nebulizer or BVM to nebulizer for wheezing;
11. If pulmonary edema is evident treat as per **CHF** (see page B-13)
12. **Rapid Sequence Intubation** if necessary. (See "**Procedures**")
13. Early contact with the receiving hospital advising of the toxic substance inhaled (if known) is strongly encouraged.

Obstructed Airway: Conscious Adult

BLS:

1. Ask, "Are you choking?"
2. If patient can answer verbally or is getting any air, reassure them, and have them cough, if possible;
3. If patient is not able to speak or take in any air, initiate **Heimlich Maneuver** (chest thrusts for pregnant or obese victim. Continue until obstruction is cleared or patient becomes unconscious;
4. If patient becomes unconscious:
 - a. Position patient;
 - b. Attempt ventilations;
 - c. Perform chest compressions (30:2)
 - d. Continue steps b and c.
5. Transport immediately.

ILS:

As above;

ALS:

As above;

6. Attempt removal of obstruction with **Laryngoscope and McGill forceps**.
7. If unable to remove obstruction with direct laryngoscopy, perform **Cricothyrotomy** using **Melker Cricothyrotomy Set or Pertrach Device**. (See "Procedures").

Obstructed Airway: Unconscious Adult

BLS:

1. Determine unresponsiveness;
2. Position patient;
3. Open the airway;
4. Determine breathlessness;
5. Attempt ventilations;
6. Reposition airway and reattempt ventilations
7. Begin chest compressions (30:2)
8. Reattempt ventilations;
9. Repeat steps 3 through 8, as needed

ILS:

As above;

ALS:

As above;

10. Attempt removal of obstruction with **Laryngoscope and McGill forceps**.
11. If unable to remove obstruction with direct laryngoscopy, perform **Cricothyrotomy** using **Melker Cricothyrotomy Set or Pertrach Device**. (See "Procedures").

Section D

Medical Emergencies

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Section D

Medical Emergencies

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Acute Abdomen

BLS:

1. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Treat for **Shock** as needed
6. Get **Sample History**;
7. Transport immediately;

ILS:

As above;

8. **Large Bore IV Balanced Salt Solution** titrate to systolic BP of 90 mmHg;
9. Consider 2nd **Large Bore IV Balanced Salt Solution**.

ALS:

As above;

10. **ECG**;
11. **12 Lead ECG**;
12. Carefully evaluate abdomen;
13. Evaluate femoral pulses;
14. Keep patient **npo**.

Acute Stroke

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. If patient is unconscious consider **Nasopharyngeal Airway**;
5. Protect paralyzed extremities;
6. Reassure patient, explain what you are doing;
7. **Vital Signs** (BP, Pulse, Respiration Rate);
8. Get **Sample History**. The following Patient History is **VERY IMPORTANT**;
 - a. Onset time of stroke symptoms (if known). If not known, determine when pt. was last seen without current symptoms.
 - b. History of previous strokes, (Date(s), Type, Residual symptoms from previous strokes)

ILS:

- As above;
9. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
 10. Field **Blood Draw** from IV site;
 11. Determine **Blood Glucose**; # 13

ALS:

- As above;
12. **Altered Mental Status Protocol**, (Glucoscan, Narcan, Thiamine, D₅₀W);
 13. **ECG Monitor**;
 14. Consider **Rapid Sequence Intubation**, if patient cannot protect their own airway or if respirations are < 8/min. (See "**Procedures**").

Altered Mental Status or Coma of Unknown Origin

BLS:

1. Take spinal precaution;
2. Assess Responsiveness and **ABCs**;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask. Assist ventilation with **BVM** if needed;
5. Protect airway as needed consider **Suction, Oropharyngeal** or **Nasopharyngeal Airway**;
6. **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History** from friend or family if present;
8. Consider causes of coma - **AEIOU-TIPS***;

ILS:

As above; AS BELOW

9. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
10. Determine **Blood Glucose**;

ALS:

As above;

13. **ECG Monitor**;
14. **Narcan, 0.5 - 2.0 mg IVP/IO/IM** or **0.8 - 4.0 mg ETT**;
15. If blood glucose < 60 mg/dL give **D₅₀W, 50ml (25 gm) slow IVP**;
16. If unable to gain IV access; **Glucagon, 1.0 mg (unit) IM or SQ**;

- | | |
|--------------------------------|----------------------|
| * A - Alcohol, Acidosis | T - Trauma |
| E - Epilepsy | I - Insulin |
| I - Infection | P - Psychosis |
| O - Overdose/Poisoning | S - Stroke |
| U - Uremia | |

Allergic Reaction

Mild Reaction: Red itchy skin, hives; and if insect sting present, localized swelling around sting site; with stable vital signs.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. If stinger present, scrape stinger off;
5. Apply loose venous tourniquet on involved extremity proximal and distal to sting site, if present;
6. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
7. Treat for **Shock** as needed
8. Get **Sample History**;
9. Transport immediately;

ILS:

As above; AS BELOW

10. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
11. Field **Blood Draw** from IV site;

ALS:

As above;

12. **ECG**, treat dysrhythmias per appropriate protocol;
13. **Benadryl 25-50mg IVP/IO/IM** if urticaria or edema is present
14. If dyspnea develops, treat as per **Anaphylaxis** protocol.

Anaphylaxis

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
4. If stinger present, **scrape** stinger off with knife blade or credit card;
5. If in severe respiratory distress or BP < 90 Systolic, **.3-.5 EPI 1-1,000 SQ**
6. Apply venous tourniquet on involved extremity proximal and distal to sting site, if present;
7. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
8. Treat for **Shock** as needed
9. Get **Sample History**;
10. Transport immediately;

ILS:

As above;

11. **Large Bore IV Balanced Salt Solution**;
12. Consider 2nd **Large Bore IV Balanced Salt Solution**.

ALS:

As above; 16. **Rapid Sequence Intubation** if necessary; (See "Procedures")

13. **Benadryl 50mg IVP/IO/IM**

Epinephrine, 1:1,000, 0.3 mg SQ. May repeat q 5 minutes prn.

OR

Epinephrine, 1:10,000, 0.1 mg (1 ml) slow IVP/IO, may repeat q **3-5 mins.** prn to **no > 0.5 mg.** Monitor ECG carefully for Heart rate and Ventricular ectopy.PPARAMEDIC ONLY

OR

Epinephrine, 1:1,000, 0.3 mg diluted in 2 ml NS. ETT if patient is intubated.PPARAMEDIC ONLY

14. **Albuterol 2.5 mg with Atrovent 500 µgm** per nebulizer or nebulizer to BVM. May substitute **Levalbuterol** for Albuterol **D/C Nebulizer if Ventricular ectopy develops** ;
15. **Dopamine 2 - 20 mcg/kg/min. IV/IO drip,** if hypotension persists.PPARAMEDIC ONLY

Additional Orders for Insect Stings PARAMEDIC ONLY

16. **Epinephrine, 1:1,000 0.2 mg** injected into sting site (**Not** fingers, toes, nose, ears, penis)

Hypoglycemia

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Assure history of diabetes, last meal, last medication
7. If patient has altered mental status, but is conscious and able to swallow and protect their own airway, Give **Oral Glucose 30gm (1 tube)** (See **Procedures**) by mouth;

ILS:

As above; As below

8. **IV normal saline @ TKO**;
9. Determine **Blood Glucose**;

ALS:

As above;

12. If Blood Glucose is < 60 mg/dL **D₅₀W 50 ml (25 gms) slow IVP**;
13. If IV cannot be established give **Glucagon 1.0 mg IM or SQ**. Continue to attempt IV access and give **D₅₀W 50 ml (25 gms) slow IVP** when established;
15. Recheck Blood Glucose after 5 mins;
16. If no response to above measures, follow "**Altered Mental Status**" protocol.

Patient Refusals:

1. Patients who refuse transport to the hospital should be encouraged to ingest "long term" carbohydrates, as the above interventions are usually short acting and hypoglycemia may recur rapidly.
2. For patients using oral anti-hypoglycemic agents or a combination of oral agents and insulin and have developed hypoglycemia, **every effort** should be made to convince them to be transported to the hospital by ambulance, up to and including contacting **MedicalControl** in the patient's presence so that the physician can discuss the importance of transport with the patient.

Seizure

BLS:

1. If patient still in seizure; protect them from injury from fall, striking head on floor or surrounding objects or tight, restrictive clothing. **Place NOTHING in patient's mouth;**
2. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
3. When tonic/clonic activity subsides **Suction** as needed;

ILS:

As above;

4. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
 5. Determine **Blood Glucose**;
- #6,7,8

ALS:

As above;

6. **ECG**, treat dysrhythmias per protocol;
7. If BP < 90 systolic, **Fluid Bolus**, to BP of 100 systolic.
8. Treat **Hypoglycemia** per protocol if blood glucose is < 60 mg/dL;
9. If seizures are > 5 min. duration or recurrent, **Midazolam 2.5-5 mg IVP/IO/IM** may **repeat q 5 min. No >10 mg total.**
10. If patient is pregnant (especially 3rd trimester) and has no previous seizure Hx. Treat per **Toxemia of Pregnancy** protocol (OB,GYN Section).
11. **Rapid Sequence Intubation** if respiratory rate is \leq 8/min or if patient unable to control their own airway, (See "**Procedures**");
12. If hypotension persists after fluid challenges, or pulmonary edema has developed, give **Dopamine 5.0- 20.0 mcg/kg/min** by infusion, **Titrate to BP \geq 90 mm Hg Systolic.**

Hypotension/Shock

BLS:

1. Assess Responsiveness and **ABCs**;
2. If trauma mechanism, protect c-spine and backboard patient
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed
5. **Vital Signs** (BP, Pulse, Respiration Rate);
6. If BP less than 90 mm Hg systolic and there is no trauma mechanism, position patient **supine with legs only elevated 8 - 12 inches**, (not trendelenburg);
7. Get **Sample History**;

ILS:

As above;

8. **Large Bore IV Balanced Salt Solution** titrate to systolic BP of 90mmHg;
 9. Consider 2nd **Large Bore IV Balanced Salt Solution**;
 10. Monitor lung sounds frequently for developing pulmonary edema;
- # 11,13,14,15

ALS:

As above;

11. **ECG**;
12. Treat any dysrhythmias as per protocols;
13. **Bolus 250-500 ml Balanced Salt Solution**, Reassess BP and lung sounds;
14. If no change, **Bolus 250 – 500 ml Balanced Salt Solution** Reassess BP and lung sounds;
15. If hypovolemia is suspected **Continue Fluid Therapy**
16. If hypotension persists after fluid challenges and/or hypovolemia is **not** suspected, or pulmonary edema has developed, give **Dopamine 5.0- 20.0 mcg/kg/min** by infusion, **Titrate to BP ≥ 90 mm Hg Systolic**.

Epistaxis

BLS:

1. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
2. Suction mouth and oropharynx as needed;
3. Sit patient up and lean forward slightly;
4. Have patient pinch anterior cartilaginous portion of nose firmly, and **do not release** for at least 10 minutes, advise patient to breathe through mouth;
5. If bleeding stops do not allow patient to blow his/her nose;
6. Pulse Oximeter, if available; (**Do Not Delay O₂**)
7. Provide blow-by **Oxygen** directed at patient's mouth;
8. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
9. Treat for **Shock** as needed;
10. Get **Sample History**;

ILS:

As above;

11. If bleeding is prolonged or patient is hypotense, **Large Bore IV Balanced Salt Solution**;

ALS:

As above;

Hyperkalemia

BLS:

1. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Treat for **Shock** as needed
6. Get **Sample History**;
7. Transport immediately;

ILS:

As above;

8. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;

ALS:Paramedic only

As above;

9. **ECG Monitor** (See ECG changes below);
10. If suspected Hyperkalemia, (Known Renal Failure , Dialysis Pt. (especially if missed dialysis), Potassium Chloride OD)
 - a. **Calcium Chloride, 500 mg slow IVP/IO (over 2-3 min.) DO NOT MIX with Bicarb.**
 - b. **Sodium Bicarbonate 50 mEq slow VP (over 10 min.)** Flush Tubing thoroughly with Balanced Salt Solution between admin. of Calcium Chloride and Sodium Bicarbonate.
 - c. **Albuterol 2.5 mg/3 ml OR Levalbuterol 1.25 mg/3 ml** via nebulizer. Repeat prn.
 - d. **Lasix 40 mg IVP/IO**

Identify **Hyperkalemia**:

Signs: ECG Changes

- a. Peaked T waves
- b. Prolonged PR interval
- c. Wide QRS
- d. PVC's
- e. Bigeminy
- f. VT or VF

Symptoms:

- a. Tingling
- b. Numbness
- c. Paresthesias
- d. Flaccid weakness

BLS:

1. **Scene Safety**, Protect Rescue Personnel and Bystanders as appropriate
2. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask. Assist ventilation with **BVM** if needed;
5. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
6. Treat for **Shock** as needed;
7. Determine:
 - A) Product and route
 - B) Time of incident
 - C) Amount taken
8. Get **Sample History**;
9. Transport immediately, with any and all medication bottles and/or the original containers of poisonous substance(s) that the patient may have taken ;

ILS:

As above;

10. **IV Balanced Salt Solution @TKO**;
11. Determine **Blood Glucose # 12,13,14**

ALS:

As Above;

12. Treat as for **Altered Mental Status or Coma of Unknown Etiology** if ingestion is unknown;
13. For ingested poisons and medications **Activated Charcoal (w/o sorbitol) 50 gm po**, per Poison Control or Medical Control;
14. **ECG Monitor**, Treat dysrhythmias per protocol;
15. Consider **Rapid Sequence Intubation**, if patient cannot protect their own airway or if respirations are < 8/min. (See "**Procedures**").

Specific Poison Therapies

- I. **Tricyclic Anti-Depressants (With tachycardias > 110/min., Widening QRS or Seizures)**
 - A. **Sodium Bicarbonate, 1.0 mEq/kg IVP/IO** followed by **Sodium Bicarbonate 50 mEq in 250 ml NS** and run at **250 ml/hr**;
 - B. **Magnesium Sulfate, 2.0 gms slow IVP/IO (5-10 mins.)** For wide QRS.
 - C. Treat Hypotension with **Fluid Bolus**.
- II. **Calcium Channel Blockers with bradycardia**
 - A. **Atropine, 0.5-1.0 mg IVP/IO/ETT**
 - B. **Calcium Chloride, 500mg slow IVP**;

- Continued Next Page -

Specific Poison Therapies (continued)

II. Calcium Channel Blockers (continued)

- C. **Glucagon, 5.0 mg (Units) IVP/IO**
 - D. **Fluid Challenge 200-300 ml Balanced Salt Solution;**
 - E. **Transcutaneous Pacing prn**
 - F. **Dopamine, 2.0-10 µgm/kg/min. to systolic BP 100 mm/Hg;**
- OR**
- C. **Epinephrine Infusion, start at 2 µgm/min. and increase as needed.**

III. Beta Blockers

- A. **Atropine, 0.5-1.0 mg IVP/IO/ETT, May repeat to total of 3 mg;**
 - B. **Glucagon 5 mg (units) IVP/IO;**
 - C. **Fluid Bolus 200-300 ml Balanced Salt Solution;**
 - D. **Tanscutaneous Pacing prn;**
 - E. **Dopamine 2.0-10 µgm/kg/min. to systolic BP 100 mm/Hg;**
- OR**
- E. **Epinephrine Infusion, start at 2 µgm/kg/min. and increase as needed.**

IV. Organophosphates

- A. **Atropine 2 mg IVP/IO/ETT q 5 min. PRN until “SLUDGE” * symptoms diminish.**
- B. **Suction prn;**
- C. **Treat seizures per protocol**

V. CNS Stimulants - Cocaine, Methamphetamine, MDMA (Ecstasy)

- A. **O₂, 12-15 LPM/NRBM**
- B. **Midazolam 2.5-10 mg IVP/IO No > 10mg;**
- C. **Treat Stable V-tach with Amiodarone 150 mg IVP/IO;**
- D. **Treat V-Fib per protocol, but limit Epinephrine to 1.0 mg of 1:10,000 q 5 mins.**

VI. For poisons not listed **Contact Poison Control.**

Washington State Poison Control Center 1(800) 222-1222
Oregon Health Sciences University 1(800) 452-7165

* **S.L.U.D.G.E.** Symptoms associated with organophosphate poisoning:

Salivation
Lacrimation
Urination
Defecation
Gastrointestinal Cramping
Emesis

Other Cholinergic Symptoms: CNS Depression, Weakness, Muscle Faciculations, Diaphoresis, Pulmonary Edema, Miosis, Bradycardia, Seizures.

BLS:

1. Assess the situation:

- A. **Scene Safety.** Protect self and others;
- B. Consider possible medical causes of mental health symptoms, i.e. head injury, drugs, poisoning, hypoglycemia, severe infection, hypothermia, and hypoxia;
- C. Request **Law Enforcement**;
- D. Request **Mental Health Professional**;
- E. If no threat or immediate danger:
 - I). Approach Patient in a calm manner;
 - II). Show self-confidence and convey concern for patient;
 - III). Reassure patient he/she should and will be taken to a hospital where there are people who are interested in helping him/her;
- IV). One person should establish rapport and deal with patient;
- F. General Approaches:
 - I). Transport the patient as quickly as possible without causing undue emotional or physical harm;
 - II). If patient appears to have a significant mental disorder and is refusing transport, enlist assistance of law enforcement or a mental health professional;
 - III). Never be alone with a psychiatric patient. Always **Law Enforcement** to restrain the violent patient;
 - IV). Always maintain an "escape route" when in a room with a psychiatric patient. Never let the patient get between you and the "escape route";
 - V). **DO NOT** confront any armed patient. Protect yourself and others. Call and wait for law enforcement.

2. Restraining a Violent Patient:

- A. Purpose and Precautions:
 - I). To prevent harm from occurring to the patient or others when all other reasonable methods have been exhausted;
 - II). Restraining an individual should be an assist to law enforcement unless waiting would result in increased risk of injury to EMS personnel;
 - III). A patient should only be restrained in a manner that is quickly reversible and allows for complete access to the patient.
 - IV). Any patient placed under arrest should be transported with the arresting officer either in the transporting unit or following close behind for back-up and/or support if needed;
- B. Method:
 - I). All EMS personnel assisting in the restraint of a patient shall use PPE and Universal Precaution;
 - II). At no time should the actions of EMS personnel jeopardize the airway or respiratory effort of the patient, i.e. holding of the neck, chest restriction, or any other maneuver or intervention that would interfere with the life support needs of the patient;
 - III). The patient must be positioned in a manner as to insure adequate airway control and to allow for IV access;
 - IV). Five persons should be involved in a coordinated take down of the patient each holding one extremity and/or the head.

Mental Health Emergencies (Continued)

BLS (Continued):

2. Restraining a Violent Patient (continued):

B. Method (continued):

- V). The patient (with no suspected c-spine injury) should be placed prone on the stretcher, with one arm secured at the wrist with a soft restraint to the stretcher above the head and the other arm secured with a soft restraint to the stretcher by his/her side;
- VI). The patient's feet should be restrained with soft restraints to the stretcher ;
- VII). The stretcher straps (3 ea.) should then be secured over the patient so as not to restrict breathing efforts;
- VIII). Transporting patients with handcuffs behind the back is **NOT** an acceptable position Of transport unless any other means of transport or restraint would put EMS personnel at risk of injury. Law enforcement must ride with the patient in the transporting unit if the patient is handcuffed behind the back;
- IX). The patient must be assessed and treated for any other medical or traumatic illness;

ILS:

As above;

- 3. **IV Saline Lock, or Balanced Salt Solution @TKO prn;**

ALS:Paramedic only

As above;

- 4. Chemical restraint of the violent patient is indicated only after a medical or traumatic cause has been ruled out;
- 5. Use **Droperidol 2.5 - 10 mg IM or 2.5 - 5.0 mg IVP/IO may repeat IV/IO dose to no > 10 mg total;**
- 5. Treat associated hypotension per shock protocol;
- 6. If prolonged transport and agitation continues, **Midazolam 2.5 - 10 mg IM/IVP/IO.**

BLS:

1. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** every 5 mins. (BP, Pulse, Respiration Rate);
5. Get **Sample History**;

ILS:

As above;

6. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;

ALS:Paramedic only

Considerations: Sudden headache followed by acute CVA symptoms with focal neurologic signs or patient is comatose in the presence of hypertension, slow pulse with or without PVC's is an intracranial bleed until proven otherwise. **Do not attempt to lower blood pressure in the field.**

If diastolic BP is >130 mm Hg with:

- a. Acute pulmonary edema
- b. Angina
- c. Hypertensive encephalopathy.
 - I. Headache (not sudden onset)
 - II. Nausea and vomiting
 - III. Blurred vision
 - IV. Confusion

As above;

7. **ECG:** Treat dysrhythmias per appropriate protocol;
8. **Nitroglycerine 0.4 mg SL** spray or tablet. **May repeat x 2 q 3-5 min**;
9. **Furosemide 40 mg IVP**;
- 10 **Versed** for seizures per **Seizure Protocol**. Give **Versed** early if hypertension due to cocaine use.
11. Aim for diastolic pressure 110-120 and/or improvement of symptoms.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. In the non-traumatic patient, position patient so as to protect airway from aspiration, i.e. Lateral recumbent or sitting and able to lean forward;
3. In the trauma patient with suspected spinal injury, log roll patient while maintaining manual, in-line c-spine immobilization, or if patient is secured to a long backboard tilt the board to protect airway;
4. **Suction** oropharynx with a large bore suction tip as needed;
5. Pulse Oximeter, if available (**Do Not Delay O₂**);
6. **O₂ 12-15 LPM** Non-Rebreather Mask, may use **Blow-by O₂** if patient cannot tolerate mask due to vomiting;
7. Monitor **Vital Signs** every frequently (BP, Pulse, Respiration Rate);
8. Get **Sample History**;

ILS:

As above;

9. **IV Balanced Salt Solution @TKO**;
10. Determine **Blood Glucose**; # 11,17

ALS:

As above;

11. **ECG**
12. Treat dysrhythmias per appropriate protocol;
13. For actively vomiting adult > 12 years old:
 - A. **Zofran oral tabs or 4 mg IV**

OR

- B. **Phenergan 12.5 - 25 mg diluted with 20 cc Balanced Salt Solution slow IVP/IO**,. For frail/elderly patients reduce dose to **6.25 mg**;
16. Monitor and record vital signs q 5 min. after administration;
17. If patient becomes hypotensive **Fluid Challenge 200 – 500 ml Balanced Salt Solution**;
18. If dystonic reaction occurs give; **Dyphenhydramine 25 - 50 mg IVP or IM**.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History**;

ILS:

As above;

7. **IV Balanced Salt Solution @TKO**;
8. Determine **Blood Glucose**;

ALS:PARAMEDIC ONLY

As above;

9. **Diphenhydramine 25 – 50 mg slow IVP/IM/IO**, patient will usually show improvement in 1- 2 min.

Common Characteristics

Any or all of the following:

- A. Contractions of muscles of the face, neck or back;
- B. Protrusion/Fasciculation of the tongue (common)
- C. Oculogyric Crisis (eyes looking upward);
- D. Laryngospasm sometimes present;
- E. Patient seems to get better with voluntary activity;
- F. Emotional or Frightened patient;
- G. Any drugs given for vomiting, psychosis, or agitation should be suspect. Drugs involved; Compazine, Phenergan, Reglan, Inapsine, Prolixin, Stelazine, Haldol, Navane, Trilafon, Moban, Loxitane.

BLS:

1. Assess Responsiveness and **ABCs** protect airway(assess pulse for 30-60 seconds;
2. Hypothermic patients should be handled gently at all times as tactile stimulation may precipitate cardiac arrhythmias and or cause tissue damage;
3. Remove the patient from cold environment and maintain heat;
4. Remove wet clothing by cutting (not pulling off) and wrap patient in dry warm blanket
5. **O₂ 12-15 LPM** Non-Rebreather Mask; Assist ventilations with BVM as needed;
6. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate) Assess pulse for 30-60 seconds;
7. Take **Rectal Temperature** with **Hypothermic Thermometer**;
8. Rewarm patient:
 - A. If body temperature is > 90 degrees, and patient is conscious, re-warm with passive external heat;
 - B. If body temperature is < 90 degrees, and patient is unconscious, re-warm with core Re-warming only;
9. Get **Sample History**;

ILS:

As above;

10. **IV Warmed, Balanced Salt Solution @TKO**;
11. Determine **Blood Glucose**;

ALS:

As above;

12. **ECG**;

Pulse/Breathing Present

A. Mild Hypothermia (93°F-97°F) Moderate Hypothermia (86°F-93°F)

- a. Institute re-warming procedures, ie. Warmed and Humidified **O₂**, Heat Packs, Heated Blankets, Heated Ambulance etc.
- b. If temperature < 93°F begin truncal re-warming;
 - I. **Bolus 200 – 300 ml warm Normal Saline**, then **TKO**, Monitor patient for fluid overload;
 - II. Heat Packs to Inguinal creases, Axillae.

B. Severe Hypothermia (< 86°F)

- I. **Bolus 200 – 300 ml warm Normal Saline**, then **TKO**, Monitor patient for fluid overload;
- II. **O₂** Warmed and humidified.

Note: Handle gently, Emergent and gentle transport. Notify receiving facility of need for in-hospital re-warming.

- Continued on next page -

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Hypothermia (continued)

Pulse/Breathing Absent

- A. **CPR;**
- B. **ECG;**
- C. If V-Fib/V-Tach is present or occurs:
 - a. **Defibrillate** x 1 @ **200J** (Biphasic), **360J** (Monophasic). If patient fails to respond, defer any further shocks or medications until core body temperature is > 86°F.
 - b. **Intubate** and ventilate with warmed humidified **O₂**.
 - c. **IV fluid bolus (200-300 ml)**. Monitor pt. for fluid overload.
- D. If core body temperature rises above 86°F:
 - a. Repeat **Defibrillation prn** as for VF/VT.
 - b. IV medications as for VF/VT at longer than normal dosing intervals.
 - c. Continue re-warming procedures as above during transport.

Other Treatment Considerations

- 15. **Altered Mental Status Protocol prn.**
- 16. If frostbite is present; protect with dry dressings, do not rub frostbitten areas, and permit Only gradual warming by room temperature.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Remove patient to cooler environment and remove excess clothing;
3. Apply tepid, wet compress to forehead, neck and extremities;
4. Pulse Oximeter, if available (**Do Not Delay O₂**);
5. **O₂ 12-15 LPM** Non-Rebreather Mask;
6. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
7. Take **Oral or Tympanic Temperature**;
8. May give oral fluids (water, Gatorade etc.) if patient is not in any way obtunded or airway is not in any way compromised;
9. Get **Sample History**;
10. Transport;

ILS:

As above;

11. **IV Balanced Salt Solution**;
12. If patient unable to take oral fluids or hypotensive; **Fluid Bolus 200 – 500 ml**;
13. Determine **Blood Glucose**;

ALS:

As above.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Remove patient to cooler environment and remove excess clothing;
3. Cool patient aggressively spray with water, air convection, wet sheets, cold packs to head, neck, axillae and groin;
4. Pulse Oximeter, if available (**Do Not Delay O₂**);
5. **O₂ 12-15 LPM** Non-Rebreather Mask;
6. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
7. Take **Core Temperature rectally**;
8. Get **Sample History**;

ILS:

As above; As below

9. **IV Balanced Salt Solution**;
10. **Fluid Bolus 200 – 500 ml** over 20-30 min., monitor for fluid overload;
11. Determine **Blood Glucose**;

ALS:

As above;

12. **ECG**;
13. Treat dysrhythmias per protocol;
14. **Altered Mental Status Protocol prn.**
15. Treat seizure or unconsciousness per appropriate protocol.

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Treat for **Shock** as needed
6. Treat injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)
7. Get **Sample History**;

ILS:

As above;

8. **IV Balanced Salt Solution**;

ALS:

As above;

9. **ECG**;
10. Treat dysrhythmias per appropriate protocol;

11 For actively vomiting adult > 12 years old:

A. Zofran po 4 mg or IV 4 mg

OR

B. **Phenergan 12.5 - 25 mg diluted with 20 cc Balanced Salt Solution slow IVP/IO**,. For frail/elderly patients reduce dose to **6.25 mg**;

Section E

Trauma Emergencies

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Section E
Trauma Emergencies

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General Considerations for Trauma

1. **Scene Safety** should be the primary consideration at all trauma scenes. EMS personnel must protect themselves and bystanders from becoming patients. Each scene must be evaluated, and the appropriate level of **PPE** employed for that scene.
2. Time is an important consideration when caring for trauma victims. Trauma life support requires transport to a designated Trauma Center as quickly as possible, in other words, a

modified scoop and run approach is the standard of care for trauma victims. It is expected that trauma patients will be transported immediately after extrication and the airway is

secured. Initiation of IV's and other time consuming procedures should be done en route. Intubation should be limited to one or two quick attempts on scene if appropriate, and further attempts should be made en route.

3. Use a high index of suspicion for trauma related incidents. Consider the following:
 - A. The Mechanism of Injury (MOI);
 - B. Time lapsed since the injury event;
 - C. The Age of the patient;
 - D. Pain from one injury may mask the pain from another injury;
 - E. Transport Time.

4. Multiple Patient or Mass Casualty Situations:
 - A. Use **Simple Triage And Rapid Transport (**S.T.A.R.T.**)
 - (I). Able to Walk?
 - a. If yes, green or yellow tag
 - (II). If not able to walk, assess Respirations
 - (a). If Respirations Absent, Open Airway
 - (i). If still absent, Tag Black
 - (ii). If breathing begins, Tag Red. Keep airway open.
 - (b). If Respirations > 30/min., Tag Red
 - (III). Assess Circulation, Control Bleeding
 - (a). If Capillary Refill > 2 sec., Tag Red
 - (IV). Assess Mental Status
 - (a). Does not obey simple commands, Red Tag
 - (b). Obeys simple commands, Yellow Tag**

5. Protect C-Spine as appropriate.

IF UNABLE TO ESTABLISH/MAINTAIN AN AIRWAY, TRANSPORT TO THE NEAREST HOSPITAL

PATIENT ENTRY

Medix Unit notify Medix Dispatch or Fire Unit notify responding Medix unit of the criteria for Trauma Activation ASAP. As soon as possible after entry the following patient information shall be provided to the receiving Trauma Hospital:

- Pulse
- Blood pressure
- Respirations
- Glasgow Coma Scale (GCS)
- Ambulance unit identification
- Patient status

MANDATORY ENTRY CRITERIA

<p><u>Physiological Criteria</u> SBP < 90 mm/Hg RR < 10 or > 29 or managed airway GCS ≤ 13</p> <p><u>Anatomical Criteria</u> Flail chest Two or more obvious long bone fractures (femur or humerus.) Penetrating injury of head, neck, torso, or groin Amputation above wrist or ankle Spinal cord injury with limb paralysis</p>	<p><u>Mechanism of Injury</u></p> <ul style="list-style-type: none"> • Heavy extrication > 20 minutes • Death of same car occupant • Patient ejected from enclosed vehicle
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DISCRETION BUT HIGH INDEX OF SUSPICION

<p><u>High-Energy Transfer Situation</u> Fall > 20 feet Person hit at 20mph or thrown 15 feet</p> <p>Rollover Motorcycle, ATV or Bicycle Crash Impact/Significant Intrusion</p>	<p><u>Co-Morbid Factors</u> Age (< 5 or > 55 years) Presence of intoxicants Hostile environment Pregnancy Medical Illness (Cardiac, respiratory, diabetic, cirrhosis) Bleeding disorder or on anticoagulants Immunosuppressed pt.</p>
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TRAUMA CENTER DESTINATION

- **Columbia Memorial Hospital:** All of Clatsop County except Highway 26 beyond mp 18.
- **Emanuel Hospital :** Highway 26 beyond mp18 as directed by TCC.
- **Oregon Health Sciences University:** Highway 26 beyond mp 18 as directed by TCC. (Emanuel is normal destination)
- **Hospital Request** If the alert, competent patient/guardian requests transport to a non-trauma hospital or a specific trauma facility, that request must be honored. Notify TCC. Document situation.

Prehospital triage is based on the following 3 steps: **Steps 1 and 2 require prehospital EMS personnel to notify medical control and activate the Trauma System. Activation of the Trauma System in Step 3 is determined by medical control.**

Spinal Trauma

BLS:

1. Take **Manual, In-line, C-spine Stabilization**;
2. Assess Responsiveness and **ABCs** protect airway;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
5. Maintain patent airway while observing spinal precautions,
6. Maintain in-line C-spine stabilization when inserting airway adjuncts;
7. If head is fixed in other than neutral position and airway is patent, stabilize head in that position;
8. If airway is inadequate, straighten C-spine using in-line axial support, move just enough to establish a patent airway;
9. Place appropriately sized **Cervical Collar**;
10. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher** use padding to prevent lateral movement;
11. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
12. Assess and frequently reassess airway, motor response and sensory status;
13. Treat for **Shock** as needed
14. Get **Sample History**;
15. Transport immediately;

ILS:

As above;

16. **Large Bore IV Balanced Salt Solution** titrate to a systolic **BP of 90 mm Hg**;
17. Consider 2nd **Large Bore IV Balanced Salt Solution** prn.

ALS:

As above;

18. Treat other injuries per appropriate protocol
19. The prehospital **Paramedic** may elect to forgo full spinal immobilization (See **Procedures**)

BLS:

1. **Scene Safety, Do Not** attempt water rescue unless specifically trained in water rescue;
2. Assess Responsiveness and **ABCs**;
3. If pulseless and apneic, **(S)AED** and **Begin CPR** as per **Cardiac Arrest** protocol;
4. Provide **C-Spine Control** if indicated (diving accident, boating accident, unknown mechanism, patient in surf or rough water, etc.);
5. Pulse Oximeter, if available (**Do Not Delay O₂**);
6. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilations with **BVM** if needed;
7. Remove wet clothing, treat per **Hypothermia Protocol**;
8. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
9. Treat for **Shock** as needed
10. Get **Sample History**;

ILS:

As above;

11. **IV Balanced Salt Solution @TKO**;

ALS:

As above

12. **ECG**;
13. Treat dysrhythmias per appropriate protocol;
14. Monitor Respiratory Status and Lung sounds;
15. **Endotracheal Intubation or Rapid Sequence Intubation** if necessary; (See "Procedures").

Intermediates combitube if necessary

Other Considerations

18. **Altered Mental Status** protocol.
19. **Hypothermia** protocol.

BLS:

1. **Scene Safety**, head injured patients may be combative or violent;
2. Take **Spinal Precautions**, "Head trauma is a C-Spine injury until proven otherwise by X-ray;"
3. Assess Responsiveness and **ABCs** protect airway;
4. Monitor patient closely for **Changes in LOC**;
5. Pulse Oximeter, if available (**Do Not Delay O₂**);
6. **O₂ 12-15 LPM** Non-Rebreather Mask, assist ventilation with **BVM** as needed;
7. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
8. Treat for **Shock** as needed;
9. Use direct pressure to stem bleeding of open head wounds if there are no underlying fractures or depressions,
10. Stabilize but do not remove impaled objects **unless** they are through the cheek and present an airway problem;
11. Treat injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)

Specific Treatments:

I. Eye Injuries:

- A. Check vision in each eye separately;
- B. Look for leakage of intraocular fluid;
- C. Protect injured eye with metal eye shield or inverted paper cup. **Do Not** allow anything to touch exposed vitreous humor (the jellylike substance from inside the eye);
- D. Avoid pressure dressings;
- E. Stabilize impaled objects very carefully;
- F. Cover uninjured eye to reduce sympathetic eye movement.
- G. For chemical(s) in the eyes, **Flush Eye(s)** ASAP with **Tap Water or Saline**, continue until you reach the hospital.

II. Ear Injuries:

- A. Use direct pressure to control bleeding of external ear;
- B. **Do Not** pack or probe the ear canal;
- C. Watch for blood or fluid drainage from ear canal.

III. Nose Injuries:

- A. Establish a patent airway, **Suction** oropharynx as needed;
- B. Control anterior bleed with direct pressure.

12. Get **Sample History** from family or bystanders if patient is unconscious or obtunded;]
13. Transport immediately;

ILS:

As above;

14. **IV Balanced Salt Solution @TKO**;
15. Determine **Blood Glucose**;

- Continued on Next Page -

Page E-6

Head Trauma (Continued)

ALS:

As above;

16. **ECG;**

17. Treat dysrhythmias per appropriate protocol;

18. If hypotensive **Fluid Challenge** to maintain systolic **BP 90 mm Hg;**

19. Maintain airway, If **Rapid Sequence Intubation** (See “**Procedures**”) is employed, **Premedicate** with **Lidocaine 1.5mg/kg IVP;**

20. For patients with facial trauma avoid nasotracheal intubation. If mandibular trauma prevents oral endotracheal intubation, perform **Cricothyrotomy** using **Melker Cricothyrotomy Set** or **Pertrach Device**. (See “**Procedures**”).

21. If blood glucose < 60 mg/dL give: **D50W, 50 ml slow IVP;**

22. For unconscious patients with respirations < 12/min., **Narcan, 0.4 – 2 mg IVP**

BLS:

1. Take **Manual, In-line, C-spine Stabilization**;
2. Assess Responsiveness and **ABCs** protect airway;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
5. If head is fixed in other than neutral position and airway is patent, stabilize head in that position;
6. If airway is inadequate, straighten C-spine using in-line axial support, move just enough to establish a patent airway;
7. Maintain in-line C-spine stabilization when inserting airway adjuncts;
8. Place appropriately sized **Cervical Collar**;
9. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher**;
10. Treat injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)

Specific Treatments:

I. Open/Penetrating Wounds:

- A. For open or penetrating injuries that may involve the large blood vessels in the neck, place an **Occlusive Dressing** over the wound;
- B. Place an appropriate dressing over the occlusive dressing and apply direct pressure (**Do Not** restrict the airway, or blood vessels on both sides of the neck);
- C. If bleeding stops, bandage dressings in place;

II. Impaled Objects:

- A. Stabilize but do not remove impaled objects;

11. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
12. Assess and frequently reassess airway, motor response and sensory status;
13. Treat for **Shock** as needed;
14. Get **Sample History**;
15. Transport immediately;

ILS:

As above;

16. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
17. Consider 2nd **Large Bore IV Balanced Salt Solution** prn;

ALS:

As above;

18. Maintain airway **Rapid Sequence Intubation** (See "**Procedures**") if needed;
19. If oropharyngeal edema or trauma prevents oral endotracheal intubation, perform **Cricothyrotomy** using **Melker Cricothyrotomy Set or Pertrach Device**. (See "**Procedures**").
20. Treat other injuries per appropriate protocol;
21. **ECG**;
22. Treat dysrhythmias per appropriate protocol;

BLS:

1. Take **Manual, In-line, C-spine Stabilization**;
2. Assess Responsiveness and **ABCs** protect airway;
3. For open or penetrating chest wounds, place an **Occlusive Dressing**, monitor closely for tension pneumothorax **Relieve Pressure** as needed ;
4. Stabilize but do not remove impaled objects
5. Pulse Oximeter, if available (**Do Not Delay O₂**);
6. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
7. Maintain in-line C-spine stabilization when inserting airway adjuncts;
8. Place appropriately sized **Cervical Collar**;
9. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher**;
10. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
11. Assess and frequently reassess airway and breathing status, motor response and sensory status;
12. Treat for **Shock** as needed;
13. Get **Sample History**;
14. Transport immediately;

ILS:

As above;

15. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
16. Consider 2nd **Large Bore IV Balanced Salt Solution** prn;

ALS:

As above;

17. **ECG**; Treat dysrhythmias per protocol;
18. Maintain airway, **Rapid Sequence Intubation** (See “**Procedures**”) if needed;
19. Treat tension pneumothorax by **Chest Decompressions*** (See “**Procedures**”);
20. Stabilize Flail Sections*;
21. **12 Lead ECG** if time allows.

* For patients with **Flail Chest** with paradoxical movement or **Tension Pneumothorax** with chest decompression, the airway should be secured by **Rapid Sequence Intubation** (or **Cricothyrotomy** if indicated) as soon after stabilizing flail section, or needle thoracostomy as possible.

BLS:

1. Take **Manual, In-line, C-spine Stabilization**;
2. Assess Responsiveness and **ABCs** protect airway, expect vomiting;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
5. Place appropriately sized **Cervical Collar**;
6. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher**;
7. Treat injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)

Specific Treatments:

I. Impaled Objects:

- A. Stabilize but do not remove object;
- B. Package patient in knees up position if possible.

II. Evisceration:

- A. Do not try to replace eviscerated organs;
- B. Cover with saline (warmed if possible) moistened dressing;
- C. Place large occlusive dressing (Saran wrap, clean plastic bag) over saline dressing;
- D. Prevent heat loss from wound site;
- E. Package patient in knees up position if possible.

8. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
9. Frequently reassess airway and breathing status;
10. Treat for **Shock** as needed
11. Get **Sample History**;
12. Transport immediately;

ILS:As below

As above;

13. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
14. Consider 2nd **Large Bore IV Balanced Salt Solution** prn;

ALS:

As above;

15. **ECG**;
16. Treat dysrhythmias per appropriate protocol;

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Place appropriately sized **Cervical Collar** if indicated by mechanism of injury;
5. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher** if indicated by mechanism of injury;
6. Treat injuries per appropriate protocol, (dressings, bandaging, etc.)

Specific Treatments:

Dislocations and Fractures Involving Joints:

- A. Check distal motor/sensory/vascular function before and after splinting, record findings;
- B. Should be splinted in position found, except in the event of neurovascular compromise;
- C. For neurovascular compromise, one attempt at realignment of the limb may be made, if realignment procedure is met with resistance (limb is “locked” in position) **Stop Procedure** and splint in position. Realignment is best attempted in presence of ALS so that pain control procedures can be implemented ;

Fractured Long Bones:

- A. Check distal motor/sensory/vascular function before and after splinting, record findings;
 - B. Align fracture and splint in anatomical position. If resistance is met during alignment procedure or fractured bone ends appear that they will pierce the skin, **Stop Procedure** and splint in position;
7. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
 - 8.. Treat for **Shock** as needed
 9. Get **Sample History**;
 - 10 Transport immediately;

ILS:

As above;

11. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
12. Consider 2nd **Large Bore IV Balanced Salt Solution** prn;

ALS:

As above;

13. **Pain Control** per “**Severe Pain Protocol**”
14. Consider **Midazolam 2.0 mg IVP x 1** for **Adults Only** to augment pain control and control muscle spasm;

Amputations/Soft Tissue Avulsions

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Control serious bleeding with **Direct Pressure**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
4. Treat injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)

Specific Treatments:

Complete Amputation:

A. Stump:

- (I). Rinse gently with **Sterile Saline** to remove debris;
- (II). Cover with **Sterile Dressing**;
- (III). Moisten with **Sterile Saline**;
- (IV). Cover with **Dry Dressing** and **Bandage** in place.

B. Severed Part or Tissue:

- (I). Collect any and all tissue that can be found at scene and transport to hospital (Do not delay transport of patient to search for tissue, a second unit may be Employed for this task.);
- (II). Rinse gently with **Sterile Saline** to remove debris
- (III). Wrap severed part in **Sterile Dressing** moistened with **Sterile Saline**, and place in **Sealed Ziploc Bag**;
- (a). **DO NOT** immerse any part in any solution;
- (IV). Place sealed Ziploc bag in **Ice Water** if available;
- (a). Label with **Patient's Name, Date, and Time**;

Partial Amputations:

- A. **Splint** in anatomical position;
- B. Cover with **Sterile Dressing**;
- C. Moisten with **Sterile Saline**;
- D. Cover with **Dry Dressing**;

5. Place appropriately sized **Cervical Collar** if indicated by mechanism of injury;
6. **Immobilize** patient on a **Long Backboard (LBB)** or **Scoop Stretcher** if indicated by mechanism of injury (See **Procedures**);
7. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
8. Frequently reassess airway and breathing status;
9. Treat for **Shock** as needed
10. Get **Sample History**;
11. Transport immediately;

ILS and ALS:

As above;

12. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
13. Consider 2nd **Large Bore IV Balanced Salt Solution** prn.

Amputation Considerations

1. **Do Not** use dry Ice;
2. **Do Not** neglect total patient care in favor of caring for the amputation;
3. Time is of great importance to assure viability of severed part.

BLS:

1. **Scene Safety, Do Not** attempt rescue from burn source unless specifically trained to do so. Employ appropriate **PPE**. Consider: Airborne contaminants, Live electrical sources, Live or smoldering fire, potential for explosion;
2. Remove patient from burning source;
 - A. Extinguish smoldering or burning clothes with water then remove;
 - B. For semi-solid substances (grease, tar, wax etc.) cool with water, **Do Not** attempt to remove substance;
3. Assess Responsiveness and **ABCs, Protect Airway**;
4. Pulse Oximeter, if available (**Do Not Delay O₂**);
5. **O₂ 12-15 LPM Non-Rebreather Mask**, Assist ventilation with **BVM** if needed;
6. Remove rings, bracelets, wrist watches and other constricting items;
7. Prevent hypothermia;
8. Treat other associated injuries per appropriate protocol, (splinting, dressings, bandaging, etc.)

Specific Treatments:

Thermal Burns:

- A. Cover burned area with **Dry, Sterile Dressing** or **Burn Sheet**;

Chemical Burns:

- A. Brush dry chemicals off skin, avoid contaminating airway or eyes;
- B. Irrigate with large quantities of water;
- C. Attempt to identify chemical if it can be done safely;

Electrical Burns:

- A. Are often worse than they appear;
- B. May have an exit wound where electrical current passing through body went to ground;
- C. Cover burned area(s) with **Dry, Sterile Dressing**;
- D. Be alert for and treat any Cardiac Symptoms;

9. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
10. Frequently reassess airway and breathing status;
11. Treat for **Shock** as needed
12. Get **Sample History**;
13. Transport immediately;

ILS:

As above;

14. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
15. Consider 2nd **Large Bore IV Balanced Salt Solution** prn.

- Continued on Next Page -

ALS:

As above;

16. Maintain Airway, Consider early **Rapid Sequence Intubation** for airway burns;
17. If oropharyngeal edema or trauma prevents oral endotracheal intubation, perform **Cricothyrotomy** using **Melker Cricothyrotomy Set or Pertrach Device**. (See **"Procedures"**).
18. **Pain Control** per **"Severe Pain Protocol"**
19. **ECG**;
20. Treat dysrhythmias per protocol.

Criteria for Critical Burns:

1. Full thickness burn(s) > 10% BSA.
2. Partial thickness burn(s) > 30% BSA.
3. Concomitant illness or injuries.
4. Airway complications.
5. Electrical burns.
6. Caustic burns.
7. Deep acid burns.
8. Burns involving:
 - A. Hands
 - B. Feet
 - C. Face
 - D. Genitalia

Section F

OB/GYN

EMERGENCIES

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OB/GYN General Considerations

BLS:

1. Most deliveries proceed without complication;
2. Transport most pregnant patients in position of comfort, if patient is hypotense transport in **Left Lateral Recumbent Position**;
3. If possible transport unconscious or traumatized third trimester pregnant patients in **Left Lateral Recumbent Position** (if on backboard, tilt board to patient left).
4. Following delivery, the baby is a primary consideration;
5. Hospital delivery is always more preferable than scene delivery

ILS:

As Above;

6. Treat hypotension in the pregnant patient aggressively;

ALS:

As Above.

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History** Establish **Last Menstrual Period**;
6. Treat for maternal **Hypotension** as needed;
7. Determine: Number of pregnancies, Due date, Time contractions started and how far apart they are now. If and when the bag of waters has ruptured;
8. Place mother **Supine** with knees elevated;
9. When baby "crowns" apply gentle counter pressure to baby's head;
10. If delivery appears to be too rapid, coach mother to pant during contraction (not push) to slow delivery;
11. When head is delivered **Suction** mouth first and then nose with a bulb syringe;
12. Assist delivery of shoulders (anterior shoulder first) and rest of body, keeping both hands on the baby at all times during delivery, as the **baby is very slippery**;
13. Keep baby below maternal vaginal opening before clamping cord. Clamp or tie cord using two clamps or ties approximately 4 inches apart and 6-8 inches from the baby. Cut cord between clamps.
14. Give newborn primary attention;
 - A. Clear **Airway**, re-suction mouth and nose with bulb syringe;
 - B. If baby not breathing,
 - (I) Stimulate by rubbing gently with a towel, or lightly flicking soles of feet;
 - (II) If no response in 60 seconds, **Ventilate** per neonatal resuscitation protocol;
 - C. Dry baby quickly;
 - D. Keep baby warm, wrap in blanket(s);
 - E. Assess **APGAR** scores at One (1), Five (5) and Ten (10) minutes after delivery;
15. Allow placenta to deliver normally
 - A. Do not pull cord;
 - B. Transport placenta to hospital with the patient;
16. After delivery of placenta massage uterus firmly to reduce bleeding;
17. Examine perineum for tears, apply direct pressure with gauze pad to any bleeding tears. **Do Not** pack vaginal opening;
18. Treat for shock as needed;
19. Transport
20. **Newborns easily become hypothermic (have heat on in back of ambulance), wrap in blankets with head covered as soon after delivery as possible. Transport in mothers arms if at all possible.**

ILS ALS:

As Above;

21. **Large Bore IV Balanced Salt Solution @ TKO** (time permitting);

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History** Establish **Last Menstrual Period**;

Breech or Limb Presentation:

6. If breech/limb presentation is obvious, **Begin Transport Immediately**;
7. Place mother **Supine or Trendelenburg**
8. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
9. If delivery occurs during transport;
 - A. Allow mother to push;
 - B. Gently extract baby. (**Do Not Pull**)
 - C. Support delivered body and extremities on your arm;
 - D. If head does not deliver, place gloved hand in vagina and form "V" with index and middle fingers around baby's mouth and nose, should it begin to breath;

Prolapsed Cord:

6. Place mother in **Knee-chest** or **Extreme Trendelenburg**;
7. Insert gloved hand into vagina and gently lift head/body off cord. **Continue until relieved by hospital staff**;
8. Observe cord for pulsations, wrap cord in sterile dressing to keep it warm;

Cord Wrapped Around Neck (Nucal Cord):

6. Gently attempt to loosen cord;
7. With two fingers behind baby's neck, try to slip forward over baby's upper (anterior) shoulder and head. If unsuccessful, attempt to slip under lower shoulder and over head;
8. If unsuccessful, clamp cord with two (2) clamps or ties and cut between clamps. Carefully unwrap cord from around neck;
9. Assist completion of delivery;

Placenta Previa/Abruptio (Pre-birth Hemorrhage):

- Note:** **Previa** is usually painless with rapid blood loss to the point of exsanguinations;
Abruptio is usually extremely painful/crampy and visible blood loss does not match the degree of shock signs/symptoms observed;
6. Transport immediately;
 7. Contact receiving hospital en route;

ILS: as below

As Above;

6. **Large Bore IV Balanced Salt Solution @ TKO** unless hypotensive (time permitting);

ALS:

As Above;

7. **ECG** for any mother with complications;

8 Get **Sample History** Establish **Last Menstrual Period**;

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History** Establish **Last Menstrual Period**;
6. Treat for maternal **Shock** as needed;
7. Place absorbent dressing externally over perineum (**Do Not** pack vaginal opening);
8. Perform firm **External Uterine Massage**;
9. Transport immediately;

ILS:

As Above;

10. **Large Bore IV Balanced Salt Solution** titrate to a systolic BP of 90 mm Hg;
11. Consider 2nd **Large Bore IV Balanced Salt Solution** prn.

ALS:

As Above;

12. **ECG**;
13. Treat dysrhythmias per appropriate protocol;
14. Continue **External Uterine Massage**.

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History** Establish **Last Menstrual Period**;
6. Calm and reassure patient;
7. Treat seizures per **Grand Mal Seizure** protocol;
8. Transport immediately;

ILS:

As Above;

9. **Large Bore IV Balanced Salt Solution @ TKO # 10**

ALS:

As Above;

10. **ECG**;
11. Treat dysrhythmias per appropriate protocol;
12. If patient in seizure:
 - A. **Midazolam 0.1 mg/kg IVP** may repeat q 5-15 min. prn no > 10mg total.
 - B. **Magnesium Sulfate 2gms slow IV** over 5-10 mins. (Contact OLMC prior to admin.)
13. Continue to calm and reassure patient, any agitation or noxious stimuli (flashing lights and/or siren) could precipitate seizures;

* **Signs Symptoms**; Any or all of the following:

Mild Pre-Eclampsia:

- A. Moderate Hypertension;
- B. Edema;
- C. Excessive Prenatal Weight Gain;

Moderate to Severe Pre-Eclampsia:

- A. Hypertension > 160 mmHg systolic and > 110 mmHg diastolic;
- B. Headache;
- C. Cerebral Disturbances (changes in behavior);
- D. Visual Disturbances (flashes of light or black spots);
- E. Epigastric Pain;
- F. Dyspnea/Cyanosis;

Eclampsia:

- A. Seizure
- B. Postictal

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History** Establish **Last Menstrual Period**;
6. Treat for **Shock** as needed;
7. Get **Sample History**, Establish **Last Menstrual Period**;
8. Apply loose perineal pad, **Do Not** pack vaginal opening;
9. Collect any tissue passed and bring to hospital with patient;
10. Provide emotional support to patient;
11. Transport immediately;

ILS:

As Above;

12. **Large Bore IV Balanced Salt Solution** titrate to a systolic **BP of 90 mm Hg**;

ALS:

As Above;

13. **ECG**;
14. Treat dysrhythmias per appropriate protocol;

ALS/ILS/BLS:

1. Assess Responsiveness and **ABCs**;
2. Treat associated injuries per applicable protocol;
4. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
 - A. If patient is embarrassed or unwilling to answer questions about the assault, restrict inquiries to Past Medical History, Medications, etc.
 - B. Patient may be unwilling to answer any questions, **Do Not Press for Answers**
6. Provide emotional support to patient;
7. Maintain Chain of Evidence:
 - A. Advise patient not to bathe, douche, or change clothing, etc.;
 - B. If clothing already changed, collect clothing worn during the assault and transport in a **PaperBag** (never in plastic bag);
8. Treat all Signs/Symptoms per appropriate protocol.

Section G

Pediatric

EMERGENCIES

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Section G
Pediatric Emergencies

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Pediatrics General Considerations

1. Pediatric Age Definitions:

- A. Pediatric patients are ≤ 14 years old;
- B. Newborn patients are from birth to 28 days of age.

2. A **Broselow Pediatric Tape** is to be used for verification purposes any time a child requires ALS medications or procedures.

3. Averages for age:

	<u>Pulse</u>	<u>BP Systolic</u>	<u>Resp.</u>	<u>Weight (Kg)</u>
Premature	140	50 – 60	<60	1 – 2
Newborn	110 – 150	60 – 90	30 – 60	3 – 4
1 Year	100 – 140	75 – 100	25 – 40	10
2 Years	90 – 100	75 – 100	25 – 40	16
6 Years	80 – 100	85 – 100	20 – 30	20
10 Years	70 – 110	90 – 110	14 – 22	40
Adolescent	60 – 100	100 – 120	12 – 20	50 – 70

4. ET Tube Averages:

	<u>Tube Size</u>	<u>Tube Length (cm lip to tip)</u>
Premature	2.5	6 + wt. kg
Newborn	3.0	6 + wt. kg
6 Months	3.5	11
18 Months	4.0	11
3 Years	4.5	13
5 Years	5.0	14
6 Years	5.5	15
12 Years	6.5	19
16 Years	7.0	20 – 24

5. Pediatric Fluid Challenge:

- A. 20 cc/kg (10 cc/kg for Neonates) Balanced Salt Solution (May repeat initial dose X 1, prn).
- B. Do not use blood pressure as a reliable guideline for shock in pediatric patients. Use capillary refill and other signs of perfusion.

6. Use APGAR

APGAR SCORING			
SCORE	0	1	2
Heart Rate	Absent	<100	>100
Respiratory Effort	Absent	Slow, Irregular	Good, Crying
Muscle Tone	Limp	Some Flexion of Extremities	Active Motion
Reflex Irritability (Nasal Catheter)	No Response	Grimace	Cough, Sneezes
Color	Blue/Pale	Extremities Blue	Completely Pink

Pediatric Respiratory Distress Without Stridor

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
4. Allow patient to assume **Position of Comfort**, with parent if necessary;
5. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
6. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
7. Assist patient with Doctor prescribed **Metered Dose Inhaler**;
8. Transport immediately;

ILS:

As Above;

9. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
10. **Intraosseous Access (IO)** for severe symptoms and if a venous site can not be readily found; (See "**Procedures**")

ALS:

As Above;

11. **ECG**;
12. **Albuterol 2.5 mg** or **Levalbuterol 1.25mg** with **3 ml NS** per nebulizer or BVM to nebulizer as needed. May **Repeat** until improved;
13. May add **Atrovent 0.5 mg (0.25 mg if ≤ 1 year old)** to **FIRST** nebulizer treatment;
14. **Rapid Sequence Intubation** if absolutely necessary to maintain adequate airway or Respiratory rate (See "**Procedures**").

Pediatric Respiratory Distress With Stridor

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **Do Not** agitate patient or attempt to visualize pharynx;
4. **O₂ 12-15 LPM** Non-Rebreather Mask if easily tolerated, if mask not tolerated by patient, **O₂ Blow-by @10 LPM**;
5. Allow patient to assume **Position of Comfort**, with parent if necessary;
6. Monitor **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
8. Transport immediately;

ILS:

As above;

9. **Do Not** attempt IV access;

ALS:

As Above;

10. **ECG**;
11. Assess rate and quality of respirations, note retractions:
 - A. For mild stridor;
 - a. **Normal Saline** by Nebulizer
 - B. For Cyanosis and severe stridor;
 - a. **Racemic Epinephrine 2.25% by Nebulizer**
Patient > 2 years old **0.3 ml in 3ml Normal Saline**
Patient < 2 years old **0.25 ml in 3ml Normal Saline**
 - b. **DO NOT Attempt Intubation**;
 - C. For Respiratory Arrest or Cyanosis with loss of consciousness;
 - a. Place patient supine with head in “sniffing position”, attempt positive pressure ventilation with Bag Valve Mask with good face seal (Preferred 2 person);
 - b. If unable to ventilate with BVM, Attempt **Endotracheal Intubation**
12. For Cyanosis and severe stridor
13. Respiratory arrest or Cyanosis with loss of consciousness,

Pediatric Foreign Body Airway Obstruction

Conscious Patient Able to Speak, Cough, or Cry:

BLS/ILS/ALS:

1. Reassure patient;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask if easily tolerated, if mask not tolerated by patient, **O₂ Blow-by @10 LPM**;
4. Allow patient to assume **Position of Comfort**, with parent if necessary;
5. Monitor **Vital Signs** (BP, Pulse, Respiration Rate);
6. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
7. Transport immediately;

Unconscious Patient Not Able to Speak, Cough, or Cry:

BLS:

1. **Infant:** Deliver back blows and chest thrusts;
2. **Child:** Perform chest compressions (30:2);
3. Reassess airway, repeat step 1 or 2 (as appropriate for Child or Infant) until airway is cleared;
4. If patient becomes unconscious:
 - A. Quickly visualize upper airway remove obstructions **if seen**;
 - B. Attempt ventilations;
 - C. If unsuccessful, repeat step 1 or 2 (as appropriate for Child or Infant) until airway is clear;
5. Transport immediately;

ILS:

As Above;

ALS:

As Above;

6. If unsuccessful, visualize larynx with **laryngoscope** and remove foreign body if seen with **Magill Forceps**;
7. If unsuccessful with direct laryngoscopy for child/infant **≤ 2 years old consider Needle Cricothyrotomy (See Procedures)**
8. If unsuccessful with direct laryngoscopy for child **> 2 years old consider Cricothyrotomy using Melker Cricothyrotomy Set. (See "Procedures")**.

Pediatric Respiratory Arrest

BLS:

1. **Open airway**, and assess for spontaneous ventilations;
2. If no spontaneous ventilations or ventilations are inadequate, **Ventilate with BVM and O₂ @ 15 LPM**, Assess lung sounds and chest rise and fall for adequate ventilations;
3. Monitor **Pulse Oximetry**, if available, and attempt to maintain 90% saturation or greater;
4. Monitor **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
6. Transport immediately;

ILS:

As Above;

7. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
8. **Intraosseous Access (IO)** for severe symptoms and if a venous site can not be readily found; (See “**Procedures**”)

ALS:

As Above;

9. **ECG**;
10. Treat dysrhythmias per appropriate protocol;
11. Consider **Rapid Sequence Intubation** as needed to control airway and adequate respiratory rate; (See “**Procedures**”)
12. Consider **Naloxone 0.1mg/kg IV/IO/IM/SQ/ET(Double the dose if ET)**

Neonatal Resuscitation

BLS:

1. Quickly dry amniotic fluid from head, body and limbs. Remove wet linen from contact with baby. Keep baby's body covered;
2. Position baby with neck slightly extended and head lower than body. Suction mouth then nose;
3. If thick meconium in amniotic fluid, perform oropharyngeal suctioning;
4. Clamp umbilical cord approximately 4 inches apart and 6-8 inches from the baby;
5. **EVALUATE RESPIRATIONS, HEART RATE AND COLOR;**
 - A. Spontaneous Breathing, HR > 100 and skin pink – Keep infant warm and observe
 - B. Spontaneous Breathing, HR > 100 and skin cyanotic – Provide **Blow-by O₂ @ 10 LPM**
 - C. Spontaneous Breathing, HR < 100 – Support ventilations with **BVM**
 - D. If apneic, flick sole of foot or rub back, and reevaluate respirations. If apnea persists, ventilate with **BVM**;
6. Assess **APGAR** scores at One (1), Five (5) and Ten (10) minutes after delivery;
7. **REEVALUATE HEART RATE;**
 - A. HR < 60 - Continue ventilations at 40-60/min. and initiate chest compressions @ 120/min. Reassess after 30 seconds;
 - B. HR 60-100 but not increasing – Continue ventilations. Initiate chest compressions @ 120/min. if HR < 80;
 - C. HR 60-100 and increasing – Continue ventilations;
 - D. HR > 100 and spontaneous respirations present – Discontinue ventilations, provide tactile stimulation, and monitor patient;
8. Transport immediately;

ILS:

As Above;

9. If HR < 80 after 30 seconds and chest compressions are initiated – Start **IV or IO** with **Balanced Salt Solution** in **Burette Set**;
10. **ECG**

ALS:

As Above;

11. If meconium is present;
 - a. Visualize cords and **Suction with Meconium Aspirator or 10 fr. catheter**, as needed;
 - b. **Intubate and suction** trachea with ET tube as suction tube;
 - c. Re-intubate and attempt ventilations. Suction as needed;
12. If HR < 80 after 30 seconds and chest compressions are initiated – **Epinephrine 0.01 mg/kg of 1:10,000 IV/IO/ET** – Repeat **q 3 – 5 min.** as needed;
13. **PPV** for Apnea, Gasping Respirations, APGAR < 5
14. **ET Intubation** for persistent apnea or APGAR < 5 after 10 min.

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Neonatal Resuscitation (continued)

16. If Hypovolemia suspected and HR remains < 100 - **Bolus 10 ml/Kg Balanced Salt Solution IV/IO, Repeat X 1**, if signs of Hypovolemia persist;
17. If evidence of continuing shock, contact **MRP** for possible administration of **Dopamine infusion 5.0- 20.0 mcg/kg/min.**
18. If respiratory from maternal narcotic use suspected, **Narcan 0.1 mg/kg to maximum dose 2.0 mg, IV/IO/ET.**
19. Check CBG and treat hypoglycemia,

Pediatric Bradycardia

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask if easily tolerated, if mask not tolerated by patient, **O₂ Blow-by @10 LPM**;
4. If spontaneous ventilations are not adequate, **Ventilate with BVM and O₂ @ 15 LPM**, Assess lung sounds and chest rise and fall for adequate ventilations;
5. If poor perfusion, or hypotension still exist despite adequate oxygenation and ventilations, perform **Chest Compressions**
 - A. For Infant with heart rate < **80/min**
 - B. For Child with heart rate < **60/min**;
6. Monitor **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;

ILS:

As Above;

8. **IV Balanced Salt Solution @TKO**;
9. **Intraosseous Access (IO)** for severe symptoms and if a venous site can not be readily found; (See “**Procedures**”)
10. **ECG**

ALS:

As Above;

11. Consider **Rapid Sequence Intubation** as needed to control airway and adequate respiratory rate; (See “**Procedures**”)
12. **Epinephrine 0.01 mg/kg of 1:10,000 IV/IO**
OR
Epinephrine 0.1 mg/kg of 1:1,000 ET
13. **Repeat Epinephrine q 3-5 min at the same dose prn**
14. **Atropine 0.02mg/kg,**
 - A. **Minimum dose 0.1 mg,**
 - B. **Maximum single dose:**
0.5 mg for Child
1.0 mg for Adolescent
15. **May Repeat Atropine x 1**
16. **Concider Transcutaneous Pacing** if no results

Pediatric Asystole

BLS:

1. Assess Responsiveness and **ABCs**;
2. **Begin CPR** for 2 minutes.
3. Attach **AED or SAED** if available, press “analyze”;
4. If no shocks advised or AED is not immediately available, **Continue CPR**;
5. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
6. Get **Sample History** from family, friends or bystanders:
7. Continue CPR, package patient on **Long Backboard** and transport immediately;

ILS:

As above;

9. **IV Balanced Salt Solution, @ TKO**;

ALS:

As above;

10. **ECG**, Confirm asystole in three (3) leads;
11. Consider **Transcutaneous Pacing** if asystole was **witnessed** to follow any other cardiac rhythm;
12. **Epinephrine, 0.01 mg/kg of 1:10,000 IVP/IO/ET q 3- 5 min.** Continue until vital signs are restored or resuscitation is terminated;
13. If asystole persists consider **Termination of Efforts** (See “General Guidelines” section for “Field Resuscitation Guidelines”).

Pediatric Ventricular Fibrillation / Pulseless Ventricular Tachycardia

BLS:

1. Assess Responsiveness and **ABCs**;
2. **Begin CPR** for 2 minutes (5 cycles);
3. If pt is ≥ 1 and ≤ 8 years old attach **AED or SAED with pediatric size electrodes**, press **“analyze”**. For children > 8 years old defibrillate as per adult protocol.
4. **Defibrillate**;
5. Immediately after shock, resume **CPR for 5 cycles**;
6. Get **Sample History** from family, friends or bystanders;
7. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
8. Press **“analyze”** and if indicated;
9. **Defibrillate**;
10. Continue **CPR for 5 cycles**, package patient on Long Backboard and transport;
11. **Check pulse**, if no pulse:
12. Press **“analyze”**
13. Repeat **shocks** between **2 min. CPR** intervals;

ILS:

As above;

14. **Endotracheal Intubation** (If WA State certified to this level) Continue ventilation BVM to ETT after first set of 3 shocks;
15. **IV Balanced Salt Solution, @ TKO** after first set of 3 shocks;

ALS:

As above;

16. If paramedic is first on scene; Start **CPR for 2 mins (5 cycles)** If arrest is witnessed, **Defibrillate before starting CPR**;
17. Confirm pulseless VT/VF, **Defibrillate 2J/kg (Biphasic or Monophasic)**, Continue **CPR immediately** after shock for 2 mins. (5 cycles)
18. **Epinephrine, 0.01 mg of 1:10,000 IVP q 3-5 min.** Repeat between doses of antiarrhythmic meds. Until vital signs restored or resuscitation terminated; **Repeat Defib q 2 mins (5 cycles) @ 4J/kg (Drug/Shock/Drug)**;
19. **Amiodarone, 5.0 mg/kg IV/IO.** Repeat between shocks **Amiodarone, 5.0 mg/kg IV/IO up to 300mg** no more than 5-10 minutes after the first dose prn;
20. If **Amiodarone is contraindicated** use **Lidocaine, 1.0 mg/kg no > 100 mg, IVP/IO/ET**, may repeat **q 5-10 min.** to total dose of **3.0 mg/kg**;
21. If VT/VF persists/recurs **Magnesium Sulfate, 25 - 50 mg/kg no > 2 gm, IVP/IO over 10 - 20 mins** (Should be used as first line antiarrhythmic for Torsades de Pointe or known Hypomagnesemia);

- Continued Next Page -

Pediatric Ventricular Fibrillation / Pulseless Ventricular Tachycardia (continued)

22. If Defibrillation is successful after administering **Amiodarone** or **Lidocaine** a continuous infusion of the last medication given should be started as below:
 - A. **Amiodarone, 30 mg/hr**
 - B. **Lidocaine, 20 - 50 µg/kg/min**
23. If V-Fib/Pulseless V-Tach persists or perfusing rhythm restored transport ASAP. If rhythm becomes asystole consider **Termination of Efforts** (See “General Guidelines” section for “Field Resuscitation Guidelines”).

Pediatric Pulseless Electrical Activity (P.E.A.)

BLS:

1. Assess Responsiveness and **ABCs**;
2. **CPR** for 2 minutes;
3. Attach **AED or SAED** if available, press “**analyze**”
4. If no shocks advised or AED is not immediately available **Continue CPR**;
5. Insert appropriate **Airway Adjunct** and ventilate with **BVM and supplemental O₂ @ 15 LPM**;
6. Get **Sample History** from family, friends or bystanders:
7. Continue CPR, package patient on Long Backboard and transport;

ILS:

As above;

8. **IV Balanced Salt Solution @ TKO**;

ALS:

As above;

9. **Epinephrine, 0.01 mg/kg of 1:10,000 IVP/IO/ET q 3- 5 min.** Continue until vital signs restored or resuscitation terminated;
10. Search for and treat frequent causes (If reversible):
 - Hypovolemia*
 - Hypoxia*
 - Hydrogen ion – Acidosis*
 - Hyper-/Hypokalemia*
 - Hypothermia
 - Hypoglycemia
 - Tablets (drug OD)*
 - Tamponade*
 - Tension Pneumothorax*
 - Thrombosis. Coronary
 - Thrombosis, Pulmonary
 - Trauma
11. If rhythm persists or perfusing rhythm restored transport ASAP. If rhythm becomes asystole consider **Termination of Efforts** (See “General Guidelines” section for “Field Resuscitation Guidelines”).

* Hypovolemia – Rapid bolus NS 500 ml.

* Hypoxia – Ventilate.

* Acidosis – Ventilate, NaHCO₃.

* Hyperkalemia – See protocol.

* Drug OD – See drug-specific protocol.

* Cardiac Tamponade – Pericardial Centesis.

* Tension Pneumothorax – Needle Decompression.

Pediatric Wide Complex Tachycardia (VT) With Pulses

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History** from family, friends or bystanders;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution large bore catheter if possible, @ TKO;**

ALS:

As above;

8. **ECG Monitor**

Unstable Patient with Ventricular Rate ≥ 150 :

Patient with any or all of the following: chest pain, SOB, decreased LOC, hypotension, shock, pulmonary edema, CHF, ischemia or AMI.

9. Consider sedation Patients > 10 years old: **Etomidate 0.3 mg/kg, no > than 20mg IVP, Do not delay cardioversion**;
10. **Synchronized Cardioversion** with; (**Biphasic or Monophasic**) **0.5 - 1 J/kg**, if not effective increase to **2 J/kg**
11. **Amiodarone, 5.0 mg/kg IV/IO**. Repeat between shocks **Amiodarone, 5 mg/kg IV/IO up to 300mg** no more than 5-10 minutes after the first dose prn;
12. If **Amiodarone is contraindicated** use **Lidocaine, 1.0 mg/kg no > 100 mg, IVP/IO/ET**, may repeat **q 5-10 min.** to total dose of **3.0 mg/kg**;
13. If V-Tach persists/recurs; **Synchronized Cardioversion** start with energy dose previously used;

Stable Patient:

9. **12 Lead ECG**
10. **Amiodarone, 5.0 mg/kg IV/IO**. Repeat between shocks **Amiodarone, 5 mg/kg IV/IO up to 300mg** no more than 5-10 minutes after the first dose prn;
11. If **Amiodarone is contraindicated** use **Lidocaine, 1.0 mg/kg no > 100 mg, IVP/IO/ET**, may repeat **q 5-10 min.** to total dose of **3.0 mg/kg**;
12. If VT persists/recurs, **Synchronized Cardioversion**, as in unstable patients.

Pediatric Narrow Complex Tachycardia

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Transport in position of comfort;

ILS:

As above;

7. **IV Balanced Salt Solution large bore catheter if possible, @ TKO;**

ALS:

As above;

8. **ECG Monitor**

Unstable Patient with HR > 180 for Children, and > 220 for infants: Patient with any or all of the following: chest pain, SOB, decreased LOC hypotension (systolic < 90), shock, pulmonary edema, CHF, ischemia or AMI;

9. Consider sedation **Etomidate 0.3 mg/kg, no > than 20 mg. IVP, Do not delay cardioversion**;
10. **Synchronized Cardioversion with (Biphasic or Monophasic) 0.5-1.0J/kg.,** If unsuccessful increase to **2.0J/kg.**
11. If the rhythm has not converted after shock, **Contact Medical Control** for further interventions.

Stable Patient with HR > 180 for Children, and > 220 for infants:

9. Direct patient to perform **Valsalva Maneuver.** Carotid Sinus Massage may be performed on patients < 40 years of age, who have been checked for and do not have carotid bruits;
10. If SVT persists, **Adenosine, 0.1 mg/kg no > 6 mg rapid IVP/IO over 1- 3 seconds** followed **immediately** by **Balanced Salt Solution 5.0 to 10 ml (Pt. size dependent) rapid IVP/IO,** using the 2 syringe method;
11. If SVT persists after 2 min., **Adenosine, 0.2 mg/kg no > 12 mg rapid IVP/IO over 1- 3 seconds,** followed **immediately** by **Balanced Salt Solution 5.0 - 10 ml (Pt size dependent) rapid IVP/IO,** using the 2 syringe method;
13. If SVT persists **Synconized Cardioversion,** as for unstable patients.

Pediatric Trauma

BLS:

1. Take **Manual, In-line, C-spine Stabilization**;
2. Assess Responsiveness and **ABCs** protect airway;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
5. Maintain patent airway while observing spinal precautions,
6. Maintain in-line C-spine stabilization when inserting airway adjuncts;
7. If head is fixed in other than neutral position and airway is patent, stabilize head in that position;
8. If airway is inadequate, straighten C-spine using in-line axial support, move just enough to establish a patent airway;
9. Place appropriately sized **Cervical Collar**;
10. **Immobilize** patient on a **Pediatric Backboard (PBB)** or in **Car Seat** if available (See **Procedures**);
11. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
12. Assess and frequently reassess airway, motor response and sensory status;
13. Treat for **Shock*** as needed;
14. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
15. Transport immediately;

ILS:

As Above;

16. **Large Bore IV Balanced Salt Solution, Intraosseous Access (IO)** if a venous site can not be readily found; (See "**Procedures**")
17. **Bolus 20 ml/Kg (10 cc/kg for Neonate)** Fluid Challenge for signs of **Shock***. May Repeat **prn** if shock symptoms persist;
18. Consider 2nd **Large Bore IV/IO Balanced Salt Solution prn**;

ALS:

As Above;

19. **ECG**;
20. Treat dysrhythmias per appropriate protocol;
21. If signs of **Head injury****:
 - A. Elevate head of PBB 15° if patient has no signs of shock;
 - B. Consider **Rapid Sequence Intubation** if respiratory rate is < 10 or > 29/min or if patient unable to control their own airway, (See "**Procedures**");

* Shock is defined by a combination of:

- | | |
|----------------------------------|---------------------------------|
| A. Altered LOC; | D. Weak or Absent Distal Pulses |
| B. Capillary Refill > 2 Seconds; | E. Cool Extremities; |
| C. Rapid Pulse Rate; | F. Hypotension. |

** Signs of Intracranial Pressure Include:

- | | |
|-------------------------------|---------------------------|
| A. Dilated or Unequal Pupils; | D. Posturing |
| B. Focal Neurological Signs; | E. Glasgow Coma Score < 8 |
| C. Decreased LOC | |

Pediatric Shock

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
4. Maintain adequate **Airway**, Use appropriate **Airway Adjunct** as tolerated;
5. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
6. Assess and frequently reassess airway, motor response and sensory status;
7. Keep patient **Warm**. If non-traumatic, position patient **Supine with Legs ONLY Elevated**;
8. Get **Sample History** from patient, family member, guardian and/or bystanders, as needed;
9. Transport immediately;

ILS:

As Above;

10. **Large Bore IV Balanced Salt Solution, Intraosseous Access (IO)** if a venous site can not be found; (See "**Procedures**")
11. **Bolus 20 ml/Kg (10 mL/kg. for neonates)** Fluid Challenge for signs of **Shock***. May **Repeat prn** if shock symptoms persist;
12. Consider 2nd **Large Bore IV/IO Balanced Salt Solution prn**;

ALS:

As Above;

13. **ECG**;
14. Treat dysrhythmias per appropriate protocol;
15. Consider **Rapid Sequence Intubation** as needed to control airway and adequate respiratory rate;
16. If evidence of continuing shock after fluid infusion, contact **MRP** for possible administration of **Dopamine infusion 5.0- 20.0 mcg/kg/min.**

* Shock is defined by a combination of:

- | | |
|----------------------------------|---------------------------------|
| A. Altered LOC; | D. Weak or Absent Distal Pulses |
| B. Capillary Refill > 2 Seconds; | E. Cool Extremities; |
| C. Rapid Pulse Rate; | F. Hypotension. |

Pediatric Anaphylaxis

BLS:

1. Assess Responsiveness and **ABCs** protect airway;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist ventilation with **BVM** if needed;
4. If stinger present, **scrape** stinger off with knife blade or credit card;
5. If in severe respiratory distress or BP < 90 Systolic, EMT BASIC **Epinephrine .01 MG/KG**
6. Apply venous tourniquet on involved extremity proximal and distal to sting site, if present;
7. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
8. Treat for **Shock** as needed
9. Get **Sample History**;
10. Transport immediately;

ILS:

As above;

11. **Large Bore IV Balanced Salt Solution**;
12. Consider 2nd **Large Bore IV Balanced Salt Solution**.

ALS:

As above;

13. **Fluid Challenge prn**. Monitor Lung sounds frequently for pulmonary edema;
14. **ECG**, treat dysrhythmias per appropriate protocol;
15. **Rapid Sequence Intubation** if necessary; (See "Procedures")
16. **Benadryl 1.0 mg/kg no > 50mg total IVP/IO/IM**
17. **Epinephrine 1:1,000, 1.0 mg/250ml D₅W (4.0 µg/ml), 0.1 µg/kg/min. IV/IO drip**, titrate to effect, and increase every 1 minute, prn. (Titrate to HR, BP, Ventricular Ectopy).
OR
Epinephrine, 1:1,000, 0.01 mg/kg no > 0.3 mg total, SQ or SL injection. May repeat q 5 Min. prn.
OR
Epinephrine, 1:10,000, 0.01 mg/kg no > 0.3 mg total IVP/IO, may repeat q 5 min. prn.
OR
Epinephrine, 1:1,000, 0.01 mg/kg no > 0.03 mg total diluted in 2 ml NS. ETT if patient is intubated.
18. **Albuterol 2.5 mg with Atrovent 500 µg** per nebulizer or nebulizer to BVM. May substitute **Levalbuterol** for Albuterol. **DC Nebulizer if Ventricular ectopy develops** ;
19. **Dopamine 2 - 20 mcg/kg/min. IV/IO drip**, if hypotension persists.

Additional Orders for Insect Stings

20. **Epinephrine, 1:1,000 0.2 mg** injected into sting site (**Not** fingers, toes, nose, ears)

Pediatric Hypoglycemia

BLS:

1. Assess Responsiveness and **ABCs**;
2. Pulse Oximeter, if available (**Do Not Delay O₂**);
3. **O₂ 12-15 LPM** Non-Rebreather Mask;
4. **Vital Signs** (BP, Pulse, Respiration Rate);
5. Get **Sample History**;
6. Assure history of diabetes, last meal, last medication
7. If patient has altered mental status, but is conscious and able to swallow and protect their own airway, Give **Oral Glucose 30gm (1 tube)** by mouth;

ILS:

As above;

8. **IV D5W @ TKO**
9. Determine **Blood Glucose**;

ALS:

As above;

- 10 If Blood Glucose is < 60 mg/dL **D₅₀W (D₂₅W for infants), 0.5 gm/kg slow IVP**
11. If > 20 kg IV cannot be established give **Glucagon 0.5-1.0 mg IM or SQ**. Continue to attempt IV access and give **D₅₀W (D₂₅W for infants), 0.5 gm/kg slow IVP** when established.
12. Recheck Blood Glucose after 5 mins.
13. If no response to above measures, follow "**Altered Mental Status**" protocol.

Patient Refusals:

1. Patients who refuse transport to the hospital should be encouraged to ingest "long term" carbohydrates, as the above interventions are usually short acting and hypoglycemia may recur rapidly.
2. For patients using oral anti-hypoglycemic agents or a combination of oral agents and insulin and have developed hypoglycemia, **every effort** should be made to convince them to be transported to the hospital by ambulance, up to and including contacting **On Line Medical Control** in the patient's presence so that the physician can discuss the importance of transport with the patient.

Pediatric Poisonings and Overdoses

BLS:

1. **Scene Safety**, Protect Rescue Personnel and Bystanders as appropriate
2. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask. Assist ventilation with **BVM** if needed;
5. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
6. Treat for **Shock** as needed;
7. Determine:
 - A) Product and route
 - B) Time of incident
 - C) Amount taken
8. Get **Sample History**;
9. Transport immediately, with any and all medication bottles and/or the original containers of poisonous substance(s) that the patient may have taken ;

ILS:

As above;

10. **IV Balanced Salt Solution @TKO**;
11. Determine **Blood Glucose**

ALS:

As Above;

12. Treat as for **Altered Mental Status or Coma of Unknown Etiology** if ingestion is unknown;
13. For ingested poisons and medications **Activated Charcoal (w/o sorbitol) 1-2 gm/kg (usual 25gm) po**, per Poison Control or Medical Control;
14. **ECG Monitor**, Treat dysrhythmias per protocol;
15. Consider **Rapid Sequence Intubation**, if patient cannot protect their own airway or if respirations are < 8/min. (See "Procedures").

Specific Poison Therapies

- I. **Tricyclic Anti-Depressants (With tachycardias > 110/min., Widening QRS or Seizures)**
 - A. **Sodium Bicarbonate, 1.0 mEq/kg IVP/IO** followed by **Sodium Bicarbonate 50 mEq in 250ml NS** and run at **250 ml/hr**;
 - B. **Magnesium Sulfate, 25-50 mg/kg No > 2 gm total slow IVP/IO (5-10 mins.)** For wide QRS.
 - C. Treat Hypotension with **Fluid Bolus 20 ml/kg**.
- II. **Calcium Channel Blockers with bradycardia**
 - A. **Atropine, 0.02 mg/kg no > 3 mg total, IVP/IO/ETT**
 - B. **Calcium Chloride, 20 mg/kg no > 500 mg total slow IVP/IO**;

- Continued Next Page -

Pediatric Poisonings and Overdoses (continued)

Specific Poison Therapies (continued)

II. Calcium Channel Blockers (continued)

- C. **Glucagon, 0.1 mg/kg (units), no > 5 mg (units) total, IVP/IO;**
- D. **Fluid Challenge 20 ml/kg Balanced Salt Solution;**
- E. **Transcutaneous Pacing prn**
- F. **Dopamine, 5.0-20 µgm/kg/min. to systolic BP 100 mm/Hg;**
OR
- G. **Epinephrine Infusion, start at 0.1 µgm/kg/min. and increase as needed.**

III. Beta Blockers

- A. **Atropine, 0.02 mg/kg, no > 3 mg, IVP/IO/ETT, May repeat to total of 3 mg;**
- B. **Glucagon 0.1 mg/kg (units), IVP/IO;**
- C. **Fluid Bolus 20 ml/kg Balanced Salt Solution;**
- D. **Tanscutaneous Pacing prn;**
- E. **Dopamine 5.0-20 µgm/kg/min. to systolic BP 100 mm/Hg;**
OR
- E. **Epinephrine Infusion, start at 0.1 µgm/kg/min. and increase as needed.**

IV. Organophosphates

- A. **Atropine 0.02 mg/kg IVP/IO/ETT q 5 min. PRN until "SLUDGE" * symptoms diminish.**
- B. **Suction prn;**
- C. **Treat seizures per protocol**

V. CNS Stimulants - Cocaine, Methamphetamine, MDMA (Ecstasy)

- A. **O₂, 12-15 LPM/NRBM**
- B. **Midazolam 0.1-0.2 mg/kg IVP/IO/IM No > 10mg;**
- C. **Treat V-Fib per protocol, but limit Epinephrine to 0.01 mg/kg of 1:10,000 q 5 mins.**

VI. For poisons not listed **Contact Poison Control.**

Washington State Poison Control Center 1(800) 222-1222
Oregon Health Sciences University 1(800) 452-7165

* **S.L.U.D.G.E.** Symptoms associated with organophosphate poisoning:

Salivation
Lacrimation
Urination
Defecation
Gastrointestinal Cramping
Emesis

Other Cholinergic Symptoms: CNS Depression, Weakness, Muscle Fasciculations, Diaphoresis, Pulmonary Edema, Miosis, Bradycardia, Seizures.

Pediatric Seizure

BLS:

1. If patient still in seizure; protect them from injury from fall, striking head on floor or surrounding objects or tight, restrictive clothing. **Place NOTHING in patient's mouth;**
2. **O₂ 12-15 LPM** Non-Rebreather Mask, Assist respirations with **BVM** if needed;
3. When tonic/clonic activity subsides **Suction** as needed;
4. Transport immediately;

ILS:

As above;

5. **IV Saline Lock**, or **Balanced Salt Solution @TKO**;
6. Determine **Blood Glucose**;

ALS:

As above;

7. **ECG**, treat dysrhythmias per protocol;
8. If BP < 90 systolic, **Fluid Bolus 20 ml/kg**, to BP of 100 systolic.
9. Treat **Hypoglycemia** per protocol if blood glucose is < 60 mg/dL;
10. If seizures are > 5 min. duration or recurrent, **Midazolam 0.1- 0.2 mg/kg IVP/IO/IM** may **Repeat x 2 q 5 min. prn.**
11. **Rapid Sequence Intubation** if respiratory rate is \leq 10/min or if patient unable to control their own airway, (See "**Procedures**");
12. If hypotension persists after fluid challenges, or pulmonary edema has developed, give **Dopamine 5.0- 20.0 mcg/kg/min** by infusion, **Titrate to BP \geq 90 mm Hg Systolic.**

Pediatric Altered Mental Status or Coma of Unknown Origin

BLS:

1. Take spinal precaution
2. Assess Responsiveness and **ABCs**;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask. Assist ventilation with **BVM** if needed;
5. Protect airway as needed consider **Suction, Oropharyngeal** or **Nasopharyngeal Airway**;
6. **Vital Signs** (BP, Pulse, Respiration Rate);
7. Get **Sample History** from friend or family if present
8. Consider causes of coma - **AEIOU-TIPS***
9. Transport immediately;

ILS:

As above; As below

10. **IV Saline Lock, or Balanced Salt Solution @TKO**;
11. Determine **Blood Glucose**;

ALS:

As above;

12. **ECG Monitor**;
13. **Narcan, 0.1 mg/kg, IVP/IO/IM/SL or 0.2 - 4.0 mg ETT**, for Child ≤ 5 yrs (or ≤ 20 kg)
14. If blood glucose < 60 mg/dL give **D₅₀W, 0.5-1.0 gm/kg slow IVP (D₂₅W for infant)**
OR
15. If > 20 kg **Glucagon, 0.5-1.0 mg (unit) IM or SQ** if unable to gain IV access;

* **A** - Alcohol, Acidosis

E - Epilepsy

I - Infection

O - Overdose/Poisoning

U - Uremia

T - Trauma

I - Insulin

P - Psychosis

S - Stroke

Pediatric Fever

BLS:

1. **Scene Safety**, Protect Rescue Personnel and Bystanders as appropriate;
2. Assess Responsiveness and **ABCs** protect airway - anticipate vomiting;
3. Pulse Oximeter, if available (**Do Not Delay O₂**);
4. **O₂ 12-15 LPM** Non-Rebreather Mask. Assist ventilation with **BVM** if needed;
5. Monitor **Vital Signs** frequently (BP, Pulse, Respiration Rate);
6. Treat for **Shock** as needed;
7. Get **Sample History**;
8. If rectal temperature is > 100° F remove heavy or swaddling clothes if in room temperature environment. Protect child from chills/shivering.
9. Transport immediately;

ILS:

As above;

10. Determine **Blood Glucose**;

ALS:

As Above;

11. If temperature is > 103° F **Acetaminophen 20 mg/kg rectal suppository.**
12. If patient is in active seizure or seizure recurs **Midazolam 0.1-0.2 mg/kg IVP/IM/IO, may repeat prn.**

Procedures

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AIRWAY MANAGEMENT - BASIC LIFE SUPPORT PROCEDURES

**AIRWAY MAINTENANCE AND CONTROL OF THE CERVICAL SPINE IS THE PRIMARY CONCERN. IF UNABLE TO ESTABLISH OR MAINTAIN AN AIRWAY,
TRANSPORT TO THE NEAREST HOSPITAL.
THIS INCLUDES PATIENTS ENTERED INTO THE TRAUMA SYSTEM.**

INDICATIONS

Patients benefit from the administration of oxygen. The amount needed differs based on the patient's needs.

METHODS OF ASSESSMENT

Use accessory muscles, pulse rate, EKG changes and changes in the rate as assessment tools. A pulse oximeter should be used to evaluate patients. End-tidal CO₂ detection is useful for evaluating the perfusing intubated patient. Mentation changes and agitation are early signs of hypoxia.

DELIVERY SYSTEMS

Nasal Cannula

Used when small amounts of oxygen are desired. Flow rates should not exceed 6 LPM.

Non-Rebreathing (NRB) Mask

Used when high concentrations are needed and in patients who have a decreased LOC, chest pain or hypovolemia.

MAINTENANCE DEVICES

Nasopharyngeal Airway (NPA)

Used with patients who are unconscious or have an altered LOC and unable to maintain their airway. Smaller diameter and greater length make the NPA more likely to become obstructed by secretions.

NPA must be lubricated with water-soluble jelly prior to insertion.

May be used with PRB mask or with BVM.

Assess respiratory status.

Oropharyngeal Airway (OPA)

Used in patients who are unable to maintain their airway and do not have a gag reflex.

Can also be used as a block to keep patients from biting down on an ET tube.

Patients who will tolerate an OPA are candidates for intubation.

OPAs must be used with high-flow oxygen delivery devices such as a BVM.

Bag/Valve/Mask (BVM) Device

Used when respiratory drive is compromised and needs ventilatory assistance.

Must be equipped with an oxygen reservoir and capable of delivering at least 15 LPM.

Proper facial seal and head positioning is required.

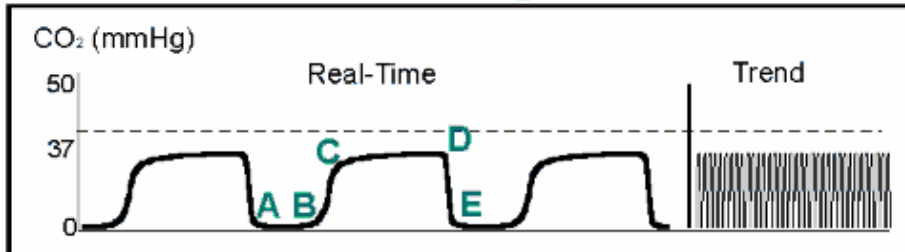
Auscultate chest and observe the rise and fall to ensure proper ventilation.

Can cause abdominal distention and aspiration of stomach contents.

AIRWAY MANAGEMENT - CAPNOGRAPHY

Approximately 5% of the exhaled air of a healthy patient is carbon dioxide. End-tidal CO₂ devices are useful in identifying the correct placement of a CombiTube or ET tube. The Capnography feature uses a disposable probe that can be used to monitor the quantity and waveform of exhaled carbon dioxide.

The Normal CO₂ Waveform



- A – B Baseline
- B – C Expiratory Upstroke
- C – D Expiratory Plateau
- D ETCO₂ value
- D – E Inspiration Begins

Normal ETCO₂ values at maximum exhalation:

- 30 – 43 mmHg
- 4.0 – 5.7 kPa
- 4.0 – 5.6%

The patient must be circulating blood for the CO₂ detector to work. Effective CPR should produce a sufficient pulse for the capnograph to establish a reading.

INDICATIONS

To assist in determining correct ET tube or CombiTube placement.

PRECAUTIONS

In low perfusion states production of CO₂ is diminished and waveform amplitude may be reduced.

If the capnograph does not show a normal waveform, reassessment by 5-point check is mandatory.

Capnography should always be used in conjunction with other assessments such as:

- 5-point check
- tube fogging
- pulse oximetry
- direct visualization of intubation.

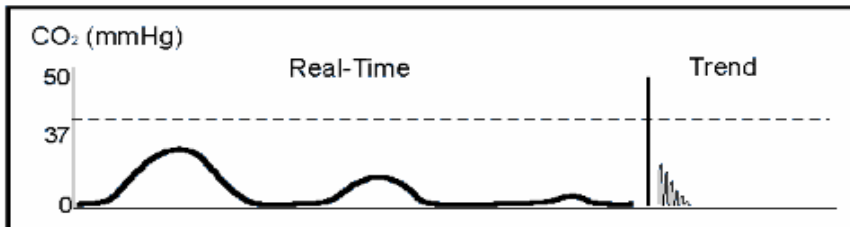
Never rely entirely on ETCO₂ detection as the sole method of assessment for tube placement.

DEVICE MUST BE CHANGED IF IT BECOMES CONTAMINATED WITH BODILY FLUIDS.

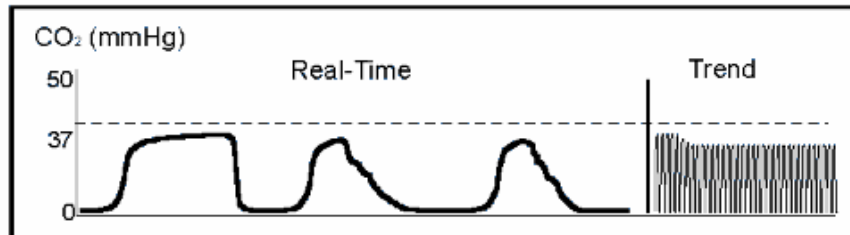
PROCEDURE

1. Intubate or place Combi-tube.
2. Assess tube placement by using visualization, 5-point check and looking for chest rise.
3. **Ventilate 4-5 times, then place Capnography device on ET tube, or ventilation port of the CombiTube.**
4. Continue ventilating the patient.
5. If tube placement is correct, waveform will rise with each ventilation.
6. Consistent amplitude of waveform is positive indication of correct tube placement.
7. If waveform does not appear or decreases, **IMMEDIATELY DETERMINE TUBE POSITION.**
8. **REMOVE ANY TUBE WHEN ITS POSITION CANNOT BE CONFIRMED.**
9. Document results of ETCO₂ detection on run report form. This should include CO₂ value and wave form.

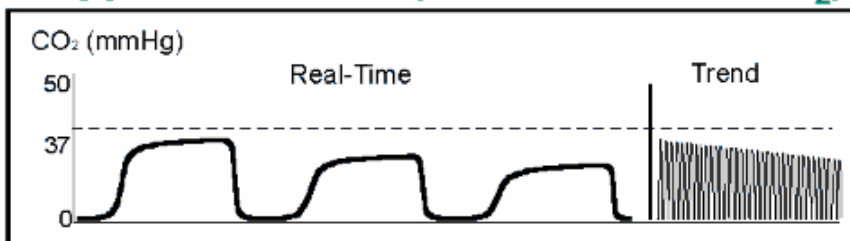
Endotracheal Tube in Esophagus



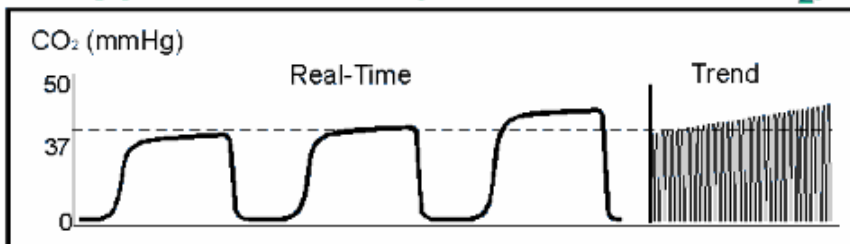
Inadequate Seal Around ET Tube



Hyperventilation (Decrease in ETCO₂)



Hypoventilation (Increase in ETCO₂)



This protocol researched and developed by Bill Wildman, EMT-P, Metro West Ambulance - 2004

AIRWAY MANAGEMENT - COMBI-TUBE

Paramedic, EMT basic-Intermediate

The CombiTube is a two-tube system similar to the PtL, EOA or EGTA airways. The CombiTube has combined the lumens of an endotracheal and esophageal tubes. The device is inserted blindly, entering the esophagus 90% of the time or the trachea 10% of the time. Depending on which structure it enters it will function as an esophageal airway or endotracheal tube.

INDICATIONS

Immediate intubation is not available or cannot be performed.

Access to the patient's head is inhibited due to entrapment.

Direct visualization of the larynx is inhibited.

CONTRAINDICATIONS

Patient less than 16 years of age.

Patient under five (5) feet tall.

Patient who has an intact gag reflex.

Patient with known esophageal disease (i.e. varices, cancer.)

Patient who has ingested a caustic substance.

PROCEDURES

- Hyperoxygenate
- Place head in neutral position.
- Insert device using jaw-lift maneuver. Black rings should be positioned between teeth.
- Inflate the pharyngeal cuff with 100cc of air.
- Inflate the distal cuff with 15cc of air.
- Ventilate through longer blue connector tube (number 1 tube).
- Do 5-point check. If breath sounds are present, ventilate through tube 1.
- If you hear gastric sounds, begin ventilation through shorter clear tube (number 2 tube).
- Attach an end-tidal CO₂ detector in the perfusing patient.
- Confirm lung sounds.
- Ventilate with 100% oxygen.

AIRWAY MANAGEMENT - ENDOTRACHEAL INTUBATION

Paramedic only

ORAL INTUBATION

INDICATIONS

Respiratory insufficiency or arrest
Airway obstruction
Brain injury (GCS \leq 8)
Unconsciousness or altered mental status with airway compromise
Situations that require positive pressure ventilation

PROCEDURE

1. Open airway and pre-oxygenate with cricoid pressure
2. Assemble/check all equipment (cardiac monitor, suction, and pulse oximeter).
3. Intubate in a controlled, but timely manner.
4. Verify placement (5-point check, fogging of the tube, chest expansion and easy cap CO₂ detector.)
5. Attach an end-tidal CO₂ detector in perfusing patients.
6. Secure the tube and insert an OPA if a tube-holder is not present.
7. Monitor vital signs including O₂ saturation and end-tidal CO₂ detector.
8. Administer Versed in 2.5mg increments as needed for agitation to a maximum of 10mg. If the patient weight more than 100kg and after 10mg of Versed is given the patient is still bucking the tube, Vecuronium will be given.
9. Repeat 5-point check after every movement of patient or change in vital signs.
10. Document placement (5-point check, fogging of the tube, chest expansion and tube check) on patient care form.

STOMAL INTUBATION

INDICATIONS

Patients with pre-existing tracheostomy and:

- Respiratory arrest
- Hypoventilation
- Loss of gag reflex
- Head injury requiring hyperoxygenation

PROCEDURE

1. Assemble the equipment while continuing ventilation.
2. Choose tube. You may need to use a smaller size tube [6mm or 7mm] if stoma is constricted.
3. Connect and check suction.
4. Position patient.
5. Insert the tube through the stoma.
6. Advance the tube until the cuff is just inside the stoma. Insert air into the cuff to prevent an air leak.
7. Verify placement (5-point check, fogging of the tube, chest expansion and Tube Check.)
8. Administer Versed 2.5mg increments as needed for agitation to a maximum of 10mg. If the patient weight more than 100kg and after 10mg of Versed is given the patient is still bucking the tube, Vecuronium will be give.
9. Repeat 5-point check after every movement of patient or change in vital signs.
10. Document placement (5-point check, fogging of the tube, chest expansion and tube check) on patient care form.

SPECIAL NOTE

The tube doesn't need to be cut/modified. Doing so may damage the tube and result in a cuff leak.
A patient will not be extubated in the field under any circumstances without OLMC approval.

AIRWAY MANAGEMENT - END-TIDAL CO₂ DETECTION (EASYCAP™)

5% of the exhaled air of a healthy patient is carbon dioxide. End-tidal CO₂ detection devices are useful in identifying the correct placement of a CombiTube or ET tube. The Easy Cap CO₂™ detector is a disposable chemical indicator that can be used for up to three hours.

It works by detecting ETCO₂ on the following color scale:

- Range A (purple): < 0.5% ETCO₂
- Range B (tan): 0.5-2.0% ETCO₂
- Range C (yellow): >2.0% ETCO₂

The patient must be circulating blood for the CO₂ detector to work. **A CO₂ detector does not need to be applied unless the patient has a pulse.**

INDICATIONS

To assist in determining correct ET tube or CombiTube placement.

PRECAUTIONS

In low perfusion states production of CO₂ is diminished.

Dramatic color changes may not be evident.

If the detector remains purple, reassessment of 5-point check is mandatory.

Detectors should be used in conjunction with other assessments such as:

- 5-point check
- tube fogging
- pulse oximetry
- direct visualization of intubation.

Never rely entirely on ETCO₂ detection as the sole method of assessment for tube placement.

DEVICE MUST BE CHANGED IF IT BECOMES CONTAMINATED WITH BODILY FLUIDS.

PROCEDURE

1. Intubate or place Combi-tube.
2. Assess tube placement by using visualization, 5-point check and looking for chest rise.
3. Ventilate 6-7 times, then place EASYCAP™ device on ET tube, or ventilation port of the CombiTube
4. Continue ventilating the patient.
5. If tube placement is correct, color will change from purple to tan or yellow with each ventilation.
6. Color change is positive indication of correct tube placement.
7. If the color does not change, IMMEDIATELY DETERMINE TUBE POSITION.
8. REMOVE ANY TUBE WHOSE POSITION CANNOT BE CONFIRMED.
9. Document results of ETCO₂ detection on run report form.

This protocol researched and developed by Laurie Lloyd, EMT-P, Metro West Ambulance - 1998

AIRWAY MANAGEMENT - IN-LINE NEBULIZER

INDICATION

The need to administer Levalbuterol through an endotracheal tube.

ASSEMBLY

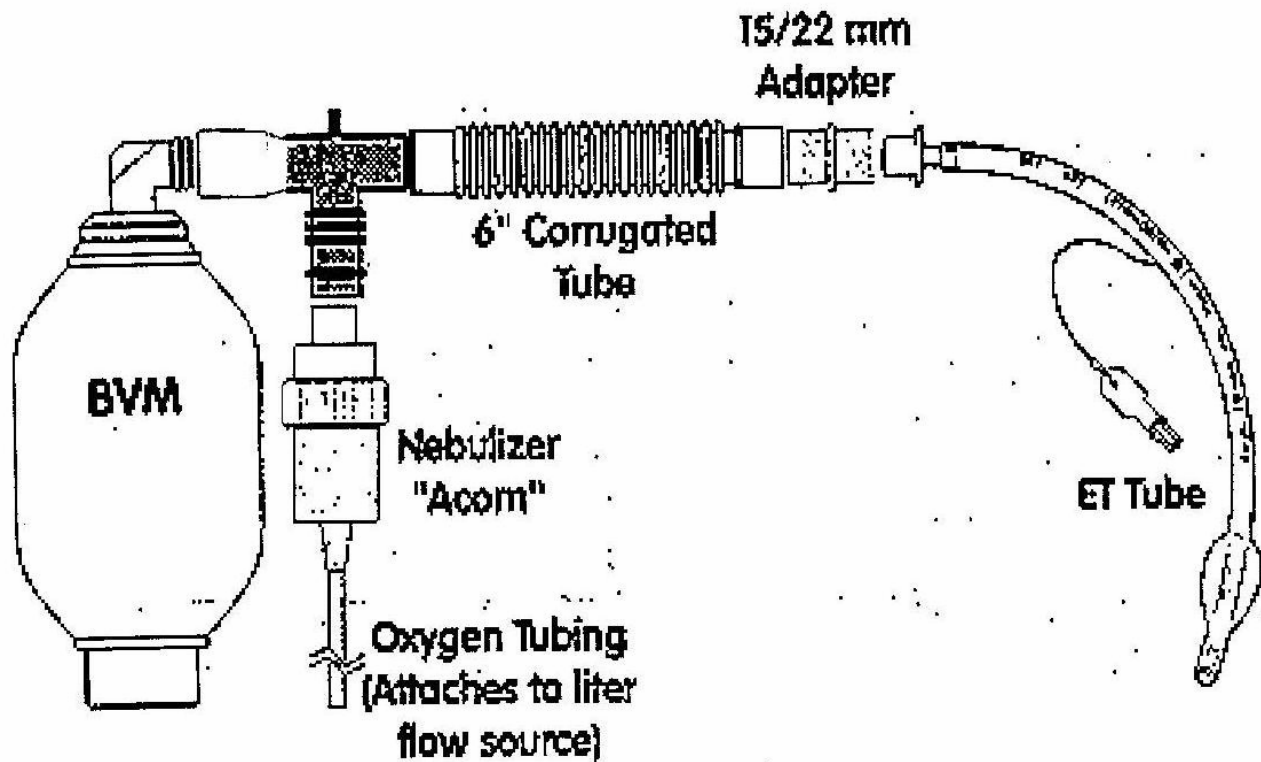
1. Assure that adequate ventilation's are being performed while assembling Nebulizer.
2. Remove Nebulizer "acorn" and attach setup between BVM and the ET tube,
 - a. The 15/22mm adapter attaches to the ET tube.
3. Place Albuterol into the nebulizer "acorn," cap, and use high liter flow O₂ (> 6 LPM)
4. Insert Nebulizer "acorn" securely into the Tee.

PROCEDURE

1. Begin bagging the patient while Albuterol is placed in the nebulizer.
2. The Nebulizer is attached to a liter-flow oxygen source, and inserted into the tee **which opens the valve.**
3. Albuterol flows into the circuit and is introduced via the bag-mask resuscitator.

PRECAUTIONS

Do not interrupt ventilation while assembling in-line nebulizer adapter.



Advanced Airway RSI ALS Only

It is frequently necessary to gain immediate control of the airway in the critically ill patient who may be hypoxic, hemodynamically unstable, agitated, or uncooperative and at risk of further deterioration. RSI stands for Rapid Sequence Intubation and has gained acceptance in pre-hospital medicine in most recent years.

ALS Treatment (Standing Orders)

1. Pre-oxygenate with 100% O₂ NRB. If ventilatory assistance is necessary, bag gently while applying cricoid pressure
2. Assemble required equipment;
 - BVM
 - Suction with Yankauer tip
 - Endotracheal tube with intact cuff, stylette, syringe, ETT securing device
 - Laryngoscope and blades
 - Cricothyrotomy kit
3. Check to insure that a functioning, secure IV line is in place
4. Continuously monitor the cardiac rhythm and oxygen saturation
5. Premedicate as appropriate
 - 1 **Atropine 0.02 mg/kg IVP** for children (minimum dose 0.1 mg)
 - 2 **Lidocaine 1.5 mg/kg IV** to patients with suspected head injuries
 - 3 **Etomidate 0.3 mg/kg no > 20mg IV/IO**
6. **Succinylcholine 1.5 mg/kg IVP**
7. Apnea, jaw relaxation, and decreased resistance to BVM indicates the patient is sufficiently relaxed to proceed with intubation
8. Intubate. If unable to intubate during the first attempt, stop and ventilate the patient with BVM for 30 – 60 seconds (**a**)
9. Treat bradycardia occurring during intubation with oxygenation and hyperventilation first. If no improvement, **Atropine 0.5 mg IV**
10. Once intubation is completed, inflate the cuff and confirm tube placement by auscultation of breath sounds, checking pulse oximetry and/or CO₂ detection device if available.
11. Release cricoid pressure and secure tube
12. **Vecuronium 0.1 mg/kg IV (b)** to maintain intubation. Contact receiving hospital as early as possible to inform them pt. has been administered Vecuronium.

Note:

- a.** If unable to intubate, bag the patient until spontaneous respiration returns or consider nasal intubation or surgical cricothyrotomy
- b.** When **Vecuronium** is used, administer **Midazolam 2 - 5mg IV PRN**.

AIRWAY MANAGEMENT – PERTRACH paramedic

This technique is to be used only when other attempts to establish an airway have been unsuccessful and respiratory obstruction exists. Such conditions are most likely to be found with:

- foreign-body obstruction
- facial and laryngeal trauma
- inhalation of thermal gases
- caustic injury to the upper airway
- angioneurotic edema
- upper airway bleeding
- epiglottitis
- severe croup

PROCEDURE

Place the patient in a supine position with support under the shoulders and mild hyperextension of the neck. Palpate the neck in the midline and locate the slight depression just below the notch of the thyroid cartilage. This is the position of the cricoid membrane.

1. Locate the cricothyroid membrane
2. Palpate the cricothyroid membrane with gloved hand.
3. Cut vertically 1-2 cm after pinching the skin.
4. Grasp the trachea and insert the needle.
5. Aspirate for air with a syringe.
6. Thread dilator through needle.
7. Squeeze wings of needle and open out to split needle. Remove needle.
8. Insert dilator into airway, place tube in functional position, (faceplate against skin.)
9. Remove dilator.
10. Inflate cuff with 1cc of air.
11. Secure the device to the neck and ventilate.

PRECAUTIONS

Damage to nearby structures:

- vessels to either side of the midline
- vocal cords if puncture is too high
- penetrating injury of the posterior trachea if the puncture is made too deeply (This is most commonly seen in infants and children whose tracheas may be deceptively narrow)

AIRWAY MANAGEMENT – PULSE OXIMETER

Pulse oximetry is the standard of care for the continuous noninvasive monitoring of peripheral arterial hemoglobin oxygen saturation (SpO₂). This monitor provides an early warning of arterial hypoxemia that is often not appreciated by subjective observation. A light--emitting diode that measures absorption of specific wavelengths of light relative to the ratio of oxyhemoglobin and reduced hemoglobin is most commonly placed on the patient's finger or ear.

Pulse oximetry has both physiologic and technical limitations. Because the technique uses light absorbency, pulsation changes in a vascular bed, any event that decreases those pulsation (hypotension, hypothermia, and vasoconstriction), will decrease the ability of the pulse oximeter to obtain and process a signal and calculate the SpO₂

It may be necessary to change sensor sites (finger, ear) to obtain an optimal signal. Motion artifact, as evidenced by a heart rate discrepancy between the ECG and pulse oximeter; may interfere with accurate calculation of SpO₂ in awake, agitated, or shivering patients. Ambient light as well as other light sources (radiant warmers, fluorescent bulbs) contaminates light-emitting diode signals. Nail polish can alter the spectra of emitted light.

The presence of dysfunctional hemoglobins can alter the ability of the SpO₂ to accurately reflect SpO₂. Carboxyhemoglobin, which is found in large quantities in carbon monoxide poisoning, is read as oxyhemoglobin by pulse oximeters, producing a falsely high SpO₂. This is the reason the SpO₂ may exceed the SpO₂ as measured by a laboratory CO₂-oximeter. A high methemoglobin concentration tends to result in a SpO₂ reading of 85% regardless of the actual SpO₂. Fetal hemoglobin has limited influences on the accuracy of the SpO₂ measurement. Complications from the use of pulse oximetry are most commonly caused by errors in data interpretation.

As a standard of care, a pulse oximeter shall be applied to all patient as soon as basic stabilization, (A-B-Cs) have been concluded. The pulse oximeter reading shall be recorded on the patient care form each time vital signs are taken.

<i>SpO₂ Reading</i>	<i>Status</i>	<i>Treatment Indicated</i>
95-100%	Normal SpO ₂	None
91-94%	Mild Hypoxia	Low-flow oxygen therapy indicated
86-91%	Moderate Hypoxia	High-flow oxygen therapy indicated
< 85%	Severe hypoxia	Aggressive oxygen therapy. Intubation indicated.

The goal is to increase and maintain the patient's SpO₂ in the 95-100% range.

A pulse oximeter will be applied as a standard of care appropriate for the patient's condition.

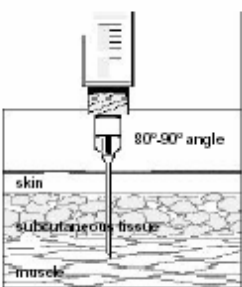
The pulse oximeter will be applied to any patient with, but not limited to, shortness of breath, chest pain, neurological deficit, alter mental status, cardiac dysrhythmia, unconscious or altered level of consciousness, any trauma system entry or significant blood loss.

INTRAMUSCULAR (IM) INJECTIONS paramedic

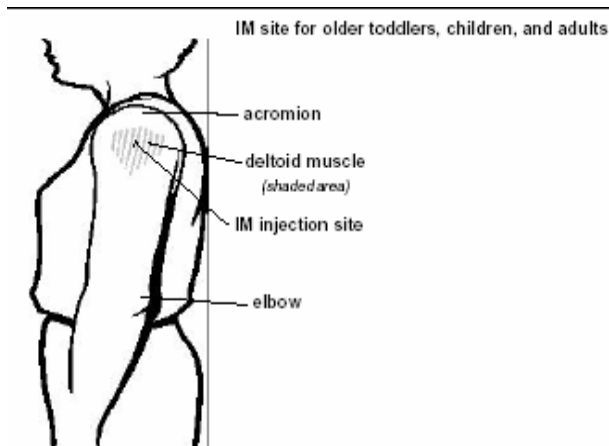
Medications administered IM must be rotated among the major muscle. There is no need to change the needle between injections as long as the skin is adequately swabbed with alcohol.

Needle insertion

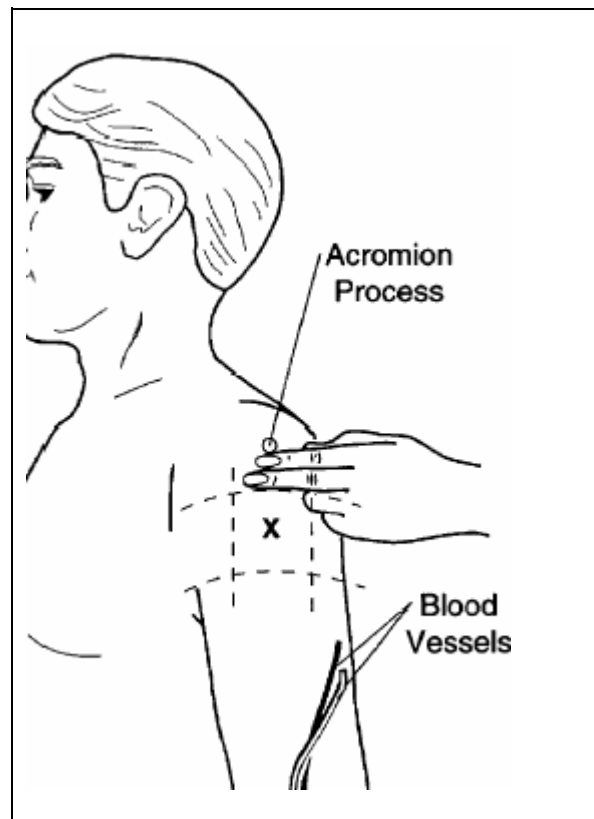
Use a needle long enough to reach deep into the muscle.
Insert needle at an 80° to 90° angle to the skin with a quick thrust.
Retain pressure on skin around injection site with thumb and index finger while needle is inserted.
There are no data to document the necessity of aspiration, however, if performed and blood appears after negative pressure, the needle should be withdrawn and a new site selected.* (p. 18)
Multiple injections given in the same extremity should be separated as far as possible (preferably 1" to 1½" with minimum of 1" apart).
Academy of Pediatrics

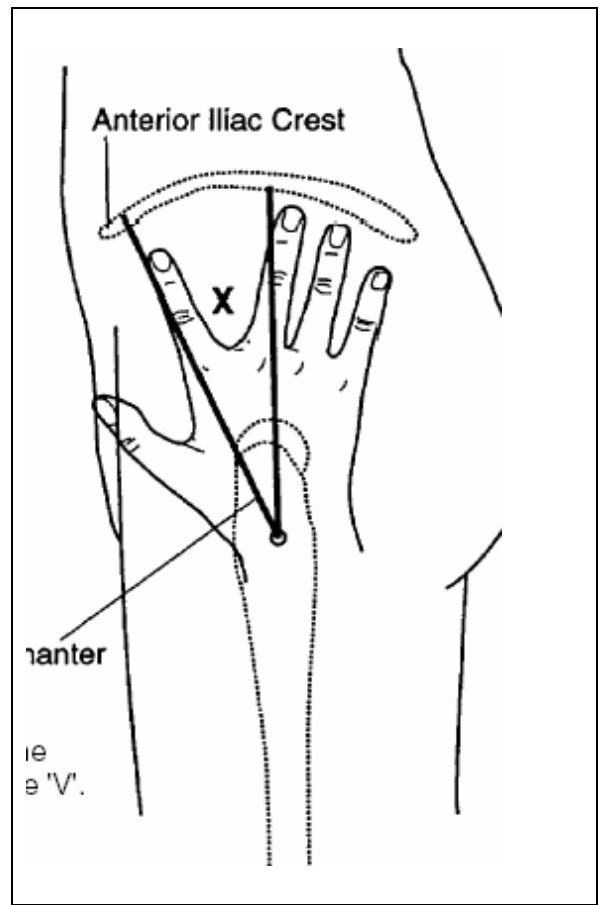
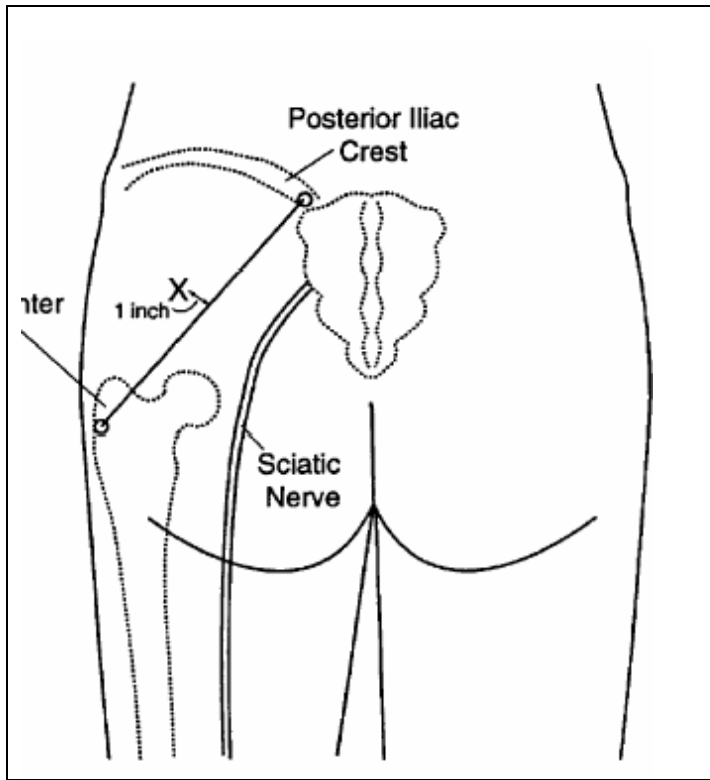


The diagram shows a cross-section of the skin and underlying tissues. A syringe with a needle is shown inserted at an 80°-90° angle. The layers are labeled: skin, subcutaneous tissue, and muscle. The needle tip is shown penetrating through the skin and subcutaneous tissue into the muscle layer.



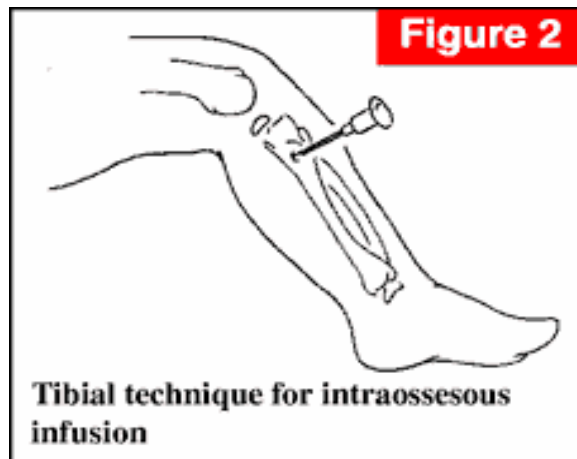
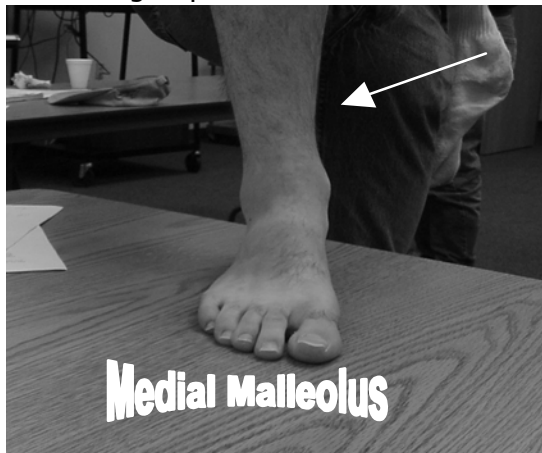
Insert needle at 80-90° angle into densest portion of deltoid muscle - above armpit and below acromion.





INTRAOSSUEOUS INFUSION intermediate- paramedic

The placement of a metal needle into the tibial tuberosity for the pediatric patient or medial malleolus in adults to administer medications and resuscitation fluids when an IV is either too difficult or time consuming to perform.



Tibial Tuberosity

1. Avoid using a leg, which has been traumatized or infected.
2. Locate anteromedial flat surface 1-3cm below the tibial tuberosity. Palpate landmarks and mark entry point. Prep the surface with Betadine and dry with a sterile gauze pad.
3. Insert needle toward the foot, away from the knee joint to avoid damaging the growth plate.
4. Push through using rotation motion, avoid rocking needle, until a "pop" or loss of resistance is felt.
5. Placement in the marrow is confirmed by the firm fixation of the needle and removal of the stylet with free aspiration of marrow or blood or infusion of 5cc of NS.
6. If extravasation should occur, further attempts in the same leg should be avoided.
7. Pressurized infusions may be needed during resuscitation. Pressure must be applied to the IV bag in order to maintain flow rates.
8. Continually monitor the rate of infusion.

Medial Malleolus

1. Avoid using a leg, which has been traumatized or infected.
2. Identify landmarks and prepare the insertion site with iodine or alcohol solution. Distal tibia in the midline 2 to 5 cm above medial malleolus in adults.
3. For insertion into the proximal end of the tibia, the spinal needle is directed inferiorly at a 45-degree angle from the perpendicular. If the insertion site is the distal tibia, the needle should be angled 45 degrees superiorly. The goal is to angle away from the region of the growth plate or joint, or both.
4. Advance needle (with stylet in place) through skin, subcutaneous tissue and cortex of bone into the marrow space using a rotary motion.
5. Remove stylet and confirm placement by aspirating back marrow. Try infusing 5cc of saline with a syringe.
6. Detach syringe and connect IV tubing to begin infusion. Secure in position with tape.

PRECAUTIONS

Maximum of two attempts, one in each tibia or medial malleolus.

INTRAVENOUS (IV) LINES AND SOLUTIONS

Indicated for replacement of fluid volume and is also used as a fluid to keep an IV line open

PROCEDURE

IV Access

Attach tubing to NS bag and connect to IV catheter.

Use blood tubing if available (1st IV) for patients entered into the Trauma System or may require blood.

IV Lock

An IV lock shall be used only in-patients with signs and symptoms of congestive heart failure with pulmonary edema.

Establish IV access and flush with NS. IV line must be flushed after each medication administration.

EXTERNAL JUGULAR AND FOOT ACCESS *paramedics only*

External jugular IVs and IVs in the feet should be attempted only if no other IV is possible and life saving treatment must be given. Intraosseous infusion can be used on any age patient.

Once an IV is established it will not be disconnected and replaced with a lock.

No more than two (2) IVs shall be attempted before transport must begin.

No more that one (1) attempt per patient for external jugulars.

INTRAVENOUS (IV) MEDICATION INFUSIONS AND DRIP MONITORING

INDICATIONS

When a medication is administered as a continuous infusion.

When fluids are administered to pediatric patients.

PROCEDURE

Using a Volutrol or Soluset-type device:

- Prepare solution and establish IV accesses.
- Connect the Volutrol between the solution bag and the IV tubing.
- Put 1 hour of solution into the Volutrol, close connection between Volutrol and solution bag.
- The Volutrol should never contain more than one hour of solution.
- Begin infusing solution at the appropriate rate.

Using an infusion pump:

- Prepare solution and establish IV accesses.
- Connect IV tubing to infusion pump.
- Begin infusing solution at the appropriate rate.

NOTES

- Extension set should be 10" long, have 1 or more injection sites, a slide clamp and standard bore tubing with a male/female
- Luer lock tip.
- **At time of transfer of care, the PCF should include the amount of solution infused.**
- **All infusions and patient responses should be documented.**

PATIENT RESTRAINT

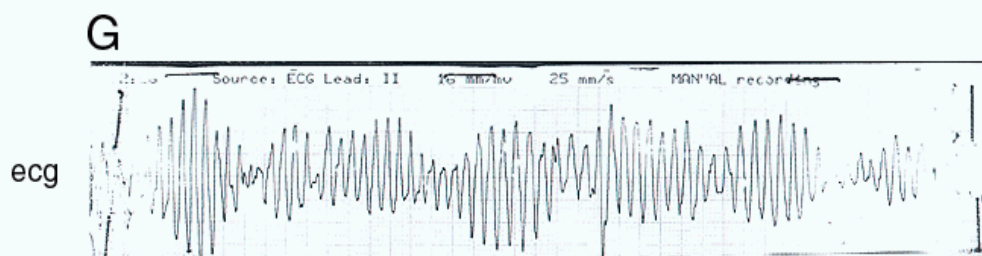
Restraints should be where the patient's behavior is a danger to the patient and others. This procedure is not to be used on patients refusing treatment unless they are placed under a police hold. Patients who are under arrest or in handcuffs by law enforcement should stay in the handcuffs. If police are not going to accompany the patient to the hospital, the handcuffs should be removed or a handcuff key should be provided by law enforcement. Patients shall not be restrained in the prone position or sandwiched between backboards and stretchers.

PHYSICAL RESTRAINT

- Use restraints to accomplish necessary patient care and ensure safe transportation.
- Call for help prior to attempting restraint procedures. Do not endanger yourself.
- Assure that restraints do not preclude evaluation of the patient's medical status.
- Place patient face up on long backboard.
- Secure extremities to backboard. Restrain lower extremities first then patient's arms.
- If necessary, utilize cervical spine precautions to control violent head or body movements.
- Secure the backboard onto gurney for transport using additional straps if necessary.

CHEMICAL RESTRAINT paramedic

- Inapsine ® may be used to restrain a combative patient.
- Check CBG level and ensure that hypoglycemia is not a cause of the combativeness.
- Monitor O₂ saturation and assure that hypoxia is not a cause of the combativeness.
- Apply monitor and watch closely for Torsades de Points.
- Give Inapsine 2.5mg IM/IV.
- Give Benadryl, 1mg/kg IM/IV up to 50mgs if dysphoric/dystonic reactions appear.
- If after 10 minutes there is no effect give an additional 2.5mg of Inapsine
- If Torsades de Pointe occur, give 2grams of Magnesium Sulfate slow IV.



v-fib (torsades des pointes)
defib, magnesium

FDA WARNING (December, 2001)

A warning has been received from the Federal Drug Administration stating that the administration of Inapsine could cause Torsades de Pointes. Although the occurrence of Torsades is rare, the warning is being taken seriously until it can be investigated. Anytime Inapsine is used the patient's ECG must be monitored immediately, closely and continually until the patient is turned over to the emergency department.

SIDE EFFECTS

Hypotension, tachycardia and Torsades de Points

Dysphoric reactions which are exaggerated feelings of depression without apparent cause.

Dystonic reactions are distorted twisting or movement of a part or all of the body.

If any of these conditions occur, contact OLMC immediately.

PELVIC WRAP

The sling/sheet is not indicated for suspected isolated hip fracture, i.e. ground level falls.

INDICATION

The initial reduction of an unstable pelvic fracture to lessen ongoing internal bleeding and to ease pain by splinting the fracture using either the SAM Sling or a specifically applied sheet.

Apply to all significant trauma patients with either pelvic pain or pelvic instability.

Consider the risk of pelvic instability in all blunt trauma patients with appropriate mechanism of injury.

Consider pelvic wrap in trauma patients with pelvic pain that is not associated with pelvic injury.

Consider pelvic wrap in trauma patient with pelvic pain, not associated with pelvic or hemodynamic instability.

PROCEDURE

SAM Sling

APPLICATION

1. Unfold sling with white surface facing up.
2. Place white side of sling beneath patient at level of buttock.
3. Snuggle close sling by placing black Velcro side of flap down on blue surface of sling. Fold back or trim excess material as needed. Try to place buckle close to midline.
4. Grab orange handle on outer surface of flap and release from flap by pulling upward.
5. With or without assistance pull both orange handles in opposite directions to tighten sling.
6. Keep pulling until you hear or feel the buckle lock.
7. As soon as buckle locks, maintain tension and firmly press orange handle against blue surface of the sling.

REMOVAL (ONLY WITH OLMC APPROVAL)

1. Lift orange handle next to the flap and release Velcro by pulling upward.
2. Maintain tension and slowly allow to sling loosen.

Bed Sheet

1. Consider placement of the sheet on a backboard in advance of the patient.
2. Fold the sheet smoothly several times lengthwise (do not roll it) until it is about nine (9) inches wide, and apply underneath the pelvis, centered on the greater trochanters of the femur.
Greater Trochanters of the Femur – Bony prominence of the lateral upper thigh. It is found to be even with the level from the patient's distal wrists to the case of the thumb, in the supine patient with arms down at the side.
3. Before tightening the sheet around the pelvis, ensuring all objects are removed from pockets so the pressure of the sheet does not cause additional pain.
4. Tighten the sheet around the pelvis, adjusting the tension to try to return the pelvis to the normal anatomic position based on the initial assessment of instability.
5. Cross the sheet around the pelvis, adjusting the tension to try to return the pelvis to a normal position.
6. Secure it laterally with a knot or clamp.
7. The sheet should feel tightly wrapped around the pelvis allowing for two (2) fingers to be inserted between the sheet and pelvis.

NOTES

1. Always re-check the position of the sling/sheet. You should still be able to feel the anterior superior iliac spines after placement. If not, the sling/sheet may be too high on the pelvis and must be repositioned.
2. If the pelvis is unstable on initial exam, DO NOT repeat the exam.

TENSION PNEUMOTHORAX DECOMPRESSION paramedic

INDICATIONS

Signs of a tension pneumothorax must be present before decompression is attempted.

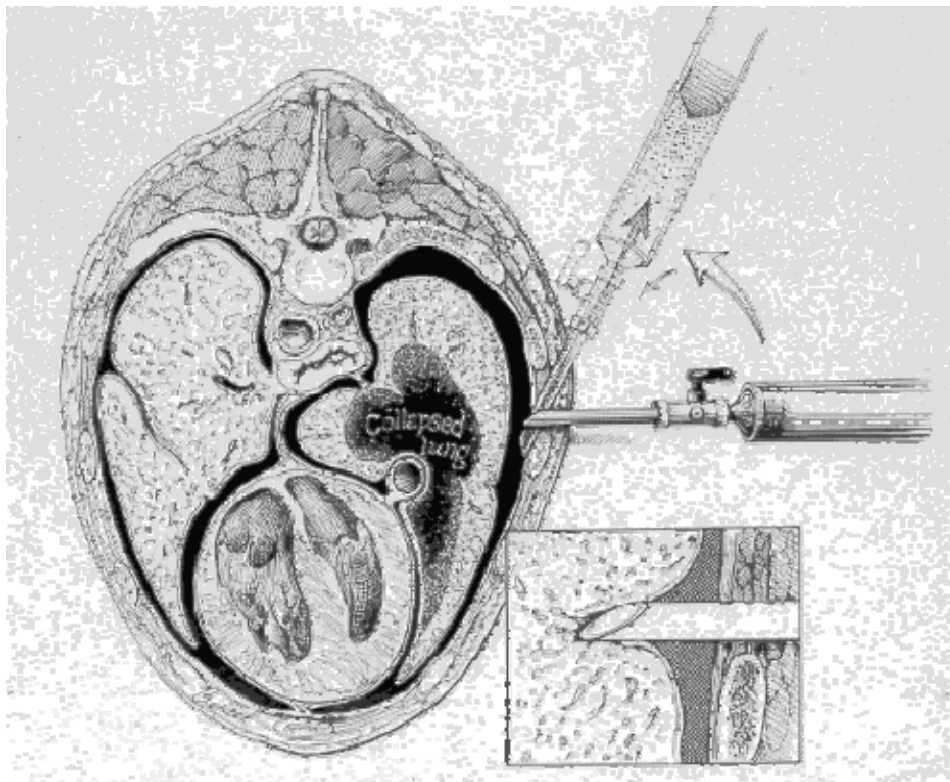
Tension pneumothorax (indications):

- Chest trauma, COPD.
- Shock, low BP or rapidly falling BP
- Tracheal shift away from affected side
- Asymmetrical movement on inspiration
- Drum-like percussion on affected side
- Patient on positive pressure ventilation
- Progressive respiratory distress
- Distended neck veins
- Hyper-expanded chest on affected side
- Increased resistance to PPV, especially if intubated

Simple and non-tension pneumothorax is relatively common and is not immediately life threatening.

PROCEDURE

1. Expose the entire chest.
2. Clean chest vigorously with alcohol, Betadine, or soap.
3. Locate the mid-clavicular line
4. Insert a large IV catheter (10-14 gauge) over the superior margin of the third rib.
5. Hit the rib, then slide over it.
6. If air is under tension the barrel will pull easily and "pop" out the back of the syringe.
7. Remove syringe, advance catheter, and remove needle.
8. Attach Heimlich type valve.
9. Be sure closed end is away from the patient.
10. Tape outlet securely to the patient's chest.



TRANSCUTANEOUS PACING paramedic

INDICATIONS

Bradycardia with evidence of inadequate perfusion, (hypotension, altered mental status), Asystole and 2° and 3° heart blocks.

PROCEDURE

1. Attach pacing electrodes as directed by manufacture of the electrode.
2. Begin pacing at a heart rate of 80 beats per minute and zero current output.
3. Increase current by increments of 20mAs.
4. Observing monitor for evidence of electrical captures.
5. Confirm mechanical capture by checking pulses and BP.
6. If patient is comfortable continue pacing, give Versed 0.1mg/kg to a maximum of 2.5mg
7. If patient is still uncomfortable, decrease output by increments of 5 Ma to point just above electrical and mechanical capture.
8. Contact OLMC for additional Versed.

If the patient is unconscious evaluate pulse and BP.

If have electrical capture and no pulses, follow PEA protocol.

If there is no response to pacing and drugs, consult with OLMC.

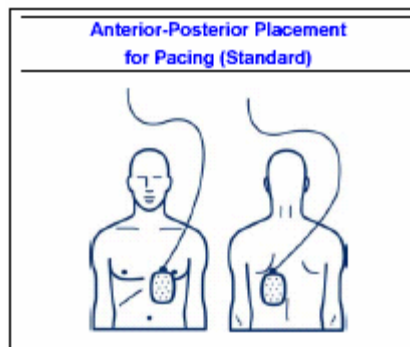
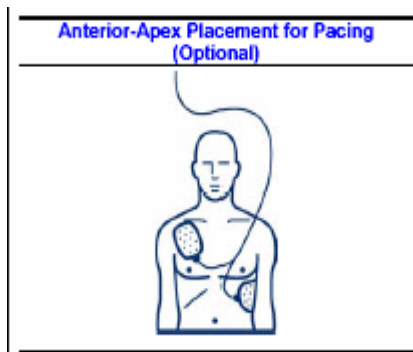
If a change in pacing rate is desired contact OLMC.

PRECAUTIONS

Transcutaneous pacing should not be used in:

- Prolonged asystole.
- Patients meeting death in the field criteria.
- Patients in traumatic cardiac arrest.

Major side effect of Versed is respiratory depression/hypotension (BP < 100.) Side effects occur especially if administered rapidly. Hypotension may occur if patient is upright/hypovolemic/has decreased cardiac output (after AMI). Hypotension (BP < 100) should not be a problem if the patient is supine and not volume depleted. Contact OLMC if any of these problems or situation occur.



12 Lead EKG ALS Only

Today the 12-Lead ECG stands at the center of decision making for the care of patients with acute coronary syndrome (ACS). The prehospital ECG has been demonstrated to be an effective means of rapidly identifying patients with acute myocardial infarction who might be eligible for reperfusion therapy. More importantly the 12-lead ECG increases the paramedic's sensitivity for the diagnosis of cardiac ischemia/infarction versus non-specific chest wall pain. When used appropriately, the 12-lead ECG will also allow the evaluator to be more dynamic with decision-making, differential diagnosis and specific treatment interventions.

The following list is a suggestion of patients that should be considered candidates for 12-lead ECG evaluation:

- 1) Chest pain, dyspnea, syncope, near syncope, weakness, DKA, diaphoresis, palpitations;
- 2) CVA (CVA is often associated with large anterior wall MI's and/or dysrhythmias);
- 3) Pre and post cardioversion of stable patients;
- 4) Post cardioversion of unstable patients, including post arrest;
- 5) Suspected electrolyte disturbances;
- 6) Overdose (unknown or suspected anti-depressants);
- 7) Blunt chest trauma only if patient is stable and other appropriate care given;
- 8) Irregular pulse rates;
- 9) Respiratory failure and/or signs of hypoxia;
- 10) CHF;
- 11) Nausea and vomiting in females;
- 12) Upper Quadrant abdominal pain

The clinician should place the highest priority on being able to classify patients with acute coronary syndromes (ACS) into 1 of 3 ECG classification groups: 1) ST-segment elevation or new or presumably new Left Bundle Branch Block: suspicious for injury; 2) ST depression or dynamic T wave inversion: strongly suspicious for ischemia; 3) Nondiagnostic ECG: absence of changes in ST segment or T waves

The following graph illustrates anatomically contiguous lead groups used to demonstrate infarct location recognition

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

ANATOMICALLY CONTIGUOUS LEADS

Automated External Defibrillation

Refer to American Heart Association current guidelines.

The AED policy and procedure applies to EMTs and FRs currently certified in the use automatic external defibrillators.

1. **Rationale for early defibrillation**

- a. The most frequent initial rhythm in sudden cardiac arrest is ventricular fibrillation.
- b. The most effective treatment for ventricular fibrillation is electrical defibrillation.
- c. The probability of successful defibrillation diminishes rapidly over time.
- d. Ventricular fibrillation tends to convert to asystole within a few minutes.

2. **General guidelines**

- a. One AED series equals zero (0) to three (3) shocks depending on what the AED indicates.
- b. Never shock a conscious patient.
- c. The goal of EMT/FR defibrillator technicians should be to provide defibrillation within 90 seconds of their arrival at the scene of a cardiac arrest.
- d. Rapid defibrillation is the treatment of choice for ventricular fibrillation and takes precedence over other treatment modalities, such as suctioning, IV's, oxygen administration and chest compressions.
- e. An EMT or FR may not change the automatic settings if a manual override capability is available.
- f. If the ALS ETA is delayed, consider rendezvous/transport after contact with the incoming ALS unit.

3. **Indications**

- a. Unresponsive, apneic, pulseless patients who are eight (8) years or older.

4. **Contraindications**

- a. The following patients should not be attached to an automatic or semiautomatic defibrillator:
 1. Any patient who is responsive, breathing, or has a pulse.
 2. Obvious "dead on scene" (decapitation, decomposition, or the presence of rigor mortis).
 3. Any patient who is actively seizing.

5. **Precautions**

- a. All persons should be clear of the patient while the machine is analyzing the rhythm and/or delivering a shock.

Automated External Defibrillation (continued)

6. Considerations

- a. Pediatric cardiac arrests are usually due to respiratory failure. Evidence suggests that ventricular fibrillation does occur in association with congenital heart problems, drug overdoses and glue sniffing.
- b. Do not use adult pads on children.
- c. Hypothermia:
 1. Defibrillation should not be withheld from the cold patient in ventricular fibrillation.
 2. Perform one series of AED protocol only.
 3. If the patient does not respond to one AED series, resume CPR and re-warming efforts.
 4. Do not continue defibrillation series.
- d. Trauma
 1. Consider the causes of the cardiac arrest before applying AED pads.
 2. Cardiac arrest secondary to major trauma seldom responds to defibrillation.
 3. Remember a ventricular fibrillation arrest may have been the actual cause of the accident.
- e. If the AED protocol is interrupted by the return of a normal rhythm, continue AED monitoring of the patient. Do not turn the unit off as the machine will reset back to the initial shock status.

7. Procedure

- a. Verify unresponsiveness, apnea and the absence of a pulse.
- b. Start CPR while the equipment is readied for use.
- c. Call for ALS if not already enroute.
- d. Turn on the AED.
- e. Apply the pads to the patient's bare chest.
- f. Follow all AED screen and voice prompts during the rhythm analysis.
- g. Administer shock if indicated.
- h. Continue CPR for one minute.
- i. Repeat f, g, and h until:
 1. The ALS unit arrives and takes over resuscitative efforts.
 2. The Base Station Physician orders you to discontinue efforts.

8. Training and skills maintenance

- a. Any AED operator must practice their skills with the device every 6 months. This should include reviewing incidents of AED use in the system, studying any new protocols, and most important, practice working with the AED.

9. Post AED usage

- a. Each event requires a complete MIR to accompany incident the recording device (i.e., tape, card) to the Medical Program Director within 24 – 48 hours after the event for downloading and review.
- b. Data cards or modules must be downloaded and erased after use to assure a clean card for future use. Events will not record over existing data on cards or tapes.

Central Line Catheter Access and Adjuncts paramedic only

PHYSICIAN ORDER ONLY

1. An ALS responder may not access an A-V shunt.
2. An ALS responder may not access a central line catheter or any other permanent indwelling line
except:
 - a. In situation of cardiac arrest
 - b. Symptomatic hypovolemic shock
 - c. Under request of base station physician
3. ALS provider must follow written procedure for central line catheter access.

PROCEDURE:

- A. Sterile technique must be maintained.
- B. Use sterile gloves.
- C. Clean port with Betadine swab followed by alcohol swab.
- D. Unclamp catheter and inject 10cc saline.
- E. Aspirate back for blood return.
- F. If blood returns, clamp catheter.
- G. Remove syringe and connect IV solution, unclamp.
- H. Administer solution at appropriate rate.
- I. Do not draw blood from catheter.

Cincinnati Stroke Test

The prehospital stroke test developed in Cincinnati effectively identifies patients with stroke. This scale evaluates three major physical findings: facial droop, motor arm weakness and speech abnormalities. The condensed examination can be accomplished with a series of simple tests that can help prehospital care providers to quickly identify a stroke patient who requires rapid transport to the hospital. A more extensive examination or institution of supportive therapies can be accomplished enroute to the hospital and in the emergency department. If possible, prehospital care providers should establish the time of onset of stroke signs and symptoms. This timing will have important implications for potential therapy. If the time of onset of symptoms is viewed as time zero, all assessments and therapies can be related to that time.

1. Facial droop – Have the patient show their teeth or smile.
 - a. Normal – Both sides of face move equally well.
 - b. Abnormal – One side of the face does not move as well as the other.

2. Arm drift – The patient closes their eyes and holds both arms out.
 - a. Normal – Both arms move the same direction or do not move at all (pronator grip may be helpful).
 - b. Abnormal – One arm does not move or one arm drifts down compared to the other.

3. Speech – Have the patient say “you can’t teach an old dog new tricks”
 - a. Normal – The patient uses the correct words with no slurring
 - b. Abnormal – The patient slurs their words, uses inappropriate words or is unable to speak.

Report specific findings for example; left side facial drooping, slurred speech.

MEDICATION

ADENOSINE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Interrupts the AV circuit and stops the tachycardia, restoring NSR. Can be used in both wide and narrow complex tachycardia. The half-life of Adenosine is less than 10 seconds.

INDICATIONS

PSVT, PSVT associated with Wolff-Parkinson-White. PSVT is regular, narrow complex with rate > 150

CONTRAINDICATIONS

- 1 Second or third degree heart block
- 2 Sick sinus syndrome
- 3 Known hypersensitivity

PRECAUTIONS

Individual doses > 12mg may cause a ↓ BP due to decrease in peripheral vascular resistance. Is antagonized by Methylxanthines (e.g. Theophylline, Caffeine). Larger doses might be required in the presence of these drugs. Effects are potentiated by Dipyridamole. Persantine, requiring smaller doses. In the presence of Carbamazepine (Tegretol®), high degree heart block may occur. Not effective in converting A-fib/flutter or VT.

SIDE EFFECTS/SPECIAL NOTES

Facial flushing Dyspnea Chest pressure Nausea/Headache Lightheadedness.
These effects are transient and last 5-10 seconds.
Is not contraindicated in pregnancy.

PROTOCOLS USED IN

Cardiac Dysrhythmia – PSVT

DOSAGE

As stated in the appropriate protocol. Normal initial dose is 6mg rapid IVP followed by 12mg as needed. Administration rate should be very rapid, over 1-3 seconds with a fluid bolus.

LEVALBUTEROL (XOPENEX)

PHARMACOLOGY AND ACTIONS

Potent selective beta₂-adrenergic bronchodilator. Causes relaxation of bronchial smooth muscle. Causes inhibition of release of mediators of immediate hypersensitivity from cells. Improvement in pulmonary function can be seen in 2 to 15 minutes. Duration of action is from 4-6 hours. It induces bronchial dilation. Has occasional beta₁ overlap with cardiac effects. Arrhythmias may occur with disorders such as coronary insufficiency and hypertension.

INDICATIONS

Bronchial asthma
Bronchial spasm that occurs with COPD.

CONTRAINDICATIONS

None

PRECAUTIONS

- Stop treatment if ventricular ectopy (PVC, VT) occurs.
- Paradoxical bronchospasm may occur with excessive administration. Skeletal muscle tremors are a common side effect.
- An ECG monitor with readout must be applied before the Albuterol treatment is started or no later than before it is completed.

TECHNIQUE

Oxygen flow should be set at 6 liters/minute. Patients with COPD should be monitored carefully for CO₂ retention.

Patients should be instructed to breathe as follows:

- Hold Nebulizer between teeth or over mouth if using nebulizer mask
- Inhale slowly
- Hold breath
- Exhale passively through nose

PROTOCOLS USED IN

Anaphylaxis
Respiratory Distress

DOSAGE

As stated in the appropriate protocol.

Normal dosage is 1.25mg by Nebulizer.

NOTE

An ECG monitor with readout must be applied before the LevAlbuterol treatment is started or no later than before it is completed.

Oregon EMT-Intermediates may administer Albuterol in Oregon if they have completed a training program approved by the State EMS Office and have access to a monitor with ECG readout.

If A-fib starts after an LevAlbuterol treatment is started, it can be continued. If the rate increases, it should be noted and reported to OLMC, but the treatment does not need to be stopped.

If the patient is in A-fib, an Albuterol treatment can still be given. If the rate increases, it should be noted and reported to OLMC, but the treatment does not need to be stopped

AMIODARONE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Is a Benzofuran derivative with an iodine content of 40%. Is an anti-arrhythmic agent for dysrhythmias of ventricular origin. It prolongs the action potential and refractory period of myocardial tissues.

INDICATIONS

In the USA it is only approved for the treatment of uncontrollable, life-threatening ventricular arrhythmias. It is successful in 60-90% of the cases, which represents a higher success rate than other anti-arrhythmic agents. Studies suggest it reduces death rate in complex ventricular dysrhythmias after an infarction.

CONTRAINDICATIONS

Pregnancy, Thyroid Diseases. Severe AV nodal conduction disturbances.

PRECAUTIONS

Increases the effect and the dangers of oral anticoagulants and Digoxin.

SIDE EFFECTS AND SPECIAL NOTES

Reinforces bradycardia and AV delays with β -blocker, Diltiazem, or Verapamil. May cause hypotension if administered to fast.

PROTOCOL USED IN

V-Fib/V-tach V-tach with a pulse

DOSAGE

As stated in the appropriate protocol.

AMMONIA INHALANTS

PHARMACOLOGY AND ACTIONS

Releases ammonia as a colorless gas with a strong, pungent odor. Reacts with mucosal surfaces causing irritation. Irritation is highly effective in eliciting a withdrawal response in all but deeply obtunded patients.

INDICATIONS

Stimulus to aid in the assessment of a non-injured, obtunded or comatose patient.

CONTRAINDICATIONS

NONE

PRECAUTIONS

Is highly effective, non-traumatic noxious stimulant. Do not automatically rule out potential medical or traumatic causes of coma or lethargy. Inhalants should never be placed in nostrils or inside oxygen masks.

SIDE EFFECTS AND SPECIAL NOTES

May cause mucosal burns if prolonged contact is maintained.

PROTOCOL USED IN

Coma

DOSAGE

As stated in the appropriate protocol. The normal dosage is one (1) ampule.

ASPIRIN

Additional training and approval by the EMS Office is required before EMT-Bs and EMT-Is may administer.

PHARMACOLOGY AND ACTIONS

Inhibits prostaglandin, disrupts platelet function for the life of the platelet (10 days), mild analgesic, anti-inflammatory.

INDICATIONS

Unstable angina and acute myocardial infarction. Indicated for patients with suspected AMI.

CONTRAINDICATIONS

Allergy to Aspirin, who are receiving anticoagulants and/or has a history of active bleeding disorder or ulcer.

SIDE EFFECTS AND NOTES

Patients with Asthma may have an allergic reaction to Aspirin. Ask patient about sensitivity.

PROTOCOLS USED IN

Chest Pain

DOSAGE

As stated in the appropriate protocol. Normal dose is 324mg given (4 baby Aspirin). If patient has taken Aspirin before your arrival, administer an additional 324mg.

Most common anticoagulants in U.S are Coumadin and Miradon.

Plavix is another type of medication that makes the platelets "slippery." It is not an anti-coagulant. Therefore, if a patient is taking Plavix, ASA can still be given.

ATROPINE SULFATE

PHARMACOLOGY AND ACTIONS

↑ HR by blocking vagal influences. ↑ Increases conduction through A-V node. ↓ action/tone of the bladder causing urinary retention. Dilates pupils. Blocks vagal influences already present.

INDICATIONS

- To increase ↑ HR in bradycardia or pacemaker failure. Improves conduction in Type I 2nd ° and Narrow Complex 3rd ° Block.
- Premedication for patients < 2 years prior to the use of Succinylcholine.
- Organophosphate exposures and nerve gases.

CONTRAINDICATIONS

Type II 2nd ° blocks. 3rd ° wide complex blocks. A-Fib/Flutter. ↑ Conduction may speed ventricular rate. Bradycardia in AMI is common and probably beneficial. Do not treat them unless signs of poor perfusion.

ATROPINE MAY ONLY BE GIVEN IF A MONITOR WITH ECG READOUT IS AVAILABLE TO THE INTERMEDIATE AND THE INTERMEDIATE IS TRAINED IN RECOGNIZING TYPE II 2ND DEGREE HEART BLOCK, 3RD DEGREE HEART BLOCK, ATRIAL-FIB OR ATRIAL-FLUTTER.

SIDE EFFECTS AND SPECIAL NOTES

2nd and 3rd degree block may be chronic and without symptoms.

In cardiac arrest situations may dilate pupils. Pushed slowly will cause a 6-8 beat per minute slowing. For patients with HR < 40 this could be undesirable. When used for unstable bradycardia give rapid IVP.

ADULT DOSAGE

As stated in the appropriate protocol.

Normal dosage is 1 mg q 5 minutes in Asystole and PEA, 0.5 mg q 5 minutes to maximum of 3mg in Bradycardia, and 1-2mg per dose until improvement for Organophosphate poisoning.

PEDIATRIC DOSAGE

See Broselow Pediatric Tape

PROTOCOLS USE IN

Airway Management - Paralytics PEA
Asystole Poisoning/Overdoses Bradycardia

ATROVENT

PHARMACOLOGY AND ACTIONS

A weak bronchodilator with no anti-inflammatory effects. Does not decrease bronchial hyper-responsiveness. Onset of action is slower than beta agonists.

INDICATIONS

Supplement to beta agonists in asthma and COPD. May be beneficial in children with moderate/severe asthma. Beneficial in adults and better tolerated than beta agonists in elderly.

SIDE EFFECTS AND SPECIAL NOTES

Dry mouth and throat irritation. Increased intra-ocular pressure in with glaucoma.

CONTRAINDICATIONS

Patients with glaucoma
Allergy to peanuts

PROTOCOL USED IN

Respiratory Distress

NORMAL DOSAGE

One (1) unit

BENADRYL

PHARMACOLOGY AND ACTIONS

Blocks action of histamines during allergic reaction. Treats dystonic reactions to antipsychotic drugs (Haldol, Thorazine, Compazine, and Inapsine.)

INDICATIONS

- The second-line in anaphylaxis and severe allergic reactions after Epinephrine.
- Used with Inapsine to help prevent dysphoric and dystonic reactions and to increase sedation.

PRECAUTIONS

May have additive effect with alcohol or other CNS depressants. Useful in acute dystonic reactions but is not an antidote to Phenothiazine toxicity or overdose. May cause hypotension.

SIDE EFFECTS AND SPECIAL NOTES

Rarely necessary for allergic reactions. May be useful for long transports.

PROTOCOL USED IN

Anaphylaxis Head Trauma

DOSAGE

As stated in appropriate protocol. Normal dosage is 1 mg/kg up to 50mg.

DEXTROSE 50%

PHARMACOLOGY AND ACTIONS

Is the body's basic fuel and produces most quick energy. Its use is regulated by Insulin, which stimulates storage of excess glucose outside bloodstream. Mobilizes stored glucose into the bloodstream.

INDICATIONS

Hypoglycemia documented by reagent strips or glucose meter.

PRECAUTIONS

May worsen AMI and stroke. Extravasation will cause tissue necrosis. Return of blood should be checked during administration. If extravasation occurs, stop administration. Report upon arrival at receiving facility. Shall only be given IV. It will never be given orally.

SIDE EFFECTS AND SPECIAL NOTES

May hasten Wernicke's encephalopathy in malnourished patients.

PROTOCOLS USED IN

AMS Coma Hypoglycemia Seizures

ADULT DOSAGE

As stated in the appropriate protocol. Diabetic - The normal dosage is 25 grams (50cc).

PEDIATRIC DOSAGE

0.5 gm/kg

See Broselow Emergency Pediatric Tape for D25% dosage.

DILTIAZEM

PHARMACOLOGY AND ACTIONS

Calcium channel blocker. Inhibits calcium movement across cardiac vascular smooth muscle (depresses mechanical contraction). Decreases myocardial contractility, AV conduction, may decrease HR, may increase CO; decreases peripheral vascular resistance.

INDICATIONS

Stable Supraventricular Tachycardia, Atrial Fibrillation, Atrial Flutter, Atrial Tachycardia.

CONTRAINDICATIONS

Sick sinus syndrome, second or third degree AV block, severe hypotension, acute MI, pulmonary congestion.

SIDE EFFECTS

Hypotension, itching, vasodilation, atrial flutter, bradycardia, CHF, dizziness.

PROTOCOLS USED IN

Cardiac Dysrhythmias/tachy dysrhythmias

DOSAGE

Adult – 20mg slow IVP, if ineffective after 15 minutes, 25mg slow IVP.

Pediatric – see Broslow tape for dosage.

DOPAMINE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Has α and β receptors. Its actions differ with dosage given:

- 1-2mcg/kg/min - Dilates renal/mesenteric blood vessels (no effect on HR or BP).
- 2-10mcg/kg/min - β effects on heart: Increases cardiac output without increasing HR.
- 10-20mcg/kg/min - α effects cause peripheral vasoconstriction and increased BP.
- 20-40mcg/kg/min - α effects reverse dilatation of renal and mesenteric vessels and decreases flow.

INDICATIONS

Cardiogenic shock May be useful for other forms of shock, except Hypovolemia.

PRECAUTIONS

May induce tachyarrhythmia. Stop infusion if tachyarrhythmia occurs. High doses cause peripheral vasoconstriction. Low doses cause decreased blood pressure. Do not add to Sodium Bicarbonate or other alkaline solutions as it will inactivate them.

CONTRAINDICATIONS

Hypovolemic shock.

DOPAMINE (PARAMEDIC ONLY) (Continued)

SIDE EFFECTS AND SPECIAL NOTES

Common side effects: Ectopic beats, nausea, and vomiting. Angina has been reported following treatment. Can precipitate hypertensive crisis in patients on MAO inhibitors (Parnate ®, Nardil ®, Marplan ®). Consider hypovolemia and treat this with fluids before administration of Dopamine.

PROTOCOL USED IN

Shock Respiratory Distress – Pulmonary Edema

DOPAMINE ADMINISTRATION

(ADULT PATIENT)

Mix dopamine solution as follows and use a microdrip (60 drops per minute) drip set.

NOTE: 400mg in 500cc= 800mcg/cc

Take patient's weight in pounds, drop the last number, multiply that number times 2 = drop per minute.

EXAMPLE: Patient weight is 170lbs, drop last number = 17 times 2 = 34 drop per minute.

NORMAL DOSAGE

Start at 5mcg/kg/min. Increase at 5mcg/kg/min increments every 5 minutes to a max. of 20 mcg/kg/min or until blood pressure is at least 90 systolic and signs of shock are relieved.

PEDIATRIC PATIENTS

Mix: 80mg in 250 cc NS or 160mg in 500 cc NS to get a concentration of 320 mcg/cc.

Administer patient's weight in kilograms drop per minute. 1 drop per kg per minutes = 5mcg/kg/min.

EXAMPLE: Patient weight = 10kg. Runs drip at 10 drops per minute = 5mcg/kg/min.

EPINEPHRINE

PHARMACOLOGY AND ACTIONS

Increases HR & BP, myocardial contractile force, systemic vascular resistance, myocardial O₂ consumption.

INDICATIONS

Ventricular fibrillation Asystole PEA Systemic Allergic Reactions Asthma

PRECAUTIONS

Increases cardiac work. Can cause angina, MI, major dysrhythmias in patient with ischemic heart disease.

SIDE EFFECTS AND SPECIAL NOTES

Anxiety, tremor, headache, Tachycardia, PVC's, angina, hypertension.
Wheezing in the elderly can be pulmonary embolus/pulmonary edema or COPD with bronchospasm.

PROTOCOLS USED IN

IV – Asystole, PEA, VF/Pulseless VT
SQ – Anaphylaxis and Respiratory Distress– Asthma
Newborn Resuscitation

ADULT DOSAGE

Cardiac Arrest: 1.0mg q 5 minutes (IV) 2.0mg q 5 minutes (ETT).
Anaphylaxis and Asthma: SQ dose is 0.3mg.

PEDIATRIC DOSAGE

As stated in the appropriate protocol.

Normal SQ dose is 0.01mg/kg to a maximum of 0.3mg

OAR 847-035-0030 requires the EMT-B to file a report with the State Board of Medical Examiners if they administer Epinephrine in Anaphylactic Shock.

ETOMIDATE paramedic only

PHARMACOLOGY AND ACTIONS

Etomidate is an ultra-short-acting, nonbarbiturate, nonbenzodiazepine hypnotic. It does not have any analgesic properties. It is used as an induction agent for RSI.

INDICATIONS

Etomidate is used and an induction agent for RSI.

PRECAUTIONS

Etomidate should be used with caution in patients with marked hypotension, severe asthma, or severe cardiovascular disease.

SIDE EFFECTS AND SPECIAL NOTES

Side effects associated with etomidate include myoclonic skeletal muscle movement, apnea, hyperventilation or hypoventilation, laryngospasm, hypertension or hypotension, tachycardia or bradycardia, nausea, and vomiting.

PROTOCOLS USED IN

IV – RSI

ADULT DOSAGE

RSI: 0.3 mg/kg no > 20mg IV/IO.

PEDIATRIC DOSAGE

As stated in the appropriate protocol.

GLUCAGON

PHARMACOLOGY AND ACTIONS

Is a hormone, which causes Glucose mobilization in the body. It works opposite to Insulin, which causes Glucose storage. It is released at times of insult or injury when Glucose is needed. Return to consciousness should be within 20 minutes IM dose if patient is hypoglycemic. Has shown to be effective in the beta-blocker overdose. (OLMC approval required for use in beta-blocker overdose. If OLMC can not be contacted, give the maximum amount of Glucagon available up to a maximum of 5mg IVP over one (1) minute.)

INDICATIONS

- Hypoglycemic states determined by blood glucose monitoring and an IV line cannot be started.
- Positive confirmation of beta-blocker overdose.

PRECAUTIONS

Restricted to patients who are seizing, comatose/combatative and an IV cannot be started.

SIDE EFFECTS AND SPECIAL NOTES

Nausea and vomiting. Patient malnourished or with alcoholism may not mobilize any glucose. May be useful in treating life-threatening beta-blocker overdoses. Contact OLMC.

PROTOCOLS USED IN

AMS Coma Hypoglycemia Poisoning and Overdoses (beta-blocker overdoses requires OLMC approval). Diabetic

DOSAGE

As stated in the appropriate protocol.

For beta - blocker overdoses give the maximum amount available up to 5mg IVP over one (1) minute.

INAPSINE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Is a potent neuroleptic (tranquilizer) agent for either IV or IM injection. Produces tranquilization, sedation, allays apprehension, state of mental detachment and indifference. Reflex alertness is not effected. Potentiates other CNS depressants. Produces mild alpha-adrenergic blockade, peripheral vascular dilation. Has an antiemetic effect.

Onset of action is 3 -10 min. Peak effect may not be apparent for 30 minutes. Duration - 2 to 4 hours.

Benadryl ® should be given after the administration of Inapsine ® if dysphoric or dystonic reactions occur. Dysphoric reaction is an exaggerated feeling of depression and unrest without apparent cause. Dystonic reactions are distorted twisting or movement of a part or all of the body.

INDICATIONS

Sedation of combative patients.

PRECAUTIONS

Can produce hypotension and decreased peripheral vascular resistance. Fluids to manage hypotension should be readily available. Before giving Inapsine, rule out medical causes such as hypoglycemia, hypoxemia, etc.

SIDE EFFECTS AND SPECIAL NOTES

The most common side effects are hypotension and tachycardia. These effects usually subside without treatment. If hypotension occurs and is severe or persists, it is well managed with parental fluid therapy.

Dysphoric (restlessness) and dystonic reactions have occurred following administration. These symptoms are not life threatening and may be lessened by Benadryl.

Use caution when administering Inapsine ® to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, and alcohol.) Inapsine ® may have additive/potentiating effects.

Inapsine may reduce the seizure threshold. Be prepared to manage the seizure patient.

FDA WARNING (December, 2001)

A warning has been received from the Federal Drug Administration stating that the administration of Inapsine could cause Torsades de Pointes. Although the occurrence of Torsades is rare, the warning is being taken seriously until it can be investigated. Anytime Inapsine is used the patient's ECG must be monitored immediately, closely and continually until the patient is turned over to the emergency department.

The treatment for Torsades de Pointes is 2 grams of Magnesium sulfate IVP.

PROTOCOL USED IN

Altered Mental Status Head Trauma

DOSAGE

As stated in the appropriate protocol.

To be used in patients greater than 12 years of age. For patients less than 12 years of age, contact OLMC for approval to use and dosage

LASIX (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Potent diuretic with a rapid onset of action and short duration of effect. Inhibits Sodium re-absorption through the kidney. Given IV causes immediate increase in venous capacitance decreasing venous pre-load. Peak effect occurs within 30-60 minutes after IV administration. Duration of effect is 60 minutes given IV and 6-8 hours if given orally.

INDICATIONS

Acute pulmonary edema

CONTRAINDICATIONS (Contact OLMC for approval)

Pregnant patient. Less than 18 year of age. Digitalis having arrhythmias.
Hypovolemia/Hypotension (BP < 100)

SIDE EFFECTS AND SPECIAL NOTES

Hypovolemia and hypotension. Hypotension should not be problem if patient is supine and not volume depleted. Problems occur if patient is upright, hypovolemic or decreased cardiac output.

PROTOCOL USED IN

Respiratory Distress

ADULT DOSAGE

Patients not taking Lasix: 20mg IV Patients taking Lasix: Daily dose up to 100mg IVP.

LIDOCAINE

PHARMACOLOGY AND ACTIONS

Depresses automaticity of Purkinje fibers.

Raises stimulation threshold in the ventricular muscle. The effect on the heart disappears in 10-20 minutes.

PVCs in the asymptomatic patient should be treated with oxygen.

INDICATIONS

- PVC's in suspected ischemic event, stable VT, recurrent VT and after cardioversion
- Paralytic premedication

SIDE EFFECTS

Sleepiness, dizziness, disorientation, confusion, convulsions and hypotension.

HEPATIC OR RENAL DISEASE

The AHA Advanced Cardiac Life Support Manual states the following for the use of Lidocaine:

"Clinicians must be aware that the balance between optimal therapeutics and toxic overdose is narrow in cardiac arrest. Several clinical conditions, such as advanced age and compromised liver function, dictate lower dosing of Lidocaine. Such patient should receive a single loading dose of 1mg/kg. Lidocaine toxicity is moot in patients who are dying because they cannot be converted from refractory VF/VT. Patients who remain in VF/VT despite multiple counter shocks, Epinephrine, and proper ventilation, the more aggressive dosing regimen remains rational and acceptable."

CONTRAINDICATIONS

Lidocaine **SHALL NOT** be given without OLMC order if the blood pressure is < 90 systolic, **OR** the heart rate is < 50/min **OR** there are periods of sinus arrest **OR** any A-V block. These do not apply when giving Lidocaine prior to Succinylcholine or during a cardiac arrest. Contact OLMC prior to giving for supra-ventricular arrhythmias.

PROTOCOLS USED IN

VF/Pulseless VT and VT with a pulse, Dysrhythmias – PVC (Paramedic Only) Airway Management - Intubation with Paralytics

ADULT DOSAGE

PVCs

1st dose - 1.5mg/kg IV.

2nd and 3rd dose is 0.75mg/kg q 10 minutes.

VF, Pulseless VT

1st dose - 1.5mg/kg

2nd dose - 1.5mg/kg

PEDIATRIC DOSAGE

See Broselow Pediatric Tape

MAGNESIUM SULFATE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Magnesium is a cation, which is present in human cells and intercellular fluids. It acts as an anti-arrhythmic agent and may convert ventricular fibrillation and tachycardia.

INDICATIONS

- Cardiac arrest, after defibrillation, Epinephrine, Lidocaine and Amiodarone in the treatment of VF/VT.
- Seizures in the pregnant patient, especially during the 3rd trimester. (OLMC approval required)
- Torsades de Pointes after Inapsine

PRECAUTIONS

Magnesium Sulfate may cause hypotension, bradycardia or decreased reflexes and respiratory depression.

PROTOCOLS USED IN

Seizures (OLMC approval required) VF/Pulseless VT Anaphylaxis Respiratory Distress

DOSAGE

As stated in protocols. Normal dosage for Cardiac Arrest - VF/Pulseless V-Tach is 2 grams and the normal dosage for seizure activity in the pregnant patient is 4 grams IVP (OLMC approval required.) Magnesium Sulfate must be given SLOW IVP, over 1-2 minutes. Fast IVP can cause cardiac arrest.

The normal dose for the treatment of Torsades de Pointe is 2 grams slow IVP.

NARCAN

PHARMACOLOGY AND ACTIONS

Naloxone is a narcotic antagonist, which competitively binds to narcotic sites.

INDICATIONS

- Effective in treating Morphine, Lomotil ®, Demerol ® (Meperidine), Propoxyphene (Darvon ®), Heroin, Codeine, Hydromorphone Hydrochloride (Dilaudid ®), Pentazocine (Talwin ®), Percodan ® (Oxycodone) Fentanyl ® (Sublimaze), Dolophine ® (Methadone), Darvocet® (Propoxyphene), Vicodin ® (Hydrocodone).
- Diagnostically in coma of unknown etiology to rule out (or reverse) narcotic depression. Look for decreasing respiratory effort, altered LOC, pinpoint pupils, etc.

PRECAUTIONS

Patient's dependent on narcotics may exhibit violent withdrawal symptoms. Protect self/restrain patient.

SIDE EFFECTS AND SPECIAL NOTES

This drug has no side effects. Duration of some narcotics is longer than Naloxone. Patient must be monitored closely. Patients who receive Narcan must be transported to the hospital. Coma may reoccur. May need large doses to reverse Propoxyphene, (Darvon ®) overdose. Antagonistic effect on opiates occurs within one (1) to two (2) minutes and lasts one (1) to four (4) hours.

Narcan can be given IM or IN if IV route is not available.

PROTOCOLS USED IN

AMS Coma Poisoning/OD

ADULT DOSAGE

As stated in protocol.

Normal dosage is 2mg increments up to 8mg.

PEDIATRIC DOSAGE

See Broselow Pediatric Tape.

NITROGLYCERIN

PHARMACOLOGY AND ACTIONS

- Cardiovascular effects include:
- Pooling of blood in veins decreasing return of blood to heart (reduced pre-load).
- Decreased peripheral resistance (reduced afterload).
- Dilatation of coronary arteries.
- General smooth muscle relaxation.

CONTRAINDICATIONS

Prior to administration ask patient if they have taken Viagra ® and, if so, when did they take their last dose?

If they have taken Viagra ® (Sildenafil Citrate) or an alternative (StaminaRX, Stinger RX, Stamina Pro, Enerx, VigRX, Enzyte, Cialis, Caverta, Veega, Meltabs, VigRX Oil) within the last 24 hours, **DO NOT** administer Nitroglycerin until OLMC is contacted. Place the patient on high-flow oxygen, give Morphine for chest pain followed by a 250cc fluid bolus unless there are signs of CHF.

If the patient has taken Nitroglycerin prior to your arrival, ask if they are also taking Viagra ®. If they are taking Viagra, when did they take the last dose? **DO NOT** administer any additional Nitroglycerin until OLMC is contacted.

If you encounter a patient who has taken Nitroglycerin and Viagra and they have dropped, or are dropping, their blood pressure, bolus them with NS in 250cc increments. Stop fluid bolus if patient shows signs of pulmonary edema.

PRECAUTIONS

Generalized vasodilatation may cause hypotension and reflex tachycardia. Loses potency easily. Store in dark glass container with tight lid. Do not expose to heat. Use with caution in hypotensive patients.

SIDE EFFECTS AND SPECIAL NOTES

Common side effects include headache, flushing, dizziness and burning under the tongue. Adverse effects are increased when patient is upright.

Is a smooth muscle relaxant. May be effective in relieving chest pain caused by esophageal spasm.

PROTOCOLS USED IN

Chest Pain

Respiratory Distress

DOSAGE

As stated in the appropriate protocol.

The normal dosage is 0.4mg SL spray q 5 minutes if BP remains >90 systolic.

Viagra is contraindicated by these drugs:

NITROGLYCERIN (Continued)

Nitroglycerin Based

Deponit, Minitran, Nitrek, Nitro-Bid, Nitrocine, Nitro-Derm, Nitro Disc, Nitro-Dur, Nitrogard, Nitroglycerin, Nitroglycerin T/R, Nitroglyn, Nitrol Ointment, Nitrolan, Nitrolingual Spray, Nitrong, Nitropar, Nitropress, Nitroprex, Nitro S.A., Nitrospan, Nitrostat, Nitro-Trans System, Nitro Transdermal, Nitro-Time, Transderm-Nitro, Tridil.

Isosorbide Nitrate Based

Dilatrate-SR, Iso-bid, Isordil, Isordil Tembids, Isosorbide Dinitrate, Isosorbide Dinitrate LA, Sorbitrate, Sorbitrate SA

Pentaerythritol Tetranitrate, Peritrate, Peritrate SA

Erythrityl Tetranitrate Based

Cardilate

Isosorbide Dinitrate/Phenobarbital Based

Isordil w/PB

Illicit Substances Containing Organic Nitrates

Amyl nitrate or nitrite. It is known that amyl nitrate or nitrite is sometimes abused. In abused situations, amyl nitrate or nitrite may be known by various names, including "poppers." e.g., butyl nitrate.

ORAL GLUCOSE

PHARMACOLOGY AND ACTION

Produces most of the body's quick energy. Insulin stimulates storage of excess glucose from the bloodstream. Glucagon, which mobilizes, stored glucose into the bloodstream, regulates its use.

INDICATIONS

- Hypoglycemic states are associated with diabetic insulin shock.
- The conscious patient where the blood glucose measurement is < 80mg%. Neurologic deficit or altered mental status where glucose measurement is not available.

PRECAUTIONS

Patient must be continually assessed for ability to protect airway. Delay giving until patient is able to protect their airway.

ADMINISTRATION

Assess patient's ability to protect his/her airway. Administer 1/2 tube; place between the cheek and gums. Do not allow it into the airway. Give remaining tube in five (5) minutes if no response. Repeat doses may be needed. May be more tolerable if administered with liquid between dosages. Have suction ready.

SIDE EFFECTS AND SPECIAL NOTES

May complicate or worsen some medical conditions (AMI, Stroke). Should be given when colorimetric strips/blood glucose meter documents hypoglycemia. Effect is delayed in the elderly or people with poor circulation. If patient is unconscious, support ABC's.

OXYGEN

PHARMACOLOGY AND ACTIONS

Oxygen added to the inspired air raises the amount of oxygen in the blood and the amount delivered to the tissues. Breathing in most persons is regulated by small changes in acid/base balance and CO₂ levels. It takes a large drop in blood oxygen concentration to stimulate respiration.

INDICATIONS

- Suspected hypoxemia or respiratory distress from any cause.
- Acute chest pain in which cardiac ischemia or myocardial infarction is suspected.
- Shock (decreased oxygenation of tissues) from any cause. Major trauma.
- Carbon monoxide poisoning.

PRECAUTIONS

A small percentage of patients with COPD breathe because they are hypoxic. **DO NOT WITHHOLD OXYGEN BECAUSE OF THIS POSSIBILITY. BE PREPARED TO ASSIST VENTILATION IF NEEDED.**

SIDE EFFECTS AND SPECIAL NOTES

Restlessness may be a sign of hypoxia.

Oxygen supports combustion. Oxygen toxicity (overdose) is not a hazard from acute administration. Nasal prongs work equally well on nose and mouth breathers.

DOSAGE

Low flow (1-2 LPM)

Patients with chronic lung disease in little or no distress.

Moderate flow (4-6 LPM)

Precautionary use for trauma, chest pain, etc.

High flow (10-15 LPM)

Severe respiratory distress, either medical or traumatic.

PHENERGAN

PHARMACOLOGY AND ACTIONS

Sedative, antiemetic. Exact mechanism unknown. Possesses sedative, antihistaminic, antiemetic, anticholinergic, local anesthetic, antimotion sickness effects.

INDICATIONS

Moderate to severe nausea and vomiting.

CONTRAINDICATIONS

Comatose, those receiving large doses of other CNS depressants, acutely ill/dehydrated children, acute asthmatic attack, vomiting of unknown etiology in children, Reye's syndrome, those receiving MAO inhibitors.

SIDE EFFECTS

Drowsiness, disorientation, Hypotension, confusion, syncope, dry mouth.

PROTOCOLS USED IN

Cardiac chest pain, Nausea and vomiting.

DOSAGE

12.5-25mg IV/IO per protocol.

SODIUM BICARBONATE (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Is an alkalotic solution, which neutralizes acids, which increase when tissues become hypoxic. Acids depress cardiac contractility and depress response to catecholamines making fibrillation more likely and defibrillation less likely. In non-perfusing patient may increase acidosis and worsen patient's acid/base balance.

INDICATIONS

- To control arrhythmias in tricyclic antidepressant overdose or hyperkalemia.
- To make heart more receptive to conversion from VF, Asystole, PEA.

PRECAUTIONS

Too much will cause alkalosis. May increase cerebral acidosis, especially in diabetics who are ketonic.

SIDE EFFECTS AND SPECIAL NOTES

May cause increase in cerebral impairment. In respiratory arrest, the treatment of choice is ventilation to correct respiratory acidosis.

PROTOCOLS USED IN

Asystole VF and Pulseless VT Poisoning/OD
Cardiac Arrest Management Wide-Complex Dysrhythmia

ADULT DOSAGE

As stated in protocols. Normal dose is 1mEq/kg. Half of original dose may be repeated every 10 minutes.

PEDIATRIC DOSAGE

See Broselow Pediatric Tape for drug and fluid dosages

VECURONIUM (PARAMEDIC ONLY)

To be administered only by authorized Paramedics

PHARMACOLOGICAL EFFECTS

A long acting non-depolarizing skeletal muscle relaxant. Competes with acetylcholine at cholinergic receptor sites. Maximal neuromuscular blockade occurs in five minutes. Duration of action is about 30 to 45 minutes. Complete paralysis of all skeletal muscles occurs and there is no effect on consciousness.

INDICATIONS

- To maintain prolonged paralysis in the intubated patient.
- Used when the effects of Succinylcholine start to wear off after the patient has been intubated.
- If Succinylcholine is contraindicated.

CONTRAINDICATIONS

NONE

SIDE EFFECT AND SPECIAL NOTES

Patients with renal or hepatic failure may experience prolonged paralysis.

PROTOCOL USED IN

Airway Management

ADULT DOSAGE

As stated in the appropriate protocol.
Normal dose is 0.1mg/kg

PEDIATRIC DOSAGE

As stated in the appropriate protocol. See Broselow Pediatric Tape for drug and fluid dosages

VERSED (PARAMEDIC ONLY)

PHARMACOLOGY AND ACTIONS

Hypnotic sedative

INDICATIONS

Status Seizures. Anxiety Relief (cardioversion, paralytic intubation, pacing.)

PRECAUTIONS

Given too quickly, will cause respiratory depression or respiratory arrest.

SIDE EFFECTS AND SPECIAL NOTES

Common

Drowsiness Fatigue
Dizziness Ataxia

Moderate

Respiratory Depression
Hypotension

Severe

Respiratory Arrest
Shock

Increased possibility of respiratory depression in patients who have taken other depressant drugs, especially narcotics, alcohol and barbiturates. Increased chance of respiratory arrest if given quickly.

PROTOCOL USED IN

Seizure Pacing Airway Management - Intubation with paralytics Cardioversion Airway Management - Intubation

DOSAGE

As stated in the protocol.