

Basic Life Support PreHospital Care Protocols 2007

Charlotte Hungerford Hospital
Danbury Hospital
New Milford Hospital

Sharon Hospital
St. Mary's Hospital
Waterbury Hospital

Preface / Note

This document is an **unauthorized** version of the **2007 Region V BLS Protocols**. Primarily to make the content of the document more accessible, the following modifications have been made:

- Divided the content into chapters
- Did some formatting and used styles
- Added a Brief and Detailed Table of Contents
- Replaced the state “Determination of Death/Discontinuation of Resuscitation” 1996 Guidelines with the latest 2009 Guidelines
- Added an Appendix on the AHA 2010 Guidelines
- NOTE: All the material content in this document is in **exactly the same sequence** as the original document.

Other places where modifications were made are indicated with red “call-out” boxes. The boxes contain a description of the modifications.

The PDF version of this document is **especially readable on-line** with the Adobe navigation panel open showing **bookmarks**. To see the bookmarks, click the bookmark icon on the left. If you expand the bookmarks, you will see the entire Table of Contents. Click an entry and you get instant access to that topic.

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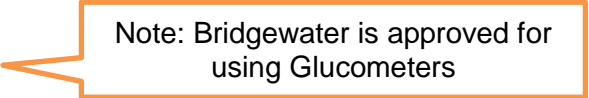
1. Introduction

These guidelines are to be used by pre-hospital providers at the EMT-Basic Level and above. These guidelines are the foundation of all levels of care and should be used as the primary medical resource for treatment modalities for personnel sponsored by Charlotte Hungerford Hospital, Danbury Hospital, New Milford Hospital, Sharon Hospital, St. Mary's Hospital and / or Waterbury Hospital.

A. Important Caution

Information contained in these protocols is compiled from sources believed to be reliable and accurate, however, this cannot be guaranteed. Despite our best efforts there may be typographical errors and/or omissions. The Region V EMS Council, the Medical Advisory Committee, Charlotte Hungerford Hospital, Danbury Hospital, New Milford Hospital, Sharon Hospital, St. Mary's Hospital, Waterbury Hospital, and any employees or members of same are not liable for any loss or damage that may result from these errors or omissions.

B. Please Note – Glucometer Use



Note: Bridgewater is approved for using Glucometers

These protocols contain treatment modalities which have not, as of this writing, been approved for usage by BLS personnel. Specifically, the use of glucometers by BLS personnel will require state approved training following a format which has not yet been agreed upon. Also, each service must complete a MIC upgrade once this training is released. Therefore, until these requirements are met, please DO NOT make use of glucometers at the BLS level.

2. Communications

A. Telephone Numbers

Medical Oversight will be obtained primarily from patching through a regional dispatch or C-MED center. If you are unable to contact a center, Medical Oversight will be obtained from any one of the Region Five Hospitals, depending on where the patient is being transported. **If** the patient is going to be transported to a hospital other than those listed below, **then** your sponsor hospital will be utilized as Medical Oversight.

Charlotte Hungerford Hospital can be reached by telephone at the following numbers:

(860) 496-6650	Emergency Department
(860) 496-6666	Hospital Operator

Danbury Hospital can be reached by telephone at the following numbers:

(203) 739-6757	Emergency Department – Medical Control
(203) 739-7100	Emergency Department – RN Station
(203) 739-7000	Hospital Operator

New Milford Hospital can be reached by telephone at the following numbers:

(860) 350-7222	Emergency Department
(860) 355-2611	Hospital Operator

Saint Mary's Hospital can be reached by telephone at the following numbers:

(203) 709-6004	Emergency Department
(203) 709-6000	Hospital Operator

Sharon Hospital can be reached by telephone at the following numbers:

(860) 364-4111	Emergency Department
(860) 364-4141	Hospital Operator

Waterbury Hospital can be reached by telephone at the following numbers:

(203) 573-6290	Emergency Department
(203) 573-6000	Hospital Operator

The Northwest Connecticut Public Safety Communications Center, Inc (Northwest C-MED) is capable of conducting patches to Receiving Facilities via phone.

The **Northwest Connecticut Public Safety Communications Center, Inc.** (Northwest C-MED) can be reached by telephone at the following numbers:

(203) 758-0054	Primary Recorded Telephone Line
(203) 758-0050	Secondary Recorded Telephone Line

B. Communication Failure

In the event of complete communication failure, these protocols will act as the parameters for pre-hospital patient care. If communication failure occurs, the EMT-Basic may follow the guidelines **through standing orders only** to render appropriate and timely emergency care to the patient.

Upon arrival at the receiving hospital the EMT-B will immediately complete an incident report relating to the communication failure. This incident report must be filed with the EMT-B's sponsor hospital EMS Coordinator along with a copy of the patient care report within 24 hours of the event.

C. Establishing On-Line Medical Oversight

When establishing On-Line Medical Oversight for special procedures or medication administration, it is crucial to use a **triple verification process** to ensure all orders are heard and carried out appropriately.

1. Request a patch from C-Med stating the need for a physician for "Medical Control". When C-Med contacts the hospital they will request a Physician for you.
2. Confirm that you are speaking with a Physician, and the name of the Physician, whenever possible.
3. When giving your patch, relay all ongoing treatments, relative and absolute contraindications, and make your specific request for treatment. This shall include:
 - a. The name of the medication.
 - b. The dosage of the medication.
 - c. The route you wish to administer the medication.
 - d. Ex: "I would like to administer 0.3 mg Adult Epi-Pen".
4. If you are unsure of the proper dose, then please relay the weight of the patient, and ask for the dose they would like administered.
5. The Physician will confirm or deny the order as "Affirmative, administer Adult Epi-Pen" or "Negative, do not administer an Epi-Pen at this time".
6. You must repeat back to the Physician that you have received the order, and you are going to carry that order out. "Received, I am going to administer one Adult Epi-Pen" or "Received, I am withholding Epinephrine at this time".
7. You must document the On-Line Physician Name, the time, amount of medication administered, or denial of the order.

3. Patient Care Reports

Emergency Medical Service Patient Care Report (PCR) or a state authorized equivalent will be used to document each patient encounter in the pre-hospital setting. PCR reports will be routinely completed at the time of patient delivery to the receiving facility. In the event the PCR cannot be completed prior to the EMS units dispatch to another emergency call, the PCR will be completed and delivered to the receiving emergency department as soon as possible after the call, and within that working shift.

A. Completion Procedure

Completion of all run reports will be as follows:

1. The hospital copy of the run-report will be left with the Emergency Department Staff and/or attached to the patients Hospital Medical Record.
2. All areas of the PCR will be completed including all times.
3. Each PCR will be signed by the attending EMS staff.
4. One copy of each PCR will be left with the receiving hospitals EMS Coordinator.
5. Any addendum paperwork will be attached to each copy of the PCR.
6. The receiving Medical Control Physician will sign the PCR as required by the services primary Sponsor Hospital policy.
7. The PCR will be legible and complete.
8. All vital signs, interventions and drug dosages will be listed and will be preceded by time of initiation.

When documenting medication doses please use the following criteria.

Write 0.3 mg, **not** .3 mg.

Write 25 g, **not** 25.0 g

4. Primary EMT-Basic Care Guidelines

This is recognized as the minimum standard of care for the evaluation and treatment of patients. Those protocols listing “**Provide Primary EMT-Basic Care**” refer to this guideline.

1. **Body Substance Isolation:** Body Substance Isolation (BSI) precautions must be routinely taken to avoid skin and mucous membrane exposure to body fluids, secretions, and airborne particles.
 - a. Take BSI precautions, including eye protection, gloves, gown, and mask as needed.
 - b. Wash hands after each patient contact
2. Evaluating **scene safety** involves an assessing the scene to ensure the well-being of the EMT, the crew, the patient(s), and bystanders.
 - a. Evaluate responder's and patient's safety
 - b. Determine number of patients/resources needed
3. **Initial Patient Assessment:**
 - a. **Level of consciousness** - categorize as below (AVPU):
 - i. Alert; recognizes surroundings and responders
 - ii. Responds to verbal stimulus
 - iii. Responds to painful stimulus
 - iv. Unresponsive
 - b. **Evaluate the situation** e.g., **chief complaint** and why you were called. Consider the potential of C-spine involvement by mechanism, location and scope of injury. If there is potential spinal injury, stabilize before moving patient.
 - c. **Airway** – Open the airway via head tilt chin lift, or modified jaw thrust techniques.
 - d. **Breathing** - look, listen, and feel for breathing; ventilate as needed. If unable to ventilate follow “Complete Airway Obstruction” Guideline. Provide supplemental oxygen as indicated.
 - e. **Circulation/Significant Bleeding** - establish presence of pulses. Begin chest compressions as needed. Control life threatening gross external hemorrhage as needed.
4. **Vital Signs**
 - a. Evaluate Breathing
 - i. Count respiratory rate
 - ii. Observe accessory muscle use and work of breathing
 - iii. Examine the mucosa of the mouth and lips for discoloration (cyanosis)
 - iv. Observe for irregular respirations or a recognizable pattern
 - v. Auscultate lung sounds
 - vi. Pulse Oximetry if available
 - b. Evaluate Circulation
 - i. Pulse rate, rhythm, and quality
 - ii. Skin color, temperature, moisture
 - iii. Skin turgor
 - iv. Capillary refill
 - v. Blood pressure

5. Evaluate **disability / deformity**
 - a. Pupils
 - b. Neurological exam as appropriate
6. **Recent History**
 - a. Obtain the pertinent information relevant to this episode such as onset and duration of symptoms, characteristics of pain, and any associated symptoms. Then identify chronic conditions:
 - i. **O** = Onset (what the patient was doing at the time the signs/symptoms started)
 - ii. **P** = Provoking factors
 - iii. **Q** = Quality of pain
 - iv. **R** = Radiation
 - v. **S** = Severity
 - vi. **T** = Time of onset
7. Obtain **Past Medical History**, including:
 - a. **S** = Signs/Symptoms
 - b. **A** = Allergies
 - c. **M** = Medications currently used
 - d. **P** = Past illnesses or episodes similar to the current episode
 - e. **L** = Last meal
 - f. **E** = Events preceding onset
8. **Detailed Physical Exam** (time and critical care needs permitting)
 - a. Remove clothing as needed – protect from environment and bystanders.
 - b. Perform Detailed Physical Exam, including:
 - i. D = Deformities
 - ii. C = Contusions
 - iii. A = Abrasions
 - iv. P = Punctures/Penetrations
 - v. B = Burns
 - vi. T = Tenderness
 - vii. L = Lacerations
 - viii. S = Swelling
 - c. Look for a Medical Alert tag and/or DNR Bracelet
9. **Locate and treat injuries/conditions** according to the appropriate protocol without unnecessary delay in transport.

5. Airway Management

A. Oxygen Administration

NO PATIENT IN RESPIRATORY DISTRESS IS TO BE DENIED OXYGEN THERAPY

1. Patients who are in respiratory distress should be administered oxygen concentrations as appropriate for their condition.
 - Preferred method of delivery is nonrebreather at 10-15 liter/min.
 - Patients who cannot tolerate a facemask may be given oxygen via nasal cannula at 4-6 l/min.
2. Patients who are not in respiratory distress should receive oxygen therapy as indicated by patient presentation and/or protocol.
 - Patients who are not in respiratory distress, and are on home oxygen therapy, should continue to receive the same concentration as their home dose.
3. If a patient is not breathing adequately on their own, then the treatment of choice is VENTILATION, not just oxygenation.

Note: Closely monitor the patient receiving high concentrations of oxygen for signs of decreased level of consciousness and/or increased respiratory distress. Be prepared to provide ventilations if indicated.

B. Airway Adjuncts

The following are approved adjuncts for use by the EMT-Basic:

- Oropharyngeal Airway
- Nasopharyngeal Airway
- Pocket Mask
- Bag Valve Mask
- Non-Rebreather Mask
- Nasal Cannula

C. Complete Foreign Body Airway Obstruction (FBAO) - Choking

Conscious patient (adolescent and older)

1. Assess to determine airway obstruction.
2. Perform the following
 - a. Lean person forward and give 5 quick back blows.
 - b. Perform Heimlich maneuver – 5 quick upward abdominal thrusts.
 - c. For **pregnant or obese victims**, use chest thrusts instead.
3. Continue with Step 2 until airway is cleared or patient becomes unconscious.

Not in Region Protocols
Back blows added. In
RedCross booklet. But
not in 2010 Guidelines.

Unconscious patient (adolescent and older)

1. Assess to determine unresponsiveness.
2. Ensure Paramedic has been dispatched.
3. Perform the following FBAO procedure
 - a. Open the airway and remove any visible foreign objects.
 - b. Give 2 rescue breaths.
 - c. **If** chest does **not** rise, then give 30 chest compressions.
Otherwise (**chest does rise**) look for signs of life.
4. Repeat FBAO procedure until foreign body is removed.

Not in Region Protocols
Rescue breaths and
chest compressions are
in Red Cross booklet
and in 2010 Guidelines.

Post Resuscitation Care: Once airway obstruction is alleviated:

1. Ensure adequate ventilation.
2. Provide Oxygen Therapy per guideline.
3. Perform focused history and physical exam.
4. Take and record baseline vital signs.

D. Oropharyngeal Airway and Nasopharyngeal Airway

The most common airway obstruction is the tongue. When a patient is unconscious or severely obtunded, the muscles relax and the tongue may slide backward, occluding the airway. Even with proper utilization of the head tilt, chin lift, the tongue may still slide back. Placement of an OPA or NPA will help hold the tongue in place or maintain a patent airway nasally, respectively. Any unconscious patient without a gag reflex should be treated with an OPA. If the patient's gag reflex is intact but the patient still has a decreased level of consciousness, then an NPA is an acceptable alternative, assuming that there are no contraindications (see below).

1. Open the patient's airway using the head tilt, chin lift or modified jaw thrust (as appropriate)
2. Give BVM ventilations throughout as warranted by the patient's ventilatory status.
3. Size the OPA by laying it between the patient's earlobe and the corner of their mouth. A properly sized adjunct will be equal to this distance.
4. Insert the OPA with the opening pointing toward the top of the patient's head.
5. Advance the OPA while twisting it 180 degrees so that the opening is pointing at the patient's feet.
6. **If a gag reflex is noted**, then remove the adjunct immediately. Prepare to suction vomit or secretions as needed. Prepare to insert an NPA.
 - i. Size the NPA by laying it between the patient's earlobe and their nostril. A properly sized adjunct will be equal to this distance.
 - ii. Lubricate the NPA with water-soluble lubricant.
 - iii. Insert the NPA into the nostril with the bevel pointed at the septum. If resistance is met, then withdraw the NPA and attempt passage in the other nostril. If still unsuccessful, then remove the adjunct and resume BVM ventilations with a head tilt, chin lift or jaw thrust as appropriate.
7. Ventilate with a BVM while maintaining a head tilt, chin lift or jaw thrust as appropriate.

Take special note: DO NOT attempt use of the NPA in cases of suspected skull fracture. This may be indicated by bruising behind the ears (Battle's sign, a late sign of injury), severe head trauma, or leaking CSF. ANY clear fluids in the ear contraindicate the use of an NPA.

E. Treating Respiratory Distress

- 1) Provide Primary EMT-Basic Care
- 2) Request paramedic dispatch for moderate to severe respiratory distress as evidenced by:
 - a. Dyspnea
 - b. Tachypnea
 - c. Diaphoresis
 - d. Difficulty speaking in sentences
 - e. Accessory muscle usage
 - f. Anxiety or acute changes in mentation
 - g. Cyanosis or mottling (centrally or peripherally)
- 3) Provide supplemental oxygen
- 4) Obtain medical history and auscultate lung sounds
 - a. Patients with a history of Asthma and audible wheezes upon auscultation
 - i. Patient with Bronchodilator MDI (ex: Albuterol, Atrovent, Xopenex, Combivent)
 - ii. Contact On-Line Medical Oversight to assist with MDI Usage
 - b. Patients with a history of COPD and audible wheezes upon auscultation
 - i. Patient with Bronchodilator MDI (ex: Albuterol, Atrovent, Xopenex, Combivent)
 - ii. Contact On-Line Medical Oversight to assist with MDI Usage
 - c. Patients with a history of Heart Failure and Pulmonary Edema with audible rales/crackles upon auscultation
 - i. Allow patient to stay upright
 - ii. Initiate positive pressure ventilation as needed by patient presentation
- 5) Initiate transport to hospital or paramedic intercept as soon as possible.
- 6) Whenever possible allow patient to maintain position of comfort.
- 7) Re-assess after every intervention/treatment and repeat vital signs.
- 8) Contact On-Line Medical Oversight as needed to repeat any treatments.

F. Pulse Oximetry Monitoring

Usage of a pulse oximetry monitoring can be useful at the EMT-Basic level, provided the EMT recognizes the limitations of the device, and the acceptable times for utilization.

Pulse Oximetry measures the amount of hemoglobin that is saturated with oxygen. When there is restricted blood flow or inadequate perfusion through the extremity the reading may be inaccurate. This may occur during shock states and vasoconstriction. Anytime there is generalized cooling of an extremity vasoconstriction may occur. Pulse oximetry will give a false reading during carbon monoxide poisonings, and should not be used to assess oxygenation. As with any diagnostic tool, nothing takes the place of an assessment especially if you feel your patient is hypoperfused.

Procedure for Pulse Oximetry Monitoring

1. Turn on machine and apply appropriately sized probe to finger, toe, or ear lobe.
2. If using a finger, then ensure adequate capillary refill time and that there is no nail polish or false nails present.
3. Record time and reading along with pulse rate.
4. To ensure an accurate reading, palpate for a corresponding radial pulse rate that matches the pulse rate given by the machine.
5. If not already done, then apply oxygen per guideline.

6. Cardiac Arrest Management – Guidelines 2005

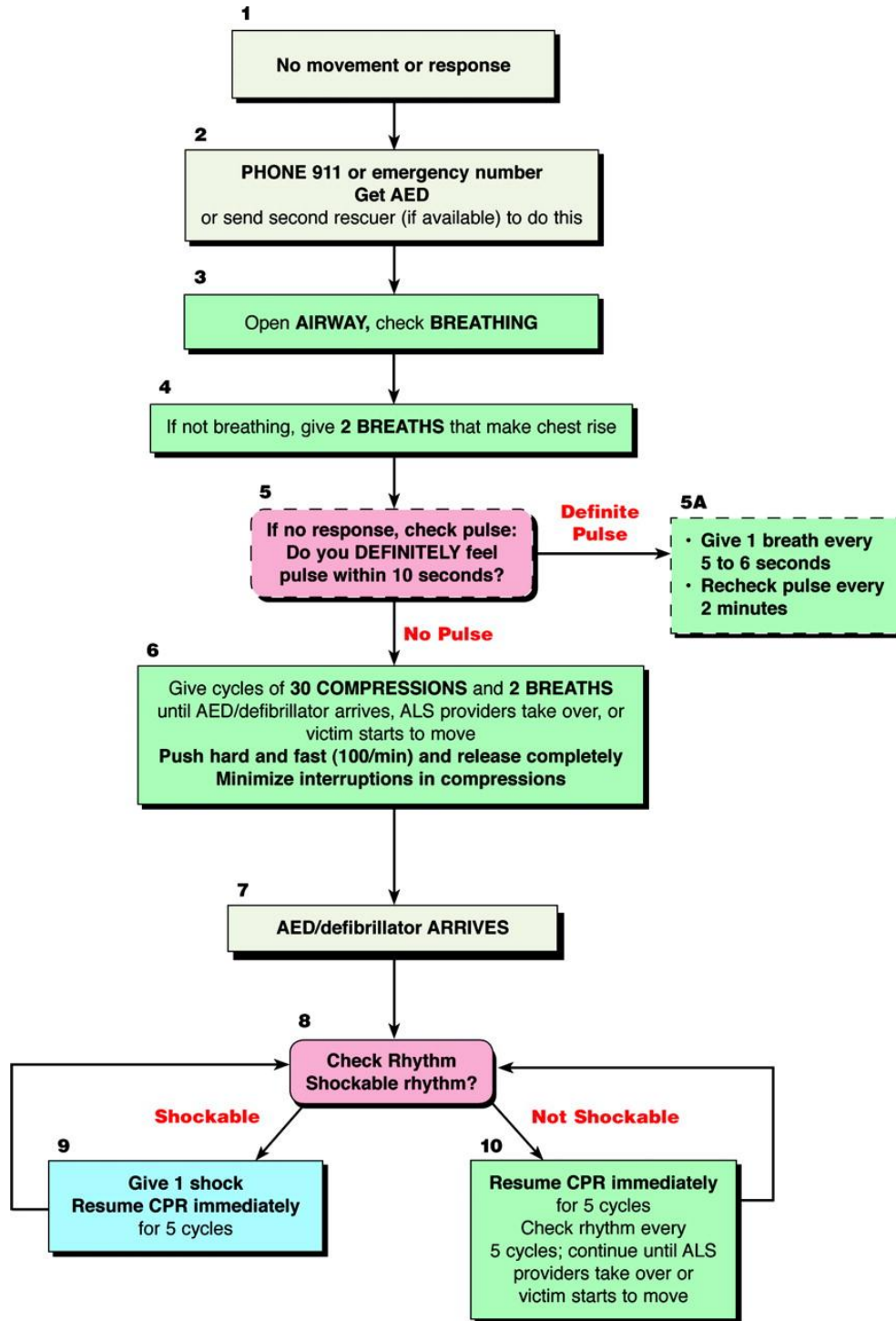
A. Introduction

With the introduction and transition to “ECC Guidelines 2005” several significant changes to adult and pediatric CPR are being brought forward. These changes reflect the latest science and knowledge of resuscitation. Effective June 1st, 2006, these new guidelines may be utilized by EMS providers. To utilize the new guidelines the equipment being operated must be Guidelines 2005 compliant, and the providers must be trained to the new guidelines standard. If the equipment being operated is still programmed to the Guidelines 2000 standard, please follow the previous guidelines and algorithms for usage. Please remember there are no human trials or data to correlate the one shock sequence AED and CPR at this time, therefore there is no mandate from the ECC or training community to incur the expense of upgrading all AEDs. As equipment is upgraded and / or replaced please be sure to have it programmed to the Guidelines 2005 standard.

We estimate that it will take two years before all providers become trained in the Guidelines 2005 AED and CPR usage. During this transition time, it is imperative to have good communication among crew members caring for the cardiac arrest victim. It is expected that personnel will work cooperatively during this time. Failure to do so may result in poor patient care, and will be viewed as a breach in protocol, and investigated as such.

Included with each guideline you will find the AED Training Form and the QA/PI Form. Please remember to fill out a QA/PI Form for every AED usage and submit it to the EMS Coordinator.

B. ECC Guidelines 2005 Flowchart



C. Guidelines 2005 Cardiac Arrest Management / AED

ASSESSMENT		
Takes or verbalizes body substance isolation precautions	Yes	No
Briefly questions rescuer about arrest events	Yes	No
Directs rescuer to stop CPR	Yes	No
Verifies absence of spontaneous pulse (skill station examiner states "no pulse")	Yes	No
Directs the resumption of CPR	Yes	No
Turns on defibrillator power	Yes	No
Attaches defibrillator electrodes to patient	Yes	No
Directs the stopping of CPR	Yes	No
Ensures all individuals are standing clear of the patient	Yes	No
Initiates analysis of the rhythm	Yes	No
Directs the resumption of CPR during the "charging" phase	Yes	No
Stops and Clears the patient prior to delivering the shock	Yes	No
Delivers shock when indicated	Yes	No
Directs the resumption of CPR for 2 minutes	Yes	No
SECOND SHOCK		
After 2 minutes directs the reanalyze phase, with CPR during the Charge	Yes	No
Directs the resumption of CPR for 2 minutes	Yes	No
Gathers additional information of arrest event	Yes	No
Confirms effectiveness of CPR (8-10 ventilations/minute and fast compressions)	Yes	No
INTEGRATION		
Directs insertion of a simple airway adjunct	Yes	No
Directs ventilation of patient at 8-10 breaths per minute	Yes	No
Assures high concentration of oxygen connected to the ventilatory adjunct	Yes	No
Assures CPR continues without unnecessary or prolonged interruption	Yes	No
Re-evaluates patient in approximately two minutes	Yes	No
Repeats defibrillator sequence	Yes	No
TRANSPORTATION		
Verbalizes transportation	Yes	No

CRITICAL CRITERIA

- Did not take or verbalize body substance isolation precautions
- Did not evaluate the need for use of the AED
- Did not direct initiation/resumption of ventilation/compressions at appropriate times
- Did not assure all individuals were clear of patient before delivering each shock
- Did not operate the AED properly (inability to deliver shock)

Student's Name: _____ Date: _____

Service: _____

Evaluator's Name: _____ Signature: _____

D. ECC Guidelines 2005 - AED QA/PI Form

EMS Service Responding		EMS Service Case Number		Date of Event	
Patient's First Name			Patient's Last Name		
Patient's Home Address					
Receiving Facility	Patient's Sex <input type="checkbox"/> Male <input type="checkbox"/> Female		Age	Patient's Race <input type="checkbox"/> White <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Hispanic <input type="checkbox"/> Native American <input type="checkbox"/> Other: _____	
Incident Location <input type="checkbox"/> Home <input type="checkbox"/> Work <input type="checkbox"/> Public Place <input type="checkbox"/> Car <input type="checkbox"/> Sports <input type="checkbox"/> Other: _____				Cause of Arrest <input type="checkbox"/> Cardiac <input type="checkbox"/> Trauma <input type="checkbox"/> Other: _____	
First Responder	EMS Personnel	EMS Personnel	EMS Personnel	ALS Personnel	ALS Personnel
Patient's signs & symptoms prior to Cardiac Arrest <input type="checkbox"/> Unknown					
Duration of Patient's signs & symptoms prior to Cardiac Arrest <input type="checkbox"/> Unknown					
Patient History (check all appropriate histories) CVA <input type="checkbox"/> Htn <input type="checkbox"/> Cardiac Hx <input type="checkbox"/> Seizure <input type="checkbox"/> Asthma <input type="checkbox"/> Cancer <input type="checkbox"/> Angina <input type="checkbox"/> COPD <input type="checkbox"/> AICD <input type="checkbox"/> Pacemaker <input type="checkbox"/> AMI <input type="checkbox"/> Liver <input type="checkbox"/>					
Witnessed Arrest? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.	Were pulses regained? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Were respirations regained? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Pt regains consciousness? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.
Did the Medic arrive? <input type="checkbox"/> Yes <input type="checkbox"/> No	Was the pt admitted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Was the pt discharged? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Positive Cardiac History? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.
Private MD:	Treating MD:		EMD <input type="checkbox"/> YES <input type="checkbox"/> NO	Bystander CPR <input type="checkbox"/> YES <input type="checkbox"/> NO BY WHOM:	
Time of Arrest			Post Resuscitation Vitals		
Time Of Call			Time :	BP: /	Pulse: Resp:
Time R1 Arrival			Time :	BP: /	Pulse: Resp:
Time R2/R4 Arrival			Resuscitation		
Time CPR Initiated			<input type="checkbox"/> In Field R1	<input type="checkbox"/> In Field R5	<input type="checkbox"/> Unsuccessful
Time De-fib connected			<input type="checkbox"/> In Field R2	<input type="checkbox"/> In Hospital	Total Shocks -
Time Of De-fib			Comments / Deviations from Protocol:		
Time CPR Re-Started					
Time of De-fib					
Time CPR Re-Started					
Time Paramedic Intercepted					
Time of Transport to ER			Discharge Condition:		
Arrival time at ER			<input type="checkbox"/> Normal		<input type="checkbox"/> Non-Functional
			<input type="checkbox"/> Functional / Impaired		<input type="checkbox"/> Morgue

E. PreHospital Care Protocol for Defibrillation

Continuous Quality Assurance/Performance Improvement and Continuing Education Requirements

I: Continuous Quality Improvement:

- A. Every effort must be made upon arrival at the receiving facility to download and print a copy of the event summary.
- B. One copy of the event summary and your run form must be attached to the patient chart, and a second copy must be left for your EMS coordinators along with a QA/PI Form and a copy of your run form.
- C. If you are unable to leave a copy of the event summary, then it must be faxed to the emergency department (see fax #'s under "Communications" Guideline) as soon as possible upon your return to the station. A second copy must be faxed, mailed or dropped off as soon as possible, along with the completed QA/PI form and a copy of the run form to your EMS Coordinator.
- D. The following hospitals provide AED printers for EMS use:
 - a. St Mary's: AED printer and software located in the EMS Office. Instructions for use are attached to it. If office is closed, have security let you in. Please have security lock the door when you leave.
 - b. Danbury: AED printer and software are located at the EMS report desk in the Emergency Department.

II. Continuing Medical Education Requirements:

- A. It is expected that all personnel utilizing an AED will be recertified annually by an approved AHA/ARC instructor.
- B. Acceptable substitutions for this include an EMT-Basic refresher or an AHA Healthcare Provider renewal.
- C. You must maintain current State of Connecticut OEMS certification or licensure.
- D. CPR training to the Healthcare Provider, or equivalent, is required. This may be used as a substitution for a sponsor hospital AED program.

Please note: An EMT's medical control for the use of the AED may be suspended for the following:

- Failure to attend a recertification class for the AED.
- Failure to adhere to these AED protocols.

7. State Guidelines for Determination of Death & Discontinuation of Pre-Hospital Resuscitation

A. From the Dept. Public Health, Oct. 13, 2009

Replaced 1997 guidelines

From the State of Connecticut, Department of Public Health – October 13, 2009

The Following Will be Policy For Emergency Medical Service care providers:

GUIDELINES FOR MRT. EMT - B. I. and Paramedic

DETERMINATION OF DEATH/DISCONTINUATION OF PRE-HOSPITAL RESUSCITATION FOR ADULTS AGE 18 AND OVER

NON-MASS CASUALTY SITUATIONS

B. Procedure for Determination Of Death

Local emergency responders and EMS personnel in Connecticut who are trained in any of the National Standard curricula are instructed to follow the most recent national guidelines of the American Heart Association.

All clinically dead patients will receive all available resuscitative measures including cardiopulmonary resuscitation (CPR) unless contraindicated by one of the exceptions defined below. A clinically dead patient is defined as any unresponsive patient found without respirations and without a palpable carotid pulse.

The person who has the highest level of currently valid EMS certification (above MRT level), has active medical control, has direct voice communication for medical orders, and who is affiliated with an EMS organization present at the scene will be responsible for, and have the authority to direct, resuscitative activities.

In the event there is a personal physician present at the scene who has an ongoing relationship with the patient, that physician may decide if resuscitation is to be initiated. In the event there is a registered nurse from a home health care or hospice agency present at the scene who has an ongoing relationship with the patient, and who is operating under orders from the patient's private physician, that nurse (authorized nurse) may decide if resuscitation is to be initiated. If the physician or nurse decides resuscitation is to be initiated, usual medical direction procedures will be followed.

Resuscitation must be started on all patients who are found apneic and pulseless UNLESS the following conditions exist (SECTION I (a-d) are applicable to a MRT level provider):

I. Traumatic injury or body condition clearly indicating biological death (irreversible brain death), limited to:

- a. **Decapitation:** the complete severing of the head from the remainder of the patient's body.
- b. **Decomposition** or putrefaction: the skin is bloated or ruptured, with or without soft tissue sloughed off. The presence of at least one of these signs indicated death occurred at least 24 hours previously.
- c. **Transection** of the torso: the body is completely cut across below the shoulders and above the hips through all major organs and vessels. The spinal column may or may not be severed.
- d. **Incineration:** 90% of body surface area 3° burn as exhibited by ash rather than clothing and complete absence of body hair with charred skin.

Section (e) and (f) require additional assessment and/or confirmation found under "C. General Procedures." (a) thru (d).

- e. **Dependent lividity** with rigor mortis (when clothing is removed there is a clear demarcation of pooled blood within the body, and the body is generally rigid).
DOES NOT APPLY TO VICTIMS OF LIGHTNING STRIKES, DROWNING OR HYPOTHERMIA In which case follow your specific protocols.
- f. **Injuries incompatible with life** (such as massive crush injury, complete exsanguination, severe displacement of brain matter)

II. Pronouncement of death at the scene by a licensed Connecticut physician or authorized registered nurse.

III. A valid DNR bracelet is present (per CGS 19a-580d), when it:

- a. Conforms to the state specifications for color and construction.
- b. Is intact: it has not been cut, broken or shows signs of being repaired.
- c. Is on the wrist or ankle
- d. Displays the patient's name and the physician's name.

C. General Procedures;

In cases of dependent lividity with rigor mortis and in cases of injuries incompatible with life, the condition of clinical death must be confirmed by observation of the following:

- a. **Reposition** the airway and look, listen, and feel for at least 30 seconds for spontaneous respirations; respiration is absent.
- b. **Palpate** the carotid pulse for at (east 30 seconds; pulse is absent.
- c. **Examine** the pupils of both eyes with a light; both pupils are non-reactive.
- d. **Absence** of a shockable rhythm with an AED for 30 seconds or lack of cardiac activity with a cardiac monitor [paramedic] (in at least 2 leads) for 30 seconds.

If all the components above are confirmed, no CPR is required.

If CPR has been initiated but all the components above have been subsequently confirmed, CPR may be discontinued and medical direction contacted as needed.

Special Consideration: For scene safety and/or family wishes, provider may decide to implement CPR even if all the criteria for death are met.

If any of the findings are different than those described above, clinical death is NOT confirmed and resuscitative measures must be immediately initiated or continued and the patient transported to a receiving hospital **unless** paramedic intercept is pending. Termination of resuscitative efforts could then be implemented by the protocol below.

DO NOT RESUSCITATE (DNR) BRACELET WITH SIGNS OF LIFE

If there is a DNR bracelet or DNR transfer form and there are signs of life (pulse and respiration), EMS providers should provide standard appropriate treatment under existing protocols matching the patient's condition. To request permission to withhold treatment under these conditions for any reason, contact **Direct Medical Oversight (DMO)**.

If there is documentation of a DO NOT INTUBATE (DN1) advanced directive, the patient should receive full treatment per protocols with the exception of intubation. If for any reason intubation is being considered in a patient with a documented DNI directive, DMO must be contacted.

D. Termination of Resuscitative Efforts (Paramedic Level Only):

Nontraumatic Cardiac Arrest

Discontinuation of CPR and ALS intervention may be implemented **after contact with medical direction** if all of the following criteria have been met.

1. Patient must be least 18 years of age.
2. Patient is in cardiac arrest at the time of arrival of advanced life support, no pulse, no respirations, and no heart sounds.
3. ACLS is administered for at least twenty (20) minutes, according to AHA/ACLS Guidelines
4. There is no return of spontaneous pulse and no evidence of neurological function (non-reactive pupils, no response to pain, no spontaneous movement).
5. Patient is asystolic in two (2) leads
6. No evidence or suspicion of any of the following: drug/toxin overdose, hypothermia, active internal bleeding, preceding trauma.
7. All Paramedic personnel involved in the patients care agree that discontinuation of the resuscitation is appropriate.

All seven items must be clearly documented in the EMS patient care report (PCR).

DMO should be established prior to termination of resuscitation in the field. The final decision to terminate resuscitative efforts should be a consensus between the on-scene paramedic and the DMO physician. CONTACT DMO for confirmation of terminating resuscitation efforts.

If any of the above criteria are not met and there are special circumstances whereby discontinuation of pre-hospital resuscitation is desired, contact DMO.

Logistical factors should be considered, such as collapse in a public place, family wishes, and safety of the crew and public.

Examples: Inability to extricate the patient, significant physical environmental barriers unified family wishes with presence of a living will.

All patients who are found in ventricular fibrillation or whose rhythm changes to ventricular fibrillation should in general have full resuscitation continued and transported.

Patients who arrest after arrival of EMS should be transported.

Traumatic Cardiac Arrest:

1. Patients must be at least 18 years of age.
2. Resuscitation efforts may be terminated with approval of DMO in any blunt trauma patient who, based on thorough primary assessment, is found apneic, pulseless, and asystolic on ECG upon arrival of emergency medical services at the scene.
3. Victims of penetrating trauma found apneic and pulseless by EMS, should be rapidly assessed for the presence of other signs of life, such as pupillary reflexes, spontaneous movement, response to pain and electrical activity on ECG. Resuscitation may be terminated with permission of DMO if these signs of life are absent. If resuscitation is not terminated, transport per protocol.
4. Do not delay initiating proper BLS resuscitation in order to contact DMO.
5. Cardiopulmonary arrest patients in whom mechanism of injury does not correlate with clinical condition, suggesting a non-traumatic cause of arrest, should have standard ALS resuscitation initiated.

E. Disposition Of Remains:

- I. Disposition of dead bodies is not the responsibility of EMS personnel but efforts must be taken to insure that there is a proper transfer of the responsibility for scene security. However, to be helpful to family, police, and others, EMS personnel may assist those who are responsible.
- II. When a decision has been made to withhold or withdraw resuscitation, the body may be removed in one of the following ways:
 - a. The Office of the Chief Medical Examiner (860-679-3980 or 1-800-842-8820) must be notified of any death, which may be subject to investigation, by the Chief Medical Examiner (CGS19a-407), which includes all deaths that occur outside a health care institution. Normally the police make this notification otherwise EMS personnel should make the notification and document on the patient care record.
 - b. If the body is in a secure environment (protected from view by the public or from being disturbed or moved by unauthorized people), the police should be contacted if not present already. The personal physician or coverage must be notified if at all possible and EMS personnel may leave when the patient has been turned over to the police. Example: a death at home
 - c. If the body is not in a secure environment notify the police. The police may contact the Office of the Chief Medical Examiner for authorization to move the body by hearse, or the medical Examiner may elect to send a vehicle for the body. EMS personnel may leave after turning the scene over to other appropriate authority. Example: death occurring on the street.
 - d. If the body is not in a secure environment and police have not yet arrived, transport the body to the hospital if scene safety is a concern. Example: death in the street with an unruly crowd of people.

F. Notes on Determination of Death/Discontinuation Of Resuscitation:

Consider the needs of survivors when considering the discontinuation of resuscitation, especially if crisis management services may be needed. Transport from the scene may be the better option.

Scene management and safety of the crew and public may prevent withholding/discontinuation of resuscitation. In general, do not cease resuscitation in public places/establishments.

Tubes and IV lines may be removed if patient is being picked up by a funeral home. If the patient is deemed a medical examiner's case, leave tubes and lines in place. In all cases of trauma, tubes and IV lines must be left in place.

Documentation of all encounters with the patient's family, personal physician, scene physician or nurse, medical examiner, law enforcement, and DMO should be on the PCR.

G. DNR Transfer Form

- a. To transmit a DNR order during transport by an EMS provider between healthcare institutions, the DNR order shall be documented on the DNR transfer form.
- b. The DNR transfer form shall be signed by a licensed physician or a registered nurse and shall be recognized as such and followed by EMS providers.
- c. The DNR remains in place during transport as well as to the point of admission to the receiving facility.

H. Revocation of The DNR

The patient's representative, according to Connecticut statutes, cannot revoke a valid DNR order.

However, in the event that EMS providers cannot verify the DNR status, the patient should be transported with normal care protocols followed.

A copy of all PCRs documenting pre-hospital deaths must be provided to medical direction within 24 hours of the event.

Approved by Commissioner Galvin, 10/13/2009

8. Acute Coronary Syndrome / Chest Pain

A. Chest Pain Assessment:

Cardiac disease can manifest itself in several ways. When assessing a patient experiencing chest pain, pressure or discomfort, the EMT-B should note each presenting complaint and obtain a history appropriate to the presenting symptom.

Common presenting symptoms of cardiac disease include:

- Chest pressure or discomfort
- Shoulder, neck or jaw pain
- Dyspnea
- Syncope
- Palpitations

Chest pain or discomfort is a common presenting symptom of cardiac disease. Chest pain is the most common presenting symptom of myocardial infarction. When confronted by a patient with chest pain, **obtain the following essential elements of the history:**

- Specific location of the chest pain (mid-sternal, etc.)
- Radiation of pain, if present (e.g., to the jaw, back, or shoulders)
- Duration of the pain
- Factors that precipitated the pain (exercise, stress, etc.)
- Type or quality of the pain (dull or sharp)
- Associated symptoms (nausea, dyspnea)
- Anything that worsens, intensifies or alleviates the pain (including medications, moving or a deep breath)
- Previous episodes of a similar pain (e.g., angina)

Shoulder, arm, neck, or jaw pain or discomfort may also be an indicator of cardiac disease. Any of these may occur with or without associated chest pain, especially in older patients, female patients, or patients with diabetes. Patients with a history of a heart transplant may not exhibit chest pain as a clinical sign of cardiac compromise. If the patient has any of these symptoms and you suspect heart disease, obtain information similar to that described above for chest pain.

Please note, other medical ailments may cause chest pain, including aortic aneurysm, pleurisy, pneumonia, esophagitis, rib fractures, hiatal hernia, pneumothorax, costochondritis, pulmonary embolus, and/or musculo-skeletal injuries. In order to differentiate between the causes of chest pain, it is important to obtain a thorough history on all patients experiencing chest pain.

B. Treatment of Chest Pain

1. Provide Primary EMT-Basic Care
2. Ensure Paramedic has been dispatched
3. Administer Aspirin (ASA):
 - a. (4) 81 mg tabs Baby ASA PO
 - b. Do not give ASA if the patient:**
 - i. Took 162 – 324 mg of ASA within the last 8 hours
 - ii. Has a known allergy to ASA/NSAIDS (Ibuprophen)
4. Transport to closest appropriate ED or Intercept location.

Establish On-Line Medical Oversight

Possible Physician Orders:

1. Administer **PATIENT'S** Nitroglycerin (NTG):
 - a) 0.4 mg (1/150 gr) tab SL or 0.4 mg metered dose spray SL
 - b) Repeat NTG q 5 minutes to a total of 3 doses, relief of symptoms, or systolic BP < 100 mmHg.
 - c) **Do not give NTG if:**
 - i. Systolic BP < 100 mmHg
 - ii. Patient took a phosphodiesterase inhibitor: (erectile dysfunction Rx)
 - a. Sildenafil (Viagra) or Vardenafil (Levitra) within 24 hours
 - b. Tadalafil (Cialis) within 48 hours
 - d) If systolic BP decreases to < 100 mmHg, place in Trendelenberg position

C. Assisting The Patient With Prescribed Nitroglycerin

Generic Name: Nitroglycerin

Trade Names: Nitrostat®, Nitrobid®, Nitrolingual Spray®

Mechanism of Action:

1. Causes relaxation of the smooth muscle of blood vessel walls.
2. Relaxation of the blood vessels causes pooling of blood in dependent portions of the body due to gravity. This reduces the amount of blood returning to the heart, decreasing the heart's workload.

Indications:

1. The patient is having chest pain
2. The patient has LEGALLY prescribed nitroglycerin
- 3. Authorization to administer** is obtained from **On-Line Medical Oversight**

Contraindications on next page:

Contraindications:

1. The patient has hypotension or blood pressure below 100 mm/Hg systolic
2. The patient has a head injury
3. The patient has taken the maximum recommended dose
4. Medical Oversight does not give permission
5. The patient is an infant or child

IMPORTANT: MEDICAL OVERSIGHT NEEDS TO KNOW IF THE PATIENT IS TAKING ERECTILE DYSFUNCTION MEDICATIONS**Side Effects:**

1. Headache
2. Hypotension
3. Dizziness, weakness
4. Flushing, feeling of warmth

Dosage:

The dosage is one tablet or spray under the tongue (sublingual).

This **may be repeated** (maximum of three doses) in 5 minutes **if:**

1. Patient continues to have chest pain.
2. The blood pressure remains above 100 mmHg systolic after each administration of NTG.
3. Medical Oversight is obtained.

Administration:

1. Confirm that the patient is having chest pain.
2. Confirm that the patient has physician prescribed nitroglycerin.
3. Ensure that the nitroglycerin is not expired.
4. Determine if the patient has already taken any doses.
5. Assess blood pressure (above 100 mmHg systolic).
6. Obtain order from On-Line Medical Oversight
7. Make sure the patient is seated or semi-fowlers on the stretcher

Tablet Administration:

1. Apply gloves (nitroglycerin can be absorbed through the skin).
2. Ask the patient to raise his/her tongue.
3. Pour one tablet into the bottle cap.
4. Hand the medication to the patient for self-administration or place the tablet under the patient's tongue.
5. Instruct the patient to keep his/her mouth closed and not to swallow until the tablet is dissolved and absorbed.

Spray Administration:

1. Ask the patient to raise his/her tongue.
2. Hand the medication to the patient for self-administration or spray the medication under the patient's tongue.
3. Instruct the patient to keep his/her mouth closed and not to swallow until the medication is dissolved and absorbed.
4. Reassess the patient's condition.
5. Document administration.

NOTE: Nitroglycerin has a half-life of 15 minutes

D. Aspirin Administration

The early administration of Aspirin has been shown to help reduce the morbidity/mortality associated with Acute Coronary Syndromes. Aspirin disrupts the clotting cascade, and works to limit the size of a clot.

Medication Name: Aspirin (Generic)

St. Joseph's Baby Aspirin 81mg chewable aspirin

Indications: Chest discomfort that is suggestive of a heart attack (AMI). Order may be on-line or off-line; this would be Sponsor Hospital or Regional Protocol specific.

How supplied: Tablet, may be chewed or swallowed.

Actions: Aspirin will decrease the ability for blood platelets to clump together. This will reduce the formation of clot in the coronary artery at the site of blockage. Aspirin is not administered in this situation as an analgesic.

Side effects: When used in this situation and after careful screening prior to administration, aspirin has very few side effects. The patient may experience stomach irritation, nausea, vomiting or complain of heartburn.

Contraindications: Aspirin should not be given to a patient with a known hypersensitivity to it.

Administration: Complete the focused history and physical exam of the cardiac patient and determine that the patient is suffering from signs and symptoms suggestive of acute coronary syndrome (AMI), i.e.: chest pain, jaw pain, radiation, shortness of breath, diaphoresis.

Assure that the patient is awake, alert, and has an intact gag reflex.

Have patient chew 4 eighty one (81)mg baby aspirin.

Reassess patient inclusive of vital signs and record.

9. Altered Mental Status

Altered Mental Status (AMS) occurs from 2 pathologies:

- Physical- reduced blood flow, tumor, lesion, occlusion, intracranial bleed
- Chemical- hypo/hyperglycemia, overdose, sepsis/disease, electrolyte imbalance

Routine Assessment should include an attempt to establish the patient baseline mental status, time of onset, any precipitating factors, and isolation of any treatable problems.

1. Provide Primary EMT-Basic Care
2. Assess AVPU Scale and Glasgow Coma Score
3. Request Paramedic Dispatch for patients with diminished AVPU and/or GCS Scores
4. Ascertain past medical history and recent events
 - a. If AMS is due to possible **overdose**, then go to Toxicology protocol
 - b. If AMS is due to possible **trauma**, then go to Trauma Protocols
 - c. If AMS is due to possible **Sepsis**, then go to Sepsis Protocol
 - d. If AMS is of **unknown** origin **then**
 - i. Obtain serum blood glucose level according to guideline
 1. If the patient has an intact gag reflex administer 1 tube Oral Glucose
5. Initiate transport to hospital or paramedic intercept.
6. Constant reassessment of the Initial Assessment is required

10. Stroke / CerebroVascular Accident, CVA

A. Description

Cerebrovascular Accidents fall into two categories:

- **Thrombosis/embolus:** A sudden occlusion of a cerebral artery, causing brain cell ischemia and tissue death.
- **Hemorrhagic:** A rupture of an Arteriovenous Malformation or Aneurism within the brain, causing both distal tissue ischemia, and an increase in intracranial pressure.

B. CVA /Stroke/ ICB (IntraCerebral Bleed)

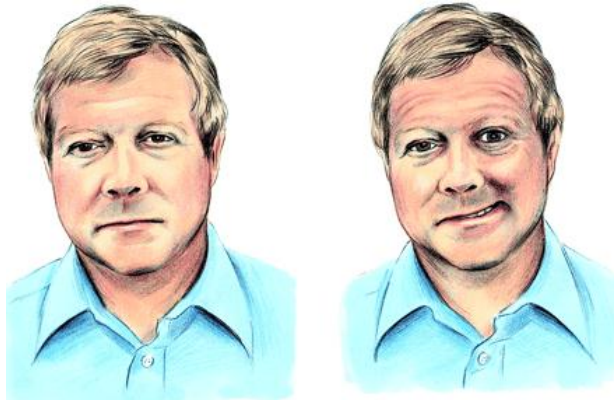
1. Provide Primary EMT-Basic Care
2. Monitor and protect airway as indicated by patient presentation, if compromised arrange paramedic intercept
3. Obtain and record blood glucose reading
4. Do NOT Administer anything orally
5. Establish time of onset of symptoms, specifically the last time seen neurologically intact to their “normal” baseline
6. Perform Cincinnati Stroke Scale (Range 0-3)
7. Notify receiving hospital as soon as possible of a “Stroke Alert” per receiving facility guidelines.

C. Cincinnati Stroke Scale

Facial Droop (have patient show teeth or smile):

On left, Normal = 0: Both sides of face move equally

On right, Abnormal = 1: One side of face does not move as well as the other side
Stroke patient with facial droop (right side of face). Kothari R, et al. Acad Emerg Med. 1997;4:986–990



Arm Drift

Have patient close eyes and hold both arms straight out for 10 seconds.

Normal = 0: Both arms move the same or both arms do not move at all (other findings, such as pronator drift, may be helpful).

Abnormal = 1: One arm does not move or one arm drifts down compared with the other. See figure on right.



Abnormal Speech

Have the patient say "you can't teach an old dog new tricks":

Normal = 0: Patient uses correct words with no slurring

Abnormal = 1: Patient slurs words, uses the wrong words, or is unable to speak

Interpretation:

If any 1 of these 3 signs is abnormal, the probability of a stroke is 72%

11. Diabetic Emergencies

A. Treatment

1. Provide Primary EMT-Basic Care
2. Assess ability to swallow and protect airway
3. Assess blood glucose level per guideline

Hypoglycemic

Blood Glucose < 60 mg/dl or patient is symptomatic (AMS, Diaphoresis)

1. If patient is **able to protect airway**, then
 - a. Administer Oral Glucose 15 g (1 tube) PO
 - i. Squeeze a small amount of Oral Glucose on a tongue depressor
 - ii. Insert the tongue depressor between the cheek and gums.
2. If patient is **unable to protect airway**, then arrange for paramedic intercept.
3. **Establish Medical Oversight.**
Possible Physician orders: Additional Oral Glucose

Hyperglycemia

Blood Glucose > 400 mg/dl and possible signs of Diabetic Ketoacidosis (AMS, Kussmal Resperations, Dry Skin)

- Arrange for paramedic intercept

B. Blood Glucose Monitoring

Monitoring a patient's blood glucose level can be an important assessment tool for pre-hospital care. To utilize this protocol it is assumed the EMT-Basic service has completed the appropriate training, and upgraded the service MIC with OEMS. The EMT-Basic service is responsible to maintain Quality Assurance tracking of their monitor, in accordance with manufacturer guidelines and "Point of Care" testing guidelines.

Every blood glucose machine is different, and must be operated according to the manufacturer's guidelines. The following procedure is developed using common monitoring techniques.

Procedure:

1. Assemble Equipment
 - a. Glucometer
 - b. Test Strip (ensure correct lot number and type)
 - c. Alcohol Swab
 - d. Self Protecting Lancet
 - e. 2x2
 - f. Band-aid
2. Cleanse lateral aspect of fingertip with alcohol swab and allow to dry
3. Place test strip in glucometer according to manufacturer's guidelines
4. Puncture clean finger with lancet and obtain blood sample
 - a. NOTE: It must be a capillary blood sample, otherwise incorrect readings may occur
5. Discard lancet in approved sharps container
6. Place 2x2 on finger to stop bleeding
7. Record time and BGL reading
8. Treat if indicated by protocol and reading
9. Place band aid over puncture site

Normal Blood Glucose Range: 80-120 mg/dl

12. Overdose / Toxicology

A. Treatment

1. Provide Primary EMT-Basic Care
2. In cases of inhalation / absorption consider HAZ-MAT as appropriate.
3. Gather all essential information related to the overdose:
 - a. Name and ingredients of the substances taken.
 - b. The total amount taken or length of exposure.
 - c. Method of exposure: Injection, Ingestion, Inhalation, or Absorption.
 - d. Approximate time of exposure / ingestion.
 - e. Look for the containers of substance ingested and if appropriate transport with the patient.
 - f. Vomiting prior to arrival.
 - g. Reason for the ingestion if intentional.
4. Obtain Blood Glucose Level and treat if indicated.
5. **Contact Connecticut Poison Control** at (800) 222-2122 and On-Line Medical Oversight with the essential information.

Establish On-Line Medical Oversight

Possible Physician Orders:

- Administer Activated Charcoal 30-50 g PO

B. Activated Charcoal Administration

1. Obtain order from on-line medical oversight
2. Ensure intact gag reflex
3. Charcoal solution will settle, make sure it is well shaken and mixed
 - a. Add any flavoring that came with the charcoal
 - b. Do not add any other types of flavor, as this will bind the charcoal, making it less effective
4. Charcoal may be poured into a cup or drunk from the container
5. Note time of administration and amount administered
6. **If the patient becomes nauseous or has a decrease in mentation**, then stop charcoal administration immediately and prepare suction equipment as necessary

13. Seizures

A. Description : Types of Seizures

There are many causes of seizures including, but not limited to trauma, epilepsy, hypoxemia, meningitis, stroke, hypoglycemia, drug overdose, drug withdrawal or eclampsia.

Initiate treatment based upon history and clinical presentation. It is important to make the distinction between focal motor, general motor seizures, and status epilepticus. Not all seizures require emergent intervention.

General or Grand Mal Motor seizures are tonic and clonic movements that are usually followed by a postictal state.

The components of a grand mal seizure include aura, loss of consciousness, **tonic phase** (extreme muscular rigidity), **clonic phase** (rigidity and relaxation in rapid succession), **postictal state** (altered level of consciousness).

Partial or Focal Motor seizures usually involve unilateral motor activity, but may not cause changes in consciousness. Partial seizures may progress to generalized seizures.

Psychomotor seizures consist of personality alterations, staring, or peculiar motor activity with periods of bizarre behavior.

Status Epilepticus is present when (a) 2 or more general motor seizures without a lucid interval is witnessed by EMS personnel or (b) there exists continuous seizure activity lasting for greater than 10 minutes.

B. Treatment of Seizures

1. Provide Primary EMT-Basic Care
2. CONSIDER: Trauma, Hypoglycemia, Overdose/ Toxicology - Go to appropriate protocol
3. Protect the patient from personal injury
4. Dispatch Paramedic Intercept for active or recurrent seizures
5. Obtain blood glucose level and record
6. Do not give or place anything in the mouth
7. Do not restrain the extremities, as they may be fractured by the seizure activity

If patient is actively seizing:

- Ensure adequate ventilation and oxygenation. Be prepared to assist ventilations as needed.

14. Acute Abdomen

A. Assessment

Assessing a chief complaint of abdominal pain can be one of the most difficult tasks for the pre-hospital provider, due to the lack of CT scan or ultrasound for clinical diagnosis. Abdominal complaints may be vague, nonspecific, and vary from patient to patient.

Any patient where **hemorrhage is suspected** should be treated for shock and transported immediately.

B. Care

1. Provide Primary EMT-Basic Care
2. Consider Paramedic Intercept for Pain Management
3. Transport in position of comfort (usually supine with knees bent) if not contraindicated
4. Supplemental oxygen according to patient presentation

C. GI Bleeding

Gastrointestinal Bleeding as evidenced by the passage of digested or undigested blood. Digested blood will be passed as either melena or coffee-ground hematemesis. Undigested blood may be frank blood, or clotted blood. Since blood is an irritant, patients will commonly be nauseated and vomiting.

1. Provide Primary EMT-Basic Care.
2. Treat for shock based upon patient condition and complaint.
- 3. Contact On-Line Medical Oversight as needed.**

15. Psychiatric Emergencies

A. Anxiety Disorders

An anxiety disorder is an acute onset of impending doom or terror with a fear of losing control. They may manifest with hyperventilation, chest discomfort, palpitations, headache, dyspnea, choking/smothering, faintness/syncope, feeling of unreality, trembling and sweating, urinary frequency and diarrhea.

B. Care

1. Provide Primary EMT-Basic Care
2. Rule out other etiology (i.e. hypo/hyperglycemia, Hypoxemia, AMI, trauma, metabolic condition, etc)
3. All Psychiatric Emergencies require hospital notification as early as possible

C. Please Note: Restrained Patients

Patients who need to be restrained for their safety or the attendant in the pre-hospital setting must be done so with a police officer present. If police restraints are used, then an officer must accompany the patient to the hospital in the ambulance, or follow behind the ambulance in their police vehicle. No patient is to be “Hog-Tied” or restrained in a prone position. In order to maintain the airway, place the patient in the left lateral recumbent position for transport.

16. Hypothermia

A. Description

When the body's core temperature decreases, the body will first respond by shivering. This is an attempt by the body to generate heat from muscle activity. Vasoconstriction will shunt blood from the skin and an increase in the patient's metabolic rate will increase heat.

If these mechanisms cannot compensate for severe temperature drops, **then** the body's systems begin to fail, i.e. respiratory function will deteriorate and lead to hypoxemia. The patient may also develop dysrhythmias and cardiopulmonary arrest may occur.

Patients are particularly at risk for cardiac dysrhythmias during the warming phase of treatment.

B. General Guidelines for Care

For Localized cold injury:

- Do not attempt to re-warm extremity
- Loosely immobilize extremity in position found
- Do not massage, or put pressure on extremity

For Generalized Hypothermia:

- Avoid rough handling or excessive movement
- Remove patient from cold environment
- Protect C-spine as necessary
- Remove all wet clothing
- Protect from further heat loss
- Provide Primary EMT-Basic Care

C. Moderate Hypothermia

Clinical observations may include: Conscious, but often lethargic. Often shivering, skin pale and cold to touch.

1. Follow General Hypothermic Care Guidelines
2. Provide Primary EMT-Basic Care
3. DO NOT DELAY TRANSPORT
4. Obtain Blood Glucose Level
5. **Establish On-Line Physician Oversight as needed**

D. Severe Hypothermia

Clinical observations may include: Unconscious or stuporous, skin very cold, heart sounds inaudible, BP unobtainable or severe hypotension, pupils non-reactive, very slow or absent respirations

HANDLE VERY GENTLY:

HEART MORE SUSCEPTIBLE TO FIBRILLATION

1. Provide Primary EMT-Basic Care
2. Assist ventilations if respiratory rate is less than 5/minute, but do not hyperventilate; keep rate of artificial ventilations around 8-10/minute
3. Request Paramedic Intercept
4. If CPR is required refer to Hypothermic Arrest Protocol
5. Transport the patient Trendelenberg position

Avoid These 4 Things

1. Hyperventilation- an extreme drop in CO₂ may cause ventricular fibrillation.
2. Rubbing the skin.
3. Rewarming frostbitten extremities until after the core is rewarmed to prevent vascular complications to the limb and the transportation of cold blood and detrimental by-products to the core.
4. All unnecessary rough movements as they may precipitate arrhythmia.

E. Hypothermic Arrest

If only respirations are absent, **then**

- Remove all wet clothing unless frozen to the skin.
- Cover patient with blanket(s)
- DO NOT ATTEMPT ACTIVE EXTERNAL REWARMING.
- **If** respirations are absent, **then** ventilate at 10/minute.

If spontaneous pulse and respirations are present , **then**

1. Defibrillate once if indicated by AED.
2. Initiate CPR (deliver 40-50 compressions per minute).
3. Dispatch Paramedic Intercept.

Establish On-Line Medical Oversight

Possible Physician Orders

1. Administration of second or third shocks via AED
2. If **pulse is absent**, then
 - a. Initiate CPR (deliver 40-50 compressions/minute).
 - b. Transport.

Once you have started CPR - DO NOT GIVE UP.

THE HYPOTHERMIC PATIENT IS NOT DEAD UNTIL HE IS WARM AND DEAD.

NOTE: Severely hypothermic patients may be without detectable pulse, blood pressure, or respirations. This may be physiologic for a hypothermic patient. Successful resuscitation with CNS complications has been accomplished in patients with a core temperature less than 70°F.

I find these two IF statement a little confusing and was tempted to modify them.

But I did NOT modify them.

17. Hyperthermia – Heat Exposure

A. Description

The body's normal core temperature is regulated by a number of factors that balance heat loss and heat production. As the body's temperature rises, vasodilation will lead to heat loss by radiation, convection, and conduction. However, if the temperature outside the body exceeds the temperature of the skin, this process is ineffective and evaporation by diaphoresis is necessary. The body's physiological response to excessive temperatures includes tachycardia as the heart attempts to increase cardiac output, diaphoresis with subsequent loss of fluid (dehydration) and electrolytes, and signs of decreased cerebral perfusion, e.g., headache, decreased responses to verbal and/or painful stimuli.

Heat Cramps: Pain in muscles due to loss of fluid and salt. Frequently affects lower extremities and abdomen. Cool, moist skin, normal to slightly elevated temperature; nausea.

Heat Exhaustion: The state of more severe fluid and salt loss leading to syncope, headache, nausea, vomiting, diaphoresis, tachycardia, pallor and/or weak pulse.

Heat Stroke: A very serious condition. The patient may present with hot and flushed skin, strong bounding pulse and altered mental status. The situation may progress to coma and/or seizures. CAUTION: Sweating may still be present in 50% of heat stroke patients.

- Do not give patient oral fluids if patient is nauseated or confused.
- Place patient in cool environment and determine need for advanced life support.
- Determine patient's past medical history and history related to present event.

B. Care of Heat Related Emergencies

Heat Cramps

1. Move patient to a cool environment
2. Primary EMT-Basic Care as indicated by patient presentation
3. DO NOT MASSAGE CRAMPING MUSCLES
4. Monitor vital signs and record
5. **Establish On-Line Medical Oversight as needed**

Heat Exhaustion

1. Move patient to a cool environment and elevate legs
2. Remove clothing as practical and fan moistened skin
3. Primary EMT-Basic Care
4. Monitor vital signs and record
- 5. Establish On-Line Medical Oversight as needed**

C. Heat Stroke

Heat stroke is caused by a failure of the body's normal temperature regulating mechanism. This results in a cessation of sweating and subsequent surface evaporation. It generally results when the body temperature reaches 105° F or more. A delay in cooling may result in brain damage or even death. **Vigorous efforts should be employed to decrease the temperature.**

1. Move patient to a cool environment
2. Remove as much clothing as possible
3. Cool the patient with a cool wet sheets
4. Apply cold packs under the arms, around the neck, and at the groin to cool large vessels
5. Provide Primary EMT-Basic Care
6. Dispatch Paramedic Intercept
7. Monitor vital signs and record
8. Beware of possible seizures
- 9. Establish On-Line Medical Oversight as needed by patient condition**

18. Near Drowning

A. Care

1. Provide Primary EMT Basic Care
2. Dispatch Paramedic Intercept
3. Protect the cervical spine and establish a patent airway appropriate to the clinical situation
4. If hypothermic, then follow Hypothermic Protocol

B. Related Definitions

All near drowning victims must be transported to the hospital.

Drowning: Death by water immersion.

Near Drowning: Refers to initial recovery after immersion.

“Dry” drowning: Little or no aspiration of water (10-20% of victims).
Asphyxia by laryngospasm.

“Wet” drowning: Aspiration of water accompanying drowning.

19. Allergic Reaction

A. Description: Allergic Reaction

An allergic reaction is a hypersensitivity to a given antigen. It is usually not life threatening, merely uncomfortable for the patient.

The patient is hemodynamically stable and complains of minor to moderate skin manifestation (redness and hives) or mild inspiratory/expiratory wheezing.

B. Description: Anaphylaxis

Anaphylaxis refers to the introduction of a foreign substance (antigen) into the body which, because of patient sensitivity, produces a severe systemic reaction. This systemic reaction may include shock, laryngospasm, swelling, and/or respiratory distress. It can be fatal.

The patient may complain of respiratory symptoms, such as tightness in the chest, wheezing, or shortness of breath. Other symptoms may include swelling, hives, nausea, vomiting, abdominal pain, or diarrhea. These symptoms are due to the release of certain substances within the body, e.g., histamine, SRSA (slow reactive substance of anaphylaxis) and bradykinin. Hypotension and bradycardia may also result. **Anaphylaxis is a true emergency** in that death may occur within minutes of the introduction of antigen.

C. Allergic Reaction Care

Stable Hemodynamics (Blood pressure >90 mmHg systolic); with minor or moderate skin manifestations and/or inspiratory/expiratory wheezing.

1. Provide Primary EMT-Basic Care
2. Consider Paramedic Intercept
3. Oxygen per guideline

Establish On-Line Medical Oversight as needed

D. Anaphylactic Shock Care

Unstable Hemodynamics with hypotensive patient (blood pressure <90) or impending upper airway obstruction; stridor; severe wheezing and/or respiratory distress.

1. Provide Primary EMT-Basic Care
2. Request Paramedic Intercept
3. Ensure adequate Ventilation
4. Epinephrine Auto-Injector 0.3 mg.

- - - TRAUMA GUIDELINES - - -

20. Injured Patient Triage Protocol*

If transport to a **Level I** (Yale, Hartford Hospital, CT Children's Hospital) or **Level II** (Danbury, Waterbury, St. Mary's) Trauma facility is indicated (see below), **but** the ground transport time to that hospital is judged to be greater than twenty (20) minutes, **then** determination of destination hospital shall be in accordance with medical control.

The logic in this section has been considerably reformatted but identical to original. To see the original, [click here](#).

1. If any **one or more** of the 9 conditions immediately below **exist** (are **TRUE**), **then** take the patient to a Level I or II Trauma center.

Assess the vital signs and level of

consciousness:

- | | |
|----------------------------|-------|
| 1. Glasgow Coma Scale | <= 12 |
| 2. Systolic blood pressure | < 90 |
| 3. Respiratory rate | <10 |
| 4. Respiratory rate | >29 |

Assess anatomy of injury

1. Gunshot wound to chest, head, neck, abdomen, groin
2. Third degree burns >15% BSA or third degree burns of face or airway involvement
3. Evidence of spinal cord injury
4. Amputation other than digits
5. Two or more obvious proximal long bone fractures

2. If any **one or more** of the 10 conditions immediately below exist (are TRUE), **then Call Medical Control for direction.**

Assess mechanism of injury and other factors:

1. Mechanism of injury:

- a. Falls >20 feet
- b. Apparent high speed impact
- c. Ejection of patient from vehicle
- d. Death of same car occupant
- e. Pedestrian hit by car >20MPH
- f. Rollover
- g. Significant vehicle deformity- especially steering wheel

2. Other factors:

- a. Age <5 or >55
- b. Known cardiac disease or respiratory distress
- c. Penetrating injury to thorax, abdomen, neck or groin other than gunshot wounds

3. **Otherwise** (i.e.:none of the conditions above exist): **evaluate as per usual protocols**

WHEN IN DOUBT, CONSULT WITH MEDICAL CONTROL

Severely injured patients <13 years should be taken to a Level I or II facility with pediatric resources including pediatric ICU.

All EMS providers transporting trauma patients to hospitals shall provide receiving hospital with a complete OEMS approved patient care form **prior to departing from the hospital.**

* State of Connecticut Regulation of Department of Public Health and Addiction Services Concerning Statewide Trauma System: Sections 19a-177-5.

21. Trauma Alert Protocol

A. Description: “Trauma Alert” Patient

The “Trauma Alert” is designed for those patients who are severely injured, have a high likelihood for immediate resuscitation/treatment, and/or for whom the time factor may be critical for a successful outcome. Triage will focus on these categories: Physiologic parameters, Systemic/Anatomical Criteria, Mechanism of Injury and Relative Indicators.

Any trauma patient that meet the following criteria should be transported to a Level I or Level II trauma center and **identified as a “Trauma Alert”** by the pre-hospital EMS staff. Notification to the receiving facility should be as early as possible so as to give the receiving facility time to mobilize the appropriate and needed resources to the ED to meet the patient/EMS staff upon arrival.

Trauma patients meeting any of the below criteria shall be called into the hospital emergency department as a “Trauma Alert” with direct communication to the on-duty ED Attending physician, or delegate. Primary notification should occur via C-Med radio. If C-Med is unavailable then direct contact to the ED should be made by calling the numbers listed in chapter one under “Communications”.

B. Physiologic Parameters (Mandatory Ems Trauma Alert)

1. Glasgow Coma Scale (GCS) < 12 or
2. Systolic blood pressure < 90 mmHg at any time in adults and age specific hypotension for pediatrics or
3. Respiratory compromise (rate < 10/min or > 29/min), intubation or obstruction
4. Trauma transfer patients from other facilities receiving blood or blood products

C. Systemic/Anatomical Criteria (Mandatory Ems Trauma Alert)

1. All penetrating injuries to head, neck, chest, abdomen, groin and extremities proximal to elbow and knee (including gunshot wounds)
2. Third degree burns covering more than fifteen (15) percent of the body, or third degree burns of the face with or without airway involvement
3. Evidence of spinal cord injury with or without limb paralysis
4. Two (2) or more proximal long bone fractures
5. Amputation proximal to wrist or ankle, other than digits
6. Flail chest
7. Pelvic fractures
8. All trauma patients arriving by helicopter

D. Mechanism of Injury (Mandatory Ems Trauma Alert)

1. Falls from over twenty (20) feet or 2X the patient's height
2. High-speed impact MVA (initial speed > 40 mph)
3. Ejection of patient from vehicle
4. Death of same car occupant
5. Auto-pedestrian / Auto-bicyclist injury with significant (>5 mph) impact
6. Rollover
7. Significant vehicle deformity
 - a. Exterior motor vehicle deformity > 20 inches
 - b. Passenger compartment intrusion > 12 inches
 - c. Steering wheel deformity
8. Pedestrian/Bicyclist thrown or run over
9. Motorcycle accident > 20 mph or separation of rider from motorcycle
10. Extrication time greater than 20 minutes

E. Relative Indicators (Discretionary EMS Trauma Alert)

1. Age < 5 or > 55
2. Known cardiac or respiratory disease
3. Insulin dependent diabetes, cirrhosis or morbid obesity
4. Pregnancy
5. Immunosuppressed patients
6. Patients with bleeding disorders or on anticoagulants

WHEN IN DOUBT, CONSULT WITH ON-LINE MEDICAL DIRECTION

All EMS providers transporting trauma patients to the hospital shall provide the receiving hospital with a complete OEMS approved patient care form prior to departing from the hospital.

Ref. State of Connecticut Regulations of Department of Public Health and Addiction Services concerning statewide trauma system: Section 19a-177-5

22. Assessment & Management of Trauma Patients

For patients with trauma the following guideline will guide the EMT-Basic through the assessment and initial management. For all trauma patients it is important to remember

1. Provide Primary EMT-Basic Care
2. Provide oxygen as indicated
3. Request Paramedic Intercept based on patient presentation and mechanism of injury
4. Destination hospital is at the discretion of the on-line medical oversight physician, **so patch in early**

A. Airway and Breathing

Initial Assessment – To be completed on Scene	
Airway	
Airway Management Techniques must maintain in-line cervical immobilization.	
Presenting Sign/Symptom:	Management / Treatment:
Manual Control	a. Chin Lift b. Jaw Thrust
Mechanical Control	a. Suction b. Oropharyngeal Airway c. Nasopharyngeal Airway d. Pocket Mask
Breathing	
Ventilation	a. Mouth to mask b. Bag-valve-mask
Flail Chest	a. Airway Management b. Bulky dressing splint
Open Pneumothorax	a. Partially occlusive dressing (3-sided) b. Assist ventilations as needed with supplemental O ₂
Tension Pneumothorax	a. Ventilatory Support
Hypoxia is common in the trauma patient and correcting it is of the highest priority. A spinal injury may be present and the airway should be managed as if C-spine instability exists. Concern about a spinal injury must not delay institution of adequate ventilation and oxygenation. The neck should be maintained in a neutral position. If an endotracheal tube is required, neutral stabilization of the spine must be maintained throughout its insertion, so that the mandible and tongue are moved forward and the head is not tilted backwards.	

B. Circulation and Bleeding Control

Circulation and Bleeding Control	
Evaluation	
Pulse	i. Rate ii. Strength iii. Location
Skin	i. Color ii. Moisture iii. Temperature
Begin Chest Compressions as indicated	

Hemorrhage Control	<ul style="list-style-type: none"> a. Direct pressure on wound and/or pack wound with sterile gauze b. Pressure Bandage and elevate extremity b. Pressure points (usually not required) c. Tourniquet (seldom, if ever, indicated) d. Traction splint e. PASG (for unstable pelvic fracture with hypotension in the adult >13 yrs.)
<p>Pale skin color and pulse characteristics are accurate parameters used in assessing the status of tissue perfusion. Blood pressure is obtained later in the patient's assessment. Hemorrhage control in the primary survey is used only for massive bleeding. Minor bleeding takes a lesser priority. For patients with an unstable femur fracture, application of a traction splint is the most important field technique for control of this type of hemorrhage. Patients with "open book" pelvic fracture will benefit from stabilization and "direct pressure" from the PASG.</p>	

C. Disability

Disability	
Glasgow Coma Score	
Eye Opening:	<ul style="list-style-type: none"> 4 - spontaneous 3 - to voice 2 - to pain 1 - none
Verbal response:	<ul style="list-style-type: none"> 5 - oriented 4 - confused 3 - inappropriate words 2 - incomprehensible words 1 - none
Motor response:	<ul style="list-style-type: none"> 6 - obeys commands 5 - localizes pain 4 - withdrawal (pain) 3 - flexion (pain) 2 - extension (pain) 1 - none

D. Exposure

Exposure - May be completed during transport
<p>Exposure of the body for examination: It may be necessary to partially or completely expose the body to control hemorrhage and perform lifesaving procedures. It is important to consider modesty, time, and conservation of body heat. Always respect the individual's needs. Nothing should be done to delay transport of the critically injured patient.</p>

E. Resuscitation

Resuscitation - To be completed during transport	
<p>Supplemental oxygen should be delivered @100% for all multisystem trauma patients.</p>	
1. Blood pressure should be monitored	<ul style="list-style-type: none"> a. systolic/diastolic b. pulse pressure

F. Detailed Physical Exam

Detailed Physical Exam	
The detailed physical exam should encompass a head-to-toe process looking for and treating injuries not discovered or treated in the primary survey	
Presenting Sign/Symptom:	Management / Treatment:

Head

Head	
Airway	Reevaluate and Correct Problems
Open Wounds	<ul style="list-style-type: none"> a. control hemorrhage with gently direct pressure b. apply clean dressings to all wounds
Eyes	<ul style="list-style-type: none"> a. protect from further injury b. irrigate to remove contaminants and debris c. do not remove foreign bodies
Nose and Ears	<ul style="list-style-type: none"> a. pre-hospital evaluation for fluid (blood, CSF) b. treatment usually not required
<p>Most injuries to the face and head require hospital treatment - therefore delay in evaluation other than hemorrhage control is usually not necessary. Lacerations of the scalp may have a fracture beneath; therefore, unnecessary pressure is to be avoided. Use only enough pressure to control hemorrhage. Transportation to the hospital should not be delayed other than to correct life threatening airway problems.</p>	

Neck and Throat

Neck and Throat	
Spinal Immobilization is indicated in trauma care	<ul style="list-style-type: none"> a. any blunt injury above the clavicle b. unconscious patient c. multiple trauma d. high speed crash e. neck pain f. complaints of extremity numbness / tingling g. gunshot wound involving the torso
Wounds	<ul style="list-style-type: none"> a. leave foreign bodies in place, but stabilized b. use direct pressure to control hemorrhage c. occlusive dressing for open neck lacerations
<p>Spinal immobilization should be accomplished without using the chin as a point of control. If the patient vomits into a closed mouth, aspiration almost inevitably results. Studies have shown that the cervical collar does not provide immobilization; therefore, a rigid cervical collar is used in conjunction with a long or short backboard and other head immobilization devices. A patient should never be secured to a backboard by the head alone. If such a patient became uncooperative, severe damage to the C-spine could result.</p>	
<p>Wounds of the neck should not be probed. Frequently a clot will have formed on the carotid artery or jugular vein, which probing could dislodge, causing severe hemorrhage. Compression dressing should not be tight enough to restrict blood flow to or from the brain and should not be circumferential.</p>	

Thorax

Thorax	
Ventilation	<ul style="list-style-type: none"> a. Assure adequacy of ventilation b. Reevaluate injuries identified and managed in the primary survey

Chest Wall Injuries

Chest Wall Injuries	
Simple isolated rib fractures	a. No pre-hospital management necessary
Flail Chest	a. Airway/ventilation management as necessary b. Bulky dressing splint
Hemothorax	a. Treat for shock b. Ventilatory support as necessary
Open Pneumothorax	a. Three-sided dressing
Tension Pneumothorax	a. Ventilatory support as indicated
<p>With the exception of myocardial contusion and pericardial tamponade, most of the chest conditions that result from trauma are either managed when identified during the primary survey or at the hospital. Chest injuries are the second leading cause of death and disability and these patients need to have a high transport priority as part of their treatment plan.</p>	

Abdomen

Abdomen	
Evisceration	a. Clean, moist dressing b. Occlusive Dressing
Foreign body	a. Do not remove except by direct order of medical control * b. Stabilize foreign body to prevent further injury during transport
Intra-abdominal hemorrhage	a. Treat for shock
Pelvic fracture	a. Long backboard immobilization b. Consider PASG stabilization
<p>Prolonged evaluation of the abdomen for signs of an acute abdomen by checking for guarding, rebound tenderness or bowel sounds requires extra delay and should be avoided. Most patients with intra-abdominal injuries require hospitalization, evaluation, and treatment so delay to perform such diagnostic techniques is not indicated.</p>	

Extremities

Extremities	
Extremity Injury	a. Examine for swelling and deformity b. Check for neurovascular function c. Apply direct pressure to control bleeding d. Splint-reassess neurovascular status after splinting e. Consider PASG for multiple lower extremity fractures

G. Neurological

Neurological	
Neurologic - Head, spinal cord, and peripheral nerve trauma	a. Suspect associated C-spine injury and treat accordingly b. If GCS <9 ventilation c. Serial GCS determinations at least every 10 minutes d. Pupillary evaluation <ul style="list-style-type: none"> i. Reactivity ii. Equality iii. Size e. Reassess motor and sensory function g. If shock is present, look for other causes of blood loss, as brain injury alone is usually not the cause

H. Transportation

Transportation

It is impossible to fully stabilize the unstable patient in the pre-hospital setting. There must be a balance of lifesaving skills (such as endotracheal intubation) with minimizing scene time (<10 minutes) and rapid transport in order to reduce the time from injury to definitive surgical treatment.

Early “trauma notification” to the receiving hospital is essential to ensure the immediate availability of an appropriate in-hospital response. A “Trauma Alert” is called by the Emergency Room Physician based upon your report to the hospital, therefore, it is crucial that EMS provide a prompt accurate “Trauma Notification” to any leveled receiving facility.

* Requires On-Line Medical Oversight

**Committee on Trauma; American College of Surgeons; Resources for Optimal Care of the Injured Patient.

23. Burn Management

A. Description of Burns

For prognostic and management reasons burns are classified in several different ways.

1. **Mechanism of burn:** thermal, chemical, electrical or inhalation (e.g., smoke, carbon monoxide, chemicals).
2. **Depth of burn wound:**
 - a. Superficial (**1st degree**) involvement of superficial layers of the skin, producing redness and pain.
 - b. Partial thickness (**2nd degree**) penetration to deeper layers of the skin producing pain, blistering, and edema.
 - c. Full thickness (**3rd degree**) involvement of all skin layers and can also involve underlying muscle, bone, and/or other structures. Lack of pain is characteristic.
3. **Extent (size) of burn wound:** This is expressed as percent of total body surface area and can be calculated using the Rule of Nines. Palm rule (patient's palm=1% TBSA).
4. **Location of burn wound:** Burns of the face, neck, hands, feet, perineum, and circumferential burns carry a higher risk of morbidity than burns of similar size in other locations. Facial burns are often accompanied by upper airway edema; be prepared to intubate this patient.
5. For every patient suspected of **carbon monoxide** or **other inhalation injury** (particularly in closed space environmental fires, presence of singed nasal hairs or carbonaceous sputum), begin oxygen at highest possible flow rate.

BURN PATIENTS ARE OFTEN VICTIMS OF MULTIPLE TRAUMA. TREATMENT OF ALL MAJOR TRAUMATIC INJURIES TAKES PRECEDENCE OVER BURN WOUND MANAGEMENT. AT ALL TIMES PROTECT YOURSELF FROM EXPOSURE.

B. Thermal Burns

Evaluate the causative agent before initiating treatment. Stop the burning process by removal of the patient from the source of exposure or eliminate the source as per guidelines noted below. Evaluate the degree and estimate the BSA (Body Surface Area) of the burn injury.

1. Provide Primary EMT-Basic Care
2. Request Paramedic Intercept
3. Protect against hypothermia
4. Check for the presence of signed facial or nasal hair; hoarseness, wheezing, cough, stridor and document.
5. Assess percentage of Total Body Surface Area Burned.
6. Remove loose clothing and jewelry/constriction hazards.
7. Apply clean dry towels or sheets to area. If the burns are less than 10% and are superficial or partial thickness you can moisten the towels or sheets with sterile normal saline for comfort.
8. **Establish Medical Control**
Possible Physician Orders: Transport to appropriate facility

DO NOT BREAK BLISTERS INTENTIONALLY. DO NOT APPLY CREAMS, OINTMENTS OR ANTIBIOTICS TO BURN. DO NOT REMOVE ANY LOOSE TISSUE OR SKIN.

C. Chemical Burns / Exposure

Consider any chemical burn/exposure situation as a Hazmat situation. Whenever this situation arises contact the local fire department for scene management and gross decontamination. Never transport a patient that has not been appropriately decontaminated. If potential Hazmat situation exists, notify receiving hospital ASAP for further direction. Never bring a grossly decontaminated patient into the emergency department unless instructed to do so by the receiving facility.

1. Use Personal Safety / Protective Equipment
2. Identify the situation if possible (including the type and amount of chemical)
3. Upon receiving the patient from the fire department, remember they are still contaminated.
4. Provide Primary EMT-Basic Care
5. Request Paramedic Intercept
6. Obtain name of the chemical or its I.D. and relay this information to the receiving facility as soon as possible, bring a copy of the MSDS Sheet whenever possible.
7. Flush with copious amounts of water or saline unless contraindicated. Irrigate burns to the eyes with a minimum of 1 liter of normal saline. Alkaline burns should receive continuous irrigation throughout transport.
8. **Establish On-Line Medical Oversight**
Possible Physician Orders: Transport to an appropriate facility

D. Electrical Burns

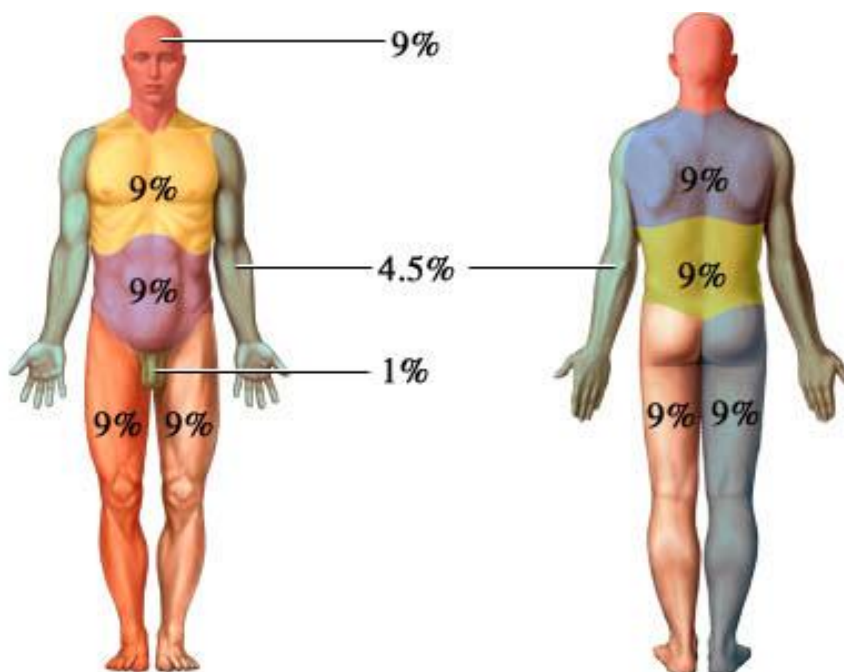
Without placing self at risk, remove patient from the source of electricity or have the power cut off.

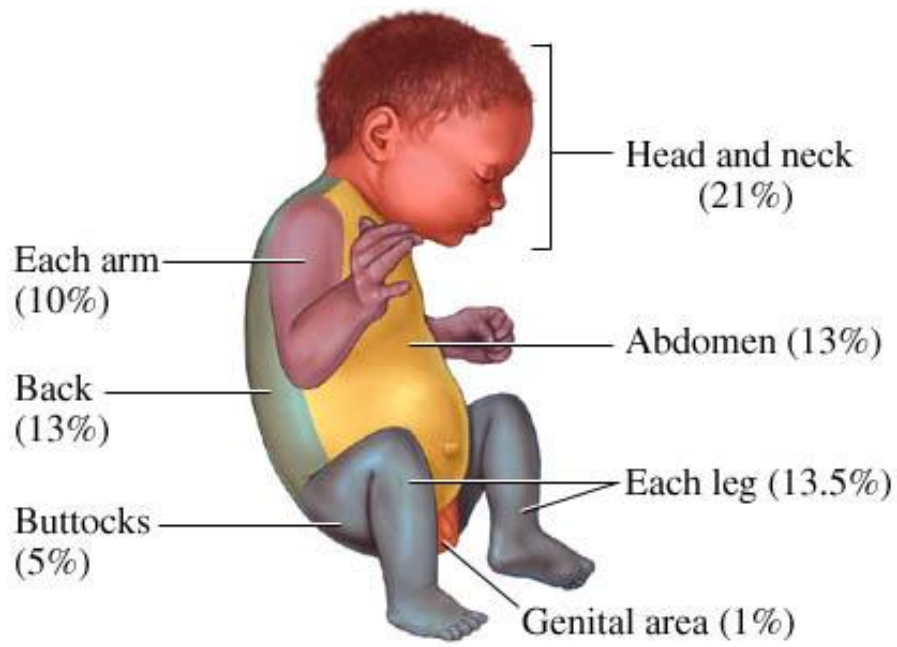
1. Provide Primary EMT-Basic Care
2. Request Paramedic Intercept
3. Suspect spinal injury secondary to tetanic muscle contraction
4. Apply AED if indicated
5. Treat any trauma secondary to electrical insult as per protocol

6. Establish On-line Medical Oversight

Possible Physician Orders: Transport to an appropriate facility

E. Rule of Nines





24. OB/GYN

A. Emergencies Before Delivery

Preeclampsia, also called pregnancy-induced hypertension, is a condition characterized by the following signs and symptoms: headache, seeing spots, swelling in the hands and feet, anxiety, and high blood pressure.

Eclampsia is the condition of having seizures that result from severe hypertension.

Assess patient, careful consideration should be paid to the CNS and Cardiorespiratory function. Verify by either history or observation the presence of tonic/clonic activity. Determine the gestational age of the fetus (will be 2nd or 3rd trimester and pregnancy should be apparent) and previous history of pregnancy induced hypertension.

1. Primary EMT-Basic Care
2. Request Paramedic Intercept
3. If actively seizing follow seizure protocol
4. Contact On-Line Medical Oversight

Possible physician orders:

Transport to an appropriate facility

B. Antepartum (Before Birth) Hemorrhage

Antepartum hemorrhage can produce serious life threatening blood loss for the mother, and it can be associated with fetal demise. Remember that rapid transport to the closest facility must be initiated any time bright red vaginal bleeding is present in the gravid female. Advise receiving hospital as soon as possible for Labor and Delivery notification.

- **Placenta Previa:** placenta overlying the cervix.
- **Abruptio Placenta:** separation of the placenta from the uterine wall, often but not necessarily associated with abdominal pain.
- **Uterine Rupture:** sudden severe abdominal pain and shock.

DO NOT DELAY - TRANSPORT IMMEDIATELY TO THE HOSPITAL

1. Provide Primary EMT-Basic Care
2. Use a wedge to tilt patient to the left to move fetus off Inferior Vena Cava
3. Request Paramedic Intercept
4. Keep patient warm
5. Elevate lower extremities

Establish On-Line Medical Oversight for destination decision (i.e. Emergency Department or Labor and Delivery)

C. Trauma in Pregnancy

The most common cause of fetal death is maternal death. Rapidly assess fetal viability - is uterus (fundus) above (viable) or below the mother's umbilicus (non-viable fetus). Fetus may be in jeopardy while mother's vital signs appear stable. Treat mother aggressively for injuries based on mechanism of injury. Follow Trauma Protocol with the following considerations.

1. Provide Primary EMT-Basic Care
2. Check externally for uterine contractions.
3. Check externally for vaginal bleeding and amniotic fluid leak (Broken water).
4. Request Paramedic Intercept
5. If patient becomes hypotensive while supine on backboard elevate right side of backboard (to relieve pressure on the inferior Vena Cava by uterus).

Early transport to an appropriate facility is essential

D. Emergent Childbirth

1. Provide Primary EMT-Basic Care
 - No Crowning or Urge to Push **Begin** transport and reassess every 2 min
 - Crowning or Urge to Push Present **Prepare** for imminent delivery
2. **Imminent Delivery:** Request Paramedic Intercept
 - 1) Control delivery with the palm of the hand so the infant does not "explode" out of the birth canal. Support the infant's head as it emerges and support perineum with gentle hand pressure.
 - 2) Support and encourage the mother to control the urge to push.
 - 3) Tear the amniotic membrane, if it is still intact and visible outside the vagina.
 - 4) Check for cord around the neck.

Gently suction mouth and nose (with bulb syringe) of infant as soon as head is delivered.

- 5) Note the presence or absence of meconium staining. If meconium is present in the airway suction extremely well.
- 6) As shoulders emerge, guide head and neck slightly downward to deliver anterior shoulder, then the posterior shoulder.
- 7) The rest of the infant should deliver with passive participation. Get a firm hold on the baby.
 - a. Repeat gentle suctioning then proceed to postpartum care of infant and mother.
 - b. Dry and keep infant warm. If possible skin to skin contact with the mother while covering the infant with a blanket provides a good warming source.
 - c. Clamp cord 6" to 8" from infant's body. Cut cord with sterile scissors (blunt side next to infant) between clamps. Clamping of cord is not critical, and does not need to be done immediately, but keep the infant level with mom if cord is not clamped. This will prevent infant CHF (blood from mom to baby) or infant anemia (blood from baby to mom). If there is any bleeding from the cord clamp, re-clamp again in close proximity to the "leaking" clamp.
 - d. Allow mother to hold baby next to her if her condition does not contradict this. Wrap both baby and mother together in blanket to diminish heat loss.

- e. Establish date and time of birth and record. Perform immediate neonatal assessment and record APGAR at 1 and 5 minutes.

E. Postpartum Maternal Care

Place patient in position of comfort, unless otherwise indicated by signs of hypoperfusion.

1. Provide Primary EMT-Basic Care.
2. Observe for signs of bleeding. Treat for shock as indicated.
3. If the perineum is torn and bleeding, apply direct pressure to the outside of vagina only. Never pack or place anything inside vaginal opening.
4. Prepare for placental delivery. This should occur within 30 minutes. Protect umbilical cord from being pulled.

F. APGAR Scoring

APGAR should be scored at one minute and five minutes post delivery.

<u>Area of Activity</u>	<u>Value</u>
Appearance (Skin Color)	
Blue all over	0
Blue at extremities	1
Normal	2

Pulse (Heart Rate)	
No Pulse	0
Less than 100 beats per minute	1
Greater than 100 beats per minute	2

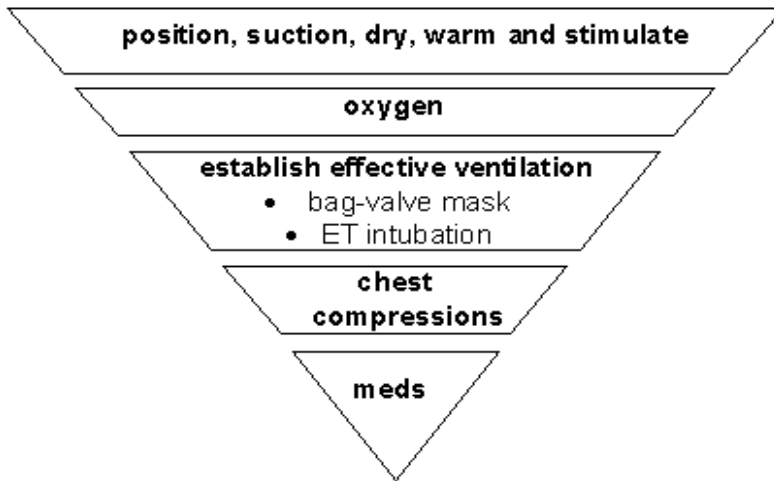
Grimace (reflex to suctioning)	
None	0
Some grimacing noted	1
Cries, coughs or sneezes	2

Activity (Muscle Tone)	
None	0
Some flexion	1
Active movement	2

Respirations	
No Respirations	0
Irregular or Ineffective	1
Good respiratory effort, effective, good cry	2

The APGAR score is the sum of the values for each of the five activities. The APGAR score can range between 0 and 10.

G. Pediatric Resuscitation Triangle



H. Delivery Complications

1. Provide Primary EMT-Basic Care
2. Request Paramedic Intercept
3. Proceed to appropriate complication guideline

Nuchal Cord (cord around baby's neck)

1. Slip two fingers around the cord and lift over baby's head.
2. If unsuccessful: Double clamp cord, cut cord between clamps with sterile scissors (blunt side next to baby, never use a scalpel) allow cord to release from baby's neck.
3. Continue with normal delivery protocol.

Prolapsed Cord (cord presenting before the baby)

1. Elevate mother's hips in knee-chest position or left side down in Trendelenberg position.
2. Protect cord from being compressed by placing a sterile gloved hand in vagina and pushing up firmly on the presenting part of the fetus.
3. Palpate cord for pulsation
4. Keep exposed cord moist and warm.
5. Keep hand in position and transport immediately to approved OB facility.
6. Do not remove hand until relieved by OB personnel.

Breech Birth (legs or buttocks presenting first)

1. Never attempt to pull baby from the vagina by the legs or trunk.
2. After shoulders are delivered, gently elevate the trunk and legs to aid in delivery of head (if face down)*
3. Head should deliver in 30 seconds. If not, reach 2 fingers into the vagina to locate the baby's mouth. Fingers in mouth will flex baby's head and should assist in spontaneous delivery. If not, press the vaginal wall away from the baby's mouth to create an airway. If head does not deliver in 2 minutes, keep your hand in position and transport ASAP.

Extremity Presentation

1. Proceed immediately to the hospital
- 2. Establish On-Line Medical Oversight**
3. Do not attempt out of hospital delivery
4. Encourage mother to perform slow deep breathing

Postpartum Hemorrhage

1. May be due to placental fragments not being delivered
2. Put the infant to breast
3. Rapid Transport

- - - PEDIATRIC GUIDELINES - - -

25. Pediatric Assessment

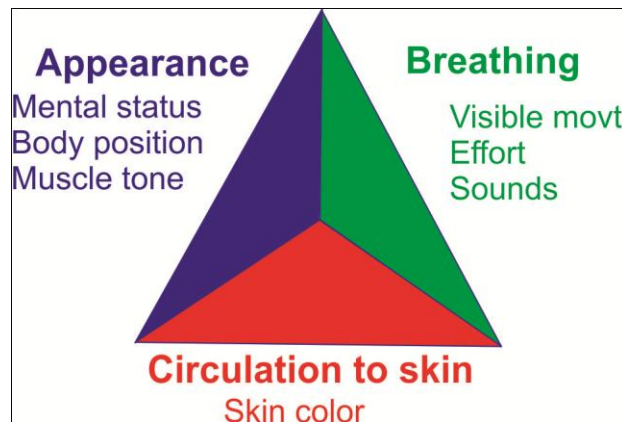
A. Pediatric Patient Assessment, Introduction

An organized pediatric assessment is crucial for determining and delivering timely, appropriate care to the pediatric population. There are currently three pediatric educational courses: **a)** Pediatric Advanced Life Support, **b)** Pediatric Education for the Pre-hospital Provider, and **c)** Pre-hospital Pediatric Care Course. These courses differ slightly in the approach and delivery of pediatric care, while maintaining the same basic principles. The following guideline has been established **combining all three courses**. The most important point to remember is to find an assessment style you, as a care provider, are comfortable with, and to apply it consistently.

B. The Pediatric Assessment Triangle (PAT)

The PAT is used to develop a general impression. Appearance, Breathing, and Circulation provide an excellent picture of the child's underlying cardiopulmonary, neurologic, and metabolic status. Using it will help establish urgency for treatment and/or transport. The PAT does not replace traditional vital signs and the ABCDEs in the next section. It precedes and complements them.

(Ref: PEPP, p. 34-35)



Replaced the original PAT triangle with this smaller and easier to read diagram (created from scratch.) Also added comments (with reference) above where none existed in original.

C. Primary EMT-Basic Pediatric Assessment and Care

When initiating pediatric care it is considered to be the “standard of care” to utilize a length/weight based tape or chart for determination of normal vital signs.

1. General Appearance
 - a. Perfusion to Skin (Skin Color)
 - b. Interaction with Environment (observe mental status and muscle tone)
 - c. Work of Breathing
2. Airway
 - a. Child maintains own airway
 - b. Maintainable by BLS Intervention
 - c. Maintainable only with ALS Intervention
3. Breathing
 - a. Tidal Volume adequate (Unobstructed Pathway)
 - b. Tidal Volume inadequate (Obstructed Pathway)
 - c. Absent
 - d. Initiate Oxygen therapy and/or ventilatory support per patient condition
4. Circulation
 - a. Normal Skin Signs with + Peripheral Pulses and + Central Pulses (Normal)
 - b. Abnormal Skin Signs with + Peripheral Pulses and + Central Pulses (Compensated)
 - c. Abnormal Skin Signs with – Peripheral Pulses and + Central Pulses (Decompensating)
 - d. Abnormal Skin Signs with – Peripheral Pulses + Weak Central Pulses (Decompensated)
 - e. Absent Pulses
5. Vital Signs
 - a. Pulse: Rate, Quality, Rhythm, and Location
 - b. Respiratory Rate, Character, and Breath Sounds
 - c. Blood Pressure (check it early and check it often)
 - d. Capillary Refill: Time to refill and location
 - e. Pulse Oximetry when indicated
 - f. Blood Glucose Level in cases of AMS, dehydration, and when indicated
6. History of Episode (Obtained from primary caregiver on scene)
 - a. Nature of Call / Mechanism of Injury
 - b. Time of Onset
 - c. Prior treatment related to present illness or injury
7. Pertinent Medical History
 - a. Previous Medical Problems or Conditions
 - b. Routine Medications
 - c. Allergies
 - d. Current Weight
 - e. Immunization Status
8. Social History as dictated by developmental age
9. Initiate specific treatment per protocol / guideline

D. Pediatric Development and Vital Signs by Age

Newborn (Birth to 1 Month)

Normal Development Characteristics

Muscle tone and Body Position	Reflexive Movements; Equal hand, arm, leg movement. Will Grasp objects, but not reach. Cannot sit upright
Mental Status and Social Interaction	Appears alert when awake, looks at objects and faces, but will not follow. Will not follow sounds
Verbal Abilities	Cries when hungry, cold, startled or in pain
Cognitive	Will look, listen, and taste to learn
Keys to Successful Interaction	Likes to be kept warm and held, may be soothed by something to suck on. Avoid bright lights and loud noises

Normal Vital Signs

Blood Pressure:	> 60mm Hg
Heart Rate:	120 - 160

Infant (1-12 Months)

Normal Development Characteristics

Muscle tone and Body Position	Equal Movements; hand, arm, leg movement. Reaches for objects 4-6 months; Crawls 4-10 months; sit upright 6-8 months; Stands at 12 Months
Mental Status and Social Interaction	Appears Alert when awake; At 2 months can fix and follow objects and smile; Turns to sound 4-6 months, fear of strangers 6-8 month
Verbal Abilities	Cries when hungry, cold, startled or in pain; 6-8 months imitates basic sounds (ma-ma)
Cognitive	Will look, listen, and taste to learn
Keys to Successful Interaction	Likes to be held, Parents nearby, Distract with Toy; Toe to Head Exam

Normal Vital Signs

Blood Pressure:	> 70mm Hg
Heart Rate:	120 - 140

Toddler (1-3 Years)

Normal Development Characteristics

Muscle tone and Body Position	18 Months can walk and climb stairs, wriggles and squirms when restrained
Mental Status and Social Interaction	Active when awake, may fear strangers, may run if frightened, feels modesty
Verbal Abilities	Basic language skills, may be talkative, comprehension exceeds their spoken words
Cognitive	Emergence of reasoning, increases independence, remembers and fears pain, does not make up false symptoms, cannot reliably explain where pain is located
Keys to Successful Interaction	Distract with toys, Toe to Head exam, respect modesty

Normal Vital Signs

Blood Pressure:	>70 + (2x age in years)
Pulse Rate:	100 - 140

Preschooler (3-6 Years)

Normal Development Characteristics

Muscle tone and Body Position	Walks, runs, skips, and climbs
Mental Status and Social Interaction	Active when awake, interacts with strangers, will initiate and control activities, modest about undressing
Verbal Abilities	Imitates conversations without comprehension, believes others share their viewpoint and may not explain clearly
Cognitive	Thinking is literal, concrete, and rooted in present. Thought process is absolute (it hurts or doesn't, things are good or bad), fears pain and separation from parents, begins to fear disfigurement
Keys to Successful Interaction	Explain actions using simple terms, tell what will happen next, and if something will hurt, respect modesty, head to toe exam

Normal Vital Signs

Blood Pressure:
>70 + (2x age in years)
Pulse Rate:
100 - 120

School Age (6-12 Years)

Normal Development Characteristics

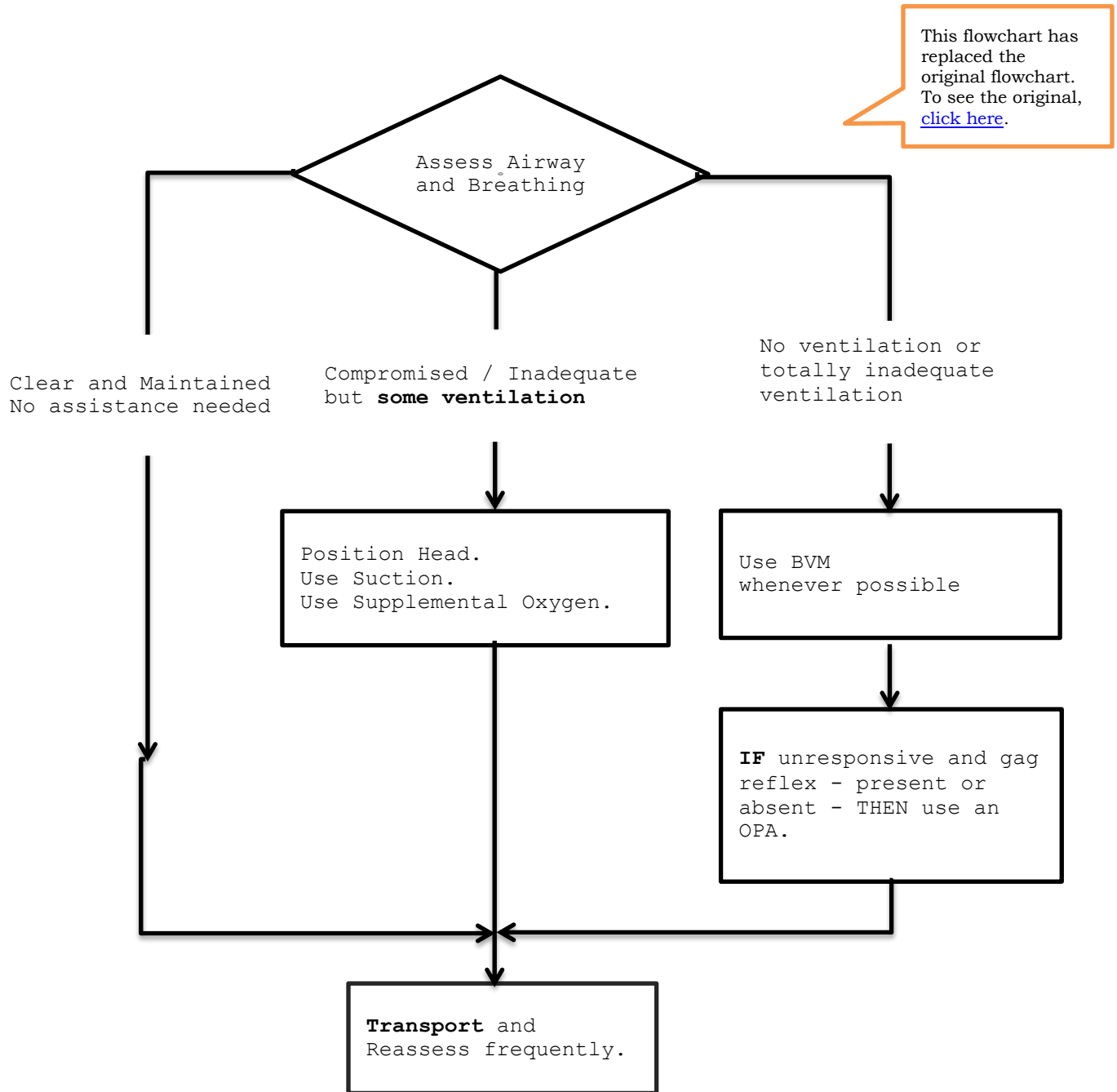
Muscle tone and Body Position	Physical skills are well developed, risk taking behavior increases
Mental Status and Social Interaction	Clearly defined social skills, very modest about being undressed
Verbal Abilities	Uses language to communicate and learn
Cognitive	Understands past, present, and some future, Relative thinking develops (may hurt a little or a lot), can reliably report where pain is, fears pain, disfigurement, loss of function, and begins to understand death
Keys to Successful Interaction	Respect modesty, let child make treatment choices when applicable, head to toe exam, allow child to participate in exam process

Normal Vital Signs

Blood Pressure:
>70 + (2x age in years)
Pulse Rate:
80 - 100

26. Pediatric Airway Management

A. Airway Flowchart (Algorithm)



B. Pediatric: Obstructed Airway - Choking

If patient can breathe, cough, cry or speak (color pale or pale-pink):

1. Routine BLS medical care and general pediatric respiratory distress protocol.
2. Oxygen 100% by face mask held adjacent to face
3. Transport with parent, keeping child warm
4. If patient is conscious, but totally obstructed perform BLS airway clearing maneuvers appropriate to age
 - a. Age <1 year - back blows and chest thrusts
 - b. Age >1 year - abdominal thrusts
5. Request Paramedic Intercept

If patient is unconscious or unable to ventilate and/or cyanotic with inadequate air exchange:

1. Initiate CPR
2. Request Paramedic Intercept
3. Continue CPR until obstruction is relieved

If unsuccessful, then transport keeping the child warm, continuing BLS airway clearing maneuvers, trying to ventilate.

Establish On-Line Medical Oversight as needed.

C. General Guidelines for Pediatric Respiratory Distress

Respiratory distress can be a life-threatening emergency. It may require immediate assessment and management. Although the etiology of respiratory distress in the pediatric patient may vary, the clinical manifestations are similar. The smaller tracheal diameter contributes to an easily compromised airway. Respiratory distress may occur as a result of upper airway obstruction (croup, foreign body, epiglottitis, congenital anomalies, edema, and allergic reactions) or from lower respiratory airway obstruction (asthma, pneumonia).

Rapid assessment is essential. Do this by checking the patency of the airway: properly position the airway, provide positive pressure ventilation using a B-V-M with 100% oxygen. Immediately institute ventilatory support for cases of severe respiratory distress or failure.

Upper Airway Obstruction

Stridor and hoarseness are signs of upper airway distress. Croup and foreign body aspirations are the most frequent causes. Rarely, epiglottitis may occur. Epiglottitis usually occurs in a two to six year old child. The onset is usually abrupt and is associated with stridor, severe difficulty swallowing, high fever, and a toxic appearance. Epiglottitis also can occur in an infant or an adolescent. Croup (laryngotracheal bronchitis) usually occurs in the infant or toddler. Its onset is more gradual and is associated with low-grade fever, a barking cough, rapid respiratory rate, and stridor. Foreign-body obstruction may present as stridor, difficulty swallowing or respiratory arrest.

Lower Airway Obstruction

Wheezing is the hallmark of lower airway obstruction. Decreased, unequal, or absent breath sounds also can occur. The respiratory rate is generally rapid (although when expiration becomes prolonged, the rate may fall, an ominous sign). Bronchiolitis, asthma, and foreign-body obstruction should be considered.

Regardless of etiology, follow these general guidelines and see other protocols as appropriate.

D. Pediatric Respiratory Distress

1. Primary Pediatric Assessment and Care
2. Request Paramedic Intercept
- 3. If airway is obstructed follow ECC Foreign Body Airway Obstruction Protocol on page xx.**
4. Assess for sign of respiratory distress (Use of accessory muscles, stridor, retractions, nasal flaring or noisy respirations)
5. Administer oxygen in the least irritating manner possible
6. Allow the child to assume the most comfortable position for themselves as practical and safe during transport
7. If patient requires ventilatory assistance, remember:
 - a. DO NOT OVER EXTEND NECK
 - b. Ventilate with a B-V-M
 - c. Follow airway algorithm on page xx**
 - d. Early transport of the pediatric patient is critical

Pediatric Asthma

1. Provide Primary Pediatric Assessment and Care
2. Request Paramedic Intercept
3. Known history of Asthma with prescription bronchodilator
 - a. Contact on-line Medical Oversight to assist with administration

Establish On Line Medical Oversight

Possible Physician Orders:

Repeat doses of prescription bronchodilator

If No Improvement is noted, then consider assisting ventilations

Suspected Croup or Epiglottitis

1. Obtain history and assess respiratory status to include:
 - presence of stridor
 - respiratory rate and effort
 - drooling or mouth breathing
 - degree of cyanosis
 - increased skin temperature
2. Provide Primary Pediatric Assessment and Care
3. Request Paramedic Intercept

DO NOT LOOK IN THE MOUTH, IMPORTANT KEEP PATIENT CALM AND UPRIGHT.
Allow child to achieve position of comfort as possible.

4. If respiratory status warrants, attempt to administer 100% oxygen via mask held by primary caregiver 4 inches in front of child's face, but ONLY if well tolerated by child.
5. Transport ASAP

Establish On Line Medical Oversight as needed

IF RESPIRATORY ARREST OCCURS FROM OBSTRUCTION

1. Rapid initial transport is imperative
2. Attempt ventilation with pediatric B-V-M
3. Establish On Line Medical Oversight as needed

27. Pediatric Allergic Reaction / Anaphylaxis

A. Allergic Reaction

Stable Hemodynamics: Patient has no problem with ventilation, oxygenation or perfusion, minor to moderate skin manifestations and/or respiratory distress. No stridor.

1. Provide Primary Pediatric Assessment and Care
2. Request Paramedic Intercept as appropriate
3. If mild to moderate respiratory distress, then:

Establish On Line Medical Oversight.

Possible Physician orders: One dose of Epinephrine 0.15mg via EPI-PEN Jr.

B. Anaphylaxis

Unstable Hemodynamics: Patient is hypotensive according to normal values for age and weight; pending upper airway obstruction with wheezing and/or stridor; or severe obstruction with wheezing and/or stridor; or severe respiratory distress.

1. Provide Primary Pediatric Assessment and Care
2. Epinephrine 0.15mg via EPI-PEN Jr.
3. **Request Paramedic Intercept**

28. Pediatric Cardiac Arrest

A. Using an AED for Children: An Update – October 2002

An Advisory Statement from the Pediatric Advanced Life Support Task Force, International Liaison Committee on Resuscitation

On the basis of the published evidence to date, the Pediatric Advanced Life Support (PALS) Task Force of the International Liaison Committee on Resuscitation (ILCOR) has made the following recommendation (October 2002):

- Automated external defibrillators (AEDs) may be used for children 1 to 8 years of age who have no signs of circulation. Ideally the device should deliver a pediatric dose. The arrhythmia detection algorithm used in the device should demonstrate high specificity for pediatric shockable rhythms, i.e., it will not recommend delivery of a shock for non-shockable rhythms (Class IIb).

In addition:

- Currently there is insufficient evidence to support a recommendation for or against the use of AEDs in children <1 year of age.
- For a lone rescuer responding to a child without signs of circulation, the task force continues to recommend provision of 1 minute of CPR before any other action, such as activating the emergency medical services (EMS) system or attaching the AED.
- Defibrillation is recommended for documented ventricular fibrillation (VF)/pulseless ventricular tachycardia (VT) (Class I).

B. ILCOR Recommendations

ILCOR recently examined (October 2002) the literature regarding the use of AEDs in children. The consensus was:

AEDs may be used for children 1 to 8 years of age with no signs of circulation. Ideally the device should deliver a pediatric dose. The arrhythmia detection algorithm used in the device should demonstrate high specificity for pediatric shockable rhythms, i.e., the device will not recommend a shock for non-shockable rhythms (Class IIb).

- Currently the evidence is insufficient to support a recommendation for or against the use of AEDs in children <1 year of age.
- For a lone rescuer responding to a child without signs of circulation, provision of 1 minute of CPR is still recommended before any other action such as activating EMS or attaching the AED.
- Defibrillation is recommended for documented VF/pulseless VT (Class I).

C. Limitations

One important limitation that arose during task force deliberations on this topic was the lack of data on clinical use of newly developed pediatric pad/cable systems that reduce the energy delivered by AEDs designed for use in the adult. This was especially problematic when discussing the risks and benefits of use of AEDs in very young infants. Relevant points of discussion included the following:

- The experimental data in the Atkinson study³⁸ examining sensitivity and specificity included infants, but the sample size diminished with decreasing age, and thus there is less confidence in the data from that study analyzing sensitivity/specificity in the youngest patients.
- Very small infants might receive doses demonstrated to cause myocardial damage in animal studies.
- The incidence of shockable rhythms as a clinical cause of unresponsiveness in young infants is lower than in older children.

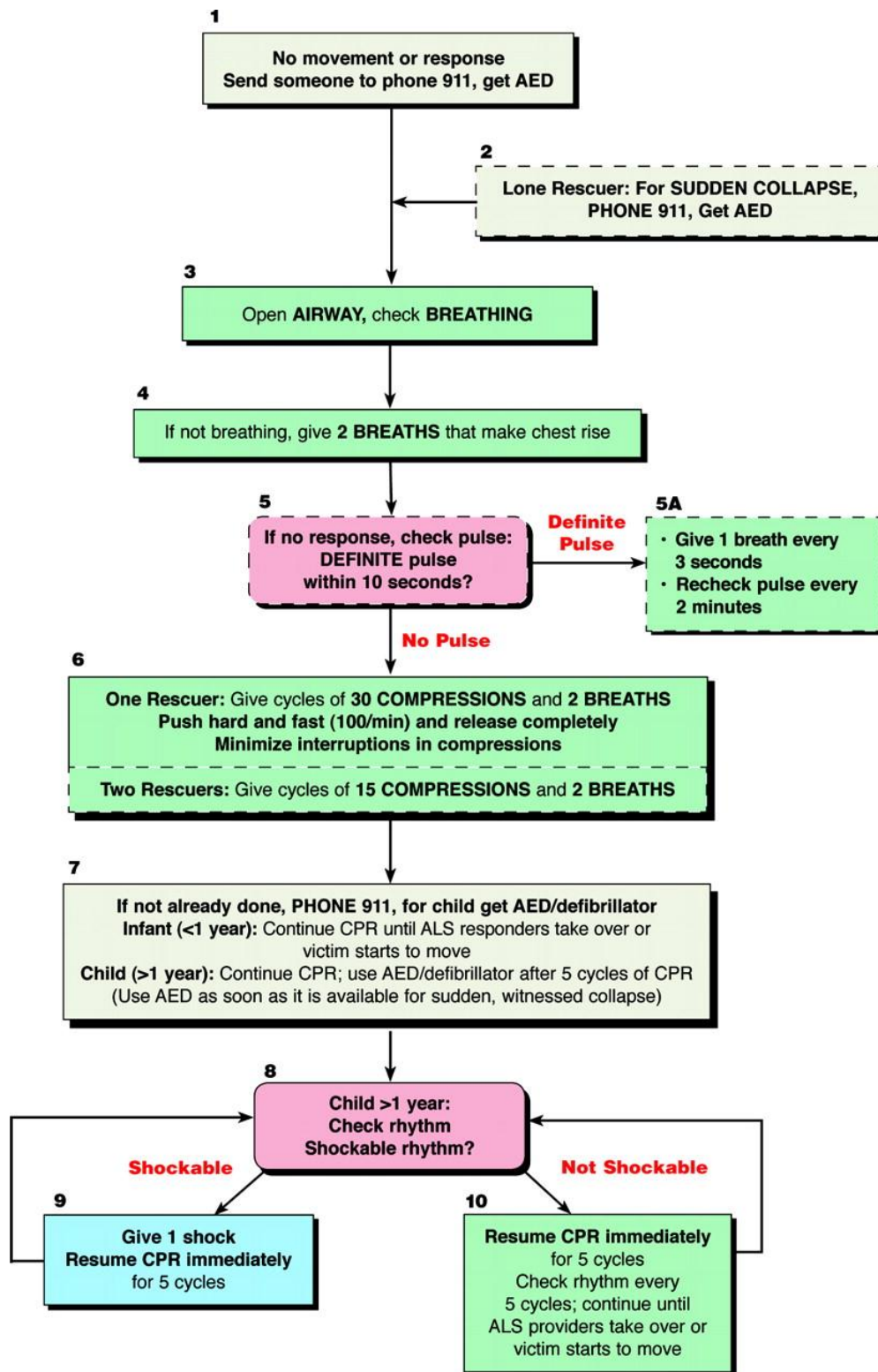
The last 2 points suggest that the number needed to harm and the number needed to treat would move in unfavorable directions with decreasing age, and thus there is consensus in the task force that the recommendations for very young infants be more conservative. The task force recognized that there were insufficient clinical data to determine the best appropriate lower age (the age at which the number needed to harm exceeds number needed to treat). Therefore, a pragmatic decision was made to limit the recommendation to children 1 to 8 years of age because many resuscitation councils use 1 year as the transition from infant to child CPR. Linking the recommendation to 1 year of age will facilitate training and retention.

Until clinical data from pediatric AED use becomes available, the task force recommends that institutions that routinely care for children at risk for arrhythmias and cardiac arrest (e.g., in-hospital settings) should continue to use defibrillators capable of energy adjustment for weight-based doses.

Because there is insufficient evidence to determine the best placement of AED pads (i.e., anterior/posterior versus sternal/apical), the task force has not recommended a preferred position for pad placement.

This data appeared in *Circulation*. 2003;107:3250. The original article may be found at <http://circ.ahajournals.org/cgi/content/full/107/25/3250>. All information has been reprinted with permission from Lippincott, Williams & Wilkins

D. Pediatric BLS Algorithm



29. Pediatric Altered Mental Status / Hypoglycemia / Coma

1. Provide Primary Pediatric Assessment and Care
2. Consider/investigate etiology (trauma, hypoglycemia, overdose, seizure, hypoxemia, etc.)
3. Request Paramedic Intercept
4. Treat according to appropriate protocol
5. Support airway per Pediatric Airway Management Guideline
- 6. If:**
 - a. Blood Glucose <60 mg/dl,
 - b. **or** The patient is a known diabetic and the blood glucose reading is unobtainable,
 - c. **or** The patient has a history consistent with hypoglycemia,
 - d. **And** the patient's gag reflex is intact,**then** administer 1 tube (15 g) oral glucose PO

Establish On Line Medical Oversight

Possible Physician orders:

1. Transport/destination decision

30. Pediatric Seizures/Status Epilepticus

A. Treatment Considerations

Initiate treatment based on history and clinical presentation. It is **essential** to make the distinction between **focal motor, general motor seizures**, and **status epilepticus**.

Most seizures do not require emergent intervention.

1. Attempt to determine the etiology i.e. whether the patient has a history of diabetes, seizure disorder, narcotic use, head trauma, poisoning or fever.
2. **If** post-traumatic; **then** transport to an appropriate facility with in-line cervical and full spinal immobilization as appropriate while maintaining airway.
3. Provide Primary Pediatric Assessment and Care.
4. Consider hypoglycemia (check blood glucose level).

IF THE SEIZURE PERSISTS BEYOND 10 MINUTES FROM ONSET CONTINUE WITH THE FOLLOWING:

B. Status epilepticus

1. Provide Primary Pediatric Assessment and Care
2. Request Paramedic Intercept
3. Maintain airway and ventilation
4. Establish On Line Medical Oversight
Possible Physician orders: Transport/Destination decision

NOTE: Continuous assessment of respiratory status is critical as respiratory arrest can occur with use of these medications.

31. Pediatric Trauma Patient

A. Pediatric Patient Triage Protocol*

When transport to a Level I or II Trauma facility is indicated (see below), but the ground transport time to that hospital is judged to be greater than twenty (20) minutes, determination of destination hospital shall be in accordance with On-Line Medical Oversight.

1. If any one or more of the 9 conditions immediately below exist, then take the patient to a Level I or II Trauma center.

Pediatric logic reformatted. It is the same as adult logic on page 52, according to original protocols.

Assess the vital signs and level of consciousness:

1. Glasgow Coma Scale <= 12
2. Systolic blood pressure < 90
3. Respiratory rate <10
4. Respiratory rate >29

Assess anatomy of injury

1. Gunshot wound to chest, head, neck, abdomen, groin
2. Third degree burns >15% BSA or third degree burns of face or airway involvement
3. Evidence of spinal cord injury
4. Amputation other than digits
5. Two or more obvious proximal long bone fractures

2. If any one or more of the 10 conditions immediately below exist then Call Medical Control for direction.

Assess mechanism of injury and other factors:

1. Mechanism of injury:
 - a. Falls >20 feet
 - b. Apparent high speed impact
 - c. Ejection of patient from vehicle
 - d. Death of same car occupant
 - e. Pedestrian hit by car >20MPH
 - f. Rollover
 - g. Significant vehicle deformity- especially steering wheel
2. Other factors:
 - a. Age<5 or >55
 - b. Known cardiac disease or respiratory distress
 - c. Penetrating injury to thorax, abdomen, neck or groin other than gunshot wounds

3. Otherwise (i.e.:none of the conditions above exist): evaluate as per usual protocols

WHEN IN DOUBT, CONSULT WITH MEDICAL CONTROL

Severely injured patients<13 years should be taken to a Level I or II facility with pediatric resources including pediatric ICU.

All EMS providers transporting trauma patients to hospitals shall provide receiving hospital with a complete OEMS approved patient care ***form prior to departing from the hospital.***

* State of Connecticut Regulation of Department of Public Health and Addiction Services Concerning Statewide Trauma System: Sections 19a-177-5.

B. Airway and Cervical Spine Control

1. Maintain in-line cervical immobilization. Note: Children < 8yrs of age have larger occiputs and therefore require elevation of the upper torso to achieve appropriate in-line cervical spine immobilization.
2. Manual
 - a. Chin Lift
 - b. Jaw Thrust
3. Mechanical
 - a. Suction
 - b. Oropharyngeal Airway
 - c. Nasopharyngeal Airway
 - d. Pocket Mask

Hypoxia is common in the trauma patient and correcting it is of the highest priority. A spinal injury may be present and the airway should be managed as if C-spine instability exists. Concern about a spinal injury must not delay institution of adequate ventilation and oxygenation. The neck should be maintained in a neutral position.

C. Breathing

Note the degree of respiratory distress: increased respiratory rate, skin color change, accessory muscle usage or noisy respirations.

1. Ventilation
 - a. Mouth to mask
 - b. Bag-valve-mask
2. Age specific rates:
 - a. <3yrs 30/min
 - b. 3-6yrs 25/min
 - c. >6yrs 20/min
3. Flail Chest
 - a. Airway management
4. Open Pneumothorax
 - a. Partially occlusive dressing (3-sided)
 - b. Assist ventilations as needed with supplemental O₂
5. Tension Pneumothorax
 - a. Support Ventilation

D. Circulation and Bleeding Control

1. Evaluate
 - a. Pulse
 - i. Rate
 - ii. Strength
 - iii. Location
 - b. Skin
 - i. Color
 - ii. Moisture
 - iii. Temperature
2. Cardiac compressions as indicated
3. Hemorrhage control
 - a. Direct pressure on wound and/or pack wound with sterile gauze
 - b. Pressure points (usually not required)
 - c. Tourniquet (seldom, if ever, indicated)
 - d. Traction splint

Pale skin color and pulse characteristics are accurate parameters used in assessing the status of tissue perfusion. Blood pressure is obtained later in the patient's assessment. Hemorrhage control in the primary survey is used only for massive bleeding. Minor bleeding takes a lesser priority. For patients with an unstable femur fracture, application of a traction splint is the most important field technique for control of this type of hemorrhage.

E. Disability

Glasgow Coma Scale

	CHILD	INFANT
Eye Opening	4 - opens spontaneously	4 - opens spontaneously
	3 - opens to speech	3 - opens to speech
	2 - opens to pain	2 - opens to pain
	1 - none	1 - none
Verbal Response	5 - oriented	5 - coos and babbles
	4 - confused	4 - irritable cry
	3 - inappropriate words	3 - cries in pain
	2 - incomprehensible words	2 - moans in pain
	1 - none	1 - none
Motor response	6 - obeys commands	6 - spontaneous movement
	5 - localizes pain	5 - withdraws to touch
	4 - withdrawal to pain	4 - withdraws to pain
	3 - flexion (pain)	3 - flexion (pain)
	2 - extension (pain)	2 - extension (pain)
	1 - none	1 - none

Changes in neurologic status can be of significance to the trauma surgeon or to the neurosurgeon. Significant alteration can change the outcome for the patient. GCS <9 consider advanced airway management.

F. Exposure of the body for examination

It may be necessary to partially or completely expose the body to control hemorrhage and perform lifesaving procedures. It is important to consider modesty and to respect the individual's needs. Nothing should be done to delay transport of the critically injured patient.

G. Resuscitation

1. Supplemental oxygen should be delivered @100% for all multisystem trauma patients.
2. Request Paramedic Intercept
3. Blood pressure should be monitored
 - a. systolic/diastolic
 - b. pulse pressure

H. Secondary Survey

A systematic evaluation of the patient beginning at the head and proceeding to the neck, thorax, abdomen, and extremities should be completed. Unnecessary delay in order to carry out diagnostic procedures that do not produce information concerning direct treatment in the pre-hospital phase should not be attempted. Rapidly identify those patients who, because of the critical nature of their situation, require rapid transport to an appropriate facility. These patients should be stabilized and transported immediately.

A. Head

1. Airway
 - a. reevaluate
 - b. correct problems
2. Open Wounds
 - a. control hemorrhage with direct pressure
 - b. apply clean dressings to all wounds
3. Eyes
 - a. protect from further injury
 - b. irrigate to remove contaminants and debris)
 - c. do not remove foreign bodies
4. Nose and ears
 - a. pre-hospital evaluation for fluid (blood, CSF)
 - b. treatment usually not required

Most injuries to the face and head require hospital treatment - therefore delay in evaluation other than hemorrhage control is usually not necessary. Lacerations of the scalp may have a fracture beneath, therefore, unnecessary pressure is to be avoided. Use only enough pressure to control hemorrhage. Transportation to the hospital should not be delayed other than to correct life threatening airway problems.

B. Neck

1. Spinal immobilization; indications
 - a. any blunt injury above the clavicle
 - b. unconscious patient
 - c. multiple trauma
 - d. high speed crash
 - e. neck pain
 - f. complaints of extremity numbness/tingling
 - g. gunshot wound involving the torso

NOTE: For small children, an appropriate size collar may not be available. In the event that collars available are too large, maintain cervical spine immobilization with an appropriate pediatric immobilization board with head immobilizers or an appropriately padded KED may be employed according to PEPP Guidelines.

2. Wounds
 - a. leave foreign bodies in place, but stabilized
 - b. use direct pressure to control hemorrhage

C. Thorax

1. Ventilation
 - a. Assure adequacy of ventilation
 - b. Reevaluate injuries identified and managed in the primary survey
2. Chest wall injuries
 - a. Simple isolated rib fractures, no pre-hospital management necessary
 - b. Flail chest
 - i. airway/ventilation management as necessary
 - c. Hemothorax
 - i. fluid replacement to treat shock
 - ii. ventilatory support as necessary
 - d. Open pneumothorax
 - i. three-sided dressing
 - e. Tension pneumothorax
 - i. Ventilatory support as necessary

D. Abdomen

1. Evisceration
 - a. Clean, moist dressing
2. Foreign body
 - a. Do not remove except by direct order of medical oversight
 - b. Stabilize foreign body to prevent further injury during transport
3. Intra-abdominal hemorrhage
 - a. Treat for shock
4. Pelvic fracture
 - a. Long backboard immobilization

E. Extremities

1. Examine for swelling and deformity
2. Check for neurovascular function
3. Apply direct pressure to control bleeding
4. Splint-reassess neurovascular status after splinting

F. Neurologic - Head, spinal cord, and peripheral nerve trauma

1. Suspect associated C-spine injury and treat accordingly
2. All unconscious patients should be considered to have an inadequate respiratory status and should have aggressive airway management with C-spine control.
3. If GCS <9 consider ventilation with B-V-M. Intubation (refer to airway algorithm)
4. Serial GCS determinations at least every 10 minutes
5. Pupillary evaluation
 - a. Reactivity
 - b. Equality
 - c. Size
6. Reassess motor and sensory function
7. If shock is present, look for other causes of blood loss, as brain injury alone is usually not the cause.

I. Transportation

It is impossible to fully stabilize the unstable patient in the pre-hospital setting. There must be a balance of lifesaving skills with minimizing scene time (<10 minutes) and rapid transport in order to reduce the time from injury to definitive surgical treatment.

Early “trauma” notification to the receiving hospital is essential to ensure the immediate availability of an appropriate in-hospital response. **See Adult Trauma Alert Protocol for patching guidelines.**

Committee on Trauma; American College of Surgeons; Resources for Optimal Care of the Injured Patient.

32. Pediatric Burn Patient

A. General Guidelines

The approach to the pediatric burn patient should be similar in your approach to any burn patient, assuring your safety, the patient's safety, stopping the burning process, and airway management all remain paramount.

1. Provide Primary Pediatric Assessment and Care
2. Request Paramedic Intercept

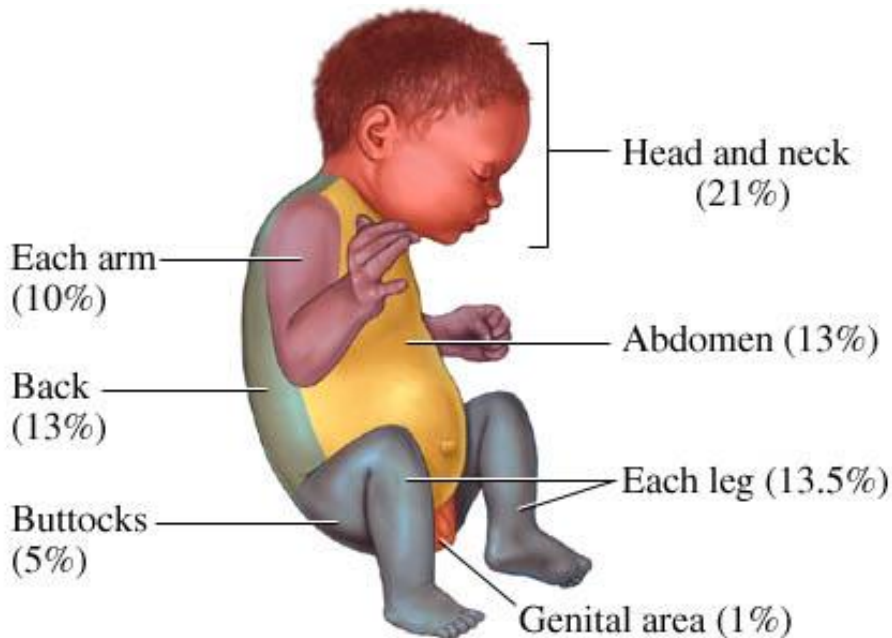
Establish On Line Medical Oversight

Possible Physician orders: Destination

B. Special Considerations:

The anatomical map of the pediatric patient changes with age, if in doubt as to the Body Surface Area involved in the burn see the "Rule of Nines."

Be suspicious for burn patterns that may indicate child abuse, i.e. "stocking" or "glove" pattern burns.



33. Pharmacology

Aspirin

Class: Antiplatelet
Action: Inhibitor of platelet aggregation
Effects: Decrease clotting time
Indication: Chest pain of cardiac origin
Dose: 325 mg tab or 4-baby aspirin (81mg per tab)
Route: PO
Side Effects: None with field use
Contraindication: Sensitivity to ASA, Ulcerative disease, and patient already taking coumadin.
Note: GI upset is not a true allergy.

Charcoal

Class: Absorbent
Action: Absorbs many drugs and poisons in the GI tract
Indication: Toxic ingestions - not caustics or pure petroleums
Contraindication: None for emergency use
Dose: 30-50 g
Pedi dose: 1-2 g/kg
Route: PO - usually in liquid form to drink

Oral Glucose

Class: Carbohydrate
Action: Raises the blood sugar
Indication: Diabetic patients with low blood glucose level
Contraindication: Compromised gag reflex
Dose: 15 g/tube, may repeat
Route: PO – Gel form

Epinephrine 1:1,000 EPI-PEN and EPI-PEN Jr.

Class: Natural catecholamine, adrenergic
Action: Stimulates both alpha (α) and beta (β_1 and β_2) receptors.
Indication: Severe anaphylaxis with shock
Contraindication: None in presence of anaphylaxis
Side effects: Tachydysrhythmias, Hypertension
May induce early labor in pregnancy
Headache, nervousness, decreased level of consciousness
Dose: 0.3mg IM Auto-inject
Route: IM
Pedi Dose: 0.15mg IM Auto-inject

Nitroglycerine (Patient prescription only)

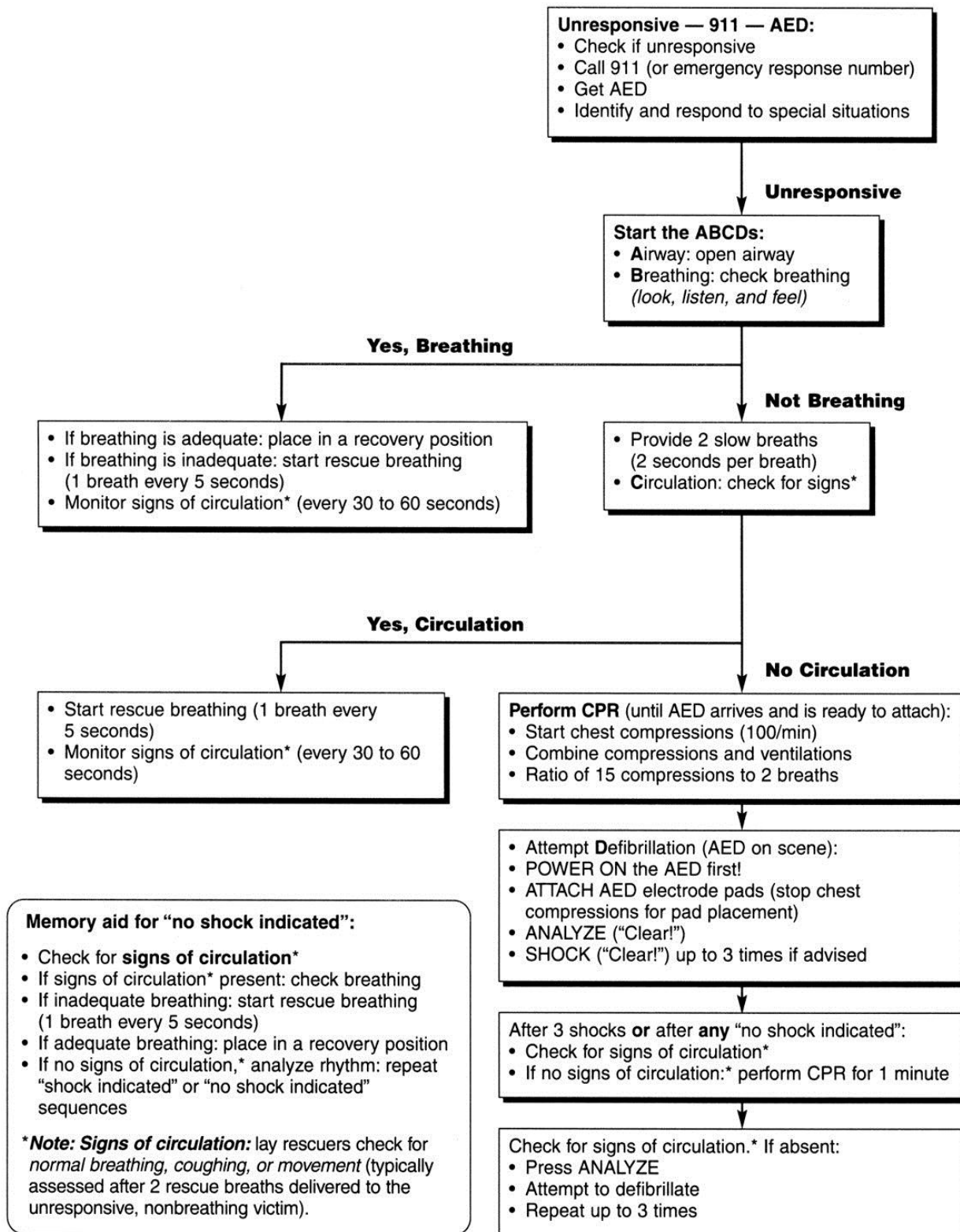
Class:	Vascular smooth muscle relaxant
Action:	Systemic vasodilator which decreases myocardial workload and oxygen consumption.
Indication:	Chest pain with prescribed nitroglycerine
Contraindication:	Hypotension
Side effect:	Hypotension Headache and facial flushing Dizziness, decreased LOC
Dose:	0.4mg may repeat q 3-5 minutes, titrate to pain, effect and blood pressure
Route:	Sublingual - spray or tablet

Appendix I: AHA Guidelines 2000

A. Introduction

The following guidelines are included for corps and providers who have not yet refreshed under the new guidelines 2005 curriculum. To use the new guidelines, the equipment being operated must be guidelines 2000 compliant, and the providers must be trained to the guidelines 2005 standard. If the equipment being used is still programmed to the guidelines 2000 standard, please follow the below algorithms for usage. Please remember that there are no human trials or data to correlate one shock sequence AED and CPR at this time, therefore, there is no mandate from the ECC or the training community to incur the expense of upgrading all AEDs. As equipment is upgraded and / or replaced, please be sure to have it programmed to the Guidelines 2005 standard. We estimate that all providers will be trained in the new guidelines by approximately January 2008. During this transition time, it is imperative to have good communication between crew members working for the cardiac arrest victim. It is expected that personnel will work cooperatively during this time. Failure to do so may result in poor patient care, will be viewed as a breach in protocol, and will be investigated as such.

B. Flowchart of Guidelines 2000



C. Cardiac Arrest Management / AED ECC Guidelines 2000

ASSESSMENT		
Takes or verbalizes body substance isolation precautions	Yes	No
Briefly questions rescuer about arrest events	Yes	No
Directs rescuer to stop CPR	Yes	No
Verifies absence of spontaneous pulse (examiner states "no pulse")	Yes	No
Turns on defibrillator power	Yes	No
Attaches defibrillator electrodes to patient	Yes	No
Directs the stopping of CPR	Yes	No
Ensures all individuals are standing clear of the patient	Yes	No
Initiates analysis of the rhythm	Yes	No
Delivers shock when indicated (up to 3 successive shocks)	Yes	No
Verifies absence of spontaneous pulse (examiner states "no pulse")	Yes	No
Transition		
Directs the resumption of CPR	Yes	No
Gathers additional information of arrest event	Yes	No
Confirms effectiveness of CPR (ventilations and compressions)	Yes	No
INTEGRATION		
Directs insertion of a simple airway adjunct	Yes	No
Directs ventilation of patient	Yes	No
Assures high concentration of oxygen connected to the ventilatory adjunct	Yes	No
Assures CPR continues without unnecessary or prolonged interruption	Yes	No
Re-evaluates patient in approximately one minute	Yes	No
Repeats defibrillator sequence	Yes	No
TRANSPORTATION		
Verbalizes transportation	Yes	No

CRITICAL CRITERIA

- Did not take or verbalize body substance isolation precautions
- Did not evaluate the need for use of the AED
- Did not direct initiation / resumption of ventilation / compressions at appropriate times
- Did not assure all individuals were clear of patient before delivering each shock
- Did not operate the AED properly (inability to deliver shock)

Student's Name:
 Evaluator's Name:

Service:
 Signature:

Date:

D. AED QA/PI Form ECC Guidelines 2000

EMS Service Responding		EMS Service Case Number		Date of Event	
Patient's First Name			Patient's Last Name		
Patient's Home Address					
Receiving Facility		Patient's Sex <input type="checkbox"/> Male <input type="checkbox"/> Female		Age	
Patient's Race <input type="checkbox"/> White <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Hispanic <input type="checkbox"/> Native American <input type="checkbox"/> Other: _____					
Incident Location <input type="checkbox"/> Home <input type="checkbox"/> Work <input type="checkbox"/> Public Place <input type="checkbox"/> Car <input type="checkbox"/> Sports <input type="checkbox"/> Other: _____				Cause of Arrest <input type="checkbox"/> Cardiac <input type="checkbox"/> Trauma <input type="checkbox"/> Other: _____	
First Responder	EMS Personnel	EMS Personnel	EMS Personnel	ALS Personnel	ALS Personnel
Patient's signs & symptoms prior to Cardiac Arrest <input type="checkbox"/> Unknown					
Duration of Patient's signs & symptoms prior to Cardiac Arrest <input type="checkbox"/> Unknown					
Patient History (check all appropriate histories) CVA <input type="checkbox"/> Htn <input type="checkbox"/> Cardiac Hx <input type="checkbox"/> Seizure <input type="checkbox"/> Asthma <input type="checkbox"/> Cancer <input type="checkbox"/> Angina <input type="checkbox"/> COPD <input type="checkbox"/> AICD <input type="checkbox"/> Pacemaker <input type="checkbox"/> AMI <input type="checkbox"/> Liver <input type="checkbox"/>					
Witnessed Arrest? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Were pulses regained? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Were respirations regained? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.	
Pt regains consciousness? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Did the Medic arrive? <input type="checkbox"/> Yes <input type="checkbox"/> No		Was the pt admitted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.	
Was the pt discharged? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Positive Cardiac History? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unk.		Private MD:	
Treating MD:		EMD <input type="checkbox"/> YES <input type="checkbox"/> NO		Bystander CPR <input type="checkbox"/> YES <input type="checkbox"/> NO BY WHOM:	
Time of Arrest		Post Resuscitation Vitals			
Time Of Call		Time : BP: /		Pulse: Resp:	
Time R1 Arrival		Time : BP: /		Pulse: Resp:	
Time R2/R4 Arrival		Resuscitation			
Time CPR Initiated		<input type="checkbox"/> In Field R1		<input type="checkbox"/> In Field R5	
Time De-fib connected		<input type="checkbox"/> In Field R2		<input type="checkbox"/> In Hospital	
Time Of De-fib		Total Shocks -			
Time Of De-fib		Comments / Deviations from Protocol:			
Time of De-fib					
Time CPR Re-Started					
Time Paramedic Intercepted					
Time of Transport to ER		Discharge Condition:			
Arrival time at ER		<input type="checkbox"/> Normal		<input type="checkbox"/> Non-Functional	
		<input type="checkbox"/> Functional / Impaired		<input type="checkbox"/> Morgue	

Appendix II: AHA Guidelines 2010

A. Introduction

All material (usually entire sentences) in this appendix has been taken from the three documents listed in section **F References** of this appendix. The second and third documents are free and can be downloaded as PDF files. But, to me, these documents seem to be very wordy and repetitious. Consequently, what you find below is material from the relevant pages of the Handbook (document #1) and some comments from the second and third documents.

New in the 2010 Guidelines

The 2010 Guidelines specify:

1. A change in the BLS sequence of steps **from A-B-C** (Airway, Breathing, Chest compressions) **to C-A-B** (Chest compressions, Airway, Breathing) for adults, children, and infants (excluding the newly born; see Neonatal Resuscitation section). **Why:**
 - In the A-B-C sequence, chest compressions are often delayed while the responder opens the airway to give mouth-to-mouth breaths, retrieves a barrier device, or gathers and assembles ventilation equipment. By changing the sequence to C-A-B, chest compressions will be initiated sooner and the delay in ventilation should be minimal (ie, only the time required to deliver the first cycle of 30 chest compressions, or approximately 18 seconds).
 - Most victims of out-of-hospital cardiac arrest do not receive any bystander CPR. There are probably many reasons for this, but one impediment may be the A-B-C sequence, which starts with the procedures that rescuers find most difficult, namely, opening the airway and delivering breaths. Starting with chest compressions might encourage more rescuers to begin CPR.
2. **Different recommendations** for trained versus untrained rescuers.
 - **Why: Hands-Only (compression-only) CPR is easier for an untrained rescuer to perform** and can be more readily guided by dispatchers over the telephone.
 - However, for the **trained lay rescuer (an EMT)** who is able, the recommendation remains for the rescuer to **perform both compressions and ventilations**.
3. A **compression rate** of **at least** 100/min (a change from “**approximately**” 100/min).
 - Note this rate is equivalent to a compression rate of 5 compressions every 3 seconds
4. Deeper compression depths:
 - Adults – **at least** 2 inches
 - Children - 2 inches
 - Infants – approximately 1.5 inches
5. Allowing for **complete chest recoil** after each compression
6. Minimizing interruptions in chest compressions
7. Avoiding excessive ventilation

There has **been no change** in the recommendation for a compression-to-ventilation ratio of 30:2 for single rescuers of adults, children, and infants (excluding newly born infants). The Guidelines continue to recommend that rescue breaths be given in approximately 1 second.

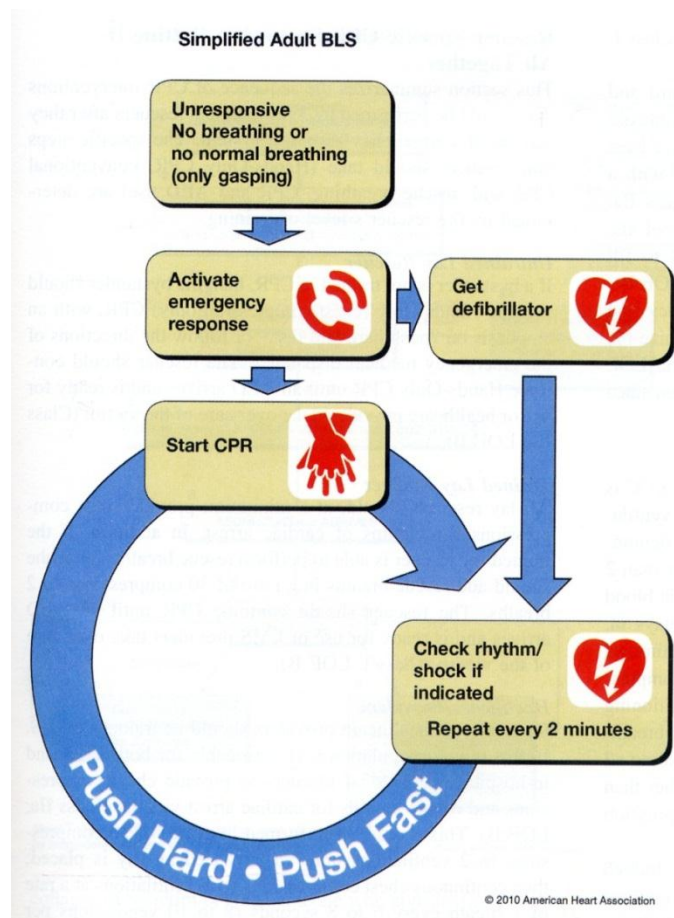
Once an **advanced airway** is in place, chest compressions can be continuous (at a rate of at least 100/min) and no longer cycled with ventilations. Rescue breaths can then be provided at about 1 breath every 6 to 8 seconds (about 8 to 10 breaths per minute). Excessive ventilation should be avoided.

Healthcare providers are again encouraged to tailor rescue actions to the most likely cause of arrest. For example, if a lone healthcare provider witnesses a victim suddenly collapse, the provider may assume that the victim has had a primary cardiac arrest with a shockable rhythm and should immediately activate the emergency response system, retrieve an AED, and return to the victim to provide CPR and use the AED. But for a presumed victim of asphyxia arrest such as drowning, the priority would be to provide chest compressions with rescue breathing for about 5 cycles (approximately 2 minutes) before activating the emergency response system.

B. Lay Rescuer - Adult CPR

Key issues and major changes for the 2010 AHA Guidelines for CPR and ECC recommendations for lay rescuer adult CPR are the following:

- The simplified universal adult BLS algorithm has been created – see figure on right.
- Immediate recognition and activation of the emergency response system is based on signs of unresponsiveness. Initiate CPR if the victim is unresponsive with no breathing or no normal breathing (ie, victim is only gasping).
- “Look, listen, and feel for breathing” **has been removed** from the algorithm.
- Emphasis is on high-quality CPR (with chest compressions of adequate rate and depth, allowing complete chest recoil after each compression, minimizing interruptions in compressions, and avoiding excessive ventilation).
- A change in the sequence for the lone rescuer to initiate chest compressions before giving rescue breaths (C-A-B). The lone rescuer should begin CPR with 30 compressions rather than 2 ventilations to reduce delay to first compression.
- Compression rate should be **at least** 100/min (rather than “**approximately**” 100/min).
- Compression depth for adults has been changed from the range of 1½ to 2 inches to **at least** 2 inches (5 cm).



These changes are designed to simplify lay rescuer training and to continue to emphasize the need to provide early chest compressions for the victim of a sudden cardiac arrest.

2010 (New): If a bystander is **not trained in CPR**, the bystander should provide Hands-Only (compression-only) CPR for the adult victim who suddenly collapses, with an emphasis to “push hard and fast” on the center of the chest, or follow the directions of the EMS dispatcher. The rescuer should continue Hands-Only CPR until an AED arrives and is ready for use or EMS providers or other responders take over care of the victim. All trained lay rescuers should, at a minimum, provide chest compressions for victims of cardiac arrest. In addition, **if the trained lay rescuer is able to perform rescue breaths**, compressions and breaths should be provided in a ratio of 30 compressions to 2 breaths. The rescuer should continue CPR until an AED arrives and is ready for use or EMS providers take over care of the victim.

C. Health Care Provided (EMT) BLS for Adults

Key issues and major changes in the 2010 Guidelines recommendations for healthcare providers include the following:

- Because cardiac arrest victims may present with a short period of seizure-like activity or agonal gasps that may confuse potential rescuers, dispatchers should be specifically trained to identify these presentations of cardiac arrest to improve cardiac arrest recognition.

- When checking for responsiveness, the healthcare provider briefly checks for no breathing or no normal breathing (ie, no breathing or only gasping). The provider then activates the emergency response system and retrieves the AED (or sends someone to do so). The healthcare provider should not spend more than 10 seconds checking for a pulse, and if a pulse is not definitely felt within 10 seconds, should begin CPR and use the AED when available.

- “Look, listen, and feel for breathing” has been removed from the algorithm.
- Increased emphasis has been placed on high-quality CPR (compressions of adequate rate and depth, allowing complete chest recoil between compressions, minimizing interruptions in compressions, and avoiding excessive ventilation).

- Use of cricoid pressure during ventilations is generally not recommended.

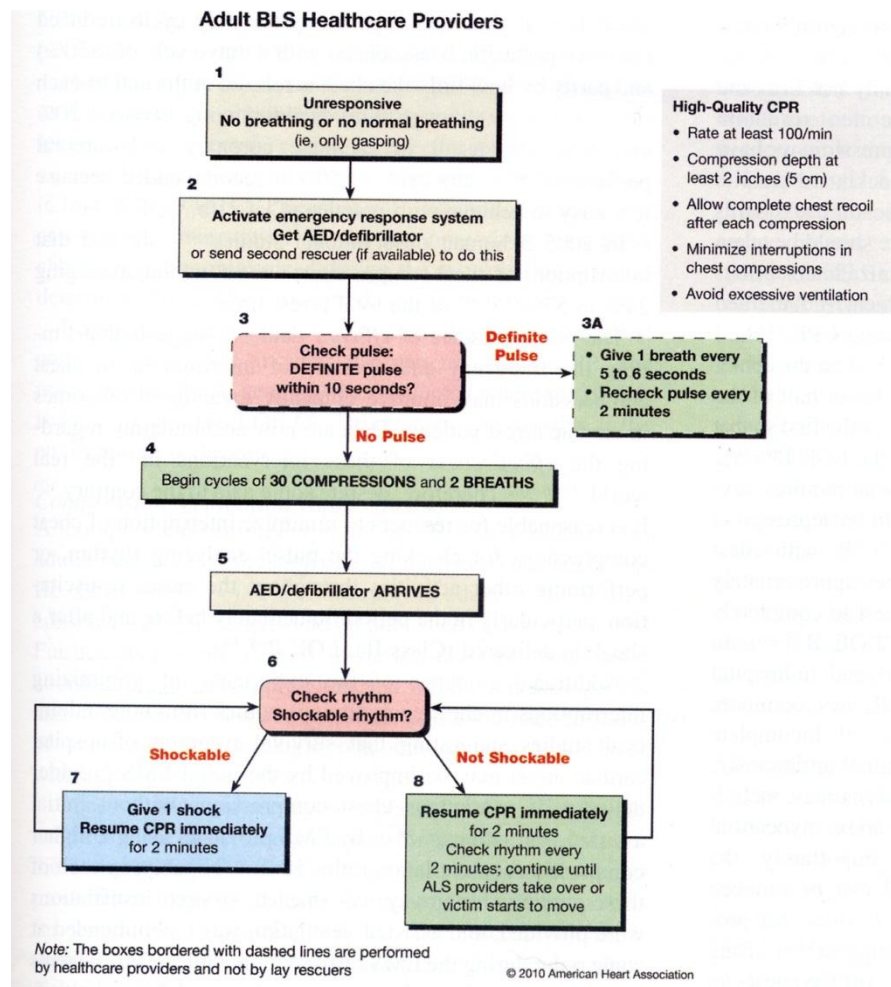
- Rescuers should initiate chest compressions before giving rescue breaths (**C-A-B rather than A-B-C**). Beginning CPR with 30 compressions rather than 2 ventilations leads to a shorter delay to first compression.

- Compression rate is modified to **at least** 100/min from **approximately** 100/min.

- Compression depth for adults has been slightly altered to at least 2 inches (about 5 cm) from the previous recommended range of about 1½ to 2 inches (4 to 5 cm).

- Continued emphasis has been placed on the need to reduce the time between the last compression and shock delivery and the time between shock delivery and resumption of compressions immediately after shock delivery.

- There is an increased focus on using a team approach during CPR.



D. Pediatric Basic Life Support

Vital Signs in Children

Age	Heart Rate (per minute)*		Sleeping Rate
	Awake Rate	Mean	
Newborn to 3 months	85 to 205	140	80 to 160
3 months to 2 years	100 to 190	130	75 to 160
2 to 10 years	60 to 140	80	60 to 90
> 10 years	60 to 100	75	50 to 90

Age	Respiratory Rate (breath/min)	Typical ** systolic BP
Newborn (0 – 1 month)	30 to 60	50 to 70
Infant (1 – 12 months)	30 to 60	70 to 91
Toddler (1 – 3 years)	24 to 40	91 to 96
Preschooler (3 – 6 years)	22 to 34	96 to 102
School-aged child (6 – 12 yrs)	18 to 30	102 to 110
Adolescent (12 – 18 yrs)	12 to 16	90 to 110

* From “2010 Guidelines Handbook”

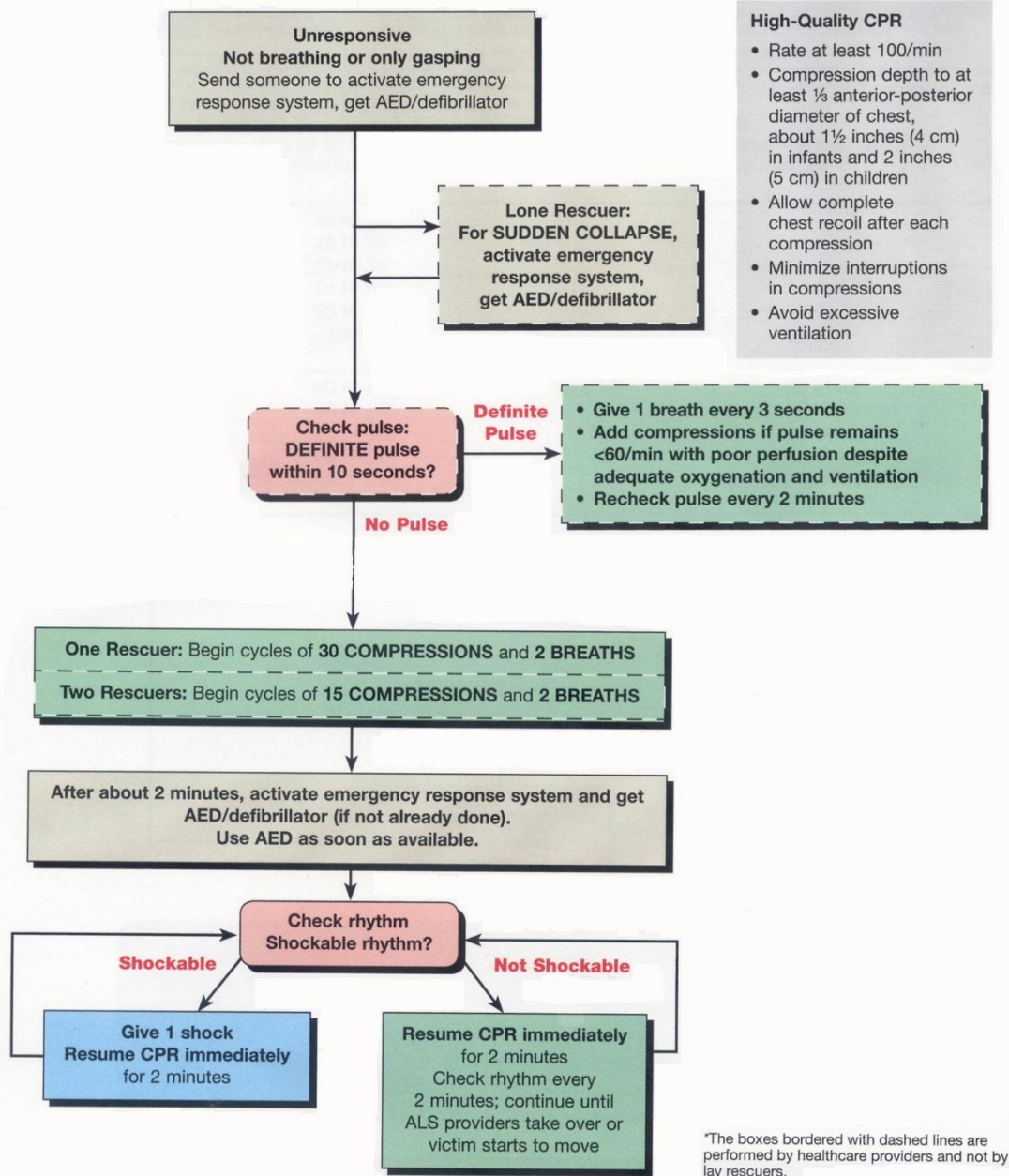
** From “2010 Guidelines Handbook” and “AAOS Book” 9th Edition

Conditions Indicating Need for Rapid Assessment and Potential Cardiopulmonary Support

- Irregular respirations or rate >60 breaths/min
- Heart rate ranges (particularly if associated with poor perfusion)
 - Child <2 years of age: <80/min or >180/min
 - Child >2 years of age: <60/min or >160/min
- Poor perfusion, with weak or absent distal pulses
- Increased work of breathing (retractions, nasal flaring, grunting)
- Cyanosis or a decrease in oxyhemoglobin saturation
- Altered level of consciousness (unusual irritability or lethargy or failure to respond to parents or painful procedures)
- Seizures
- Fever with petechiae (a small (1-2mm) red or purple spot on the body, caused by a minor hemorrhage)
- Trauma
- Burns involving >10% of body surface area

Pediatric CPR

Pediatric BLS for Healthcare Providers Algorithm*



E. References

All material in this appendix has been taken from the three documents listed below. The documents (2) and (3) are PDF files that are on the web. They can be downloaded by clicking the links.

(1) 2010 Handbook of Emergency Cardiovascular Care for Healthcare Providers; ISBN 978-1-61669-000-7. Pages: 101. Expensive: \$25.00.

About 15 pages of this Handbook are relevant for EMTs. The remaining pages are meant for paramedics and emergency room health care providers.

(2) Highlights of the 2010 American Heart Association Guidelines of CPR and ECC - [link](#).

This is a 32-page PDF document that is a summary of document (3), below. It contains a rationale for steps outlined in the “Handbook.” The most relevant sections for EMTs are listed below.

• Major Issues Affecting All Rescuers	-	-	-	-	-	page 1 ff
• Lay Rescuer Adult CPR	-	-	-	-	-	page 3 ff
• Healthcare Provider BLS	-	-	-	-	-	page 5 ff
• Stroke	-	-	-	-	-	page 18 ff
• Pediatric Basic Life Support	-	-	-	-	-	page 18 ff
• First Aid	-	-	-	-	-	pages 26 ff

(2) Circulation – Volume 122 – Issue 18 – Supplement 3 – November 2, 2010 - [link](#).

This journal article contains the actual guidelines in detail. A major feature of this publication is that it explains in depth the reasons behind the steps in the algorithms for CPR.

• Part 4	CPR Overview
• Part 5	Adult Basic Life Support
• Part 11	Adult Stroke
• Part 12	Cardiac Arrest in Special Situations
• Part 13	Pediatric Basic Life Support