Medical Care Protocols

I want to express my sincere appreciation to everyone involved for all the hard work and many hours spent preparing this document. It will be an evolving set of protocols, so it is imperative that they are reviewed on a periodic basis. Revisions will be made so that the EMS system in Alachua County can provide the optimum pre-hospital service to its citizens and visitors.

Approved for content and implementation:

___________________________________               ____/_____/_____
Peter J. Gianas, MD        Date approved
System Medical Director, Alachua County
EMERGENCY MEDICAL SYSTEM

MEDICAL PROTOCOLS
Protocol Sections:

Administrative
Basic Medical Care
Cardiovascular
Medical Emergencies
Trauma
OB/GYN
Procedural
Appendix
Administrative Protocols
GENERAL CONSIDERATIONS

The following standards of care shall apply to all patients treated by Alachua County Emergency Medical System.

- All patients are to be treated with respect.

- Consultation with an on-line medical control physician prior to initiation of non-life threatening therapeutic modalities outside the context of these protocols remains the standard. **The sole exception is being life-saving care.** Life-saving care is defined as any or all measures which have as their purpose the immediate preservation of life and/or the establishment of means by which life might be preserved. The Medical Control Physician shall be defined as the emergency department attending physician at the receiving facility.

- Patient care is by nature unpredictable and patients may require care derived from multiple protocols, or in the absence of these, on-line medical control. The following protocols are written with this reality in mind. Deviations from protocol will be tolerated only when it is intended to further patient care. Such deviations must in no way detract from the high level of patient care expected from pre-hospital care providers associated with Alachua County’s EMS system.

- The ABC’s (airway, breathing, and circulation) will always take priority in patient management. Maneuvers required to secure the airway, ensure adequate gas exchange, and establish adequate tissue perfusion should always supersede specific protocol statements.

- Orders communicated directly from the on-line Medical Control Physician to the paramedics caring for the patient may supersede established protocol.

- The paramedic on every patient contact, regardless of treatment administered, will complete a patient care report.

- Complications, problems, or requests for additional orders during treatment will be directed to the on-line Medical Control Physician. Additional questions or problems should be directed to the Medical Director after the incident.

- Emergency responders functioning at the BLS level will be expected to conform to Alachua County’s BLS Medical protocols to the extent that their training and certifications allow.
• Although it is our policy and desire to be of assistance to law enforcement, requests by law enforcement for collection of blood samples to screen for alcohol or drug levels will be honored when, in the best judgment of the paramedic in charge of the patient, assisting law enforcement in such a manner would not delay patient transport, care, nor violate the Citizen’s rights of refusal.

• An Alachua County Fire/Rescue ALS unit may cancel their response by any of the following means:
  o The requester calls back and advises that they no longer need EMS to respond,
  o Another Advanced Life Support (ALS) unit arrives on the scene and determines additional ALS units are not needed,
  o LEA or a Basic Life Support (BLS) unit advises there is no patient.

• NOTE: The only recognized reason for cancellation by another Public Safety Agency is for “no patient on the scene”. The Medic unit will continue response for a minor injury or for a patient refusing treatment.
RADIO REPORT

It is understood that some pre-hospital situations preclude providing a complete report to the destination facility. However, paramedics should strive to furnish a complete report at the earliest possible opportunity with deviations from this standard being for the benefit of the patient.

- Unit Identification
- Patient’s age and gender
- Patient’s chief complaint
- Brief history relevant to the chief complaint
- Vital signs (as appropriate for circumstances)
- Description of the mechanism of injury for traumatized patients
- General appearance, including the Glasgow coma scale
- Pertinent physical findings
- Treatment rendered and the response to treatment
- Request for orders needed and confirmation of any orders given
- If medical radio contact is not available
  - Attempt contact by phone
  - Route a message through CCC via dispatcher
  - Follow protocol as written
INITIATION OF CPR

All patients found in cardiopulmonary arrest by EMS personnel will receive cardiopulmonary resuscitation (CPR). CPR will be initiated using the American Heart Association standards for adults, children or infants.

- **Exceptions:**
  - A patient who has in his or her possession, or at the bedside, a completed Florida Pre-Hospital Do Not Resuscitate Order (HRS Form 1896).
  - If there is any question about the validity of the DNR document, consultation with the on-line medical control physician will be initiated. Until there is a clear understanding as to the validity of the order, CPR will be performed.
  - Any patient who presents as obviously dead. (See declaration of death)

- **Cardiopulmonary resuscitation may be halted when:**
  - Effective spontaneous ventilation and circulation have been restored as per 2006 AHA ECC guidelines
  - Resuscitation efforts have been transferred to persons of no less skill than the initial providers
  - The rescuer is exhausted and physically unable to continue resuscitation.

- **ALL DECISIONS CONCERNING THE WITHHOLDING OR CESSATION OF RESUSCITATION MUST BE MADE IN CONJUNCTION WITH THE ON-LINE MEDICAL CONTROL PHYSICIAN. IF A PHYSICIAN IS AT THE SCENE AND WISHES TO PARTICIPATE IN PATIENT CARE DECISIONS, THAT PHYSICIAN MUST BE PLACED IN IMMEDIATE CONTACT WITH THE MEDICAL CONTROL PHYSICIAN."
DETERMINATION OF DEATH

The EMS team does not pronounce death; rather, it is determined to exist.

What to look for:
- Death is determined to be present if all of the following are evident:
  - Unresponsiveness
  - Pulselessness
  - Apnea
  - Additionally, at least one of the following will be present to determine that death has occurred:
    - Absence of electrical activity on cardiac monitor in 2 or more leads
    - Lividity, rigor mortis, or generalized cyanosis
    - Decomposition of body tissue
    - Decapitation, incineration
    - Destruction of brain or heart

- Once it is determined that death has occurred, the EMS team will notify LEA.
- The body will not be left unattended until LEA is present.
- If this may be a crime scene, nothing in and around the immediate area should be disturbed.
- If CPR has been initiated by a bystander prior to arrival of EMS and upon the responders arrival the patient fulfills the criteria for death, the EMS team does not have to continue resuscitation.
- Resuscitation begun by EMS personnel MAY NOT be discontinued without Medical Control Physician input.
- Patients who are in a hypothermic environment may respond to resuscitation measures for a longer period of time. Therefore, hypothermic patients should be resuscitated until normal body temperature is achieved.
- When in doubt, resuscitate and transport.

- The criteria noted herein DO NOT apply in the situation of a mass casualty incident [MCI].
SUSPECTED CHILD/ELDER ABUSE

- Whenever child or elder abuse is suspected, assess the scene closely.
- Record all appropriate information on the patient care report.
- Upon arrival at the Emergency Department, a verbal report summarizing your findings should be given to the responsible medical personnel. Complete any appropriate paperwork in compliance with organizational and administrative procedures.
- Do not delay transport to obtain the above information.
- Do not make accusatory, confrontation, angry, or threatening statements to any parties present.
- Any non-transported patient, for whom you have concerns about the possible abuse, will be reported to the appropriate local or state agency (Children and Family Services, LEA). The District Chief/Supervisor will also be notified.
- **ABUSE REGISTRY 1-800-962-2873**
DETERMINATION OF HOSPITAL DESTINATION

Determine the acuity of the patient’s chief complaint, illness, or injury.

- **If potentially life threatening, transport the patient to the closest appropriate facility.**

- **If non life-threatening:**
  - Transport the patient to hospital of the patient’s choice
  - If the patient is unable to make such a judgment (minors, etc.), transport the patient to the hospital of choice of an appropriate party acting on behalf of the patient (parent, guardian);
  - If the patient expresses no choice and if no other appropriate party is available or has reason to act on behalf of the patient, transport the patient to the closest appropriate facility.

- When transporting an OB patient, notify the ED as early in the call as possible. When the ED gets the radio call from ACFR stating they have an L&D transport, the ED will notify Labor and Delivery. The OB RN will meet EMS personnel at the designated elevator. The OB RN will then transport the patient to OB triage.

- If the OB patient is unstable, the ED physician will evaluate and stabilize the patient in the ED.

- If the transport is an inter-facility transfer and the OB physician requests EMS to transport the patient to OB triage, the L&D RN will meet EMS personnel at the designated elevator and both personnel will transport the patient to meet the OB physician in OB triage.

- **No paramedic is to influence the choice of hospital by the patient nor assume that any hospital cannot offer its usual range of services thereby preferentially re-routing patients to select facilities, however, paramedic personnel may educate those requesting information to the appropriate facility for their specific type and acuteness of emergency consistent with recognized local practice**
HOSPITAL EMERGENCY DEPARTMENT EMS BYPASS GUIDELINES

Recognizing that the usual capabilities of a particular emergency department may become acutely and temporally overwhelmed, it may be necessary to temporarily divert patients to other facilities. To promote community cooperation in the delivery of emergency services, we have agreed to the following standards:

- The only complete hospital bypass is as a result of a hospital disaster (fire, power failure, HAZMAT incident, flooded ED, etc.) or a security lockdown (armed and dangerous subject in the ED). All patients are subject to hospital bypass.
- EMS bypass, as determined only by persons authorized to do so (Hospital designee in cooperation with the ACFR Medical Director), will give the emergency department of that hospital temporary relief from incoming patients via EMS. This status is independent of any temporary change in other hospital capabilities.
- Once notified of a hospital's bypass status, EMS crews will make every effort to honor that status. Exceptions to this rule include:
  - The patient whose condition is unstable, life threatened, and deteriorating will be taken to the closest appropriate facility, regardless of bypass status. The paramedic attending the patient is the sole arbiter of the patient's status.
  - If the patient (or third party responsible for the patient) insists on patient transport to a facility on bypass for the patient's condition, on-line medical control at the facility requested by the patient (or surrogate) will be contacted for assistance. The directives of the on-line medical control physician will indicate the most appropriate destination for the patient.
  - Any hospital placing themselves on EMS bypass status will notify the Combined Communications Center when the ED has been reopened.

- Each hospital will develop internal procedures for determining which personnel are authorized to recommend bypass and are authorized to report hospital status to the Alachua County Combined Communications Center (CCC).

- Should two or more receiving facilities request bypass status at the same time, all bypasses will be terminated. The administrator's on-call at each facility will be notified (by their respective ED staffs) in this event and the Combined Communications Center will issue an administrative page to ACFR and the Medical Director. In this event, the hospitals involved, ACFR and the Medical Director will determine status and notify the Combined Communications Center.

- These guidelines apply to patients transported by Alachua County Fire/Rescue units only. Extension of these guidelines to patients transported by EMS units of other agencies may be permitted.
REFUSAL OF SERVICE

- Dealing with the patient who activates the EMS system (or has the system activated on their behalf by a third party) and then declines or refuses care and transport is a difficult problem for the field paramedic. An ordered approach to these situations will help to expedite their satisfactory resolution. The assumption should ALWAYS be that the patient requires medical care and transport.

- **Assess the patient and the scene.**
  - Obtain a history from the patient and/or others in the area, including mechanism of injury (if appropriate).
  - Obtain the patient’s vital signs and document on the run report.
  - Perform the physical examination, paying particular attention to alterations in mental status or vital signs and consider any traumatic injury, mechanism of injury, or medical illness that may represent a threat to the well being of the patient.
  - Document clearly if the patient or surrogate refuses assessment.

- **Assess the competency of the patient.**
  - For our purposes, a competent patient shall be defined as one who is:
    - Over 18 years of age, or is an emancipated minor (a pregnant woman, a woman who has given birth, or a married person of either gender) and;
    - Awake, alert, and fully oriented to time, person, place, and situation and;
    - Has no alterations in vital signs, mental status, or level of consciousness and;
    - Has no signs of acute injury or illness, and has no signs of chronic illness, either of which may influence the ability to make an informed decision and;
    - Is not exhibiting clinical signs of intoxication by alcohol or drugs, (licit or illicit) and/or
    - Has no history of mental illness that affects their decision-making ability.
- **If the patient (or parent or guardian) is judged competent to refuse transport:**
  - Again emphasize the need for care, the risks of refusal of care (including death), and our wish to transport the patient;
  - If patient, parent, or guardian declines care, and the EMS personnel do not feel transport by EMS to the hospital is required, patient, parent, or guardian must sign the appropriate written release form in front of two witnesses. The patient, parent, or guardian who is judged competent, declines care, and then refuses to sign the waiver will prompt the EMS crew to reassess the competency of the individual; if still considered competent to decline care, a verbal statement MUST be documented on the run report and the verbal waiver form completed.

- **If the patient (or parent or guardian) is judged not competent to refuse transport:**
  - Explain to the patient (or parent/guardian) the need for transport; reassure the patient that no harm will result from transport but that complications, up to and including death, may result from a delay in treatment;
  - If patient, parent, or guardian continues to refuse care, enlist the MCP or law enforcement personnel to secure patient for transport.

  - **THIS PROCEDURE MAY BE COMPLETED WITHOUT ON-LINE MEDICAL DIRECTION UNLESS THE PATIENT IS YOUNGER THAN 5 YEARS OF AGE, OLDER THAN 70 YEARS OF AGE, OR HAS RECEIVED ANY MEDICATION BY THE EMS TEAM. FOR THESE PATIENTS, ON-LINE MEDICAL DIRECTION MUST BE REQUESTED PRIOR TO OBTAINING A WAIVER.**
• **Refusal of treatment/ transport of minors:**
  o Although care may be refused by a responsible parent or legal guardian if said parent or guardian making the decision qualifies as competent as defined above, **every effort will be made to transport minors exhibiting any findings consistent with injury, alteration in mental status, or intoxication.** If the parents or guardian are not on scene, they may make the refusal over the telephone. Two witnesses will confirm the telephone conversation by signing the Waiver form.
  o Where there are historical or physical findings of injury or illness, intoxication, and/or alterations in mental status, level of consciousness, or vital signs, and no parent or guardian is available, the minor will be transported.
    o If the minor is a college student, the paramedic will obtain assistance from the MCP prior to obtaining a waiver.
    o If the EMS system is summoned to by a third party and either the patient is not found or there is no EMS assistance required, there is “No Patient” and no refusal form is required.
    o If patient contact is made a patient care report must be completed.
  o If the patient, parent, or guardian refuses care, and EMS personnel feel transport to the hospital is required, the patient, parent, or guardian must sign the appropriate written release form in front of two witnesses.
    o The patient, parent, or guardian who is judged competent, refuses care, and then refuses to sign the waiver will prompt the EMS crew to reassess the competency if the individual;
    o If the person in question is still considered competent to decline care, a verbal statement **MUST** be documented on the run report and the verbal waiver form completed. **ON-LINE MEDICAL DIRECTION MUST BE INVOLVED IN THESE CASES.**
    o Thank patient, parent, or guardian for signing the release. Emphasize that our EMS system **WILL RETURN** should the patient, parent, or guardian change his or her mind.

• All episodes, which involve refusal of care or assessment of competency, must be documented completely on the run report.

• **NO REFUSAL OF CARE WILL OCCUR IN THE PATIENT WHO, AFTER EVALUATION BY RESCUE PERSONNEL, IS JUDGED TO BE AT RISK OF OR SUFFERING FROM SERIOUS ILLNESS OR INJURY, WITHOUT THE INVOLVEMENT BY THE ON-LINE MEDICAL CONTROL PHYSICIAN.**
PHYSICIAN ON SCENE

- If a physician on scene offers to provide assistance/physician-command for a case requiring Advanced Life Support, the paramedic is to do the following, as long as it may be accomplished without putting the patient at risk for further morbidity or mortality. A “physician” is, for the purposes of this protocol, defined as a health care practitioner with either an MD or DO Degree.

- **Determination of Qualification:**
  - A valid license to practice medicine is required.

- **Authorization to Paramedics:**
  - Paramedics are authorized to proceed under the command of a physician on scene only if the physician has produced a valid license to practice medicine. Any dispute will be referred to the Medical Control Physician [MCP].

- **Requirements of Physician on Scene:**
  - **Assistance:** After determination of qualification, the physician who wishes to assist the Paramedic, but not take physical command, may do so. In this situation, the Paramedic remains in command and the Physician acts as either an extra set of hands or as a resource for selected procedures (i.e., Endotracheal Intubation) or both.
  - **Command:** Physical command may be accepted ONLY if the physician on scene agrees to sign the narrative section at the bottom right corner of the run report **AND** agrees to accompany the patient to the hospital.

- **Any conflicts will be referred to the MCP for resolution.**

- The physician who offers assistance at a scene call is doing so for reasons of humanity. A professional and respectful attitude toward the physician-volunteer will be maintained.
**UNIVERSAL PRECAUTIONS**

**All blood and body fluids will be considered infectious.**

- Appropriate Personal Protective Equipment (PPE) will be worn when treating patients where blood and/or OPIM (Other Potentially Infectious Materials) are evident or suspected.

- Appropriate respiratory protection will be used if it is documented or suspected that the patient may have infectious Tuberculosis or any other respiratory spread infection.

**General Practices:**

- Sharps will be disposed of in appropriate sharps container(s).
- Sharps will not be recapped.
- Hands will be cleaned, preferably with soap and water after patient contact or contact with OPIM; however, waterless hand cleaners may be used until soap and water are available.
- Contaminated equipment will be cleaned and then disinfected.
- PPE should be used to cover any areas on an employee’s person that could provide a route for contamination.

**Universal Precautions Categories:**

- **Mechanical Devices:**
  - Sharps containers and biomedical waste red bags.
  - Sharps Safety Devices.

- **Personal Protective Equipment (PPE)**
  - Gloves, Gowns, Eyewear, Fluid Shields, N95 Respirators.

- **Housekeeping:**
  - Cleaning and disinfecting products.
  - Waterless hand cleaner.
BASIC MEDICAL CARE PROTOCOLS
BASIC MEDICAL CARE

The phrase “Basic Medical Care” is used throughout the entire protocol as the first direction in patient care. This phrase will encompass all of the following and includes all of the BLS care protocols that are appropriate to the patient.

• **Scene size up:**
  o Utilize Personal Protective Equipment
  o Assess the scene for hazards
  o Park unit in a safe place
  o Protect yourself and crew members
  o Assess for the number of patients
  o Assess the need for additional resources
  o Assess the general condition of the patient(s)

• **Establish responsiveness:**
  o If unresponsive;
    • Assess ABC’s and correct as needed
    • Open airway, controlling C-spine as indicated
    • Check for breathing, give ventilations via BVM
    • Check for pulse – if no pulse found, initiate compressions at 100 per minute. (see CPR protocol)

• Control **bleeding** as per BLS protocol
• Administer **oxygen** as indicated per **Oxygen** protocol
• Treat for **shock** per BLS Shock protocol
• Ascertain **chief complaint**

• Ascertain and document **SAMPLE** History
  o Signs and symptoms
  o Allergies to medications
  o Medications
  o Past medical history
  o Last oral intake
  o Events leading up to the incident

• Utilize and document the pain mnemonic **OPQRST** if appropriate
  o Onset, Provocation, Quality, Radiation, Severity and Time
• Assess **Vital Signs**
  o Pulse - rate, quality, strength, location
  o Respirations - rate, quality, depth, effort
  o Blood pressure - systolic/diastolic
  o Level of pain (1-10 scale)
    • Where 0 = no pain and 10 = the worst pain the patient has ever suffered
  o Oxygen saturation **(SaO2)**
  o Initial VS must be manually assessed (excluding SaO2)

• **All abnormal vital signs must be verified manually (excluding SaO2)**

• **Physical assessment**
  o Physical exam of Head, Neck, Chest, Abdomen, Pelvis and Extremities as dictated by Nature of Illness or Mechanism of Injury
  o Cardiac monitor, to assess the patient’s rhythm. The cardiac monitor should be utilized for all patients with abnormal vital signs, conditions indicating possible rhythm irregularities (i.e. syncope, dizziness, chest pains, etc.) and any time that continuous cardiac monitoring would be useful. An EKG strip will be printed for documentation when monitor is utilized.
  o Perform a 12-lead ECG (if available) as indicated by 12-lead protocol and document findings

• Re-evaluate patient and vital signs at least every 15 minutes if stable or as appropriate if unstable

• Transport patient in **position of comfort** if not directed otherwise by protocol
## BLS For Health Care Providers

<table>
<thead>
<tr>
<th></th>
<th>Adult and Older Child (puberty and older)</th>
<th>Child (1 year old to puberty)</th>
<th>Infant (Less than 1 year old)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Establish that the victim does not respond</strong></td>
<td>Activate your emergency response system as soon as the victim is found.</td>
<td>Activate your emergency response system after giving 5 cycles of CPR.</td>
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</tr>
<tr>
<td><strong>Open the airway</strong></td>
<td>Use head tilt–chin lift.</td>
<td>Head tilt–chin lift (Suspected trauma: jaw thrust)</td>
<td></td>
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<tr>
<td><strong>Check breathing</strong></td>
<td>If the victim is not breathing, give 2 breaths that make the chest rise.</td>
<td>Open the airway, look, listen, and feel. Take at least 5 seconds and no more than 10 seconds.</td>
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<tr>
<td><strong>First 2 breaths</strong></td>
<td>Give 2 breaths (1 second each)</td>
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<tr>
<td><strong>Check pulse</strong></td>
<td>Carotid pulse (if no pulse, start CPR)</td>
<td>Carotid pulse (if no pulse or pulse is &lt;60 bpm with signs of poor perfusion, start CPR)</td>
<td>Brachial pulse (if no pulse or pulse is &lt;60 bpm with signs of poor perfusion, start CPR)</td>
</tr>
<tr>
<td><strong>Start CPR</strong></td>
<td>Center of breastbone between nipples</td>
<td>Just below nipple line on breastbone</td>
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<tr>
<td>• Compression location</td>
<td></td>
<td></td>
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<tr>
<td>• Compression method</td>
<td>Heel of 1 hand, other hand on top (or 1 hand for small victims)</td>
<td>2 fingers (2 thumb-encircling hands for 2-rescuer CPR)</td>
<td></td>
</tr>
<tr>
<td>• Compression depth</td>
<td>1½ to 2 inches</td>
<td>⅓ to ½ depth of chest</td>
<td></td>
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<tr>
<td>• Compression rate</td>
<td>100 per minute</td>
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**Compression-ventilation ratio**

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<tr>
<td></td>
<td>30:2 (1- or 2-rescuer CPR)</td>
<td>30:2 for 1-rescuer CPR (15:2 for 2-rescuer CPR)</td>
</tr>
</tbody>
</table>
**BLS - AIRWAY MANAGEMENT**

Management of a patient’s airway is paramount to life support.

The management of a patient’s airway shall include the following in order from BLS to ALS:

- Position the head using the head tilt-chin lift method unless trauma is suspected
- The airway of a suspected trauma patient should be opened using the modified jaw thrust maneuver
- Use suction as needed to clear airway
- Use oral or nasal pharyngeal airway adjuncts
- Consider King LT tube
- Request ALS intervention

**Assisted Ventilations:**

- Adult patients with a respiratory rate less than 12 or greater than 28 breaths per minute and/or exhibiting signs of hypoxemia may require assisted ventilations. This shall include use of any of the following methods:
  - Utilizing Bag Valve Mask (BVM) and basic airway maneuvers, with supplemental **Oxygen**.
  - Deliver enough volume to make the chest rise.
  - Mouth-to-mouth, mouth-to-nose, mouth-to-stoma (at provider option when adjuncts are not available). If any of these methods are employed an incident report **MUST** be filled out because of the exposure.

- Pediatric patients with signs of hypoxemia and or respiratory distress (including **bradycardia**, abnormal breath sounds, increased work of breathing, nasal flaring, retractions, stridor or abnormal positioning) should have ventilations assisted with a mask that covers both mouth and nose, but not eyes. This can be accomplished utilizing:
  - Pediatric Bag Valve Mask (BVM) and reservoir with supplemental **Oxygen** at 10-25 LPM.
  - Mouth-to-mouth, mouth-to-nose, mouth-to-stoma (at provider option when adjuncts are not available.) If any of these methods are employed an incident report **MUST** be filled out because of the exposure.

**Advanced Skills**

- Endotracheal Intubation (see protocol)
- Cricothyrotomy (see protocol)
BLS - OXYGEN THERAPY

Protocol:

Oxygen should be administered to patients who:
- Display signs and symptoms of hypoxia
- Complain of respiratory distress
- Complain of acute chest or abdominal pain
- Present in hypotensive states
- Have suffered major trauma
- Present as acutely ill
- Are suspected of carbon monoxide inhalation (regardless of SaO2 reading)
- Are pregnant and may have reason for fetal hypoxia
- Any patient who you suspect may become hypoxic due to mechanism of injury or nature of illness regardless of oxygen saturation level.
  - If patient is able to maintain SaO2 greater than 96% you may elect not to administer O2.

Methods of administration include:
- Venturi Mask Various = 28-50%
- Nasal cannula 1-6 LPM = 24-40%
- Non re-breather mask 12-15 LPM = 90-95%
- Bag Valve Mask with reservoir 10-25 LPM = 90-100%
- Oxygen powered Ventilator N/A = 100%
- Ventilator 40-60 LPM = 21-100%

Oxygen therapy should never be withheld from any patient who displays a need for it.
BLS - CONTROL OF EXTERNAL BLEEDING

Protocol:

- Whenever the term “Control external bleeding” is used throughout these protocols, the following elements must be considered:
  - Application of direct pressure with a sterile dressing
  - Elevation of the injured part above the level of the heart
  - Application of a pressure dressing

- Only when these measures fail should the following elements be considered:
  - Application of pressure to proper arterial pressure point
  - Pneumatic Anti-Shock Garment (PASG) may be utilized for lower extremity splints to control lower extremity hemorrhage and for stabilization of pelvic fractures.

- **Contraindications for Pneumatic Anti-Shock Garment (PASG) inflation:**
  - Pulmonary edema
  - Cardiogenic shock
  - Penetrating chest injury
  - Appropriate size not available

- **Contraindications for inflation of the abdominal compartment:**
  - Evisceration
  - Impaled object
  - If the patient is known to be pregnant
  - Pediatric patient under 9 years of age

- Application of a tourniquet as a last resort
BLS - SHOCK

Decompensated Shock:

- Any adult patient exhibiting signs of inadequate perfusion, which may include:
  - Altered mental status (e.g. lethargy, coma)
  - Tachycardia
  - Pallor
  - Diaphoresis
  - Pale conjunctiva
  - Delayed capillary refill
  - Orthostatic vital sign changes
  - Low Blood Pressure
  - Thirst

- Any pediatric patient having a systolic blood pressure BELOW normal [(patient age x 2) + 70] or the following signs of inadequate central (proximal) perfusion:
  - Altered mental status (e.g. lethargy, coma)
  - Profound tachycardia or bradycardia
  - Delayed capillary refill time (greater than 2 seconds)
  - Any of the adult signs listed above

Protocol:

- Place patient in supine position
- Trendelenburg position -- elevate legs approximately 45 degrees
- **Oxygen** via NRBM @ 10-25 liters/minute
- Maintain body temperature
- Request ALS assistance
MCI and Triage System

**Definition:**
- A Mass Casualty incident or “MCI” is defined as any event that overwhelms the resources of the EMS system.
  - Alachua County’s EMS system resources may vary at different times. (IE: such as fall during college football games).

**Protocol:**
- The need for an organized and orderly approach to an MCI cannot be overstressed.
  - The Department’s SOG has an established guide for implementation of the incident command system which should be active for any MCI.
  - Triage of patients at the scene of an MCI should be accomplished using the START/JUMPSTART triage system as listed below.
  - Patients injury/illness severity will be identified as one of the following four categories:
    - Red – Requires immediate transportation.
    - Yellow – Requires transportation but can be delayed.
    - Green – Ambulatory “walking wounded” with minor injuries.
    - Black – Deceased- not transported.
  - Coordination of patients with area hospitals must be accomplished through the incident command system.
- The steps of the Start triage systems are as follows.

**STEP ONE:** Loudly ask anyone within the sound of your voice to move to a designated area if they are able. This will automatically help you sort out the walking wounded and these patients should be tagged **green**.

**STEP TWO:** In an orderly fashion, move to each patient checking for the status of Airway, Breathing, Circulation and Mental status and tag them using the following rules.

**Breathing:**
- Yes, if respirations less than 30 then check circulation.
- Yes, if respirations greater than 30 = triage RED.
- No, open and clear airway- if breathing begins = triage RED
- No, after clearing airway the patient is not breathing = triage Black.
**CIRCULATION:** (Check pulse)

- Control bleeding.
  - Weak pulse=triage RED
  - Strong Pulse= go to mental status check or check capillary refill time (CRT)
    - CRT: If less than 2 seconds go to mental status check
    - CRT: If greater than 2 seconds=triage RED

**Mental Status:** (Commands "open your eyes, squeeze my hand, etc.)

- Patient follows commands = triage Yellow
- Fails to follow simple commands = triage RED

A simple flow chart below will demonstrate the progression of triage with each individual, including pediatric patients.
CARDIOVASCULAR
PROTOCOLS
CHEST PAIN - SUSPECTED CARDIAC

Protocol:
- Basic Medical Care
- Airway management
- Define pain response using OPQRST:
  - Onset, Provocation, Quality, Radiation, Severity, Time
    - If patient has a history of Diabetes, consider symptoms other than pain to evaluate for a silent MI
- Vascular Access
  - Obtain a blood sample including: 1 red, 1 purple and 1 green top tube.
- Cardiac monitor - Treat dysrhythmias as indicated
- Cardiac rhythm and the presence of a blood pressure must be assessed prior to and between each therapeutic measure when treating cardiac dysrhythmias with a pulse.
- If available, obtain a 12-lead EKG (See 12-lead protocol)
  - Repeat 12-lead EKG after treatment or changes in patient condition (as time permits).

If chest pain is considered cardiac in origin
- Oxygen at 2-4 LPM
- Administer Nitroglycerin* spray/tablet SL every 5 minutes until pain relieved
- After administration of Nitroglycerin re-check vital signs to ensure the patient is hemodynamically stable
  - Apply Nitroglycerin paste, ½” – 2” to the anterior chest wall
  - Use Nitroglycerin carefully if evidence of a right ventricular infarct
    - In the presence of a right ventricular infarct, a fluid bolus of 250ml Normal Saline may be appropriate prior to the administration of Nitroglycerin.
*Patients who have ingested Viagra (sildenafil) or other erectile dysfunction medications within 36 hours should not receive nitrates in any form
- If patient is not allergic and has not consumed aspirin in the past 6 hours
  - Administer 4 chewable baby Aspirin (total 324mg)
- If pain persists and systolic BP is greater than 100mmHg
  - Morphine Sulfate 1-5 mg IVP/IO. May repeat in 2 mg increments up to a total 10 mg. For additional pain management contact medical control.
- If patient becomes hypotensive
  - Re-evaluate and adjust medicines
- If hypotensive and lungs clear
  - Refer to Hypotensive protocol
CHEST PAIN - NON CARDIAC

Protocol:

• Basic Medical Care
• Airway management
• Define pain response using **OPQRST**:
  - Onset, Provocation, Quality, Radiation, Severity, Time
• Cardiac monitor
• Treat dysrhythmias per protocol
• Vascular Access
• Obtain a blood sample including: 1 red, 1 purple, and 1 green top tube

   **If available, obtain and document a 12-lead EKG to rule out a cardiac event**

**If chest pain is still considered non-cardiac in origin**

• Focused physical exam for chest injury
• Ascertain if movement, drinking fluids, eating, deep inspiration, or other changes pain
• Continually re-evaluate for cardiac or respiratory distress
• If patient develops shortness of breath go to respiratory distress protocol
# Chest Pain Differential Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Pain</th>
<th>Relief</th>
<th>Associated Symptoms</th>
<th>E.K.G.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aortic Dissection</td>
<td>Excruciating, Tearing, May migrate to arms, neck, back and shoulders</td>
<td>Analgesics, Resection</td>
<td>Blood pressure differences in arms, unequal arterial pulses</td>
<td>No changes</td>
</tr>
<tr>
<td>Pericarditis</td>
<td>Sharp, Sudden, Constant, Increases with change in position and respirations</td>
<td>Sitting up, Leaning forward, Anti-Inflammatory drugs</td>
<td>Pericardial friction rub</td>
<td>Global ST &amp; T-wave elevations</td>
</tr>
<tr>
<td>Pulmonary Embolism</td>
<td>Sudden, Sharp</td>
<td>Analgesics</td>
<td>Hemoptyis, Shortness of breath</td>
<td>Right Axis Shift</td>
</tr>
<tr>
<td>Pericardial Tamponade</td>
<td>Sharp or dull pain</td>
<td>Pericardio-centesis</td>
<td>Distant heart sounds, Shortness of breath, Pulsus paradoxus, JVD</td>
<td>Diffuse, non-specific changes</td>
</tr>
<tr>
<td>Angina</td>
<td>Sudden onset, Crushing, Substernal, May radiate to jaw, neck or back</td>
<td>Rest, Vasodilatation, equalize O2 supply and demand</td>
<td>Diaphoresis</td>
<td>Elevated ST segments resolve with relief of pain</td>
</tr>
<tr>
<td>Prinzmetal's Angina</td>
<td>At rest, Cluster timing, 12:00pm-8:00am Young males</td>
<td>Vasodilatation</td>
<td>Elevated ST segments resolve with relief of pain</td>
<td></td>
</tr>
<tr>
<td>Unstable Angina</td>
<td>At rest, Unrelieved with NTG, Change on existing pattern of pain or new onset pain</td>
<td>Equalize O2 supply and demand</td>
<td>Diaphoresis</td>
<td>Transient ST and T wave changes resolve with relief of pain</td>
</tr>
<tr>
<td>Myocardial Infarction</td>
<td>Sudden onset, Crushing, Substernal, May radiate to jaw, neck or back</td>
<td>Analgesics, re-perfusion, fibrinolytic, (mechanical or surgical)</td>
<td>Diaphoresis; weakness, shortness of breath, anxiety, feeling of doom, nausea, pale or ashen color skins, rales.</td>
<td>Elevated ST segment, Significant Q waves; T wave inversion, dysrhythmias</td>
</tr>
</tbody>
</table>
CONGESTIVE HEART FAILURE/PULMONARY EDEMA

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access

- Administer Lasix 20-40 mg IV over 2 minutes

- Administer Nitroglycerin sublingual

- Administer Nitropaste ½” – 2” on anterior chest
  - Remove if systolic B/P drops less than 100

- Morphine Sulfate 1-5 mg IV/IO

- May administer Albuterol 2.5 mg in 3 cc Normal Saline via nebulizer if wheezing

- If hypotensive
  - Refer to Shock Protocol

- If respiratory failure is imminent, be prepared to intubate and provide positive pressure ventilation.

MEDICAL CONTROL OPTIONS:

- Repeat any of the above Standing Orders
Cardiac Arrest Management

1. CPR
   a. Compressions at a rate of 100/min.
   c. **When an advanced airway is placed**, rescuers will no longer perform CPR in cycles (i.e.; compressions interrupted by pauses for 2 breaths).
      i. Chest compressions are then delivered continuously at 100/ min for 2 minutes intervals.
      ii. Ventilations are provided once every 6-8 seconds. Avoid excessive ventilations
      iii. Ventilate with enough volume to make chest rise.
   d. Rescuers should switch roles (ventilator and compressor) every two minutes to minimize compressor fatigue and deterioration of quality of compressions.

2. Airway management:
   a. Basic: oral or nasophyngeal airways should be used to maintain a patent airway with BVM
   b. Advanced: place an advanced airway when needed, minimizing interruptions in CPR during placement. Examples include endotracheal tube, King LT tube, and LMA.
   c. Change the rate of ventilations as listed above when an advanced airway is placed

3. Work flow of the cardiac arrest:
   a. A team leader should assign roles to each member of the rescue team to make sure everyone knows what tasks they are responsible for completing.
   b. Team Roles include an airway manager, compressor, IV/Drug administration person and team leader.
   c. The sequences of tasks that are to be accomplished during a cardiac arrest are demonstrated in the 2 pictures below. The V-Fib/Pulseless VT protocol has the specific details of each two minute segment. For all others follow this sequence as it applies.
Work flow of the cardiac arrest

Asystole / PEA Arrest

V-Fib / Pulseless V-tach
DYSRHYTHMIA - ASYSTOLE

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access

- Confirm asystole in 2 leads and/or increase gain to rule out fine ventricular fibrillation

- If ventricular fibrillation
  - Refer to Ventricular Fibrillation protocol

- If asystole
  - Administer **Epinephrine** 1 mg IVP/IO
    - and/or
  - **Vasopressin** 40 units X 1

  - Repeat Epinephrine every 3-5 minutes for the duration of the dysrhythmias

  - Administer **Atropine** 1 mg IVP/IO every 5 minutes
    - May repeat to total dose of 0.04 mg/Kg (approximately 3 mg)

- **Determine likely etiology of Asystole:**
  - **Hypoxic:**
    - Ensure adequacy of **OXYGEN** delivery and ventilations
  - **Hypothermia**
    - Warm patient
  - **Hypovolemia**
    - Administer fluid bolus of 20ml/Kg
    - May repeat x2.
  - **Hyperkalemia** - transport
  - **Tamponade** (cardiac) - no field treatment - rapid transport
  - **Acidosis**
    - Administration of **Sodium Bicarb** 1 mEq/kg IVP/IO for suspected acidosis
  - **Acute MI**
  - **Pnuemothorax** (Tension)
    - Decompress affected side (see chest decompression protocol)
  - **Embolism**
    - Rapid transport
  - **Drug Overdose**
    - Administer **Narcan** 0.4 – 2 mg IVP/IO for opiate overdose
    - Administer **Sodium Bicarb** 1 mEq/kg IVP/IO for Tricyclic Antidepressant overdose

- Contact medical control and consider termination of efforts
DYSRHYTHMIA – ATRIAL FIBRILLATION

Protocol:

- Basic Medical Care
- Airway management
- If rate is less than 120 and patient is asymptomatic
- Treat underlying conditions as per protocol

- **Atrial Fibrillation with Rapid Ventricular Rate – STABLE**
  (Normotensive without dyspnea, chest pain, or decreased level of consciousness):
  - Vagal maneuvers (cough, hold breath)
  - Administer **Diltiazem 0.25 mg/Kg** (20 mg in a normal adult) IV over two minutes
  - If no response in 15 minutes administer **Diltiazem 0.35 mg/Kg IV**
  - (25mg in a normal adult)
  - If patient allergic to **Diltiazem**;

- **Administer Amiodarone 150 mg over 10-15 minutes.** [150 mg in 50 ml NS using a MACRO drip infusion set (10cc/min) run at 1 gtt/second]

- **Atrial Fibrillation with Rapid Ventricular Rate – UNSTABLE**
  (Including: decreased LOC, chest pain, dyspnea, hypotension, shock, pulmonary congestion, etc.)
  Consider sedation with **Versed 1-2 mg SIV** or Morphine 1-5 mg IVP/IO if patient is awake and time permits (avoid in patients who are hemodynamically unstable)
  - Synchronized Cardiovert at **100 joules (50 joules Biphasic)**
  - If no change
    - Synchronized Cardiovert at **200 joules (120 joules Biphasic)**
    - Synchronized Cardiovert at **300 joules (150 joules Biphasic)**
  - If no change
    - Synchronized Cardiovert at **360 joules (200 joules Biphasic)**
  - When the rhythm converts, proceed to appropriate protocol.
DYSRHYTHMIAS - BRADYCARDIA

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access

- If **asymptomatic**
  - Monitor and transport in position of comfort

- If **symptomatic** (hypotension, pulmonary edema, ventricular ectopy, chest pain, dyspnea, acute altered mental status, seizures, syncope, or other signs of shock related to the bradycardia)
  - For Sinus Bradycardia, 1st Degree or 2nd Degree type 1 block:
    - Administer Atropine 0.5 - 1 mg IVP/IO
    - May Repeat every 3-5 minutes to total dose of 0.04 mg/Kg IV/IO
    - If Atropine is ineffective begin pacing
      - For 2nd degree type 2 or 3rd degree block, begin immediate transcutaneous Pacing (TCP) without delay
    - If there will be a delay in initiating pacing consider administration of atropine as above.

**If pacing fails**, consider administration of one of the following infusions. Titrate infusion to maintain a systolic BP greater than 90 mmHg

- **Dopamine infusion** - 400 mg in 250ml Normal Saline

  OR

- **Epinephrine infusion** — 1 mg in 250ml Normal Saline
DYSRHYTHMIA - PULSELESS ELECTRICAL ACTIVITY (PEA)

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access

- Administer Epinephrine 1 mg IVP/IO
  and/or
- Vasopressin 40 units X 1
  - Repeat Epinephrine every 3-5 minutes for the duration of the dysrhythmias

- Administer Atropine 1 mg IVP/IO if electrical rate is less than 60/minute
- **Determine likely etiology of PEA:**
  - Hypoxic:
    - Ensure adequacy of OXYGEN delivery and ventilations
  - Hypothermia
    - Warm patient
  - Hypovolemia
    - Administer fluid bolus of 20ml/Kg
    - May repeat x2.
  - Hyperkalemia - transport
  - Tamponade (cardiac) - no field treatment - rapid transport
  - Acidosis
    - Administration of Sodium Bicarb 1 mEq/kg IVP/IO for suspected acidosis
  - Acute MI
  - Pneumothorax (Tension)
    - Decompress affected side (see chest decompression protocol)
  - Embolism
    - Rapid transport
  - Drug Overdose
    - Administer Narcan 0.4 – 2 mg IVP/IO for opiate overdose
    - Administer Sodium Bicarb 1 mEq/kg IVP/IO for Tricyclic Antidepressant overdose
DYSRHYTHMIAS - SUPRAVENTRICULAR TACHYCARDIA

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access
- Assess for alternate causes of tachycardia (pain, fever, hypovolemia, etc.) and treat appropriately
- Confirm diagnosis of SVT

- **If stable** (normotensive without dyspnea, chest pain, or decreased level of consciousness):
  - Encourage patient in performance of Vagal maneuvers
  - Administer **Adenosine** 6 mg IVP/IO. Drug should be given rapid IVP with a 20ml flush of **Normal Saline**.
  - If no change in 2-3 minutes may administer 12 mg IVP/IO
  - If still no change administer an additional 12 mg IVP/IO

- **If unresponsive to Adenosine**
  - Administer:
    - **Diltiazem** 0.25 mg/Kg IV/IO (20 mg in a normal adult) over two minutes
      - If no response in 15 minutes
        - Administer **Diltiazem** 0.35 mg/Kg IV/IO (25 mg in a normal adult)

  - **Or (not in addition to)**
    - **Amiodarone** 150 mg IV/IO over 10-15 minutes.
      - Mix 150 mg (3ml) in 50 ml NS using a MACRO drip infusion set (10cc/min) Run drip at 1gtt/second
DYSRHYTHMIAS - SUPRAVENTRICULAR TACHYCARDIA

- **If unstable** (chest pain, dyspnea, hypotension or decreased level of consciousness, or unresponsive to medications)
  - Consider sedation with Versed 1-2 mg SIV or Morphine 1-5 mg IVP/IO If patient is awake and time permits (avoid in patients who are hemodynamically unstable)
  - Synchronized Cardiovert at 100 joules (50 joules Biphasic)
    - If no change
      - Synchronized Cardiovert at **200 joules (120 joules Biphasic)**
    - If no change
      - Synchronized Cardiovert at **300 joules (150 joules Biphasic)**
    - If no change
      - Synchronized Cardiovert at **360 joules (200 joules Biphasic)**
**DYSRHYTHMIAS - VENTRICULAR ECTOPY**

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access

**Ventricular ectopy** (ectopy shall be defined as patient being symptomatic with greater than 6 PVC’s/minute, couplets, multiform PVC’s, runs of ventricular tachycardia)

**Symptomatic (i.e.):** chest pain, shortness of breath, decreases in LOC, hypotension, diaphoretic, nausea and/or vomiting

**Treatment:**
Consider alternate causes (**hypoxia**, hypo or hyperkalemia, Digoxin toxicity, etc.) and treat appropriately
- If ectopy **suppressed:**
  - Administer **Lidocaine** 1-1.5 mg/Kg over 1-2 minutes
- If ectopy continues:
  - Repeat dose of **Lidocaine** 0.5-0.75 mg/Kg IVP/IO every 10 minutes until ectopy suppressed or total dose of 3 mg/Kg has been given
  - With each additional bolus increase infusion by 1 mg/min up to 4 mg/min
- If suspected cocaine toxic patient:
  - Administer **Versed 1-2mg SIV** if ectopy not suppressed
DYSRHYTHMIAS - VENTRICULAR TACHYCARDIA

(STABLE)

Protocol:
• Basic Medical Care
• Airway management
• Vascular Access

If stable (normotensive without dyspnea, chest pain, or decreased level of consciousness):
• Consider alternate causes (hypoxia, hypo or hyperkalemia, digoxin toxicity, etc.) and treat appropriately
• Attempt vagal maneuvers

Administer:
• **Amiodarone** 150 mg over 10-15 minutes
  o Mix 150 mg (3ml) in 50 ml NS using a MACRO drip infusion set
  Run drip at 1gtt/second
  • If ectopy still continues:
    o Repeat Amiodarone 150 mg over 10-15 minutes as needed to a maximum dose of 2.2 g IV per 24 hours
    o If rhythm suppressed, continue to monitor

  Or (not in addition to)

• **Lidocaine** 1-1.5 mg/Kg over 1-2 minutes
  • If ectopy suppressed
    o Administer Lidocaine infusion starting at 2 mg/min
  • If ectopy continues:
    o Repeat dose of Lidocaine 0.5 – 0.75 mg/Kg IVPIO every 10 minutes until ectopy suppressed or total dose of 3 mg/Kg has been given
    o With each additional bolus increase infusion by 1 mg/min up to 4mg/min

• **If suspected cocaine toxic patient:**
  • Administer Versed 1-2mg SIV if ectopy not suppressed
If Unstable (hypotension, chest pain, dyspnea, pulmonary edema, decreased level of consciousness):

- Consider sedation with Versed 1-2 mg SIV/IM or Morphine 1-5 mg IVP/IO if patient is awake and time permits (avoid in patients who are hemodynamically unstable)
  - Synchronized Cardiovert at 100 joules (50 joules Biphasic)
    - If no change
      - Synchronized Cardiovert at 200 joules (120 joules Biphasic)
    - If no change
      - Synchronized Cardiovert at 300 joules (150 joules Biphasic)
    - If no change
      - Synchronized Cardiovert at 360 joules (200 joules Biphasic)
  - May administer Amiodarone or Lidocaine as described above in the stable V-Tach protocol

- If the ventricular tachycardia returns
  - Begin therapy at last step which was successful in resolving the dysrhythmia

- If patient has no pulse or patient becomes pulseless refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia protocol
DYSRHYTHMIAS - VENTRICULAR FIBILLATION/

PULSELESS VENTRICULAR TACHYCARDIA

Protocol:

- Basic Medical Care
- If response time is greater than 3-4 minutes and adequate CPR was not being performed initiate CPR for 5 cycles (two minutes).
- Assess rhythm - If rhythm is:
  - shockable: (continue CPR until Defibrillator is charged)
    - Defibrillate 1 time (360 monophasic/200 biphasic)
  - not shockable, proceed to appropriate protocol
- Perform 5 cycles of CPR immediately
- Assess rhythm - If rhythm is:
  - shockable: (continue CPR until Defibrillator is charged)
    - Defibrillate 1 time (360 monophasic/200 biphasic)
  - not shockable, proceed to appropriate protocol

Perform 5 cycles of CPR immediately (two minutes)
- Simultaneously - Initiate vascular access (do not interrupt compressions)
  - Administer Epinephrine 1 mg IVP/IO and/or Vasopressin 40 units X 1

Repeat Epinephrine every 3-5 minutes for the duration of the dysrhythmias
- Perform 5 cycles of CPR immediately (two minutes)
- Assess rhythm - If rhythm is
  - shockable: (continue CPR until Defibrillator is charged)
    - Defibrillate 1 time (360 monophasic/200 biphasic)
  - not shockable, proceed to appropriate protocol
- Perform 5 cycles of CPR immediately
- Administer:
  - Amiodarone 300 mg IVP/IO
    - May repeat once after 10 minutes at 150mg IVP/IO
  - Lidocaine 1-1.5 mg/kg via IVP/IO
    - May repeat at 0.5 - 0.75 mg/kg IVP/IO
- Assess rhythm - If rhythm is
  - shockable: (continue CPR until Defibrillator is charged)
    - Defibrillate 1 time (360 monophasic/200 biphasic)
  - not shockable, proceed to appropriate protocol
- Perform 5 cycles of CPR immediately
• If ventricular fibrillation prolonged or intractable, consider the following and inform MCP:
  o Consider Administration of **Magnesium sulfate** 2 gm IVP for torsades de points
  o Administer **Sodium Bicarb** 1 mEq/kg IVP
  o Check blood glucose level, if less than 60 mg/dl
    ▪ administer **Dextrose 50%** 25gm IVP
  o **Calcium chloride** 10ml of 10% solution IVP if calcium channel blocker toxicity, hyperkalemia, or hypermagnesemia suspected

• When dysrhythmia resolves, initiate **Lidocaine** or **Amiodarone** infusion unless contraindicated (i.e.: allergies, bradycardia, etc.).

**Antidysrthmic Infusions**

• **Lidocaine Infusion**
  o Mix 1 gm into 250 ml of NS
  o Start rate at 2 mg/min

• **Amiodarone Infusion**
  o Mix 150 mg (3ml) in 50 ml NS using a **MACRO** drip infusion set (10cc/min)
  o Run drip at 1gtt/second (this will last about 12 minutes)
CEREBROVASCULAR ACCIDENT (CVA, STROKE)

Protocol:

- Basic Medical Care
- Airway management
  - Administer OXYGEN at 2-3 L/min
- Vascular Access
- Check blood glucose level (BGL)
  - Administer Dextrose 50% as needed to maintain a blood glucose between 60 and 200 mg/dl
- If onset of symptoms is less than 3 hours:
  - Perform stroke assessment
  - Do Stroke Checklist
  - Initiate stroke alert to appropriate receiving facility
  - Transport expeditiously
  - Elevate head of bed 30 degrees
- Obtain a good history from the family or witnesses as to onset of symptoms. Be specific.
  - Obtain name and contact number of witnesses if they do not accompany the patient to the hospital.
- Do not treat elevated blood pressure without consultation with MCP control, as this may be a compensatory mechanism for maintaining cerebral perfusion pressure.
- Hyperventilate only if signs of cerebral herniation
  - Dilated pupil(s) decorticate or decerebrate posturing, seizures, decreased respirations and/or pulse, etc.
# CEREBROVASCULAR ACCIDENT (CVA, STROKE)

## STROKE ASSESSMENT

<table>
<thead>
<tr>
<th><strong>Facial Droop:</strong></th>
<th>Have patient show teeth or smile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>both sides of face move equally</td>
</tr>
<tr>
<td><strong>Abnormal</strong></td>
<td>one side of face does not move as well</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Arm Drift:</strong></th>
<th>Patient closes eyes and holds arms outright for 10 seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Normal</strong></td>
<td>both arms move the same or both arms do not move at all</td>
</tr>
<tr>
<td><strong>Abnormal</strong></td>
<td>one arm does not move or one arm drifts down compared with other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Abnormal Speech:</strong></th>
<th>Have the patient say the words:</th>
</tr>
</thead>
<tbody>
<tr>
<td>“You can’t teach an old dog new tricks”</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Normal</strong></th>
<th>patient uses correct words with no slurring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abnormal</strong></td>
<td>patient slurs words, uses the wrong words, or is unable to speak</td>
</tr>
</tbody>
</table>
MEDICAL EMERGENCY PROTOCOLS
ALLERGIC REACTIONS – ANAPHYLAXIS

Protocol:
- Basic Medical Care
- Airway management
- Vascular Access

- If simple allergic reaction (urticaria):
  o Place and transport patient in position of comfort

- If allergic reaction with itching, swelling and urticaria:
  o Administer **Epinephrine** 0.3 ml of 1:1,000 in the anterolateral thigh**
  o Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)
    Or
    **Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO
    or 25mg IM
  o Consider **Methylprednisolone** 125 mg IVP (Peds: 1 mg/kg IVP)

- If anaphylaxis without hypotension (shortness of breath, wheezing, urticaria):
  o Administer **Epinephrine** 0.3 ml of 1:1,000 in the anterolateral thigh**
  o Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)
    Or
    **Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO
    or 25mg IM
  o Consider **Methylprednisolone** 125 mg IVP (Peds: 1 mg/kg IVP)
  o If wheezing, administer **Albuterol** 2.5 - 5 mg via nebulizer

- If anaphylaxis with hypotension:
  o Administer **Normal Saline bolus** of 20 ml/kg to maintain systolic BP greater than 90 mm. Adults may require volumes in excess of 2-3 liters
  o Administer **Epinephrine** 0.5 - 1mg IVP/IO
  o If wheezing, administer **Albuterol** 2.5 - 5 mg via nebulizer and repeat PRN
  o If hypotension **persists**, administer **Epinephrine** 1 mg IVP q3-5 mins
  o Administer **Diphenhydramine** 25-50 mg IVP/IM (Peds: 1 mg/kg IVP)
    Or
    **Phenergan** 12.5 mg diluted in 10ml of Normal Saline slow IV/IO
    or 25mg IM

Antihistamines and corticosteroids are second line agents for the treatment of anaphylactic shock. Antihistamines should be administered after the airway is secured and hypotension is resolved.
** If the thigh cannot be rapidly accessed, administer epinephrine into the deltoid. Do not administer into the subcutaneous area as we have in the past- absorption may be significantly delayed in shock.

** MEDICAL CONTROL OPTIONS**

- Repeat any of the above Standing Orders
- Consider administration of one of the following infusions. Titrate the infusion to maintain a systolic BP greater than 90 mmHg
  - Dopamine infusion - 400 mg in 250ml. Normal Saline
  - OR
  - Epinephrine infusion - 1 mg in 250ml Normal Saline

- **Precaution**: Epinephrine is relatively contraindicated in patients with known coronary artery disease, angina, or previous MI except in life-threatening circumstances.
- **Promethazine**: Unless patients are allergic to diphenhydramine, avoid Promethazine in pediatric patients. Promethazine is not recommended for patients less than 2 years of age.
ABDOMINAL PAIN

Protocol:

- Basic Medical Care
- Vascular Access
  - Use a large bore IV
- Special assessment considerations:
  - Assess the patient closely for possible cardiac etiology, as many patients may present with abdominal pain during an acute M.I. This should include a 12 lead ECG if available. Pay close attention to diabetics and the elderly
  - Assess for orthostatic blood pressure changes.
- Life threatening problems that may present with abdominal pain include:
  - AMI
  - Perforated abdominal organs
  - G.I. bleeding (ask about blood in stool or emesis)
  - DKA
  - Ruptured Appendicitis
  - Dissecting Abdominal Aortic Aneurysm
  - Ectopic Pregnancy (ask about menstrual history)
  - Certain toxic ingestions (including mushrooms and poisons)
  - Abdominal pain emergencies are likely to lead to death through hypovolemic shock (either blood or fluid loss). This may also lead to electrolyte imbalances that can cause dysrhythmias.
- If patient presents in Shock refer to Shock protocol.
- Patient should have nothing to eat or drink.

- If patient presents with severe nausea and vomiting and is greater than 16 years old:
  - May administer Phenergan 12.5 mg diluted in 10ml of Normal Saline slow IV/IO
- Transport patient in position of comfort if not in shock
ALTERED MENTAL STATUS
(SYNCOPE / NEAR SYNCOPE)

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access
- Spinal immobilization if history is unknown or trauma is suspected

- Check **Blood Glucose Level (BGL)**
  - If blood glucose level **less than 60 mg/dl**
  - Administer Dextrose 50% IVP ½ - 1 amp (12.5-25 gm)
    - May be repeated x2 PRN
  - Repeat BGL should be obtained after each **Dextrose 50%** bolus

- If **Ethanol abuse** suspected, or evidence of **malnutrition**:
  - Administer **Thiamine 100 mg IVP prior to Dextrose 50%**

- If a change in Level Of Consciousness is suspected from **narcotic use**: (respiratory rate less than 12, pinpoint pupils, history of opiate use/abuse, etc)
  - Administer **Narcan 0.4 mg IV**
  - If no effect, may administer **Narcan 2 mg IV**
  - If patient returns to baseline after **Narcan**, further boluses may be necessary
  - Be prepared for a combative patient if reversal of opiate abuse (e.g. heroin addict)
  - Be prepared for acute narcotic withdrawal syndrome if patient opiate dependent (as this may precipitate seizures or delirium)

- Assess patient for **seizure** history and medications

- Look for **underlying causes** (e.g. fever, cardiac, stroke, infections, etc.)

- If patient presents with **hypotension**
  - Refer to hypotension protocol
CARBON MONOXIDE INTOXICATION

Protocol:

- Basic Medical Care

- Airway management
  - Give **100% OXYGEN** via NRBM irrespective of **SaO2**

- Vascular Access

- If Unconscious
  - Altered Mental Status Protocol

- Minimize patient motion

- Transport to hyperbaric facility
  - Shands Hospital at the University of Florida
  - Baptist Hospital Jacksonville
DIABETIC EMERGENCIES

Protocol:

- Basic Medical Care
- Airway management
- Assess Blood Glucose Level (BGL)

- **If BGL is between 60-80 mg/dl and patient is verbally responsive**
  - May administer oral glucose 1 tube.

- **If BGL less than 60 mg/dl or patient is unresponsive:**
  - Vascular Access
  - Draw blood tube(s)
  - Administer **Dextrose 50%** 25 gm IVP.
    - Dose may be repeated x2 PRN.
  - Repeat Blood Glucose Level should be obtained 5 minutes after each **Dextrose 50%** bolus.

- **If vascular access is not available:**
  - Administer Glucagon 1mg IM. (Preferably in the anteriolater thigh.

- **If suspected hyperglycemia (BGL greater than 400 mg/dl)**
  - Vascular Access
  - Administer **Normal Saline** - fluid bolus (20cc/Kg) and then decrease rate to KVO.
  - Monitor closely for fluid overload
  - Recheck BGL intermittently

- **NOTE:**
  1. If diabetic patient with nausea, diaphoresis, pallor or unspecified pain consider cardiac in origin and refer to the Chest Pain/Cardiac protocol.
  2. **After treatment with Glucose/Glucagon, the paramedic should investigate the cause of the hypoglycemic episode that might suggest an underlying medical problem and a need for transport**
DYSBARISM - DIVING ACCIDENTS

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access
- Obtain C-spine control if mechanism of injury suggests C-spine injury or if patient is unresponsive

- Administer 100% OXYGEN by NRBM
  - Caution should be taken with any positive pressure (BVM, intubation) as this may worsen a pneumothorax.

- Administer 4 baby aspirin (if patient is able to protect his/her own airway)

- Transport in left lateral position
  - Consider hypothermia
  - Keep patient warm
  - Follow hypothermia protocol

- Transport to hyperbaric facility
  - Shands Hospital at the University of Florida
  - Baptist Hospital Jacksonville

- Monitor for possible/developing tension pneumothorax.

Medical Control Options:

- Morphine Sulfate 1-5 mg IV/IO
GASTROINTESTINAL BLEEDING

Protocol:

- Basic Medical Care
- Airway management
  - Monitor airway for emesis
- Vascular Access

- **Transport expeditiously**

- Refer to shock protocol

- If patient is vomiting blood, place nasogastric tube for suction of stomach contents (see appropriate protocol)
HEAT ILLNESS

Protocol:

- Basic Medical Care
- Airway management
- Evacuate patient from heat environment
- Determine if patient suffers from fever, heat cramps, heat exhaustion, or heat stroke.

- **If fever:**
  - May sponge patient with room temperature water or Normal Saline

- **If heat cramps or heat exhaustion** (skin ambient temperature, diaphoretic):
  - Remove outer layers of clothing
  - May cool patient with water or Normal Saline
  - Vascular Access
  - Fluid bolus Normal Saline as needed (20cc/Kg)

- **If heat stroke** (skin hot and dry, elevated core temperature):
  - Remove outer layers of clothing
  - Cool patient with water, Normal Saline and/or cold packs to axilla and/or groin
  - Vascular Access
  - Fluid bolus Normal Saline as needed (20cc/Kg)
  - Monitor patient closely
  - Rapid Transport
HYPERTENSION
(Hypertensive Crisis/Urgency)

Definition: SBP ≥ 180 mm Hg, DBP ≥ 120 mm Hg

Protocol:

- Basic Medical Care
  - Assess and document severity of hypertension
  - Check BP every 5 minutes.
- Airway management
- Vascular Access

- Asymptomatic:
  - Monitor for blood pressure and symptomatic changes

- Mildly symptomatic: headache, dizziness, etc., or asymptomatic with diastolic BP ≥ 120 mmHg:
  - Administer Nitroglycerin spray/tablet SL every 5 minutes
  - Place 1” Nitroglycerin paste on chest
  - Remove Nitroglycerin paste if systolic BP drops to 140-150 mmHg.

- Severely symptomatic and/or hypertensive emergency (chest pain, dyspnea, pulmonary edema, mental status change, etc.) and patient’s condition not improving with the above therapy:
  - For a 70 Kg adult [bracketed dose is in mg/Kg ideal body weight] administer IV Labetalol as follows:
    - 15 mg [0.2 mg/Kg] IV push;
    - Re-check blood pressure, if goal not reached within 5 minutes...
    - 30 mg [0.4 mg/Kg] IV push;
    - Re-check blood pressure, if goal not reached within 5 minutes...
    - 60 mg [0.8 mg/Kg] IV push;
    - Re-check blood pressure, if goal not reached within 5 minutes...
    - 120 mg [1.6 mg/Kg] IV push;
    - Re-check blood pressure, if goal not reached within 5 minutes...
    - May repeat 120 mg [1.6 mg/Kg] dose 2 more times;

- Observe closely for progression of symptoms. If noted, continue with protocol.
- Hypertension associated with cocaine or other drug use may be difficult to control, consider Versed 1-2 mg SIV. May repeat once.
- In patients suspected of having a CVA/transient ischemic attack/reversible ischemic neurologic deficit, the blood pressure should not be treated unless directed by medical control [i.e., use less drug and/or allow the BP to remain in the high end of Goal BP], as cerebral autoregulation may be impaired.
HYPOTHERMIA

Protocol:

- Basic Medical Care
  o Assess vital signs over one minute before declaring them absent.
- Airway management
- Evacuate patient from cold environment. Handle the patient very gently as the hypothermic heart is irritable and ventricular arrhythmias may result from rough treatment.
- Warm patient compartment

- If core temperature > 95 degrees F:
  o Vascular Access
  o Utilize warm fluids if possible
  o Administer Normal Saline at 250cc/hr unless otherwise indicated
  o Remove wet or cold clothing; wrap patient in blankets

- If core temperature < 95 degrees F:
  o Obtain 12 lead if available
  o Treat dysrhythmias per cardiac protocols
  o Warming is the priority. Maintain core temperature with blankets
  o If patient exhibits a decreased level of consciousness, incorporate that protocol into your treatment plan.

- If hypothermia injury is local (frostbite):
  o Handle injured part gently; leave uncovered.
  o Do not allow the injured part to thaw if chance exists for the part to refreeze before arrival at a definitive care facility.
**Nausea and Vomiting**

**Protocol:**

- Basic Medical Care
- Vascular Access
  - Use a large bore IV
- **Special assessment considerations:**
  - Assess the patient closely for possible cardiac etiology, as many patients may present with sudden nausea and vomiting during an acute M.I. This should include a 12 lead ECG if available. Pay close attention to diabetics and the elderly.
  - Assess for orthostatic blood pressure changes.
  - **Life threatening problems that may present with nausea and vomiting include:**
    - AMI
    - G.I. bleeding (ask about blood in stool or emesis)
    - DKA
    - Ruptured Appendix
    - Certain toxic ingestions (including mushrooms and poisons)
    - Nausea and vomiting can lead to death through hypovolemic shock (either blood or fluid loss) especially in infants and the elderly. This may also lead to electrolyte imbalances that can cause dysrhythmias.
- **If patient presents in Shock refer to Shock protocol.**
  - Patient should have nothing to eat or drink.
- **If patient presents with severe nausea and vomiting and is >16 years old;**
  - Administer Phenergan 12.5-25 mg slow IV
  - Monitor for hypotension
- Transport patient in position of comfort if not in shock
OVERDOSE AND POISON INGESTIONS

Protocol:

- Basic Medical Care
- Airway management
- Determine agent, time and amount of ingestion, circumstances of the event, and retain for transport any pill bottles, containers, or other identifying material
  - Notify CCC to contact Poison Control and to advise of your destination hospital
- Vascular Access

- **If patient awake, alert:**
  - Transport patient

- **If patient with decreased level of consciousness:**
  - Perform blood glucose check
  - Refer to altered mental status protocol

- Several ingestions may have antidotes or effective countermeasures. Consult with Medical Control for the following:

  - **Tricyclic Antidepressants:**
    - Cardiotoxicity may manifest as tachycardia, wide QRS, or hypotension;
    - Alkalization may be accomplished with hyperventilation and/or administration of Sodium Bicarb 50-100 mEq IVP, and an infusion of Sodium Bicarb 100 mEq in Normal Saline 1000 cc TRA 150 cc/hour.

  - **Cholinergic Poisoning** (organophosphate or carbamate insecticides):
    - Toxicity to crew may result from inhalation or topical exposure. Any patient with dermal exposure MUST be adequately decontaminated prior to transport. Crew should wear protective clothing including masks, gloves, and eye protection;
    - If symptoms severe (blurred vision, nausea, vomiting, diarrhea, salivation, lacrimation, bradycardia, diaphoresis, wheezing, fasciculations, confusion, and seizures, etc):
      - Administer Atropine 1-2 mg IVP every 5 minutes until symptomatic improvement and signs of atropinization (body secretions dry up);
      - If marked severity (respiratory distress, cyanosis, unconscious), continue Atropine every 5 minutes.

  - **Acetaminophen:**
    - If patient has a known toxic acetaminophen level or ingestion of potential toxic dose (calculated greater than 140 mg/Kg or 7.5 gm), transport to receiving facility expeditiously.

  - **Digoxin (symptomatic):**
• **Magnesium Sulfate**: 2 gm slow IVP.

• **Cyanide (symptomatic):**
  o Transport expeditiously.

• **Methanol, Ethylene Glycol:**
  o Transport expeditiously.

• **Antipsychotics (dystonic reaction):**
  o Administer **Diphenhydramine** 50 mg IVP.

• **Calcium Channel Blockers:**
  o Toxicity may manifest as bradycardia, hypotension, bronchospasm, and/or altered mental status;
  o If symptomatic dysrhythmia, administer **Calcium Chloride 10% solution** 500 mg IV slow (adults only)

• **Beta Blockers:**
  o Toxicity may manifest as bradycardia, hypotension, bronchospasm, and/or altered mental status;
  ▪ If symptomatic
    o Administer **Atropine** 1-2 mg
    o Initiate either an **Epinephrine** or dopamin drip

• **Benzodiazepines:**
  o Support airway and transport.

• **Cocaine:**
  o Toxicity may manifest as tachycardia, hypertension, agitation, and mental status changes;
  o Administer **Versed 1-2 mg SIV**. May repeat once.

• **Opiates:**
  o Toxicity may manifest as altered mental status, pinpoint pupils, slow respirations, and hypotension;
  o Administer **Narcan** 0.4 - 2mg IVP, IM, SQ, or via ETT, repeat as necessary.

• **See "Drug Overdose Chart" on next page for more information.**

**MEDICAL CONTROL OPTIONS**

• **OPTION A:** Repeat any of the above Standing Orders
• **OPTION B:** Administer Activated Charcoal 50-100 gm P.O. or NG tube
• **OPTION C:** HAZMAT Unit: **Cyanide Ingestion**
  o Open **amyl nitrite** pearl under the nose; encourage forceful inhalation.
  o Administer **Sodium Nitrite 3%** 5-10 cc slow IVP (contact MCA for Pediatric dosing).
  o Administer **Sodium thiosulfate** 25% 50 cc slow IVP over 10-15 minutes (contact MCA for Pediatric dosing).
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<td>Tachycardia, Bradycardia, Ventricular Arrhythmias, Impaired Conduction, Shock, Cardiac Arrest</td>
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</tbody>
</table>
| **Anticholinergics** | Diphenhydramine  
Doxylamine                                    | Tachycardia  
Supraventricular / ventricular arrhythmias  
Impaired conduction  
Shock, Cardiac arrest | Physostigmine                                           |
| **Cholinergics** | Carbamate  
Nerve agents  
Organophosphates | Bradycardia  
Ventricular arrhythmias  
Impaired conduction, Shock  
Pulmonary edema, Bronchospasm  
Cardiac arrest | Atropine  
Decontamination  
Pralidoxime  
Obidoxine                                           |
| **Opiates**      | Heroin  
Fentanyl  
Methadone                                      | Hypoventilation  
Bradycardia, Hypotension | Naloxone  
Nalmefene                                           |
| **Isoniazid**    |                                                       | Lactic acidosis with / without seizures  
Tachycardia  
Bradycardia  
Shock, Bradycardia  
Cardiac arrest | Pyridoxide  
(Vitamin B6)                                           |
| **Sodium channel blockers** | Type 1A antiarrhythmics  
Propranolol  
Verapamil  
Tricyclic antidepressants | Impaired conduction  
Bradycardia  
Ventricular arrhythmias  
Seizures  
Shock, Bradycardia  
Cardiac arrest | Sodium Bicarb  
Pacemakers  
α-/β Agonist  
Lidocaine  
Hypertonic saline   |
PSYCHIATRIC DISTURBANCES

Protocol:

- Basic Medical Care
- Safety for both the EMS crew and the patient are of paramount concern. Take no actions that may endanger EMS personnel or the patient.
- Always involve law enforcement if the patient may present a significant danger to him/herself, bystanders, to yourself, or your partner.
- Determine if patient is awake and alert, if possibility of traumatic injury exists, or if underlying medical problems (e.g. hypoglycemia, hypoxia, drug or alcohol intoxication), might cause patient's behavioral difficulties. Refer to appropriate protocol.
- If possible, establish collegial rapport with patient.
- Avoid escalating the situation.
- Remove all loose objects or potential weapons from the patient care area.
- It would be prudent to secure any personal equipment (scissors, etc.) at a distance from the patient.
- If patient becomes violent before transport, enlist assistance of patient's family, friends, and/or law enforcement personnel.
- EMS personnel should not transport the overly hostile patient alone.
- If patient becomes violent at any time during care and becomes a danger to either him/herself or the medical team, attempt to control patient using reassurance and, if needed, mechanical restraints.
- If restraints are used the MCP must be informed.
- If unable to restrain, request driver to stop vehicle immediately and notify law enforcement personnel for assistance.

- **Versed 1-2 mg SIV/IM** for control of agitated patient. May repeat once.
- **Haldol** 2.5 - 5 mg IV slowly, for patients exhibiting agitation. May repeat up to total dose of 10 mg.

- Any patient who is psychotic or could present a danger to personnel will be transported with 2 personnel in the patient compartment.
RESPIRATORY DISTRESS

Protocol:

• Basic Medical Care
• Airway management
• Determine site of respiratory impairment
• Allow patient to sit in position of comfort

• If infectious upper airway obstruction (croup or epiglottitis):
  o Administer 100% Oxygen via NRBM or “blow-by” technique
  o Attempt to calm patient; allow to sit in position of comfort
  o Parent may be allowed to hold the pediatric patient
  o Transport expeditiously
  o Vascular Access, if at all, after airway control established
  o If suspected epiglottitis, avoid agitation

• If lower airway obstruction (Asthma, COPD, Wheezing):
  o Administer Albuterol 2.5-5 mg in 3cc Normal Saline via nebulizer
  o Albuterol therapy may be repeated as necessary during transport while heart rate remains below 160
  o Vascular Access

• If patient does not improve or has self-administered albuterol prior to requesting EMS:
  o Consider a mixed Albuterol 2.5 mg / Atrovent 0.5 mg treatment
  o Consider Solumedrol 125 mg IVP
  o If bronchospasm worsens despite treatment, respiratory failure may be imminent (as documented by falling oxyhemoglobin saturations, tachycardia, increased work of breathing, lethargy, apnea, etc ;).
    - Refer to Advanced Airway Protocol

• Patients with chronic obstructive pulmonary disease may have a decrease in respiratory effort and/or mental status when placed on high concentrations of Oxygen. Thus, a SaO2 of 91% to 95% is acceptable.

Medical Control Options

• For Croup/ epiglottitis: If breathing becomes labored and SaO2 consistently decreases below 90%
  o Gently assist ventilations with BVM with 100% Oxygen
• Administer Epinephrine .5 mg in 2cc Normal Saline via nebulizer
• Magnesium Sulfate 1-2 gm slow IV push over 5 minutes
SEIZURES - ATRAUMATIC

Protocol:

- Basic Medical Care
- Airway management
- Immobilize if indicated
- Protect patient from injuring him/herself
- Vascular Access
  - Obtain Blood Glucose Level

- For repeated seizures or seizures lasting longer than 2 minutes:
  - Administer Versed 1-2 mg SIV, IO or IM
  - Repeat dose once every 2 minutes up to 10 mg if seizure activity continues
  - Be prepared to support a decreased respiratory status

- If seizure occurs in the setting of poisoning, overdose or eclampsia refer to the appropriate protocol for additional management

MEDICAL CONTROL OPTIONS:

- If seizure is refractory to other therapy, consider Lidocaine up to 3 mg/Kg IVP.
- Consider Versed 1-2 mg IM/IO if unable to obtain vascular.
SHOCK - ALS

Protocol:

- Basic Medical Care
- Airway management
- BLS Shock Protocol
- Vascular Access
- Determine the etiology of shock
- Continually reassess

- **Anaphylaxis: refer to anaphylaxis protocol**

- **Hypovolemia:** (i.e. trauma, ruptured aorta, ectopic pregnancy, etc)
  - If bleeding is controlled or hypovolemia is from other fluid loss (i.e. vomiting, diarrhea)
    - Administer Normal Saline fluid bolus of 20 cc/Kg over 15 minutes
    - Reassess lung sounds
    - May repeat 20cc/Kg fluid bolus

- **Hypovolemic from uncontrolled bleeding:**
  - Initiate 2nd IV
  - Titrate fluid administration to maintain peripheral pulses

- **Septic (sepsis):**
  - Administer **Normal Saline** fluid bolus of 20 cc/Kg over 15 minutes
  - Reassess lung sounds
  - May repeat fluid bolus x2 prn

- **Hypotension refractory to IV fluids, or development of pulmonary edema develop**
  - Administer **Dopamine** infusion.
    - Titrated to systolic BP greater than 100 mmHg
Cardiogenic (CHF)
  o Position patient upright if tolerated
  o Manage Airway and support ventilations if needed
  o Administer Normal Saline fluid bolus of 100 cc
  o Reassess patient
  o If systolic BP improves, continue cautious fluid boluses until no further improvement noted or systolic BP 90-100 mmHg.
  o If hypotension refractory to fluids, consider administration of one of the following infusions. Titrate infusion to maintain a systolic BP greater than 90 mmHg
    ▪ **Dopamine infusion** - 400 mg in 250cc Normal Saline
    ▪ **Epinephrine infusion** - 1 mg in 250cc Normal Saline

Neurogenic (spinal cord injury):
  o Secure airway while maintaining cervical spine immobilization
  o Administer OXYGEN irrespective of Saturation level
  o Keep patient warm
  o Administer fluid bolus of Normal Saline 20 cc/Kg

Refractory hypotension:
  o Consider administration of one of the following infusions. Titrate infusion to maintain a systolic BP greater than 90 mmHg
    ▪ **Dopamine infusion** - 400 mg in 250cc Normal Saline
    ▪ **Epinephrine infusion** - 1 mg in 250cc Normal Saline
Snake Bite

Protocol:

- Basic Medical Care
- Airway management
- Vascular Access:
  - Two IV’s preferred.
  - Obtain blood; Red, Purple, Blue top tubes
- Immobilize area and minimize all movement
- Cardiac monitor
  - Treat dysrhythmias per protocol
- Assess degree of envenomation, type of snake, and advise MCP
- Outline edematous, erythremic, ecchymotic area with a pen and note the time
- Follow hypotension/anaphylaxis protocol as needed

MEDICAL CONTROL OPTIONS:

- Morphine Sulfate 1 - 5 mg IV/IO for pain
TRAUMA
PROTOCOLS
For ease of review, the major categories of this protocol follow the mnemonic:

A Airway and cervical spine management
B Breathing/Respiratory
C Circulatory
D Disability / Neurologic
E Exposure / Secondary Survey

Protocol:
- Basic Medical Care

AIRWAY
- Assess airway patency
  - If intact, administer **OXYGEN** by most appropriate method
- If patency in question:
  - If patient exhibits increased respiratory compromise perform jaw thrust maneuver to open the airway making sure to maintain cervical spine position and immobilization.
- Reassess the respiratory effort:
  - If adequate, ensure **SaO2 > 95**
- If unsuccessful, consider placement of a nasal trumpet or oral airway to maintain airway patency. The individual controlling cervical immobilization must maintain the jaw thrust maneuver until airway is placed.
- Assist ventilation with 100% **OXYGEN** via bag-valve-mask as needed

- Perform endotracheal intubation as needed
  - The **nasal intubation** is commonly used in the trauma victim. Contraindications to this route include:
    - Apnea
    - The presence of midface fractures
    - Significant neck trauma with possible disruption of the airway
    - Known bleeding disorders
    - Oral intubation may be performed with assistance in maintaining neutral head position

- If intubation is unsuccessful or mechanical obstruction prevents intubation perform surgical cricothyrotomy.
BREATHING
- Assess respiratory exchange
- **If adequacy of ventilation is in question:**
  - Support ventilation at a rate of 12-14 breaths/minute with 100%
    - **Hyperventilate** at 20-22 breaths per minute if evidence of herniation such as decerebrate or decorticate posturing, abnormal pupil, seizure, or bradycardia.
  - Assess for signs of chest trauma
  - **Open chest wound** - cover with a gloved hand, place 4x4 Vaseline gauze dressing over wound, and tape on three sides only. May use Asherman Valve.
  - **Flail chest** - Support chest wall with chest wall by taping or manual support.
  - **Tension pneumothorax** - perform chest decompression per protocol
  - **Oxygen** via BVM.

CIRCULATORY
- Assess circulatory status (pulse, skin temperature, capillary refill, blood pressure as indicated)
  - **Vascular Access**
  - The goal is to support a systolic blood pressure of 90-100 mmHg.
  - If circulatory status is in question, refer to shock protocol

DISABILITY
- Assess neurologic status using AVPU
  - Alert
  - Responds to voice
  - Responds to pain
- If unresponsive
  - Immobilize patient with backboard and cervical collar as indicated
    - Patient should be immobilized as soon as possible; however, immobilization should not take priority over assessment and management of the ABCs.
  - In the hypotensive head injured patient, the goal is to support a normal blood pressure for the patient. Look for other causes of hypotension.

- If patient exhibits decreased level of consciousness, follow altered level of consciousness protocol
EXPOSURE
- Undress patient completely to facilitate a thorough, focused survey.
- Cover with blankets to prevent loss of body heat and preserve modesty.
- To facilitate rapid transport, the patient should be evacuated to the ambulance for the focused survey.

- **Assess extremities**
  - Splint suspected fracture sites in most appropriate fashion after checking **pulses, motor function** and **sensation**.
  - If the patient is critically injured, utilization of the long spine board as a total body splint is a time and resource efficient procedure.
  - Femur fractures may be immobilized with traction splints.
  - An inflated PASG may be used to splint pelvic and/or lower extremity fractures.
  - Fractures may also be immobilized with air splints, ladder splints, or board splints in order to immobilize the joint above and below the injured area.
  - Place cold pack on suspected fracture sites if time and resources allow.
  - If distal vascular deficits noted, reduce fracture in anatomical alignment and splint in most appropriate fashion.
    - Recheck pulse, motor function and sensation after reduction and immobilization.

- **If partial amputation:**
  - Place in a dressing moistened with **Normal Saline** and splint in line with associated extremity.
  - Avoid torsion or traction of severed part;

- **If complete amputation:**
  - Apply direct pressure to bleeding sites.
  - Elevate above the level of the heart as able.
  - If bleeding profuse despite elevation and direct pressure, place blood pressure cuff just proximal to amputation site and inflate to just above systolic pressure. Maintain cuff pressure during transport. Do not place cuff over joints.
  - Wrap amputated part in a dressing moistened with **Normal Saline**.
  - Secure in watertight container and place container in cool water.
  - Transport amputated part with patient to definitive care facility.
  - **Placing the amputated part on ice or a similar environment may further damage the tissue and prevent its use.**
• **Special considerations in the pregnant trauma victim:**
  o The most common cause of fetal mortality is maternal mortality. Treatment of the mother **ALWAYS** comes first.
  o Assess patient for uterine contractions, vaginal bleeding, and amniotic rupture.
  o Monitor fetal heart tones.
  o **Place patient in left lateral recovery position** to decrease pressure on the mother’s vena cava and increase blood return to her heart. Support backboard with pillows placed under the right side of the board in the immobilized patient.
  o If unable to place mother in recovery position, you may manually displace the uterus to the left to relieve pressure on the vena cava.

• **Re-assess**
  o Reassess any of the above critical injuries identified and perform necessary interventions during the focused survey. Treatment of life threatening injuries identified during the initial survey take priority over a complete subsequent survey.
  o Notify the receiving hospital early regarding critical patients or those patients meeting trauma alert criteria.
  o Report revised trauma score and mechanism of injury.

**EARLY TRANSPORT OF THE CRITICAL TRAUMA PATIENT OFFERS THE BEST CHANCE OF SURVIVAL. FIELD TIME SHOULD NOT BE PROLONGED IN ORDER TO PERFORM PROCEDURES NOT ABSOLUTELY CRITICAL TO THE WELL-BEING OF THE PATIENT DURING TRANSPORT.**

All Trauma patients should be evaluated using the state trauma scorecard methodology.

**Morphine Sulfate** 1-5 mg IV/IO may be administered for isolated extremity pain
BURNS

Protocol:

- Basic Medical Care
- Airway management
  - Patients with known inhalation injury or with signs of potential airway burns (singed nasal hair, soot in the pharynx, etc.) in respiratory distress should be intubated with the largest endotracheal tube possible.
- Remove all clothing from patient and expose all burned areas
- Assess type, depth, and extent of burn
- If indicated cool burn for 1-2 minutes

- If burning agent still in contact with skin
  - Remove gently after cooling with sterile water or Normal Saline.
  - If burning agent is chemical:
    - Brush away loose, dry agent and irrigate burned area with copious amounts (2 or more liters) of Normal Saline or sterile water.

- If an explosion is involved:
  - Follow trauma protocol

- For Radiation Burn: decontamination is paramount.
  - Utilize bunker gear for protection; remember time, distance, shielding and quantity relating to the exposure. Treat burns the same.
- In all cases avoid recontamination or cross contamination
- If patient has > 5% body surface area (BSA) second degree or any third degree burn:
  - Vascular Access
    - Avoid starting lines in burned areas if possible
  - Run IVF at the rate using the following formula:

\[
\text{Formula examples for small, medium and large person:}
\]

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<td>100</td>
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Do not delay transport to establish IV
• **Dress burns:**
  o Transport patient in **dry** non-sterile sheets or bandages regardless of extent of burn
  o Document area involved on chart using "**Rule of Nines.**"
  o Maintain temperature control.
    ▪ Keep patient warm
    ▪ Wrap in blankets as needed
    ▪ DO NOT ALLOW PATIENT TO BECOME HYPOTHERMIC

• **For Pain relief:**
  o Administer **Morphine Sulfate** 1-5 mg IV/IO if patient hemodynamically stable
  o Dose may be repeated every 5 minutes prn

• Transport to Shands @ UF (Burn Center):
  o Partial thickness burn involving > 20% BSA
  o Full thickness burn involving > 5% BSA
  o Burns of the hands, face, feet, or perineum
  o Burns associated with inhalation injuries

• Burns associated with multiple trauma
  o Electrical injuries

**MEDICAL CONTROL OPTION:**

*Repeat any of the above Standing Orders*
EYE EMERGENCIES

Protocol:

- Basic Medical Care
- Assess the nature of eye emergency - blunt vs. penetrating, chemical, glaucoma (by history), or others
  - Briefly check visual fields and visual acuity
  - Transport with head of bed elevated at 60 degrees
  - Trivial injuries to eyelids may hide significant injury to the globe

- Penetrating Trauma:
  - Avoid any pressure on the affected globe
  - Carefully secure penetrating objects
  - If possible, cover the affected eye with a metal eye shield
  - Patch both eyes to prevent conjugate movement
    - Explain to the patient why it is necessary to patch both eyes
  - If possible, transport patient in supine position

- Blunt Trauma:
  - May administer Tetracaine eye drops, 1-2 drops in painful eye for comfort.
    - Repeat PRN as necessary to control pain. There is no need to patch the eye, however suggest that the patient wear dark glasses or keep eyes closed for comfort.
  - If no contraindications, elevate head of bed.
  - Avoid bright lights (Dim compartment lights, allow patient to wear sunglasses, keep eyes closed, etc). In cases of facial trauma, note the ability or loss of ability to move the eyes in any particular direction.

- Chemical trauma:
  - May administer Tetracaine eye drops, 1-2 drops in painful eye for comfort.
  - Irrigate affected eye with a minimum of 2 liters Normal Saline. Continue irrigation throughout transport if the chemical was an alkali agent, or if symptoms persist.
  - Dim cabin lights for patient comfort.

- If patient is being transported for treatment of diagnosed central retinal artery occlusion:
  - Administer 100% OXYGEN via NRBM.
  - Place patient in Trendelenburg position.
  - Transport emergently to the receiving hospital.

MEDICAL CONTROL OPTIONS:

- Morphine Sulfate 1-5 mg IV/IO for pain
OB / GYN PROTOCOLS
VAGINAL BLEEDING

Protocol:

- Basic Medical Care
- Airway management
- Ascertain patient history specifically for:
  - Date of Last Menstrual Period (LMP)
- Position patient tilted right side up 10-15 degrees
- Vascular Access
- Attempt to obtain fetal heart tones if pregnancy is estimated greater than 10-12 weeks
- If hypotensive
  - See Shock protocol
- If in active labor
  - See Emergency Delivery protocol
- Keep accurate count of used perineal pads
- Save any clots or tissue expelled for examination by physician upon arrival at receiving facility
- Transport expeditiously

NOTE: Monitor pad usage - Two saturated pads are equivalent to one pint (~ 250cc) of fluid/blood loss.

DO NOT let anyone perform vaginal or rectal examination on the patient. Vaginal bleeding may markedly increase and hypovolemia may result.

MEDICAL CONTROL OPTIONS:

- Morphine Sulfate 1-5 mg IV/IO.
- Versed 1-2 mg SIV for anxiety.

Differential Diagnosis:
Ruptured ectopic pregnancy ruptured ovarian cyst, abortion, threatened abortion, appendicitis, cholecystitis, diverticulitis, colitis, and kidney stones.
SUSPECTED ECTOPIC PREGNANCY

Protocol:

- Basic Medial Care
- Airway management
- Vascular Access x 2
- Keep accurate count of used perineal pads
- Save any clots or tissue expelled for examination by physician upon arrival at receiving facility
- If signs of shock are noted:
  - Refer to Shock protocol

Physical Exam:

- Abdominal bruising, distention, tenderness, guarding, rebound tenderness, rigidity, bowel sounds, distension, presence of a pulsating mass
- Are peripheral pulses equal?
- Emesis: amount and type [ingested food, bloody, bilious, feculent (looks and smells like stool)]
- Ruptured Ectopic Pregnancy:
  - May present as a pale, diaphoretic, distressed woman with a weak, fast pulse.
  - May have orthostatic hypotension
    - Refer to shock protocol

- Warning signs of an undiagnosed ectopic pregnancy:
  - Previous recent visits to the ED or physician’s office with menstrual irregularity and/or mild abdominal pain with no diagnosis being made.
  - May complain of abdominal pain and/or vaginal bleeding.

- Warning signs of a ruptured ectopic pregnancy:
  - Increased abdominal or pelvic pain
  - Dizziness, fainting
  - Pain radiating to the shoulder from pelvic area
PRE-ECLAMPSIA

Third Trimester Pregnancy with B/P greater than 140/90 Hg/mm, proteinuria, and peripheral edema. May progress to eclampsia.

Protocol:

• Basic Medical Care
• Airway management
• Position patient tilted right side up 10-15 degrees
• Vascular Access

Physical Examination:

• Mild hypertension (diastolic BP < 100 mmHg) usually no symptoms
• Severe Hypertension (diastolic BP > 110 mmHg) may cause:
  o Headache
  o Visual disturbance
  o Upper abdominal pain
  o Jaundice
  o Bruises
  o Pulmonary edema

• Transport expeditiously

• If seizures occur, refer to ECLAMPSIA protocol

MEDICAL CONTROL OPTIONS

• If hypertensive and symptomatic, contact medical control for possible Magnesium sulfate order.
  o Monitor blood pressure, fetal heart rate, respiratory rate and, if possible, urine output before and during Magnesium sulfate therapy.
  o If hypertension (systolic BP ≥ 170 or diastolic BP ≥ 120) and symptoms persists after administration of Magnesium sulfate, refer to hypertension protocol.

• NOTE: LOWERING BLOOD PRESSURE TO LESS THAN 150/100 IN SEVERE PREECLAMPSIA MAY COMPROMISE FETOPLACENTAL BLOOD FLOW.
**ECLAMPSIA**

Pre-eclampsia with seizure activity

Protocol:
- Basic Medical Care
- Airway management
- Position patient tilted right side up 10-15 degrees
- Vascular Access
- Seizure precautions and attempt to prevent maternal injury
  - Administer Magnesium sulfate 2 gm IVP over 5 minutes
  - Initiate Magnesium infusion (10 gm in 250cc of Normal Saline) @ 50 cc/hr
  - If already receiving Magnesium sulfate infusion when seizure occurs, give an additional 2 gm bolus of Magnesium sulfate.
  - If severe hypertension (systolic BP > 170 or diastolic BP > 120) persists after administration of Magnesium sulfate:
    - See Hypertension protocol
    - If unresponsive to therapy, call MCP.

- Transport expeditiously

MEDICAL CONTROL OPTIONS:
- For seizures that continue despite Magnesium sulfate:
  - Use Versed 1-2 mg SIV/IM
  - Repeat in 2 minutes if seizures do not resolve.

- Lowering diastolic blood pressure to less than 90-100 mm/hg may compromise fetoplacental blood flow.
PROLAPSED UMBILICAL CORD

Protocol:

- Basic Medical Care
- Airway management
- Shock protocol
- Monitor Fetal Heart Rate abdominally and indicate time accurately
- **Transport expeditiously**
  - Position the patient in **Trendelenburg** or on **left lateral side** with knees flexed
  - Instruct mother to pant, and **not** to push during contractions
  - Insert sterile gloved hand into vagina and elevate the presenting fetal part to prevent cord compression. Leave hand in place and avoid touching cord.
  - Covering exposed cord with sterile saline gauze
  - If crowning noted, prepare to assist with vaginal delivery
  - If delivery is **inevitable** prior to arrival at the hospital, attempt gentle manual replacement of cord into the uterus. This should only be done just prior to actual delivery, or on advice of medical control.

**MEDICAL CONTROL OPTIONS:**

- **Magnesium sulfate** 1-5 gm IV over 30 minutes
EMERGENCY DELIVERY

• **History**
  o Time when contractions began
  o Has “water broken”
  o Obstetrical History
  o Number of previous deliveries
  o Complications in previous pregnancies, abnormal presentation, multiple pregnancy, hemorrhage
  o Known complications in this pregnancy
  o Due Date, Date of last period (i.e. is this a premature delivery?)
  o Has there been meconium staining of amniotic fluid?

• **Physical Examination**
  o Determine that delivery is imminent by assessing for the following signs:
    • Bulging perineum
    • Crowning (top of baby’s head visible)
    • Contractions less than 2 minutes apart and reported as strong by mother

• **Delivery**
  o Prep mother and delivery area with drapes.
  o As the infant’s head delivers, use the palm of your hand to gently apply pressure to his/her head preventing a rapid, uncontrolled delivery.
  o Support the infant’s head as it emerges from the vagina.
  o Allow the head to rotate to one side.
  o Aspirate mouth and then nose with bulb syringe.
  o Wipe any mucous from the infant’s face with gauze.
  o After delivery of the head, examine the neck for a looped umbilical cord.
    • If found, gently remove it by slipping it over the head of the infant.
    • If wrapped tightly, clamp the cord in two places.
    • Using scissors cut between the clamps.
  o Begin to deliver the infant’s shoulder.
    • Position your hands on either side of the infant’s head.
    • Exert gentle downward pressure as you deliver the anterior shoulder, then guide the head upwards and deliver the posterior shoulder.
  o Be careful to securely grasp the infant, as he/she will be slippery.
  o Keep the baby at a level below or equal to the mother until the umbilical cord is clamped.
  o Clamp the cord in two locations (minimum of 6-8 inches from baby).
  o Position the clamps one-inch apart.
  o Cut cord with scalpel or scissors.
  o **CAUTION:** Remember not to cut the cord too close to the infant. It can always be made shorter later.
• **After the Delivery**
  - Keep the mother and infant warm.
  - Evaluate infant.
  - Obtain APGAR score at 1 and 5 minute marks.

• **Placenta delivery**
  - The placenta will deliver spontaneously usually within 15 minutes of the infant. Do not force the placenta to deliver.
  - Signs of separation include: gush of blood from the vagina, lengthening of the umbilical cord, uterine fundus rising upward in the patient’s abdomen, or uterus becoming firmer.
  - Massaging the uterus and/ or allowing baby to nurse may facilitate uterine contractions and delivery of the placenta.
  - Check the patient’s vaginal and perineal area for excessive bleeding.
    - If patient becomes hypotensive, refer to shock protocol

• **Meconium (fetal fecal material) aspiration:**
  - When there is thick meconium staining of the amniotic the infants mouth then nose should be suctioned with a meconium aspirator until secretions are cleared or appear thin and watery.
  - Suctioning should be performed after the head emerges but prior to the delivery of the body.

**If infant requires resuscitation, refer to NEONATAL RESUSCITATION PROTOCOL**
  - Indications for neonatal resuscitation include: meconium staining, lack of spontaneous breathing, pulse rate less than 100 BPM after birth despite Oxygen and stimulation.

• **Document the following:**
  - Presentation
  - Date and time of birth of baby and placenta
  - Gender of infant
  - Position of cord at delivery
  - Appearance of amniotic fluid (brown, green, clear)
  - Complications
NEONATAL RESUSCITATION

Protocol:

- Deliver infant in method consistent with emergency childbirth protocol
- Suction mouth and nose or infant with bulb syringe or appropriate suction device
  - In the infant with thick, particulate meconium, suctioning should be performed upon delivery of the head, PRIOR TO delivery of the body.
  - Upon delivery of the body and prior to ventilation, Infants should be immediately intubated and meconium suctioned through the ET tube until no more meconium is present
  - The infant may then be ventilated with positive pressure as indicate.
  - Failure to clear the trachea before assisted or spontaneous ventilation will disseminate meconium through airways, severely impairing chances for survival.
  - Warm and dry infant
  - Apply tactile stimulus to feet and back of infant to stimulate a vigorous respiratory effort
  - Assess APGAR

- If respiratory effort adequate:
  - Place infant in slight Trendelenburg position.
  - Turn head of infant to side

- If respiratory effort inadequate:
  - Manage Airway and support ventilations
  - Assess heart rate and respiratory status frequently
  - If spontaneous respirations return and patient has not been intubated, continue to provide 100% OXYGEN to patient via facemask.
  - If infant remains apneic or bradycardic, continue with protocol

- If brachial pulse less than 80 bpm:
  - Assist ventilations with 100% OXYGEN via BVM or ETT
  - If pulse remains less than 80, perform endotracheal intubation and ventilate
  - Perform chest compressions at 120/min.
  - Follow infant BLS protocols

- If heart rate climbs greater than 80 bpm
  - Cease compressions, maintain ventilation, and continue to administer 100% Oxygen
  - If no change in heart rate, continue with protocol.
• If heart rate remains less than 80 bpm:
  o CPR
  o Vascular Access
  o Administer fluid bolus - Normal Saline 20cc/Kg
  o Administer Epinephrine 0.01 mg/Kg IV.
    ▪ May repeat every 5 minutes at higher dose of 0.1 mg/Kg
    ▪ Repeat fluid bolus of 20cc/Kg
  o Consider 2 mEq/Kg 4.2% Sodium Bicarb if bradycardia prolonged
  o Consider Narcan 0.1 mg/Kg IVP.
    ▪ May repeat dose every 2 min as needed to avoid respiratory depression.
  o Check BGL. IF less than 40 mg/dl, consider Dextrose 10% solution, 0.25 to 0.50 mg/Kg IVP

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<td>&gt; 100</td>
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<tr>
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<tr>
<td>Color</td>
<td>Blue, Pale</td>
<td>Body: Pink</td>
<td>Ext: blue</td>
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• Calculate one and five minute APGAR scores as time permits

Note: The use of the length based measurement device (i.e.: Broslow ®, Pediwheel) is strongly encouraged.
Procedural Protocols
12- Lead EKG

Protocol:

• **Indications for performing a 12-lead**
  o Non-traumatic chest pain / thoracic back pain
  o Epigastric pain where no evidence of GI cause
  o Sudden onset of SOB, diaphoresis, syncope (non-traumatic)
  o CHF/ Acute PE
  o Any insulin dependant diabetic with cardiac signs or symptoms other than pain
  o Any overdose with potential cardiac effects (tricyclics, Beta blockers, calcium channel blockers, etc.)
  o Whenever physician or paramedic deems it necessary

• Obtain rhythm strip prior to 12-lead EKG
• Assess and treat any life threatening conditions or arrhythmias
• Perform assessment and obtain baseline vital signs
• Ascertain **SAMPLE** History
  o **S**igns and symptoms
  o **A**llergies to medications
  o **M**edications
  o **P**ast medical history
  o **L**ast oral intake
  o **E**vents leading up to the incident

• Assess Chest pain specifics **OPQRST**:
  o **O**- Onset; **P**- Provocation; **Q**- Quality; **R**- Radiation; **S**- Severity **T**-Time

• If patient meets criteria, clean site and attach chest leads
• Obtain EKG
• Print 2 copies of 12-lead  #1) for hospital,  #2) for EMS reports
• If capability exists, fax a copy of 12-lead to the receiving hospital

• Suspect MI if:
• **1 mm of ST segment elevation** is seen in 2 or more contiguous **V**-leads
• **2 mm of ST segment elevation** in limb leads,

• If evidence of inferior AMI is present (leads II, III, and AVF) obtain right side chest lead EKG utilizing V4R. Treat patient accordingly.

• A 12-lead EKG is not recommended for trauma or unstable patients.

• **Notify receiving hospital as soon as practical!**
**Automatic External Defibrillation**

**Protocol:**

- The AED is to be used to treat patients of non-traumatic cardiac arrest who are greater than 8 years old.
- The AED operator is in charge of patient care until ALS arrives on scene.
- The sequence of events:
  - Establish unresponsiveness
  - ABCs and CPR until defibrillator arrives
  - Power on defibrillator and attach electrodes as directed
  - State a brief situation report aloud (the AED will be recording sound)
  - Analyze the patient’s rhythm
  - Do not allow anyone to touch the patient (including yourself)
  - If “shock” is advised, state “I’m clear, you’re clear, we’re all clear” as you scan the patient from head to toe, to insure no one is touching the patient
  - The AED will deliver three shocks and then direct the operator to check for a pulse, and do 1 minute of CPR if no pulse is found
  - Re-analyze the patient’s rhythm
  - Deliver 3 more shocks if directed to do so by the AED
  - If patient is still pulseless, perform CPR for 1 minute
  - Re-analyze the patient’s rhythm
  - The operator may deliver 3 more shocks (for a total of 9)
  - If the patient remains pulseless, continue CPR until ALS arrives
- If at any time the patient has a return of spontaneous circulation, but is not breathing, correct ABC’s as needed
- If patient returns to spontaneous circulation, with breathing, place in recovery position and monitor ABC’s until transport arrives.
Blood Draw

Protocol:

- Utilize Universal precautions
- Select vein and prep site as you would for IV cannulation
- Gather appropriate drawing devices
- Apply tourniquet
- Clean site with alcohol or betadine (do not use alcohol for cleansing site while drawing for LEA and blood alcohol levels.
- Insert needle or cannula
- Attach blood tubes to vacutainer and draw blood
- Release tourniquet
- Withdraw needle and vacutainer
- Bandage site
- Label blood sample
  - Patient’s Name
  - Date and Time
  - Drawer’s initials
Chest Decompression

Protocol:

• Determine need for chest decompression by clinical presentation of the patient (decreased breath sounds with signs and symptoms consistent with tension pneumothorax)
• Identify puncture site
  o Second intercostal space on affected side in the midclavicular line (strongly preferred);
  o Fourth intercostal space on affected side in midaxillary line
• Prepare skin at puncture site with Betadine or alcohol swabs
• Insert 14-16 gauge catheter perpendicular to the skin and over of inferior rib.
• Remove any parts from the catheter/needle assembly which may occlude the lumen
• Listen for a rush of air. If noted, the diagnosis of pneumothorax and proper needle placement is confirmed.

• **Remove both needle and catheter from patient**

• If air collection reaccumulates, (tension pneumothorax develops again) perform second needle thoracentesis.
CRICOTHYROTOMY

Protocol:

• Surgical Cricothyrotomy (Adults only)
• Identify and prepare cricothyroid area
• Grasp the tracheal cartilage (Adam's apple) with the non-dominant hand to secure it
• Using a #11 scalpel, make a midline vertical incision approximately 3 cm long, centered over the cricothyroid membrane
• Using the blade handle or hemostats, move the strap muscles out of the way
• Once the cricothyroid membrane is reached, make a horizontal stab incision in the inferior third of the membrane
• Open the incision by spreading clamps or by inserting the handle of the scalpel and rotating to the vertical position
• Insert ETT until the balloon is just inside the trachea
• Secure the tube and ventilate the patient
• Follow intubation protocol

• Note: The preferred method for GFR crews will be utilization of the Melker Wire-guided Cricothyrotomy Kit.

Alternate method:

• Make a stab/puncture into the trachea through the cricoid membrane with a #11 blade.
• Extend the incision laterally or use the blunt end of the scalpel to open an area able to place a small ET tube within the trachea.
• Proceed as above to secure the tube
End Tidal CO2 Monitoring
(Electric and Disposable)

Protocol:

- Secure airway via endotracheal (ET) intubation
- Place CO₂ device on adapter end of ET tube
- Attach the BVM to the open end of ETCO2 device and administer ventilations
- Complete at least 3 ventilations before the electric ETCO2 device will register a color change or 6 ventilations before the disposable device will register a color change
- If either device turns yellow with exhalation, tube placement is confirmed
- If the device remains purple
  - Reconfirm ET tube placement by direct visualization and auscultation
- If placement of tube is in question, remove the tube, ventilate patient for 30 seconds and attempt to intubate again
- If tube placement confirmed, consider possible causes of low end-tidal CO₂ (low cardiac output secondary to hypovolemia or cardiac failure, or cardiac arrest) and treat appropriately
- If device changes to Tan, consider low cardiac output from poor CPR or poor patient perfusion. Recheck tube placement by visualization, and correct as necessary
- If device is yellow, but changes to purple during transport, recheck placement using steps as above
- The disposable devices are ineffective if they become wet
- Recheck placement of tube each time you move the patient or there is a change in his/her condition
**Endotracheal Intubation**

**(Nasal & Oral)**

**Protocol:**

- Select route of intubation
- Have all airway supplies and suction nearby
- **If orotracheal intubation is to be attempted**
  - Hyperoxygenate patient with 100% O\textsubscript{2} using BVM prior to intubation attempt
  - Insert laryngoscope blade into oropharynx and visualize vocal cords
    - Miller blade (straight) is used to lift the epiglottis
    - MacIntosh (curved) is placed in the vallecula and used to raise the larynx and therefore the epiglottis
  - Remove any obstructing secretions or foreign bodies with suction and/or Magill forceps
- Insert endotracheal tube past vocal cords and inflate balloon Visually confirm placement before removing the laryngoscope
- If a stylet is used, remove it after the tube has passed the cords
- If no cervical spine injury is suspected, cricoid pressure (sellick manuever) may be used to better position the trachea for viewing
- **If nasotracheal intubation to be attempted:**
  - Patient must have spontaneous respirations
  - Maintain cervical spine immobilization if trauma is known or suspected
  - Place patient on high flow **OXYGEN** via NRB prior to nasal intubation
  - Consider use of 4ml of 2% Lidocaine via nebulizer mask. This will result in the complete or near complete loss of the gag reflex and facilitate patient compliance with the passage of the ET tube.
  - Anesthesia can be achieved by the placement of an NPA coated with 4% lidocaine jelly 3-5 minutes prior to intubation. Coat external nares and tip of endotracheal tube with 4% lidocaine jelly
  - Spray nares with Neo-Synephrine
  - Connect Nasoscope to the 3 mm adapter of the ET tube.
  - Insert tube with bevel side facing the septum. The tube should be advanced along the floor of the nose. Endotrrol\textsuperscript{©} tubes are helpful in controlling the position of the tip of the tube, stylets **cannot** be used. As the tube enters the pharynx, listen for breathing sounds to get louder as you advance closer to the trachea
  - The Nasoscope\textregistered\, disposable stethoscope should be used to hear air movement as you approach and enter the trachea
  - The patient is likely to cough or gag. Suction must be ready for use
  - Listen for patient breathing and/or vocalizations. The vocal cords are widest apart upon inspiration
  - Ask patient to take a deep, slow breath or when the patient inhales, advance tube quickly through cords
  - Success is noted by an absence of further vocalizations and continued airflow through the tube
- Inflate balloon
- Verify tube placement as you would with oral intubation

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• Ventilate patient via ET tube with 100% O₂ using BVM
• Secure ET tube in place using locking device or tape
• Reassess and document tube placement after moving patient
• Continue with ventilation during transport with BVM or use a mechanical ventilation device
• If intubation attempt is unsuccessful after 15 seconds, remove laryngoscope and resume ventilation via bvm
• If the patient is not intubated in 2 attempts (not 2 attempts per provider), utilize an alternative airway such as the LMA, King LT tube, or oral/nasal pharyngeal airway & BVM
• Other services may be authorized to use an airway management device/technique other than endotracheal intubation.
  o If a paramedic responds to a patient whose airway is being managed by an alternate device/technique, the paramedic who initiated the alternative will continue to manage the airway and accompany the patient to the hospital.
    ▪ The paramedic will assist with the verification of proper placement of the alternate airway utilizing the same tools and techniques outlined in this protocol.
  o If the alternate airway method is not providing adequate airway support, the paramedic should withdraw the device and manage the airway in accordance with these protocols.
• In all cases confirmation of tube placement must include:
  o ETCO₂ monitoring device (Use colormetric only if electronic device is unavailable)
  o Utilize the Esophageal Detection Device (EDD) if colormetric device is used
• In addition note and document:
  o The absence of breath sounds over the epigastrium and the presence of breath sounds over right and left lung field
  o Chest rise and fall and “mist” in the ET tube during exhalation
• Special Considerations:
  o It is strongly suggested that the patient’s head and neck be immobilized using a cervical collar and CID to prevent tube dislodgement during patient movement
• To manage the airway of a patient with known or suspected trauma & vomiting during airway procedures:
  o If a patient with known or suspected trauma vomits during airway procedures (or whenever immobilized), turn AS A UNIT on side and suction oral cavity. Maintain spinal immobilization throughout the turning maneuver
  o If the patient becomes combative, consider Versed 1-2mg IV push to facilitate intubation. May repeat in 2 minutes. Closely monitor the patient who has received Versed for respiratory depression or arrest

REMEMBER:
The goal of airway management is to VENTILATE and OXYGENATE the patient, not necessarily to intubate the patient.
External Cardiac Pacing

Protocol:

- Attach cardiac monitor chest leads to patient
- Place combo pads in the normal position for defibrillation (anterior chest)

- **Set pacer rate:**
  - In patients with electrocardiographic evidence of organized cardiac activity, set pacer rate 20-30 beats per minute (BPM) above patient's intrinsic rate (ideally the rate should be between 80-100 bpm)
  - In patients without evidence of organized activity, set pacer at rate of 80-100 bpm

- Arm pacer (turn it on)

- **Set amperage** (which activates the pacer)
  - In patients with decreased cardiac function (pulse and blood pressure present), turn on pacing element with amperage at lowest setting, gradually increase until patient demonstrates electrical capture on EKG and mechanical capture as evidenced by pulses simultaneous with paced beat.

- When mechanical capture obtained, adjust heart rate to maintain systolic BP > 100 mmHg. Do not exceed paced rate of 100 bpm

- Administer **Versed 1-2 mg SIV**, titrate to patient comfort to a maximum dose of 10 mg and a systolic blood pressure greater than 100 mmHg.

Medical Director Options:

- In patients with no intrinsic cardiac function (asystole), pacing may be used at the direction of online medical control. To pace asystole, set pacer at 100 bpm and 100 milliamps and follow the procedures as outlined above.
**Intraosseous**

**Protocol:**
- Locate the anterior medial surface of the proximal tibia;
  - Palpate the tibial tuberosity with the index finger, and grasp the medial aspect of the tibia with the thumb
  - Halfway between these two points is the optimal point for needle insertion (1-2 cm distal to the tibia tuberosity)
  - The needle should be inserted perpendicularly or slightly angled toward the midshaft of the tibia to avoid the epiphyseal plate
  - Using a rotary motion, insert the needle with the bevel pointing away from the joint space until a slight decrease in resistance is noted, indicating that the cortex of the bone has been punctured.
  - Aspirate to verify position, if no aspirate returns, but placement seems correct administer a slow fluid bolus (10ml of normal saline without resistance) and check for swelling.
- The I/O solution is Normal saline.
- Intraosseous infusion is useful for emergency administration of any drug you may give intravenously.
- Drugs should be given in the same dose as with the intravenous route; fluids are given at the same rate.
- Although it is not the best course of action, intraosseous infusion may be used for volume replacement.
- After each drug administration a 10 cc bolus of **Normal Saline** should be infused to enhance absorption.
- Intraosseous infusion should be used only until venous access is obtained.

**Complications:**
- The needle may become obstructed with bone or marrow
- The needle is accidentally forced through the opposite side of the bone
- Extravasation of fluid around the puncture side (usually minor)
- Extravasation of fluid from fractures or previous attempts
- Potential for osteomyelitis

**NOTE:** If the bony cortex has been penetrated during a failed insertion attempt, no further attempts should be made on that bone. Set the bevel on the needle to the estimated depth of penetration to marrow (generally between 1/4 and 1/2 inch).
Intravenous Access / Saline Loc

Protocol:

- Select site for IV placement
- Apply tourniquet snugly to area just proximal to intended puncture site
- Peripheral catheterization procedure
  - Prepare skin with Betadine or alcohol swabs
  - Secure vein with fingers ask patient or assistant to secure extremity
  - Insert needle and catheter assembly into vein, bevel up; watch for free blood return
  - When placement confirmed by blood return, advance catheter into the vein until you reach the hub
  - Attach blood collection device and draw blood samples for hospital use as appropriat
  - Remove tourniquet

- Saline Loc:
  - Attach Saline Loc to catheter hub
  - Insure patency by briefly flushing with fluid

- For IV:
  - Attach drip solution set to IV catheter and administer a small amount of fluid to ensure patency
  - Fluid should then continue to run at a rate indicated by the patient’s condition and related protocol

- Secure catheter/saline loc with tape or occlusive dressing
NASOGASTRIC TUBE PLACEMENT

Protocol:

- Explain the procedure to the patient and/or parent if appropriate;
- Select the proper size tube:
  - Premature - newborn infant # 8 french
  - 1 - 6 months # 8 - # 10 french
  - 6 months - 2 years # 10 french
  - 2 years - 8 years # 10 - 12 french
  - 8 years and older # 14 - # 16 french
  - Adults # 16 - # 18 french
- Mark the distance the tube should be inserted:
  - For pediatric patients, measure the tube by holding distal end of tube at patient's nose and extending tube to the tip of the earlobe and down to the xiphoid process. Mark the point on the tube.
  - For adult patients, measure the distance from the earlobe to the bridge of the nose and then from the bridge of the nose to below the xiphoid process.
- To aid in tube insertion, curl tube tightly around index finger and then release. Lubricate distal end of tube with water-soluble lubricant
- Place the patient in a semi-upright position if condition permits
- Gently insert tube into nare. When resistance is felt, apply gentle downward pressure to advance tube
- With the tube just above the oropharynx, instruct the patient to swallow (if able) to facilitate advancement of the tube. Offer the patient water to drink if appropriate (Only if the head is not restrained and suction is ready)
- If cervix spine injury is not suspected, the patient may be asked to flex the neck toward the chin
- If the patient begins to cough, gag, or choke, procedure should be stopped and the patient be given an opportunity to recover. If patient begins to vomit, place in lateral decubitus position
- Continue to pass the tube until the marked spot is reached
- Check tube placement by ascultating over stomach as air is introduced through the tube - or by aspirating gastric contents
- Tape tube in place (Tube may be left open to gravity drainage or may be hooked to suction if ordered)
- Restrain patient as needed to prevent dislocation of the tube
- Document procedure, including tube size, which nare it was placed in, amount of stomach contents aspirated, and the patient's tolerance of the procedure
- The EGTA may be used to facilitate the placement of the NG tube in the unconscious overdose patient. The tube should be passed as above but through the lumen of the EGTA.
Oxygen Saturation Monitoring

Protocol:

- Switch power to the “on” position of the oxyhemoglobin saturation monitor, (or just clip the unit on the finger using the portable devices)

- Place oxyhemoglobin sensor on digit or earlobe of patient; secure to finger with tape if necessary. Avoid attaching sensor to hand or arm where IV has been initiated

- Allow sensor to “capture” pulse and determine oxyhemoglobin saturation (approximately 15-20 seconds).

- In order to ensure that the saturation reading is correct, the patient’s pulse rate obtained from the Pulse Oximeter MUST match the pulse manually. If these pulse rates do not match within several beats, the saturation reading you have is incorrect

- Continue to monitor O₂ saturation during transport

NOTE:

- Use of the pulse oximeter distal to the blood pressure cuff may give brief inaccuracies when the cuff is inflated.
**Ventilator- Eagle ®**

**Protocol:**

- Basic medical care
- Review transfer paper work
- Meet with Respiratory Therapist and RN in charge of Patient
- Review patient’s ventilator settings and flow sheet

**Set Ventilator Parameters:**
- FiO2 range 21-100%
- Tidal Volume (TV) range 300-1000 cc
- BPM (Breaths Per minute)
- Mode (A/C, CMV, CPAP, or SIMV)
- Peep Range 5-20 cm/H2O
- Pressure Alarms
- Sensitivity 1-2 cm/H2O
- I/E Ratio (Default is 1:2)

- Ventilators cannot replicate the following parameters
  - Pressure support Ventilation
  - Inverse I/E ratios

- Some patient’s will experience agitation when transferred to a different ventilator. There are physiologic reasons for patients to become agitated including: Pain, hypoxia, fever, and nervousness about the transfer. For patients who become agitated
  - Look for physiologic reasons and try to alleviate them
  - May administer **Versed 1-2mg SIV.** Repeat as need, monitor for hypoxia.
APPENDICIES

PEDEATRIC TRAUMA SCORE

THE REVISED TRAUMA SCORE

THE TRAUMA ALERT SCORECARD-ADULT

THE TRAUMA ALERT SCORECARD – PEDIATRIC

ALTERNATIVE ROUTES FOR DRUG ADMINISTRATION

APPROVED ABBREVIATIONS FOR DOCUMENTATION

APPROVED MEDICATIONS AND DOSAGES CHART
**PEDIATRIC TRAUMA SCORE**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>2 POINTS</th>
<th>1 POINT</th>
<th>-1 POINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>&gt; 20 Kg</td>
<td>10-20 Kg</td>
<td>&lt; 10 Kg</td>
</tr>
<tr>
<td>Airway</td>
<td>Normal</td>
<td>Maintainable</td>
<td>Un-maintainable</td>
</tr>
<tr>
<td>Systolic BP</td>
<td>&gt; 90 mm Hg</td>
<td>90-50 mm Hg</td>
<td>&lt; 50 mm Hg</td>
</tr>
<tr>
<td>CNS</td>
<td>AWAKE</td>
<td>OBTUNDED</td>
<td>COMATOSE</td>
</tr>
<tr>
<td>Open wound</td>
<td>None</td>
<td>Minor</td>
<td>Major/penetrating</td>
</tr>
<tr>
<td>Skeletal</td>
<td>None</td>
<td>Closed FX</td>
<td>Open/multiple FX</td>
</tr>
</tbody>
</table>

(If proper size BP cuff not available, BP can be assessed by assigning 2 points for a palpable pulse at the wrist, 1 point for a palpable pulse at the groin, and –1 point if no pulse palpable.)

I. **SIZE:** When a given amount of energy is imparted to a smaller child (with less reserve), the potential for severe injury is much greater, so smaller children have high injury potential.

II. **AIRWAY:** Airway management is more difficult in children because of size and anatomy and the greater difficulty in obtaining a surgical airway when needed, requiring the skills which probably only reside at a trauma center.

III. **SYSTOLIC BLOOD PRESSURE:** Systolic blood pressure is assessed to provide an initial evaluation of cardiovascular status; “low” blood pressure may reflect normal physiology for a small infant, or reflect Decompensated shock with impending arrest in an older child.

IV. **CNS:** Level of consciousness is the most important factor in determining neurologic status, and any deviation from totally awake and normal with no history of abnormality demands heightened attention.

V. **OPEN WOUND:** Any abrasion may reflect internal injury or fracture more often than in adults; certainly, any penetrating injury or major avulsion/laceration may reflect such an injury.

VI. **SKELETAL:** Children with skeletal trauma are more likely than adults to have associated blunt trauma to the trunk area, and this adds greatly to general morbidity.

The score range is **-6** (injured worst) to **+12** (injured least).

Studies have shown that no children with PTS of greater than 8 died; though they certainly may have been seriously injured. All children with PTS of less than 1 died. 3% of those who had PTS of 7-8 died. Therefore, any child with PTS of 8 or less should be taken to the highest-level trauma center available.
THE REVISED TRAUMA SCORE

The Revised Trauma Score (RTS) is a standardized method of reporting the severity of injury of the trauma patient in the pre-hospital setting, because of its reliance solely on objective parameters, its use is to be preferred to that of the Trauma Score in patient care conducted by ACFR/GFR/ShandsCair personnel.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Revised Trauma Score Point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Glasgow Coma Score:</strong></td>
<td></td>
</tr>
<tr>
<td>13-15</td>
<td>4</td>
</tr>
<tr>
<td>9-12</td>
<td>3</td>
</tr>
<tr>
<td>6-8</td>
<td>2</td>
</tr>
<tr>
<td>4-5</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Systolic Blood Pressure:</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 89 mm Hg</td>
<td>4</td>
</tr>
<tr>
<td>76-89 mm Hg</td>
<td>3</td>
</tr>
<tr>
<td>50-75 mm Hg</td>
<td>2</td>
</tr>
<tr>
<td>1-49 mm Hg</td>
<td>1</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td><strong>Respiratory Rate:</strong></td>
<td></td>
</tr>
<tr>
<td>10-29/min</td>
<td>4</td>
</tr>
<tr>
<td>&gt; 29/min</td>
<td>3</td>
</tr>
<tr>
<td>6-9/min</td>
<td>2</td>
</tr>
<tr>
<td>1-5/min</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Revised Trauma Score</strong></td>
<td><strong>0-12</strong></td>
</tr>
</tbody>
</table>

**NOTE:** A lower Total Revised Trauma Score reflects an increased severity of injury and mandates consideration of patient transport to a trauma center or the closest appropriate facility.
**PEDIATRIC TRAUMA ASSESSMENT METHODOLOGY**

The EMT or Paramedic will assess the condition of those injured individuals with anatomical and physiological characteristics of person fifteen (15) years of age or younger for the presence of one or more of the following three (3) criteria to determine the transport destination:

1. **Pediatric Trauma Triage Checklist:** The individual is assessed based on each of the six (6) physiologic components listed below (left column). The single, most appropriate criterion for each component is selected (along the row to the right). Refer to the color-coding of each criteria and legend below to determine the transport destination:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>SIZE</th>
<th>AIRWAY</th>
<th>CONSCIOUSNESS</th>
<th>CIRCULATION</th>
<th>LONGBONE FRACTURE</th>
<th>CUTANEOUS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ORANGE, GREEN, YELLOW, WHITE or BLUE BROSELOW ZONE; &gt; 10 Kg (&gt; 22 lbs.)</td>
<td>Blank</td>
<td>AMNESIA OR ANY RELIABLE HISTORY OF LOST CONSCIOUSNESS</td>
<td>GOOD PERIPHERAL PULSES; SBP &gt; 90 mmHg</td>
<td>NONE SEEN OR SUSPECTED</td>
<td>NO VISIBLE INJURY OR CONTUSION or ABRASION</td>
</tr>
<tr>
<td></td>
<td>Red or purple broselow zone; &lt; 10 Kg (&lt; 22 lbs.)</td>
<td>Normal, supplemented O₂ or single time suctioning</td>
<td>Altered mental status or paralysis or suspected spinal cord injury</td>
<td>Normal carotid or femoral pulses palpable; no peripheral pulses palpable SBP 90-50 mmHg</td>
<td>Single closed long bone fracture site anywhere</td>
<td>Major tissue disruption or amputation or burns to &gt;10% TBSA or any penetrating injury to head, neck, or torso</td>
</tr>
<tr>
<td></td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
<td>Weak or no palpable carotid or femoral pulses; SBP &lt; 50 mmHg</td>
<td>Blank</td>
<td>Blank</td>
</tr>
<tr>
<td></td>
<td>Blank</td>
<td>Red or purple broselow zone; &lt; 10 Kg (&lt; 22 lbs.)</td>
<td>Red or purple broselow zone; &lt; 10 Kg (&lt; 22 lbs.)</td>
<td>Blank</td>
<td>Blank</td>
<td>Blank</td>
</tr>
</tbody>
</table>

- **R** = RED, any one (1) - transport as a trauma alert
- **B** = BLUE, any two (2) - transport as a trauma alert
- **G** = GREEN, follow local protocols

3) Patient does not meet any of the trauma criteria listed above, but was transported to a trauma center due to EMT or Paramedic judgment.

1 Degloving injuries, major flap avulsions, or major soft tissue disruption
2 Proximal to the wrist or ankle
3 Excluding superficial wounds in which the depth of the wound can be easily determined
ADULT TRAUMA TRIAGE CRITERIA & METHODOLOGY

The EMT or paramedic will assess the condition of those injured persons with anatomical and physiological characteristics of a person sixteen (16) years of age or older for the presence of at least one of the following four (4) criteria to determine whether to transport as a trauma alert. These four criteria are to be applied in the order listed, and once any one criterion is met that identifies the patient as a trauma alert, no further assessment is required to determine the transport destination.

Criteria:

- 1. Meets color-coded triage system (see below)
- 2. GCS ≤ 12 (Patient must be evaluated via GCS if not identified as a trauma alert after application of criterion 1.)
- 3. Meets local criteria (specify): ________________________________
- 4. Patient does not meet any of the trauma criteria listed above but, in the judgment of the EMT or paramedic, should be transported as a trauma alert (document):

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIRWAY1</td>
<td>±</td>
<td>±</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIRCULATION</td>
<td>±</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEST MOTOR RESPONSE</td>
<td></td>
<td></td>
<td>±</td>
<td></td>
</tr>
<tr>
<td>CUTANEOUS</td>
<td>±</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONGBONE FRACTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGE</td>
<td>±</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MECHANISM OF INJURY</td>
<td>±</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COMPONENT**

<table>
<thead>
<tr>
<th>AIRWAY1</th>
<th>± SUSTAINED RR &gt; 30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>± ACTIVE AIRWAY ASSISTANCE²</td>
</tr>
<tr>
<td>CIRCULATION</td>
<td>± SUSTAINED HR &gt; 120</td>
</tr>
<tr>
<td></td>
<td>± LACK OF RADIAL PULSE WITH SUSTAINED FAST HEART RATE (&gt; 120) OR ± BP &lt; 90R</td>
</tr>
<tr>
<td>BEST MOTOR RESPONSE</td>
<td>± BMR = 5</td>
</tr>
<tr>
<td></td>
<td>± BMR OF &lt; 4 OR ± PARALYSIS OR ± SUSPECTED SPINAL CORD INJURYR</td>
</tr>
<tr>
<td>CUTANEOUS</td>
<td>± TISSUE LOSS³ OR ± GSW TO EXTREMITIES</td>
</tr>
<tr>
<td></td>
<td>± AMPUTATION⁴ OR ± 2⁰/3⁰ BURNS TO &gt; 15% TBSA OR ± ANY PENETRATING INJURY TO HEAD, NECK, OR TORSO⁵</td>
</tr>
<tr>
<td>LONGBONE FRACTURE</td>
<td>± SINGLE FX SITE DUE TO MVA OR ± FALL &gt; 10'</td>
</tr>
<tr>
<td></td>
<td>± MULTIPLE FX SITES</td>
</tr>
<tr>
<td>AGE</td>
<td>± &gt; 55</td>
</tr>
<tr>
<td>MECHANISM OF INJURY</td>
<td>± EJECTION FROM VEHICLE OR ± DEFORMED STEERING WHEEL⁶</td>
</tr>
</tbody>
</table>

☐ R = any one (1) - transport as a trauma alert ☐ B = any two (2) - transport as a trauma alert

¹ Airway evaluation is designed to reflect the intervention required for effective care
² Not just oxygen
³ Degloving injuries, major flap avulsions (> 5 in.), ⁴ Amputations proximal to the wrist or ankle ⁵ Excluding superficial wounds in which the depth of the wound can be easily determined, ⁶ Only applies to driver of vehicle m: JR/PATTC/6/26/97
### NORMAL PEDIATRIC VITAL SIGNS/ACLS PARAMETERS

<table>
<thead>
<tr>
<th>Age</th>
<th>Weight (Kg)</th>
<th>Pulse</th>
<th>Respirations</th>
<th>B/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newborn</td>
<td>3</td>
<td>140</td>
<td>40</td>
<td>80/50</td>
</tr>
<tr>
<td>6 months</td>
<td>6</td>
<td>140</td>
<td>30</td>
<td>90/60</td>
</tr>
<tr>
<td>1 year</td>
<td>10</td>
<td>120</td>
<td>25</td>
<td>90/60</td>
</tr>
<tr>
<td>5 years</td>
<td>20</td>
<td>100</td>
<td>20</td>
<td>100/60</td>
</tr>
<tr>
<td>10 years</td>
<td>30</td>
<td>85</td>
<td>15</td>
<td>110/70</td>
</tr>
<tr>
<td>15 years</td>
<td>50</td>
<td>80</td>
<td>14</td>
<td>120/80</td>
</tr>
</tbody>
</table>

(Adult values are applicable from age 15 on)

To estimate **pediatric weight**:  
Estimated wt (Kg) = 2 x (age) + 10  
Example:  
For 7 year old child, wt = (2 x 7) + 10 = 24 Kg

To estimate **pediatric endotracheal tube size**:  
Use diameter of patient’s little finger as gauge of needed tube size; OR  
Tube size = \(\frac{16 + \text{age}}{4}\)  
Example:  
For 7-year-old child, tube size = \(\frac{16 + 7}{4} = 5.75\)

(Approx. a 5.5 or 6.0 ETT)

**Pediatric defibrillation dose:**  
2 joules/Kg, followed by 4 joules/Kg, followed by 4 joules/Kg

**Pediatric major ACLS drug doses:**

- Epinephrine 0.01 mg/Kg
- Atropine 0.02 mg/Kg (min. dose 0.2 mg)
- Lidocaine 1 mg/Kg
- Dextrose 0.5 - 1 gm/Kg
- Naloxone 0.4 - 2 mg
- NaHCO3 0.5 - 1 mEq/Kg
- Diazepam 0.2 - 0.5 mg/Kg

**Pediatric Blood Sugar Values**

- 0-2 years: 40-60 gm/dl
- 2-8 years: 60-80 gm/dl
ALTERNATE ROUTES OF DRUG ADMINISTRATION

The preferred route of drug administration shall be intravenous when not otherwise specified in operational protocols. However, providers must be aware of alternate routes of drug administration and make this information available to base station physicians when difficulties arise in giving required fluids and/or medications.

- **INTRAOSSEOUS**
  - Any drug given IV may be given via the intraosseous route:

- **ENDOTRACHEAL**
  - The following drugs may be given via the endotracheal route:
    - Naloxone
    - Atropine
    - Epinephrine
    - Lidocaine
  - When drugs are given endotracheally, they should be diluted with 10-15 cc NS prior to administration; administration must be followed by hyper-insufflation of the lungs to promote optimal drug absorption.
  - Use 2-2.5 X recommended dosage, preferably done by administering through IV tubing past the end of the ETT.

- **SUBLINGUAL**
  - The following drugs may be given sublingually (injected into the venous plexus at the base of the tongue):
    - Nitroglycerin
    - Capoten
    - Glucose paste
• **RECTAL**
  - The following drugs may be administered rectally:
    - Diazepam

• **INTRAMUSCULARLY**
  - The following drugs may be administered intramuscularly:
    - Atropine
    - Diazepam
    - Diphenhydramine
    - Furosemide
    - Lidocaine
    - Morphine sulfate
    - Naloxone
    - Haldol
    - Phenergan
    - Glucagon

  - Use of the IM route is to be highly discouraged due to slow and erratic absorption of drugs from deep IM sites.

• **SUBCUTANEOUSLY**
  - The following drug may be administered subcutaneously:
    - Epinephrine

• **TOPICAL**
  - The following drugs may be administered intramuscularly:
    - Nitroglycerin paste
**APGAR SCORING**

The Apgar score provides a measure of the well being of the newly delivered infant. It is composed of the parameters of appearance, pulse, irritability (grimace), muscle tone (activity), and respirations. The scores may be from 0 to 10; higher scores are more indicative of neonatal well being. APGAR scores should be determined both one and five minutes after delivery; the five minute score is most significant.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>0 points</th>
<th>1 point</th>
<th>2 points</th>
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<tbody>
<tr>
<td>Heart Rate</td>
<td>0</td>
<td>&lt;100</td>
<td>&gt;100</td>
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<tr>
<td>Respirations</td>
<td>absent</td>
<td>slow, irregular</td>
<td>good, crying</td>
</tr>
<tr>
<td>Irritability to slap</td>
<td>0</td>
<td>grimace</td>
<td>cry</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>flaccid</td>
<td>some reflex</td>
<td>active motion</td>
</tr>
<tr>
<td>Color</td>
<td>blue/pale</td>
<td>body pink</td>
<td>all pink</td>
</tr>
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</table>

Total score = sum of each parameter score
## APPROVED ABBREVIATIONS FOR DOCUMENTATION

<table>
<thead>
<tr>
<th>A</th>
<th>Abd</th>
<th>Abdomen</th>
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<tbody>
<tr>
<td>ABC</td>
<td>ABC</td>
<td>Airway, Breathing, circulation</td>
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<tr>
<td>ACLS</td>
<td>ACLS</td>
<td>Advanced Cardiac Life Support</td>
</tr>
<tr>
<td>Adm</td>
<td>Adm</td>
<td>Admission</td>
</tr>
<tr>
<td>ALS</td>
<td>ALS</td>
<td>Advanced Life Support</td>
</tr>
<tr>
<td>AMA</td>
<td>AMA</td>
<td>Against Medical Advice</td>
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<td>ASA</td>
<td>ASA</td>
<td>Aspirin</td>
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<tr>
<td>ASCVD</td>
<td>ASCVD</td>
<td>Arteriosclerotic cardiovascular disease</td>
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<tr>
<td>ATLS</td>
<td>ATLS</td>
<td>Advanced Trauma Life Support</td>
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<table>
<thead>
<tr>
<th>B</th>
<th>BBB</th>
<th>Bundle e Branch Block</th>
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<tbody>
<tr>
<td>BCLS</td>
<td>BCLS</td>
<td>Basic Cardiac Life Support</td>
</tr>
<tr>
<td>BP</td>
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<td>Blood pressure</td>
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<tr>
<td>BS</td>
<td>BS</td>
<td>Breath sounds</td>
</tr>
<tr>
<td>BVM</td>
<td>BVM</td>
<td>Bag-valve mask</td>
</tr>
</tbody>
</table>

| C | C  | Centigrade |
|---|---  | C          |
| Ca | Ca  | Cancer     |
| Ca++ | Ca++  | Calcium |
| CAB | CAB  | Coronary artery bypass |
| CAD | CAD  | Coronary artery disease |
| Cath | Cath  | Catheter, catheterization |
| CBC | CBC  | Complete blood count |
| cc | cc  | Cubic centimeter |
| CC | CC  | Chief Complaint |
| CCU | CCU  | Coronary care unit |
| CHF | CHF  | Congestive heart failure |
| CHI | CHI  | Closed head injury |
| Circ | Circ  | Circulation |
| Cm | Cm  | Centimeter |
| CMS | CMS  | Circulation, movement, sensation |
| CNS | CNS  | Central nervous system |
| CO₂ | CO₂  | Carbon dioxide |
| COLD/COPD | COLD/COPD  | Chronic obstructive lung disease pulmonary disease |
| C-spine | C-spine  | Cervical spine |
| C-section | C-section  | Cesarean section |
| CSF | CSF  | Cerebrospinal fluid |
| CSM | CSM  | Carotid sinus massage |
| CVA | CVA  | Cerebral vascular accident |
| CVP | CVP  | Central venous pressure |
| CPR | CPR  | Cardiopulmonary resuscitation |
D
DC/dc  discontinue
D & C  Dilation and curettage
Detox  detoxification
DOA  Dead on arrival at hospital
DOE  Dyspnea on exertion
DOS  Dead on scene
DT  Delirium Tremens
Dx  diagnosis

E
ED  Emergency Department
ECG/EKG  Electrocardiogram
EENT/ENT  eye, ear, nose throat
EOA  Esophageal obturator airway
EOM  Extraocular movement
ET  Endotracheal
ETA  Estimated time of arrival
ETOH  Alcohol

F
F  Fahrenheit
FHR  Fetal Heart Rate
FB  Foreign body
FD  Fire Department
FI  Fluid
Fx  Fracture

G
GB  Gallbladder
GC  Gonococcus or gonorrhea
GCS  Glasgow Coma Scale
GI  Gastrointestinal
Gm  Gram
Gr  Grain
GSW  Gunshot wound
Gtt(s)  Drops
GU  Genitourinary
GYN  Gynecology

H
H  Hour
HA  Headache
HB  Heart block
Hct  Hematocrit
Hg  Mercury
Hgb/Hb  Hemoglobin
H&P  History and physical exam
<table>
<thead>
<tr>
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<td>Height</td>
</tr>
<tr>
<td>Hx</td>
<td>History</td>
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<td>Intracardiac</td>
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<td>Intracostal space</td>
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<td>Intensive Care Unit</td>
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<td>I&amp;D</td>
<td>Incision and drainage</td>
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<td>Jugular-venous distention</td>
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<td>K⁺</td>
<td>Potassium</td>
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<td>KVO</td>
<td>Keep vein open</td>
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<tr>
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<tr>
<td>LMP</td>
<td>Last menstrual period</td>
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<td>Left lower quadrant</td>
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<td>LOC</td>
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<tr>
<td>Lt</td>
<td>Left</td>
</tr>
<tr>
<td>LUL</td>
<td>Left Upper Lobe</td>
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<tr>
<td>MAE</td>
<td>Moves all extremities</td>
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<td>Medical antishock trousers</td>
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<td>Per</td>
<td>By or through</td>
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<tr>
<td>PERL</td>
<td>Pupils equal and react to light</td>
</tr>
<tr>
<td>PERLA</td>
<td>Pupils equal, and react to light and accommodation</td>
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<tr>
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<tr>
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<td>Right bundle branch block</td>
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<td>RBC</td>
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<td>Rheumatic heart disease</td>
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<tr>
<td>RLQ</td>
<td>Right lower quadrant</td>
</tr>
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<td>Rule out</td>
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<td>Range of motion</td>
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<td>Right upper quadrant</td>
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<tr>
<td>Rx</td>
<td>Take, treatment</td>
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<tr>
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<tr>
<td>Sol</td>
<td>Solution</td>
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<td>Sm</td>
<td>Small</td>
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<td>Stat</td>
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<td>Subcutaneous</td>
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<td>Sup</td>
<td>Superior</td>
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<tr>
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<td>Sign/symptom</td>
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<td>Tablespoon</td>
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<td>Temperature</td>
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<tr>
<td>TIA</td>
<td>Transient ischemic attack</td>
</tr>
<tr>
<td>Tid</td>
<td>Three times a day</td>
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<tr>
<td>TKO</td>
<td>To keep open</td>
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<td>Tender loving care</td>
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<td>Tympanic membrane</td>
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<td>Tolerated</td>
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<tr>
<td>TRA</td>
<td>To run at</td>
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<td>Temperature, pulse, respirations</td>
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<td>Teaspoon</td>
</tr>
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<td>Tx</td>
<td>Treatment</td>
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<tr>
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<td>Full Form</td>
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<td>-----------</td>
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<tr>
<td>UA</td>
<td>Upon arrival, urinalysis,</td>
</tr>
<tr>
<td>Unk</td>
<td>Unknown</td>
</tr>
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<td>Upper-respiratory infection</td>
</tr>
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<td>Urology</td>
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<td>Urinary tract infection</td>
</tr>
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<td>Vag</td>
<td>Vaginal</td>
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<tr>
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<td>Venereal disease</td>
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<td>By way of</td>
</tr>
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<td>Volume</td>
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<td>Wandering atrial pacemaker</td>
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<td>White blood cells</td>
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<td>WNL</td>
<td>Within normal limits</td>
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<td>Wolfe Parkinson White syndrome</td>
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<td>Wt</td>
<td>Weight</td>
</tr>
<tr>
<td>WO</td>
<td>Wide open</td>
</tr>
<tr>
<td>X</td>
<td>Times</td>
</tr>
<tr>
<td>YO</td>
<td>Year old</td>
</tr>
<tr>
<td>Yr.</td>
<td>Years</td>
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# APPROVED MEDICATION LIST

<table>
<thead>
<tr>
<th>Drug</th>
<th>Adult Dosage</th>
<th>Pediatric Dosage</th>
<th>Pearls</th>
</tr>
</thead>
</table>
| **Adenosine (Adenocard)** | - 6 mg initially IV/IO  
- If no response in 1-2 minutes, 12 mg IV/IO  
- If no response in 1-2 minutes, repeat 12 mg dosage IV/IO | - 0.1 mg/Kg IV/IO initially up to a total dose of 6 mg  
- If no response in 1-2 minutes, 0.2 mg/Kg IV/IO up to a total dose of 12 mg  
- If no response in 1-2 minutes, repeat 0.2 mg/Kg IV/IO dosage | - Contraindicated in patients with higher heart blocks, sick sinus syndrome, functioning artificial pacemaker, a-flutter, a-fibrillation and v-tach.  
- Patients with asthma may be subject to experience adenosine-induced bronchoconstriction |
| **Albuterol (Proventil, Ventolin)** | - 2.5-5.0 mg as tolerated by the patient  
Metered dose inhaler can be used prior to administering nebulized treatment | - 2.5 mg as tolerated by the patient | - Contraindicated in patients with severe coronary insufficiency, history of cardiac disease, or uncontrolled, severe hypertension  
- In life threatening situations the positive effects of Albuterol outweigh the negative |
| **Amiodarone** | - Antidysrhythmic Blocks sodium channels, myocardial potassium channels and calcium channels; prolongs action potential and refractory period in the myocardium  
- Route IV SLOW push or IV drip | Cardiac Arrest  
- Adult: 300 mg IV. May repeat 150 mg IV once in 5 min.  
Stable tachycardia: Adult: 150 mg over ten minutes (Mix 150 mg into 50 cc bag of NS, using MACRO DRIP, run at 60gtt/min) | Pediatric cardiac arrest:  
- 5mg/kg IV/IO bolus, can repeat x 2.  
Pediatric: 5mg/kg IV/IO over 20-60 minutes, can be repeated to a maximum 15mg/kg per day  
Contraindications: Known hypersensitivity. Cardiogenic shock, marked sinus Bradycardia, and second- or third-degree AV block.  
- Contraindicated in patients with insufficient renal or hepatic function, febrile pediatrics with influenza, bleeding disorders, pregnancy or asthma  
- Avoid use in patients who are already taking anticoagulatents |
| **Aspirin** | - 324 mg of chewable baby Aspirin  
- 81 mg x 4 tablets is the normal dose | - Not established | - Contraindicated in patients with insufficient renal or hepatic function, febrile pediatrics with influenza, bleeding disorders, pregnancy or asthma  
- Avoid use in patients who are already taking anticoagulatents |
| **Atropine Sulfate** | Asystole  
- 0.5-1 mg IV/IO q3-5 minutes up to a total of 0.04 mg/Kg  
Bradycardia  
- 0.5-1 mg IV/IO q3-5 minutes up to a total of 0.04 mg/Kg  
Cholinergic Poisoning  
- 1-2 mg IV/IO q5 minutes ET tube dosage is 2-2.5 times the IV dose. | Asystole  
- 0.02 mg/Kg IV/IO q3-5 minutes up to a total of 1 mg  
Bradycardia  
- 0.02 mg/Kg IV/IO q3-5 minutes up to a total of 1 mg  
Cholinergic Poisoning  
- Contact medical control | Minimum dose of 0.1 mg/Kg IV/IO  
- Contraindicated in narrow angled glaucoma  
- Avoid in coronary heart disease, tachycardia, CHF, hypertension  
- Bradycardia in children is due to hypoxia until proven otherwise |
<table>
<thead>
<tr>
<th>Drug</th>
<th>Adult Dosage</th>
<th>Pediatric Dosage</th>
<th>Pearls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Chloride</td>
<td></td>
<td></td>
<td>Do not use in conjunction with sodium Bicarb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use only in VF associated with suspected hyperkalemia, i.e. renal failure patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Do not use in patients with digitalis toxicity, hypercalcemia, or renal or cardiac disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Avoid extravasation due to severe necrosis at the site</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Do not use in conjunction with sodium Bicarb</td>
</tr>
<tr>
<td>Dextrose 50%</td>
<td>25 gm IV/IO</td>
<td>Children</td>
<td>Contraindicated in patients with elevated blood glucose levels, suspected intraspinal or intracranial hemorrhage</td>
</tr>
<tr>
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<td>Avoid extravasation due to severe necrosis and sloughing at the site</td>
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<td></td>
<td>Can result in dilution of electrolyte concentrations and overhydration when fluid overload is present</td>
</tr>
<tr>
<td></td>
<td>Repeat as needed, maximum of 2 additional doses</td>
<td>Neonates</td>
<td>Dextrose administration may produce a vitamin B deficiency</td>
</tr>
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<td></td>
<td>Use caution to avoid a BLG &gt;200 in patients with suspected CVA or who are post arrest</td>
</tr>
<tr>
<td>Diazepam (Valium)</td>
<td>5-10 mg IV/IO/IM q3 minutes to a maximum of 20 mg</td>
<td>0.1-0.3 mg/Kg IV/IO to a maximum of 5 mg</td>
<td>Be prepared to handle CNS depression, especially in higher doses</td>
</tr>
<tr>
<td></td>
<td>0.1-0.5 mg/Kg rectally</td>
<td>0.5 mg/Kg rectally to a maximum of 18 mg</td>
<td>Toxicity can occur in patients with ethanol on board</td>
</tr>
<tr>
<td></td>
<td>Psychiatric</td>
<td></td>
<td>Contraindicated in pregnancy.</td>
</tr>
<tr>
<td></td>
<td>5-10 mg IV/IO</td>
<td></td>
<td>Use with caution in patients with decreased hepatic function</td>
</tr>
<tr>
<td></td>
<td>10-20 mg IM</td>
<td></td>
<td>No Diazepam via the ET tube for either adults or pediatrics</td>
</tr>
<tr>
<td></td>
<td>Cardioversion</td>
<td></td>
<td>Do not use in pregnancy.</td>
</tr>
<tr>
<td></td>
<td>5-10 mg IV/IO</td>
<td></td>
<td>Use with caution in patients with decreased hepatic function</td>
</tr>
<tr>
<td></td>
<td>Ventricular Ectopy Cocaine Toxicity</td>
<td></td>
<td>No Diazepam via the ET tube for either adults or pediatrics</td>
</tr>
<tr>
<td></td>
<td>5 mg IV/IO, refractory to other suppressing agents</td>
<td></td>
<td>Do not use in conjunction with sodium Bicarb</td>
</tr>
<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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</tr>
<tr>
<td><strong>Diltiazem (Cardizem)</strong></td>
<td>- 0.25 mg/Kg IV/IO initially&lt;br&gt;- If no response in 15 minutes, 0.35 mg/Kg IV/IO</td>
<td>- Not established</td>
<td>- Avoid in severe CHF, sick sinus syndrome, high degree AV block, hypotension&lt;br&gt;- May increase carbamazepine, digoxin, cyclosporine, theophylline levels</td>
</tr>
<tr>
<td><strong>Diphenhydramine (Benedryl)</strong></td>
<td>- Allergic Reaction 25-50 mg IV/IO/IM&lt;br&gt;- Dystonic Reaction 50 mg IV/IO/IM</td>
<td>- 1-2 mg/Kg IV/IO/IM to a maximum dose of 50 mg&lt;br&gt;- Not for infants &lt;3 months old</td>
<td>- Increases the effects of CNS depressants</td>
</tr>
<tr>
<td><strong>Dopamine (Intropin)</strong></td>
<td>- 400 mg in 250cc NS to run at 10-20 mcg/Kg/min, titrate to systolic BP of 90-100 mm/Hg</td>
<td>- 400 mg in 250cc NS to run at 10-20 mcg/Kg/min, titrate to age appropriate BP</td>
<td>- Can increase afterload due to its vasoconstrictive effects&lt;br&gt;- Contraindicated in patients with V-fibrillation&lt;br&gt;- Monitor BP and ECG closely, can cause heart irritability causing dysrhythmias and PVCs</td>
</tr>
<tr>
<td><strong>Epinephrine 1:1,000 (Adrenalin)</strong></td>
<td>- Allergic Reaction 0.3 mg SC if not hypotensive&lt;br&gt;- 1 mg in 250cc NS to run at 0.1-1 mcg/Kg/min titrate to BP of 90 mm/Hg&lt;br&gt;- Respiratory Distress 0.5 mg in 2 cc NS nebulized&lt;br&gt;- Hypotension 1 mg in 250cc NS to run at 0.1-1 mcg/Kg/min titrate to BP of 90 mm/Hg</td>
<td>- Allergic Reaction 0.01 mg/Kg SC if not hypotensive&lt;br&gt;- 1 mg in 250cc NS to run at 0.1-1 mcg/Kg/min titrate to age appropriate BP&lt;br&gt;- Respiratory Distress 0.5 mg in 2 cc NS nebulized&lt;br&gt;- Hypotension 1 mg in 250cc NS to run at 0.1-1 mcg/Kg/min titrate to age appropriate BP</td>
<td>- Use with caution in patients with coronary artery disease, uncontrolled hypertension, serious ventricular arrhythmias, during the second stage of labor and the elderly with diabetes mellitus, hypertension, cardiovascular disease or cerebrovascular insufficiency</td>
</tr>
<tr>
<td><strong>Epinephrine 1:10,000 (Adrenalin)</strong></td>
<td>- Anaphylaxis 1 mg IV/IO q3 minutes to a maximum of 5 mg over 15 minutes&lt;br&gt;- Cardiac Arrest 1 mg IV/IO q3-5 minutes&lt;br&gt;- ET tube dose is 2-2.5 times the IV dose</td>
<td>- Anaphylaxis 0.01 mg/Kg IV/IO q3 minutes to a maximum of 0.05 mg/Kg over 15 minutes&lt;br&gt;- Cardiac Arrest 0.01 mg/Kg IV/IO q3-5 minutes&lt;br&gt;- ET tube dose is 10 times the IV dose</td>
<td>- Use with caution in patients with coronary artery disease, uncontrolled hypertension, serious ventricular arrhythmias, during the second stage of labor and the elderly with diabetes mellitus, hypertension, cardiovascular disease or cerebrovascular insufficiency</td>
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<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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<tr>
<td><strong>Furosemide</strong></td>
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<tr>
<td>(Lasix)</td>
<td>20-40 mg IV/IO/IM</td>
<td>2 mg/Kg IV/IOIM</td>
<td>Contraindicated in patients with anuria, severe electrolyte depletion</td>
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<td>May potentiate digitalis toxicity</td>
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<tr>
<td><strong>Haloperidol</strong></td>
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<tr>
<td>(Haldol)</td>
<td>2.5-5 mg IV/IO/IM</td>
<td>0.05-0.15 mg IM up to a maximum dose of 10mg</td>
<td>Contraindicated in patients with CNS depression, pregnant, severe liver or cardiac disease, or head injury</td>
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<td>May increase tricyclic antidepressant levels and hypotensive actions of antihypertensive agents</td>
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<tr>
<td><strong>Ipratropium</strong></td>
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<tr>
<td>(Atrovent)</td>
<td>0.5 mg mixed with 2.5 mg of Albuterol</td>
<td>0.5 mg mixed with 2.5 mg of Albuterol</td>
<td>Albuterol increases the effects of ipratropium</td>
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<tr>
<td></td>
<td>One dose only</td>
<td></td>
<td>Use with caution in pregnancy</td>
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<td></td>
<td>Not indicated for acute onset of bronchospasm</td>
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<tr>
<td><strong>Labetalol</strong></td>
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<tr>
<td>(Trandate)</td>
<td>0.2 mg/Kg IV/IO</td>
<td>Not established</td>
<td>Contraindicated in patients with cardiogenic shock, pulmonary edema, bradycardia, AV block, uncompensated CHF, reactive airway disease, or higher heart blocks</td>
</tr>
<tr>
<td></td>
<td>If goal not reached after 5 minutes, 0.4 mg/Kg IV/IO</td>
<td></td>
<td>Use caution in patients with impaired hepatic function</td>
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<td></td>
<td>If goal not reached after 5 minutes, 0.8 mg/Kg IV/IO</td>
<td></td>
<td>Bronchodilator effects may be blunted</td>
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<td></td>
<td>If goal not reached after 5 minutes, 1.6 mg/Kg IV/IO</td>
<td></td>
<td>Nitroglycerin may augment hypotensive effects</td>
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<td></td>
<td>If goal not reached after 5 minutes, may repeat 1.6 mg/Kg IV/IO x 2</td>
<td></td>
<td>Patient should be continuously monitored for hypotension, bradycardia, ECG changes, CHF, or bronchospasm</td>
</tr>
<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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<tr>
<td><strong>Lidocaine (Xylocaine)</strong></td>
<td>Cardiac Arrest 1.5 mg/Kg IV/IO initially 0.5-0.75 mg/Kg IV/IO for each subsequent dose to a total dose of 3 mg/Kg</td>
<td>Cardiac Arrest 1 mg/Kg IV/IO bolus  Maximum dose of 50 mg IV/IO  Tachycardia or Ectopy 1 mg/Kg IV/IO initially  0.5-0.75 mg/Kg IV/IO for each subsequent dose up to a total dose of 3 mg/Kg</td>
<td>With conversion of the rhythm initiate infusion, 200 mg in 250cc NS, start with 20 mcg/Kg/min and titrate for further ectopy up to 50 mcg/Kg/min  Nasal Tracheal Intubation 4 cc of 2% Lidocaine nebulized  ET tube dose is 2-2.5 times the IV dose.  Contraindicated in patients with Wolff-Parkinson-White syndrome, severe SA, AV or intraventricular block if an artificial pacemaker is not in place  Lidocaine plasma concentrations can reach toxic levels when taken with beta-blockers.  May increase the effects of succinylcholine  High plasma concentrations can cause seizures, heart block and AV abnormalities  Use caution in patients with hepatic disease, hypovolemia or shock, respiratory depression, incomplete heart blocks or bradycardia, or atrial fibrillation  Decreased dose in the elderly due to increased risk for CNS and cardiac side effects</td>
</tr>
<tr>
<td>Magnesium Sulfate</td>
<td>Cardiac Arrest Vfib/Vtach, Torsades 2 gm IV/IO bolus  Torsades de Pointes With a Pulse 1-2 gm in 100 cc of NS to run over 5-60 minutes 0.5-1 gm/hr, titrate to control of rhythm  Pre-Eclampsia 2-4 gm IV/IO bolus over 4 minutes Eclampsia 2 gm IV/IO bolus over 4 minutes 10 gm in 250cc of NS to run at 50 cc/hr  If patient starts seizing during the infusion administer another 2 gm IV/IO bolus over 4 minutes</td>
<td>Torsades de Pointes With a Pulse 2 gm in 250cc NS to run at 25-50 mg/Kg over 10-20 minutes up to 2 gm</td>
<td>Contraindicated in patients with myocardial damage, hepatitis, Addison disease, heart blocks, or significant renal impairment  Use with caution in patients on digitals, may cause heart blocks and renal impairment may lead to toxicity  IV calcium chloride may be given to antagonize the effects of magnesium sulfate</td>
</tr>
<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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</tr>
<tr>
<td><strong>Methyl-prednisolone (Solu-Medrol)</strong></td>
<td>- Anaphylaxis: 125 mg IV/IO</td>
<td>- 1-2 mg/Kg/dose IV/IO</td>
<td>- Drug interactions include NSAIDs and live virus vaccines</td>
</tr>
<tr>
<td></td>
<td>- Respiratory Distress: 125 mg IV/IO</td>
<td></td>
<td>- Hypoglycemic responses to insulin and oral hypoglycemic agents may be decreased</td>
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<td></td>
<td>- Spinal Cord Injury: 30 mg/Kg IV Infusion over 5 minutes</td>
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<td>- Use caution in patients with GI bleeding, diabetes mellitus or severe infection</td>
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<tr>
<td><strong>Midazolam (Versed)</strong></td>
<td>1-2 mg over 2 minutes. If desired effect not achieved after 2 minutes may repeat to a total dose of 10 mg</td>
<td>0.05-.1mg/kg IM slow push. Can repeat in five minute to a max dose of .5 mg.</td>
<td>Monitor vital signs following administration.</td>
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<td>Be prepared for hemodynamic effects in hypovolemia patient. Treat as needed with volume replacement and trendelenberg. May require vasopressor to correct.</td>
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<td>Be prepared to assist ventilations and control airway with BVM and/or endotracheal intubation.</td>
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<td>Rapid administration may exacerbate side effects</td>
</tr>
<tr>
<td><strong>Morphine Sulfate</strong></td>
<td>1 - 5 mg IV/IO initially. May be repeated q5 minutes as needed to control pain or anxiety</td>
<td>0.1 mg/Kg IV/IO initially. May be repeated q5 minutes as needed to control pain or anxiety up to a maximum dose of 15 mg</td>
<td>Contraindicated in patients with hypovolemia or shock, head injuries, increased ICP, nausea/vomiting or respiratory depression</td>
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<td></td>
<td>May require vasopressor to correct.</td>
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<td>MAO inhibitors may potentiate adverse effects</td>
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<td></td>
<td>Use caution in patients with atrial flutter or other supraventricular tachycardias</td>
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<td></td>
<td>Use caution, may increase ventricular response</td>
</tr>
<tr>
<td><strong>Naloxone (Narcan)</strong></td>
<td>0.4-2 mg IV/IO/IM q2 minutes, titrate to respiratory increase ET tube dose is 2-2.5 times the IV dose</td>
<td>0.01 mg/Kg IV/IO/IM q2 minutes, titrate to respiratory increase or to a maximum dose of 2 mg</td>
<td>Use with caution in patients with cardiac disease due to the possibility of flash pulmonary edema</td>
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<td>Use with caution in patients with possible narcotic addiction due to the possibility of withdrawal</td>
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<td></td>
<td></td>
<td></td>
<td>Administration of naloxone may not reverse hypotension</td>
</tr>
<tr>
<td><strong>Nasal Spray</strong></td>
<td>2 sprays in the appropriate nare</td>
<td>1-2 sprays in the appropriate nare</td>
<td>Same as Nitroglycerin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Monitor patients closely for hypotension</td>
</tr>
<tr>
<td><strong>Nitro Paste (Nitro-Bid Paste)</strong></td>
<td>½”-2”, applied to the anterior chest wall</td>
<td>Not Established</td>
<td></td>
</tr>
<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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</tr>
<tr>
<td>treatment for angina, CHF and hypertension</td>
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<tr>
<td>Route: TD</td>
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<tr>
<td><strong>Nitroglycerin (Nitrostat)</strong></td>
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<tr>
<td>Vasodilator used in the treatment of angina, CHF, and hypertension</td>
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<tr>
<td>Route: SL</td>
<td>0.4 mg SL q5, as long as systolic BP is &gt;100 mm Hg, until desired effects</td>
<td>Not Established</td>
<td>Contraindicated in shock, severe bradycardia, severe tachycardia, Viagra within 24 hours, head trauma and cerebral hemorrhage Use caution in patients suspected to be having a right ventricular infarct Marked symptomatic orthostatic hypotension may occur when given with calcium channel blockers</td>
</tr>
<tr>
<td><strong>Procainamide (Pronestyl)</strong></td>
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<tr>
<td>Antidysrhythmic used in the treatment of both atrial and ventricular dysrhythmias</td>
<td></td>
<td>15 mg/Kg over 30-60 minutes</td>
<td>Contraindicated in patients with higher heart blocks where pacemaker is not in place, digitalis toxicity, tricyclic antidepressant toxicity, Torsades de Pointes, or systemic lupus erythematosus Use with caution in patients with complete AV block, intoxication, organic heart disease, digitalis induced dysrhythmias, renal disease or hepatic insufficiency Not the appropriate agent in V-fib or pulseless V-tach in pediatric patients</td>
</tr>
<tr>
<td>Route: IV infusion, IO infusion</td>
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</tr>
<tr>
<td><strong>Phenergan (Promethazine)</strong></td>
<td>12.5-25 mg IV, IM</td>
<td>0.25-1 mg/Kg IV, Max dose 25 mg</td>
<td>Use caution with patients who have glaucoma, liver impairment, seizure disorders and elderly patients</td>
</tr>
<tr>
<td>Nausea, Vomiting</td>
<td></td>
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<tr>
<td>IV, IM</td>
<td></td>
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<tr>
<td><strong>Sodium Bicarb</strong></td>
<td>Cardiac Arrest 1 mEq/Kg IV/IO initially</td>
<td>Cardiac Arrest 1 mEq/Kg IV/IO of 4.2%, initially</td>
<td>Contraindicated in patients with unknown abdominal pain or severe pulmonary edema Use caution in patients with CHF, edema, cirrhosis, corticosteroid use or renal failure due to possibility of electrolyte imbalances Extravasation during administration can cause tissue necrosis</td>
</tr>
<tr>
<td>Alkalizing agent used in the treatment of tricyclic overdoses and metabolic acidosis</td>
<td>0.5 mEq/Kg IV/IO q10 minutes Tricyclic Overdose 50-100 mEq IV/IO initially</td>
<td>0.5 mEq/Kg IV/IO of 4.2% q10 minutes Tricyclic Overdose Contact MCP</td>
<td></td>
</tr>
<tr>
<td>Route: SIVP, SIOP, IV Infusion</td>
<td>Infusion of 100 mEq in 1000 cc of NS to run at 150 cc/hr</td>
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</tr>
<tr>
<td><strong>Tetracaine (Pontocaine)</strong></td>
<td>1-2 drops initially Repeat as necessary for pain control</td>
<td>1-2 drops initially Repeat as necessary for pain control</td>
<td>Contraindicated in patients with open eye injuries</td>
</tr>
<tr>
<td>Topical ophthalmic anesthetic used in the treatment of eye injuries</td>
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<tr>
<td>Route: Eye Drops</td>
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</tr>
<tr>
<td><strong>Thiamine (Betaxin)</strong></td>
<td>100 mg IV/IO/IM</td>
<td>50 mg IV/IO/IM</td>
<td>Use caution in IV administration, anaphylactic reactions have been reported Large IV doses have been</td>
</tr>
<tr>
<td>Vitamin B complex used in patients with suspected vitamin deficiency,</td>
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<tr>
<td>Drug</td>
<td>Adult Dosage</td>
<td>Pediatric Dosage</td>
<td>Pearls</td>
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<tr>
<td>delirium tremens, Wernicke’s encephalopathy</td>
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<td></td>
<td>known to cause respiratory difficulties</td>
</tr>
<tr>
<td>Route: IV, IO, IM</td>
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</tbody>
</table>

| Vasopressin (Pitressin) | 40 U IV/IO single dose administration | Not established | May be useful in the treatment of vasodilatory shock May provoke cardiac ischemia and angina due to increased peripheral vascular resistance |
| Vasopressor used in the treatment of hypotension in various situations. | | | |
| Route: IV, IO, ET | | | |