

**New York State  
Department of Health  
Bureau of Emergency Medical Services**

**Statewide  
Basic Life Support  
Adult & Pediatric  
Treatment Protocols  
Certified First Responder**

**2003**

**UPDATED 7/2011**



## **Preface and Acknowledgments**

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The 2003 New York State (NYS) Statewide Basic Life Support Adult & Pediatric Treatment Protocols for the Certified First Responder (CFR) includes revisions to match the current New York State CFR course curricula. These 2003 statewide protocols also include de-emphasizing the use of CUPS. CUPS is no longer required to be taught in NYS Emergency Medical Services (EMS) Courses and is not tested in Practical Skills Examinations or State Written Certification Examinations.

We would like to acknowledge the members of the New York State EMS Council's Medical Standards Committee for the time and effort given to developing this set of protocols. In addition, we would like to recognize the efforts of the Regional Emergency Medical Advisory Committees (REMACS) for their input and review.

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# Introduction

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The 2003 NYS Statewide Basic Life Support Adult and Pediatric Treatment Protocols designed by the Bureau of Emergency Medical Services of the New York State Department of Health and the New York State Emergency Medical Services Council. These protocols have been reviewed and approved by the New York State Emergency Medical Advisory Committee (SEMAC) and the New York State Emergency Medical Services Council (SEMSCO). The protocols reflect the current minimally acceptable statewide treatment standards for adult and pediatric basic life support (BLS) used by the Certified First Responder (CFR).

These protocols are not intended to be absolute and ultimate treatment doctrines, but rather standards which are flexible to accommodate the complexity of the problems in patient management presented to Certified First Responders in the field. These protocols should be considered as a model or standard by which all patients should be treated. Since patients do not always fit into a "cook book" approach, these protocols are not a substitute for GOOD CLINICAL JUDGMENT, especially when a situation occurs which does not fit these standards.

This manual includes a protocol for the general approach to the prehospital management of a patient, which is applicable to CFRs, and BLS protocols for the management of specific conditions. These protocols apply to both adults and children. In several cases, protocols designed specifically for adults or children are included. These are identified as such in their titles.

Several assumptions have been made in developing the specific protocols. First, the CFR has followed the protocol outlining the general approach to the prehospital management of the patient, that both the subjective and objective patient information has been analyzed to arrive at an appropriate treatment plan. Secondly, specific treatment protocols are referred to once the patient's problem has been identified. Obviously, significant indirect (off-line) medical control has been assumed in the development of these protocols.

Regional EMS councils, regional emergency medical advisory committees (REMACs), course sponsor agencies, regional and local medical directors and squad training officers play an important part in the implementation of these protocols.

The goal of prehospital emergency medical care is to provide DEFINITIVE CARE for the patient as rapidly and safely as the situation indicates with no deterioration of his/her condition and, when possible, in an improved condition. BLS units shall deliver their patients who will benefit from ALS care to this higher level of care as soon as possible. This may be accomplished either by intercepting with an ALS unit or by transport to an appropriate hospital, which ever can be effected more quickly.

A system of ALS intercept (when available within a given area) shall be pre-arranged. Formal written agreements for the request of ALS shall be developed in advance by those agencies not able to provide ALS. ALS requests should be initiated as soon as possible at the dispatch level whenever indicated.

A request for ALS intercept shall occur as noted in specific treatment protocols. Initiation of patient transport shall not be delayed to await the arrival of an ALS unit, unless an on-line medical control physician otherwise directs.

# Table of Contents

<b>GENERAL APPROACH</b>	
General Approach to Prehospital Patient Management	GA – 1
<b>MEDICAL</b>	
Altered Mental Status (Non-Traumatic and without Respiratory or Cardiovascular Complications)	M – 1
Behavioral Emergencies	M – 2
Cold Emergencies	M – 3
Pediatric Respiratory Distress/Failure	M – 4
Heat Emergencies	M – 5
Adult Obstructed Airway	M – 6
Pediatric Obstructed Airway	M – 7
Adult Respiratory Arrest / Failure (Non-Traumatic)	M – 8
Pediatric Respiratory Arrest / Failure (Non-Traumatic)	M – 9
Adult and Pediatric Automated External Defibrillation (AED)	M – 10
Respiratory Distress (Shortness of Breath, Difficulty Breathing)	M – 11
Seizures	M – 12
<b>TRAUMA</b>	
Amputation	T – 1
Bleeding (External)	T – 2
Burns (Chemical)	T – 3
Burns (Thermal/Electrical)	T – 4
Musculoskeletal Trauma	T – 5
Adult Major Trauma (Including Traumatic Cardiac Arrest)	T – 6
Pediatric Major Trauma (Including Traumatic Cardiac Arrest)	T – 7
Suspected Head or Spinal Injuries (Not Meeting Major Trauma Criteria)	T – 8
<b>SPECIAL CONSIDERATIONS</b>	
Oxygen Administration	SC – 1
Hypoperfusion	SC – 2
Emergency Childbirth and Resuscitation/Stabilization of the Newborn	SC – 3
Refusing Medical Aid (RMA)	SC – 4
<b>SEMAC ADVISORIES and BUREAU OF EMS POLICIES</b>	
Emergency Care of Persons with Hemophilia	SA – 97-01
Biphasic Automated External Defibrillator	SA – 97-02
Hyperventilation in Severe Traumatic Brain Injury	SA – 97-03
AED for Pediatric Patients	SA – 02-02

# Table of Contents

## SEMAC ADVISORIES and BUREAU OF EMS POLICIES

### ARE AVAILABLE AT:

<http://www.health.ny.gov/professionals/ems/policy/policy.htm>

Patient Carrying Devices	PS – 88-01
Tuberculosis	PS – 92-02
EMS Mutual Aid	PS – 95-04
Responsibilities of EMS Providers & Coordination of EMS Resources	PS – 98-05
ALS Intercepts	PS – 98-09
Exposure to Blood and/or Body Fluids	PS – 99-06
Patient Care and Consent for Minors	PS – 99-09
Use of Epinephrine Auto Injectors by EMS Agencies	PS – 00-01
Transition of Care	PS – 00-03
Storage and Integrity of Prehospital Medications and Intravenous Fluids	PS – 00-14
Storage and Integrity of Prehospital Medications by EMT-Bs	PS – 00-15
Abandoned Infant Protection Act	PS – 01-05
Requirement to Report Instances of Suspected Child Abuse or Maltreatment	PS – 02-01
Prehospital Care Reports	PS – 02-05
Needlesticks and Sharps Injuries	PS – 02-09
Response Planning to a Suspected Biological Infectious Disease Incident	PS – 03-02
Instructions for completing a Version 5 NYS PCR	PS – 03-03
Chemical Terrorism Preparedness and Response Card	PS – 03-04
Mark 1 Kits	PS – 03-05
EMT-Basic Assisted Medications	PS – 04-07
Emergency Patient Destinations	PS – 06-01

### APPENDICIES

A – Pediatrics

B – New York State Designated Trauma Centers

# **General Approach**

# **General Approach to Prehospital Patient Management**

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## **I. Scene Size-Up**

- A. Assess the scene for safety.
- B. Use standard precautions and transmission based precautions for all patients.
- C. Note the number of patients, the mechanism(s) of injury, environmental hazards, etc.
- D. Request additional personnel (i.e. EMTs, AEMTs, police, firefighters, etc. as appropriate), ALS intercept, and/or additional equipment or resources if needed.
- E. Consider C-Spine stabilization.

**Note:**

**Check each patient for responsiveness, breathing, and pulse quickly while protecting the cervical spine.**

## **II. Initial Assessment**

### **A. General Impression**

- 1. Determine mechanism of injury, nature of illness and chief complaint.
- 2. Age and sex.
- 3. Find immediate life threatening conditions.

### **B. Mental Status – What is the patient’s level of consciousness?**

- 1. *Assess the patient’s level of consciousness as follows:*

**Alert – Patient is awake and alert.**

**Verbal – Patient responds to verbal stimuli.**

**Painful – Patient responds to pain.**

**Unresponsive – Patient does not respond to verbal or painful stimuli.**

- 2. *Establish patient’s orientation*

**Patient is oriented to:**

- 1. his/her name,
- 2. where he/she is, and
- 3. day of the week.

### **C. Airway, Breathing and Circulation**

**Airway – Identify and correct any existing or potential airway obstruction problems while protecting the cervical spine when indicated.**

## General Approach, continued

**Breathing** – Assess breathing, administer oxygen if necessary and consider positive pressure ventilations.

**Circulation** – Assess circulation and control life threatening hemorrhaging.

### III. **Identify Priority Patients:** Consider the following criteria for **High** priority patients

1. Poor general impression
2. Unresponsive patients
3. Responsive, not following commands
4. Difficulty breathing
5. Shock
6. Complicated childbirth
7. Chest pain
8. Uncontrolled bleeding
9. Severe pain
10. If utilizing CUPS scale – patients who are a C, U, or P

#### **Immediate Transport Decision**

**If the patient's condition is high priority notify responding EMS units immediately.**

**Request for an ALS unit should be made as soon as possible. ALS requests should ideally be initiated at the dispatch level.**

### IV. **Vital Signs:** Obtain and record the following on every patient initially, and repeat as often as the situation indicates.

1. **Respirations:** Rate and quality.
2. **Pulse:** Rate, quality, and regularity.
3. **Skin:** Color, temperature, moisture.

#### **Note:**

**Do not delay updating the responding EMS unit of a high priority patient to obtain the above information.**

## General Approach, continued

V. **Updating Responding EMS Units:** Update responding EMS unit/Ambulance with a brief radio report. Include, at a minimum, the following:

1. Age and sex
2. Chief complaint
3. Mental status/Responsiveness (AVPU)
4. Airway and breathing status
5. Circulation status
6. Identification of priority patients
7. Determine estimated time of arrival of additional EMS resources

VI. **Physical Examination:** Perform a physical examination on the patient to gather additional information.

1. Inspect and palpate for signs of injury using the mnemonic DOTS:
  - a. Deformities
  - b. Open injuries
  - c. Tenderness
  - d. Swelling
2. Briefly assess the following areas:
  - a. Head
  - b. Neck
  - c. Chest
  - d. Back
  - e. Abdomen
  - f. Pelvis
  - g. All four extremities

VII. **Obtain History:** Obtain the history from the patient and/or family members. The SAMPLE history may be completed prior to the physical exam for medical patients. Determine if the patient has a medical identification tag.

### **SAMPLE**

**Signs and Symptoms:** “Why did you call EMS today?”

1. Sign – any medical or trauma condition displayed by the patient and identifiable by the CFR.
2. Symptom – any condition described by the patient, e.g., shortness of breath.

**Allergies:** “Are you allergic to anything?”

1. Medications.
2. Food.
3. Environmental.

## **General Approach, continued**

**Medications:** “Do you take any prescription or non-prescription medicine?”

1. Prescription (current, recent, birth control pills, etc.).
2. Non-prescription (current, recent, herbal remedies, etc.).

**Pertinent Past History:** “Are you seeing a Doctor for anything?”  
“Have you ever been in the hospital?”

1. Medical.
2. Surgical.
3. Trauma.

**Last oral intake:** “When was the last time you had anything to eat or drink?”  
*Solid or Liquid*

1. Time.
2. Quantity.

**Events leading up to the injury or illness:** *Examples*

1. Chest pain on exertion. (i.e. pain while shoveling snow or walking up stairs, etc.)
2. Chest pain while at rest (i.e. pain while laying in bed or watching television, etc.)
3. “What were you doing when this happened?”
4. “Were there any other associated symptoms?”

**VIII. Field Treatment:** Administer appropriate treatment in order of priority. See specific treatment protocols.

**IX. On-Going Assessment:** Continue to assess the patient while waiting for additional EMS resources.

1. Repeat Initial Assessment every 15 minutes for a stable patient
2. Repeat Initial Assessment every 5 minutes for an unstable or high priority patient
3. Repeat Physical Examination as necessary
4. Maintain an open airway
5. Monitor breathing
6. Monitor pulse
7. Monitor skin color and temperature
8. Check effectiveness of treatments and/or interventions

**X. Hand-off Report:** Provide a Hand-off Report to the arriving EMS unit, which will take over care of your patient(s). The report must contain, at a minimum, the following information:

1. Age and sex.
2. Chief complaint
3. Mental status/Responsiveness (AVPU)
4. Airway and breathing status
5. Circulation status
6. Physical Examination findings
7. SAMPLE history
8. Interventions and/or treatment given

## General Approach, continued

### Documentation

- A. It is recommended that a written report summarizing all information listed in Section X, as a minimum data set, be given to the arriving EMS unit taking over your patient's care. However, patient care and/or transportation to a hospital **must not be delayed to complete this written report.**
- B. Complete a New York State Prehospital Care Report (PCR) or other approved equivalent documenting all information listed in Section X as a minimum data set.
- C. Submit the hospital copy of the Prehospital Care Report (PCR) to the arriving EMS unit taking over your patient's care.

# **Medical Protocols**

## Altered Mental Status

(NON-TRAUMATIC AND WITHOUT RESPIRATORY OR CARDIOVASCULAR COMPLICATIONS)

**Note:**

Request Advanced Life Support if available.

**Note:**

This protocol is for patients who are not alert (A), but who are responsive to verbal stimuli (V), responding to painful stimuli (P), or unresponsive (U).

- I. Assess the situation for potential or actual danger. If the scene/situation is not safe, retreat to a safe location, create a safe zone and obtain additional assistance from a police agency.

**Note:**

Emotionally disturbed patients must be presumed to have an underlying medical or traumatic condition causing the altered mental status.

**Note:**

All suicidal or violent threats or gestures must be taken seriously. These patients should be in police custody if they pose a danger to themselves or others.  
If the patient poses a danger to themselves and/or others, summon police for assistance.

- II. Perform initial assessment. Assure that the patient's airway is open and that breathing and circulation are adequate.
- III. Administer high concentration oxygen.
- IV. Obtain and record patient's vital signs, including determining the patient's level of consciousness.
  - A. If the patient is unresponsive (U) or responds only to painful stimuli (P), place the patient in the recovery position, keeping the patient warm.

## **Altered Mental Status, continued**

**Note:**

**Do not give anything by mouth to patients who are unconscious or to patients with head injuries.**

- V. If underlying medical or traumatic condition causing an altered mental status is not apparent; the patient is fully conscious, alert (A) and able to communicate; and an emotional disturbance is suspected, proceed to the Behavioral Emergencies protocol.
- VI. Update the responding EMS unit.
- VII. Perform a physical examination.
- VIII. Obtain history using SAMPLE.
- IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## Behavioral Emergencies

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- I. Determine whether the scene/situation is safe. If not, retreat to a safe location, create a safe zone, and obtain additional assistance from a police agency.

**Note:**  
**If regionally approved and available, contact a specialized mental health unit response team for assistance.**

- II. Perform initial assessment.
- III. Assure that the patient's airway is open and that breathing and circulation are adequate.
- IV. Consider other causes of abnormal behavior (lack of oxygen, shock, diabetic reactions, etc.)
- V. Place the patient in a position of comfort, if possible and no suspicion of spinal injury.
- VI. Attempt to establish a rapport with the patient and keep the patient calm.
- VII. Restrain, *only if necessary*, using soft restraints to protect the patient and others from harm. *Restraints should only be used if the patient presents a danger to themselves or others!*

**Note:**  
**Restraints must be utilized in accordance with New York State Mental Health Law. Police or Peace Officer should be present at the scene prior to the application of restraints.**

- VIII. After application of restraints, keep the patient in the most appropriate position, while assuring the restraints do not restrict the patient's breathing or circulation.
- IX. Update the responding EMS unit.
- X. Perform a Physical Examination if possible and obtain History using SAMPLE.
- XI. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- XII. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- XIII. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

# Cold Emergencies

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## I. LOCAL COLD INJURY

- A. Remove the patient from the cold environment.
- B. Protect the injured areas from pressure, trauma, and friction.

**Caution:**  
**Do not rub the injured areas! Do not break blisters!**  
**Do not allow the injured areas to thaw if they may refreeze before evacuation is completed!**

- C. Perform initial assessment.
- D. Administer high concentration oxygen.
- E. Update the responding EMS unit.
- F. Perform Physical Exam.
- G. Obtain History using SAMPLE.
- H. Remove the clothing from the injured areas.
  - 1. If patient has an early *or superficial* local cold injury:
    - a. Remove jewelry.
    - b. Manually stabilize and cover the area with dry dressings.
    - c. Do not rub, massage, or expose to the cold.
  - 2. If patient has a *late or deep* local cold injury:
    - a. Remove jewelry.
    - b. Cover the exposed area with dry dressings.
    - c. Do not break blisters, rub or massage area, apply heat, rewarm, or allow the patient to walk on the affected extremity.
- I. Keep the patient warm while waiting for the responding EMS unit.

## Cold Emergencies, continued

- J. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates
- K. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- L. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## II. GENERALIZED COLD EMERGENCY:

### A. General Treatment Guidelines:

1. Handle the hypothermic patient carefully to prevent cardiac arrest from ventricular fibrillation.
2. Remove the patient from the cold environment and protect the patient from further heat loss.
3. Do not allow the patient to walk or exert themselves.
4. Perform initial assessment.
5. Assure that the patient's airway is open and that breathing and circulation are adequate.
6. Administer high concentration oxygen.
7. Update responding EMS unit.
8. Assess pulses for 30 – 45 seconds. If no pulse begin CPR and refer to appropriate Cardiac Arrest protocol.
9. **If the patient is unconscious or not responding appropriately:**
  - a. **If respirations and pulse are absent, start CPR. It is possible that the patient may still be revived.**

**Note:**

**Vital signs should be taken for a longer period of time than usual so as not to miss a very slow pulse or respiratory rate.**

- b. **If defibrillation is indicated by the AED, defibrillate a maximum of three shocks.**

## **Cold Emergencies, continued**

10. Remove any wet clothing and cover patient with a blanket.
11. Do not allow the patient to eat or drink.
12. Perform Physical Exam.
13. Obtain History using SAMPLE.
14. Place the patient in a warm, draft free environment.
15. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
16. Provide a Hand-off Report to arriving EMS unit, which will take over care of you patient.
17. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## Pediatric Respiratory Distress/Failure

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**Note:**  
**Request Advanced Life Support if available.**

- I. **If the child is in respiratory distress (signs and symptoms of respiratory distress and any of the following):**
  - a. **Respiratory rate outside the normal range for the patient's age.**  
(**>60 per min. in infants, >30/40 per min. in children**)
  - b. **Cyanosis.**
  - c. **Decreased muscle tone.**
  - d. **Severe use of accessory muscles.**
  - e. **Poor peripheral perfusion and color.**
  - f. **Altered mental status.**
  - g. **Grunting.**
  - h. **Stridor.**
  - i. **Retractions.**
- A. **Maintain a calm approach to the child and parent. Allow the child to assume and maintain a position of comfort or to be held by the parent, preferably in an upright position. Do not force the child to lie down!**
- B. **Administer high concentration oxygen by a face mask if tolerated without agitating the child! Administration of oxygen may best be accomplished by allowing the parent to hold the face mask about 6 – 8 inches from the child's face.**
- C. **Update the responding EMS unit.**
- D. **Perform Physical Exam.**
- E. **Obtain History using SAMPLE**
- F. **Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- G. **Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- H. **Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## Pediatric Respiratory Distress, continued

### II. If the child is in respiratory arrest/failure (signs and symptoms of respiratory distress with any of the following):

- a. Breathing at less than 12 breaths/minute in a child.
  - b. Breathing at less than 20 breaths/minute in an infant.
  - c. Retractions.
  - d. Head bobbing.
  - e. Grunting.
  - f. Severe use of accessory muscles.
  - g. Absent or shallow chest wall motion.
  - h. Limp muscle tone.
  - i. Changes in mental status.
  - j. Slow or absent heart rate.
  - k. Cyanosis with a slow heart rate.
  - l. Weak or absent distal pulses.
  - m. Unresponsive.
- A. Open the child's airway with the head-tilt/chin-lift maneuver if no trauma is suspected. Use the modified jaw thrust maneuver if head, neck, or spinal trauma is suspected.
  - B. Ventilate the child at a rate appropriate for the child's age using a pocket mask or bag-valve-mask. **Assure that the chest rises with each ventilation.**
  - C. Supplement ventilations with high concentration oxygen.

#### **Caution:**

**Adequate ventilation may require disabling the pop-off valve if the bag-valve-mask unit is so equipped!  
BVM must have a volume at least 450 – 500 ml for newborns & infants.**

- D. Update the responding EMS unit.
- E. Perform Physical Exam.
- F. Obtain History using SAMPLE
- G. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- H. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.

## **Pediatric Respiratory Distress, continued**

**Caution:**

**If progressive low pulse rate and cyanosis – signs of impending cardiac arrest are present, be prepared to initiate the Non-Traumatic Cardiac Arrest Protocol.**

- I. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## **Heat Emergencies**

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- I. Perform initial assessment.**
- II. Assure that the patient's airway is open and that breathing and circulation are adequate.**
- III. Remove the patient from the heat source and place in a cool environment.**
- IV. Administer high concentration oxygen.**
- V. Update the responding EMS unit.**
- VI. Perform Physical Exam.**
- VII. Cool the patient by removing excess clothing and fanning the patient.**
- VIII. Place patient in the recovery position.**
- IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## Adult Obstructed Airway

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**Note:**

**Request Advanced Life Support if available.**

- I. **If the patient is conscious and can breathe, cough or speak, do not interfere! Encourage the patient to cough. If the foreign body cannot be dislodged by the patient coughing:**
  - A. Administer high concentration oxygen.
  - B. Proceed to step V.
- II. **If the patient is conscious with signs of severe airway obstruction (i.e. signs of poor air exchange and increased breathing difficulty, such as a silent cough, cyanosis, or inability to speak or breathe), perform obstructed airway maneuvers according to AHA/ARC/NSC guidelines and proceed to step V.**
- III. **If the airway obstruction persists after two sequences of obstructed airway maneuvers and/or the patient becomes unconscious:**

**Caution:**

**If obstructed airway is traumatic, manually stabilize the head and cervical spine in a neutral position while opening the patient's airway using the jaw-thrust maneuver.**

**Continue to attempt removal of the airway obstruction while waiting for EMS unit to arrive.**

- A. Begin CPR.
- IV. **If the airway obstruction is cleared and the patient resumes breathing:**
  - A. Administer high concentration oxygen.
  - B. Proceed to step V.
- V. Update the responding EMS unit
- VI. Perform Physical Exam
- VII. Obtain History using SAMPLE

## **Adult Obstructed Airway, continued**

- VIII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates**
- IX. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- X. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## **Pediatric Obstructed Airway**

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**Note:**

**Request Advanced Life Support if available.  
Do not delay transport to the appropriate hospital.**

- I. **Partial Airway Obstruction – If the child is alert and can breathe, cough, cry or speak:**
  - A. **Do not interfere, and do not perform BLS airway maneuvers! Allow the child to assume and maintain a position of comfort or to be held by the parent, preferably in an upright position. Do not lay the child down.**
  - B. **Administer high concentration oxygen (preferably humidified) by a face mask, if tolerated without agitating the child! Administration of oxygen may best be accomplished by allowing the parent to hold the face mask about 6 – 8 inches from the patient’s face.**
  - C. **Transport immediately, keeping the child warm.**
  - D. **Ongoing assessment. Obtain and record the patient’s initial vital signs, including capillary refill, if tolerated, repeat enroute as often as the situation indicates, without agitating the child. Limit your exam and do not assess blood pressure.**
  - E. **Record all patient care information, including the patient’s medical history and all treatment provided, on a Prehospital Care Report (PCR).**
- II. **If the child is conscious but cannot breathe, cough, speak, or cry, perform obstructed airway maneuvers according to AHA/ARC/NSC guidelines.**

**Caution:**

**Agitating a child with a partial airway obstruction could cause complete obstruction! As long as the child can breathe, cough, cry, or speak, do not upset the child with unnecessary procedures (e.g., blood pressure determination)!**

**Use a calm, reassuring approach, transporting the parent and child securely as a unit.**

## Pediatric Obstructed Airway, continued

### III. If the child is unconscious, becomes unconscious and is not breathing:

- A. Attempt to establish airway control using BLS techniques. Open the child's mouth, and remove any visible foreign body.
- B. Begin CPR according to AHA/ARC/NSC guidelines and transport immediately.

### IV. Immediately upon removal of the foreign body and/or establishment of chest rise in a child of any age (including infants), assess the child's ventilatory status!

**Caution:**

If signs of impending cardiac arrest are present (i.e., progressive bradycardia, delayed capillary refill [greater than 2 seconds] and cyanosis), be prepared to initiate the non-traumatic cardiac arrest protocol!

1. If the ventilatory status is inadequate (the child is cyanotic, the respiratory rate is low for the child's age or capillary refill is greater than 2 seconds):
  - a. Ventilate at the rate appropriate for the child's age using a pocket mask or bag-valve-mask. Assure there is adequate chest rise with each ventilation given over one second.

**Caution:**

Adequate ventilation may require disabling the pop-off valve if the bag-valve-mask unit is so equipped!

- b. Supplemental ventilations with high concentration oxygen.
  - c. Transport, keeping the child warm.
  - d. Ongoing assessment. Obtain and record the patient's vital signs, repeat enroute as often as the situation indicates.
  - e. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report.
2. If the ventilatory status is adequate (i.e., the child is breathing spontaneously, the respiratory rate is appropriate for the child's age, cyanosis is absent, and capillary refill is less or equal to 2 seconds):

## **Pediatric Obstructed Airway, continued**

- a. **Administer high concentration oxygen (preferably humidified) by a face mask, if tolerated, without agitating the child!** Administration of oxygen may best be accomplished by allowing the parent to hold the face mask about 6 – 8 inches from the patient's face.
- b. **Transport, keeping the child warm.**
- c. **Ongoing assessment. Obtain and record the patient's vital signs, including capillary refill, if tolerated, repeat enroute as often as the situation indicates, without agitating the child.**
- d. **Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR).**

## **Adult Respiratory Arrest/Failure (Non-Traumatic)**

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**Note:**

**Determine if the patient has a Do Not Resuscitate (DNR) order. Treatment must not be delayed while making this determination.**

**Note:**

**Request Advanced Life Support if available.**

- I. Perform initial assessment.
- II. If ventilatory status is inadequate, (patient is cyanotic, visible retractions, severe use of accessory muscles, altered mental status, respiratory rate less than 10 breaths per minute, signs of poor perfusion) proceed with positive pressure ventilations as follows.
- III. Insert an oropharyngeal airway if tolerated (i.e., no gag reflex). Provide BLS care according to AHA/ARC/NSC standards. If ventilations are unsuccessful, refer immediately to the Obstructed Airway Protocol. If the patient is in cardiac arrest refer immediately to the appropriate Cardiac Arrest Protocol.
- IV. Ventilate with supplemental oxygen.
- V. Update the responding EMS unit.
- VI. Perform physical exam and obtain history using SAMPLE.
- VII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- VIII. Provide a Hand-Off Report to arriving EMS unit, which will take over care of your patient.
- IX. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR).

**Caution:**

**Patients with airway obstruction or poor lung compliance *may* require high pressures to be properly ventilated, which can be achieved by disabling the pressure-relief valve of the BVM.**

**Rate of Ventilations**

**Adults: Ventilate every 5 – 6 seconds without an advanced airway in-place and every 6 – 8 seconds if CPR is ongoing and an advanced airway in-place.  
Each breath is given over 1 second causing visible chest rise.**

## Pediatric Respiratory Arrest/Failure (Non-Traumatic)

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**Note:**

**Request Advanced Life Support if available.**

- I. Establish airway control and ventilations using BLS techniques according to AHA/ARC/NSC guidelines.

- A. Open the airway using the head-tilt/chin-lift or jaw-thrust maneuver.

**Caution:**

**If signs of impending cardiac arrest (i.e., progressive bradycardia, delayed capillary refill [greater than 2 seconds], cyanosis and limp muscle tone), be prepared to initiate the appropriate Cardiac Arrest Protocol!**

- B. Remove any visible airway obstruction by hand and clear the airway of any accumulated secretions or fluids by suctioning.

- II. Immediately determine if the child is breathing adequately.

- A. **If the ventilatory status is inadequate (the child is cyanotic, visible retractions, grunting, head bobbing, severe use of accessory muscles, altered mental status, the respiratory rate is low for the child's age, muscle tone is limp, a slow or fast heart rate, or other signs of inadequate perfusion):**

1. Insert a properly sized oropharyngeal airway if the gag reflex is absent. If a gag reflex is present insert a nasopharyngeal airway.
2. Determine if the patient needs positive pressure ventilations. If no, use supplemental oxygen and maintain airway. If yes, maintain airway, give positive pressure ventilations and supplemental oxygen.
3. Ventilate (with high concentration oxygen) at a rate appropriate for the child's age using a pocket mask or bag-valve-mask. Assure there is adequate chest rise with each ventilation.

**Caution:**

**Adequate ventilation *may* require disabling the pop-off valve if the bag-valve-mask unit is so equipped. BVM must have a volume of at least 450 – 500 ml for newborns and infants**

## **Pediatric Respiratory Arrest/Failure, continued**

### **Rates of Ventilations**

**Infants and children: Every 3 – 5 seconds without an advanced airway in-place and every 6 – 8 seconds with an advanced airway in-place, each breath given over 1 second, causing visible chest rise.**

- III. Identify and correct any other life-threatening conditions found during the initial assessment.
- IV. Update the responding EMS unit.
- V. Perform physical exam.
- VI. Obtain history using SAMPLE.
- VII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- VIII. Provide a Hand-Off Report to arriving EMS unit, which will take over care of your patient.
- IX. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## **Cardiac Arrest Adult and Pediatric (Non – Traumatic)**

Note:

**Determine if the patient has a Do Not Resuscitate (DNR) order.  
Treatment must not be delayed while making this determination.**

**Request Advanced Life Support if available.**

- I. If patient is unresponsive and pulseless, begin Cardiopulmonary Resuscitation as per current AHA/ARC/NSC guidelines.

**DO NOT DELAY BEGINNING COMPRESSIONS TO BEGIN VENTILATIONS – COMPRESSIONS MUST BEGIN AS SOON AS IT IS DETERMINED THE PATIENT DOES NOT HAVE A PULSE**

- A. Artificial ventilation and/or compressions **must not be delayed** to attach supplemental oxygen. Initial ventilations without supplemental oxygen should be used until supplemental oxygen can be attached.
  - i. Deliver each breath over 1 second.
  - ii. Give sufficient tidal volume to produce visible chest rise.
  - iii. Avoid rapid or forceful ventilations.
  - iv. When a advance airway is in-place with 2 person adult CPR, ventilations are to be given at a rate of one breath every 6-8 seconds without attempting synchronization between compressions. **Do not pause compressions for delivery of ventilations.**

- II. During application of the AED:
  - A. The AED should be applied to the patient as soon as it is available and without interrupting compressions.
  - B. Assure proper application and adhesion of the pads to the patient's chest.
  - C. If present, remove Nitroglycerin medication patch from the patient's chest.



**Cardiac Arrest – Adult and Pediatric – Non-Traumatic, continued**

- A. If pt remains unresponsive with vital signs they may benefit from therapeutic hypothermia and medical control should be contacted to determine appropriate transportation destination.
- VIII. Record all patient care information, including the patient's medical history and all treatment provided (including the total number of defibrillations administered), on a Prehospital Care Report (PCR) or other approved equivalent.

## **Respiratory Distress** **(Shortness of Breath, Difficulty Breathing)**

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**Note:**  
**Request Advanced Life Support if available.**

**Caution:**  
**Be prepared to deal with respiratory and cardiac arrest!**  
**Monitor the patient's respiratory status continuously.**

- I. Perform initial assessment.
- II. Assure that the patient's airway is open. **If the airway is obstructed, perform obstructed airway maneuvers according to AHA/ARC/NSC guidelines.**
- III. Administer high concentration oxygen and assist the patient's ventilations as necessary.

**Note:**  
**Allow the patient to assume and maintain a position of comfort, or  
if a child to be held by the parent, preferably in an  
upright position**

- IV. Place the patient in position of comfort.
- V. Update the responding EMS unit.
- VI. Perform Physical Exam.
- VII. Obtain History using SAMPLE.
- VIII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- IX. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- X. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## Seizures

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**Note:**  
Request Advanced Life Support if available.

### I. Management of the patient who is seizing:

- A. Protect the patient from harm, and remove hazards from the patient's immediate area, and avoid unnecessary physical restraint.
- B. Perform initial assessment.
- C. Assure that the patient's airway is open, and that breathing and circulation are adequate.
- D. Suction the airway as needed. Avoid stimulation of the posterior pharynx during suctioning because this may cause vomiting.

**Caution:**  
If the patient's ventilatory status is inadequate (cyanosis, low respiratory rate for the patient's age, decreased tidal volume, retractions, nasal flaring, agonal or irregular respirations), initiate the respiratory arrest/failure protocol.

- E. Position the patient in the recovery if no possibility of cervical spine trauma.

**Note:**  
Do not force the patient's mouth open or force an oral airway or any other device into the patient's mouth if it is clenched tightly during the seizure!  
A nasopharyngeal airway may be used.

- F. Administer high concentration oxygen.
- G. Proceed to step III.

### II. Management of the post-seizure patient:

- A. Perform initial assessment.
- B. Assure that the patient's airway is open and that breathing and circulation are adequate.

## **Seizures, continued**

- C. Place patient in the recovery if no possibility of cervical spine trauma.**
  - D. Administer high concentration oxygen.**
  - E. Treat injuries sustained during the seizure.**
  - F. Be prepared for additional seizures.**
- III. Update the responding EMS unit.**
- IV. Perform Physical Exam**
- V. Obtain History using SAMPLE**
- VI. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- VII. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- VIII. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

# Trauma Protocols

# Amputation

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- I. Perform initial assessment.
- II. Assure that the patient's airway is open and that breathing and circulation are adequate. Apply oxygen if needed.

**Caution:**  
**Manually stabilize the head and cervical spine if trauma of the head and/or neck is suspected!**

- III. Place the patient in a position of comfort **only if doing so does not compromise stabilization of the head and cervical spine!**
- IV. Control the bleeding by applying direct pressure.
- V. Elevate the stump above the level of the patient's heart.
- VI. **If bleeding cannot be controlled, apply pressure on the appropriate arterial pressure point.**
- VII. Assess for hypoperfusion. **If hypoperfusion is present, refer immediately to the hypoperfusion protocol!**
- VIII. Wrap the stump with moist sterile dressings.
- IX. Cover the dressed stump with a dry bandage.
- X. Preserve the amputated part as follows:
  - A. Moisten an appropriately sized sterile dressing with sterile saline solution.
  - B. Wrap the severed part in the moistened sterile dressing, preserving all amputated material.
  - C. Place the severed part in a water-tight container (i.e. sealed plastic bag).
  - D. Place the container on ice or cold packs (if available). **Do not freeze or use dry ice! Do not immerse the amputated part directly in water! Do not allow the amputated part to come in direct contact with ice!**
- XI. Manually stabilize the limb to prevent further injury.
- XII. Update the responding EMS unit.

## **Amputation, continued**

**Note:**

**Transportation of the patient should not be delayed to search for amputated parts! Continued searching for missing amputated parts should be continued while the patient is being transported to the appropriate hospital.**

- XIII. Perform Physical Exam.**
- XIV. Obtain History using SAMPLE.**
- XV. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- XVI. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- XVII. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## **Bleeding (External)**

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- I. Assure that the patient's airway is open and that breathing and circulation are adequate. Apply oxygen if needed.
- II. Control bleeding by:
  - A. Immediately applying pressure directly on the wound with a sterile dressing.

NOTE: If available and bleeding is severe, a hemostatic gauze dressing should be applied directly to the bleeding site simultaneously with direct pressure.
  - B. If bleeding soaks through the dressing, apply additional dressings while continuing direct pressure. **Do not remove dressings from the injured site!**
  - C. Cover the dressed site with a pressure bandage.
- III. **If severe bleeding persists from a limb, apply a tourniquet just proximal to the bleeding site. If severe bleeding still persists, a second tourniquet may be applied proximal to the first tourniquet. Record time tourniquet was secured and document near the tourniquet site.**
- IV. **If severe bleeding persists from the trunk, neck, head or other location where a tourniquet cannot be used, hemostatic gauze dressings should be used.**
- V. **Assess for hypoperfusion. If hypoperfusion is present, refer immediately to the hypoperfusion protocol!**
- VI. Update the responding EMS unit.
- VI. Perform Physical Exam.
- VII. Obtain History using SAMPLE.
- VIII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- IX. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- X. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## Burns (Chemical)

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- I. Assure that the scene is safe for entry. If danger of contamination is present, it may be necessary to obtain assistance from trained rescue personnel.
- II. Perform initial assessment.
- III. Assure that the patient's airway is open and that breathing and circulation are adequate. Apply oxygen if needed.
- IV. Treat according to the following:
  - A. **IF THE CHEMICAL IS A LIQUID:**

The patient you receive in your safe zone should already be decontaminated. Always check to assure that decontamination has been completed. There should be no contaminated clothing or jewelry on the victim. If contaminated items are present, notify the decontamination personnel. Flush the decontaminated areas with copious amounts of water at the scene and enroute to the hospital. If possible, flush site of the burn with water for a minimum of 20 minutes.
  - B. **IF THE CHEMICAL IS A DRY POWDER:**

The patient you receive in your safe zone should already be decontaminated. Always check to assure that decontamination has been completed. Brush any remaining chemical off of the patient. **Be careful not to spread it over unaffected areas.** There should be no contaminated clothing or jewelry on the victim. If contaminated items are present notify the decontamination personnel. Flush the decontaminated areas with copious amounts of water at the scene and enroute to the hospital. If possible, flush site of the burn with water for a minimum of 20 minutes.
  - C. **IF THE EYE(s) IS CONTAMINATED:**

The patient you receive in your safe zone should already be decontaminated. Always check to assure that decontamination has been completed. Irrigate the eye(s) with saline solution or water continuously for at least 20 minutes, or until arrival to the hospital, while the patient blinks frequently during irrigation. If only one eye is affected, do not contaminate the unaffected eye. After irrigation is complete, cover both eyes with moistened dressings or eye pads.
- V. Obtain the name of the product or substance involved and bring it and its container (if possible and without causing further contamination with the substance) with the patient to the hospital

## **Burns (Chemical), continued**

- VI. Update the responding EMS unit.**
- VII. Perform Physical Exam.**
- VIII. Obtain History using SAMPLE.**
- IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient**
- XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## **Burns (Thermal/Electrical)**

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- I. **Assure that the scene is safe for entry. If danger of contamination is present, it may be necessary to obtain assistance from trained rescue and/or fire personnel.**
- II. **Extinguish burning clothing, and stop the burning process.**
- III. **Perform initial assessment.**
- IV. **Assure that the patient's airway is open and that breathing and circulation are adequate.**
- V. **Place the patient in a position of comfort only if doing so does not compromise stabilization of the head and cervical spine!**
- VI. **Administer high concentration oxygen if indicated during the initial assessment or if respiratory burns are suspected and in all burns involving flames, exposure to superheated gases or when patient is found in a confined area.**
- VII. **Remove smoldering clothing not adhering to the patient's skin. Remove rings, bracelets and all other constricting items if possible.**
- VIII. **Assess for hypoperfusion. If hypoperfusion is present, refer immediately to the hypoperfusion protocol!**
- IX. **For all burns determine the thickness and cover the burned area with a dry sterile dressing.**
- X. **Keep the patient warm. This is important since these patients tend to lose heat and become hypothermic!**
- XI. **Perform Physical Exam.**
- XII. **Obtain History using SAMPLE.**
- XIII. **Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- XIV. **Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- XV. **Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## Musculoskeletal Trauma

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**Caution:**

**Manually stabilize the head and cervical spine if trauma of the head and/or neck is suspected!**

- I. Perform initial assessment.
- II. Assure that the patient's airway is open and that breathing and circulation are adequate. Apply oxygen if needed.

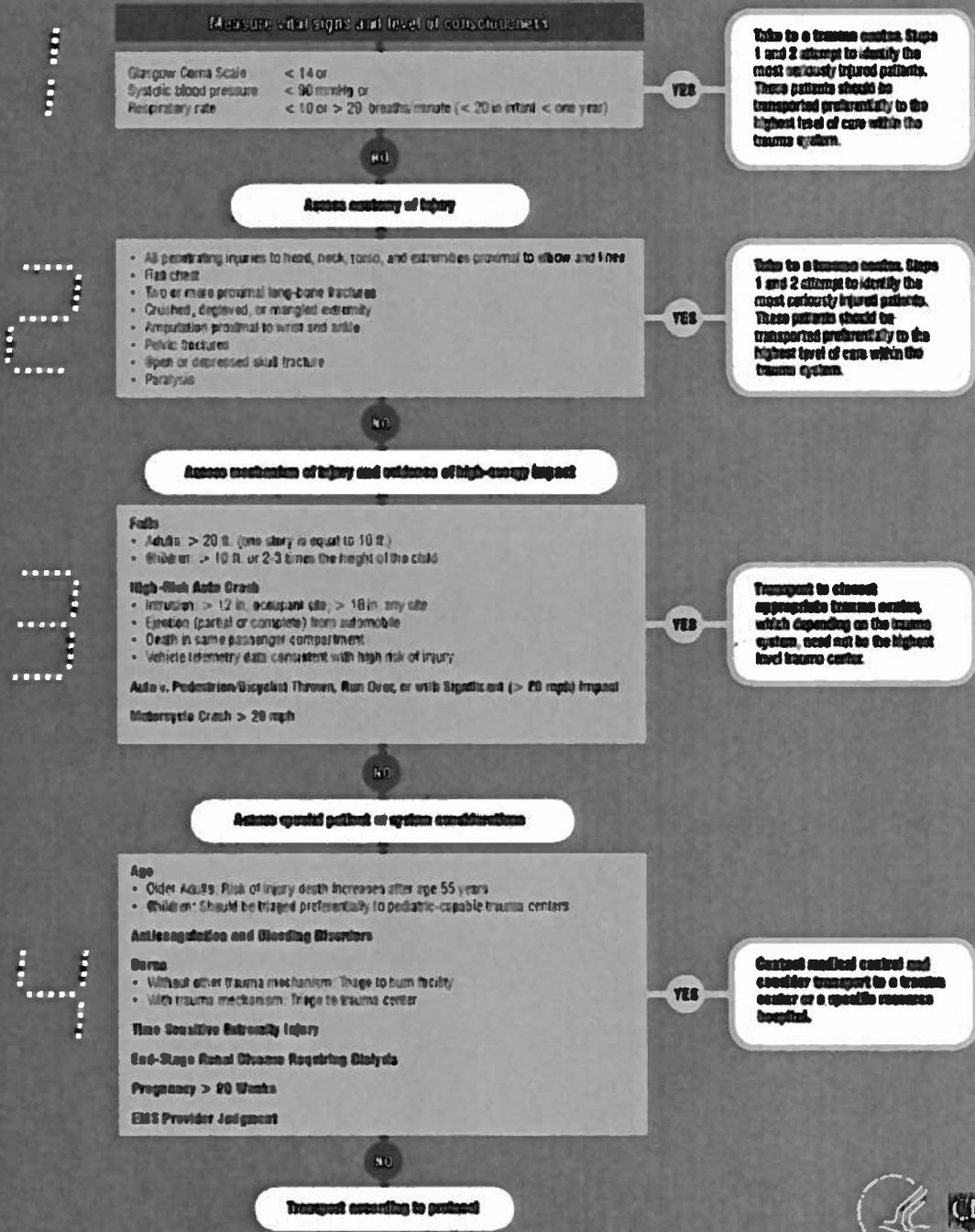
**Note:**

**Consider any open wound near a suspected bone injury site to be the result of bone protrusion.**

- III. Manually stabilize the joints above and below the suspected injury site.
- IV. Expose the injured area to locate and identify suspected musculoskeletal injuries.
- V. Cover open wounds with sterile dressings.
- VI. Do not replace any protruding bones.
- VII. Assess for hypoperfusion. **If hypoperfusion is present, refer immediately to the hypoperfusion protocol!**
- VIII. Apply a cold pack to the injured area to reduce swelling and pain.
- IX. Update the responding EMS unit.
- X. Perform Physical Exam.
- XI. Obtain History using SAMPLE.
- XII. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- XIII. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- XIV. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

# Adult Major Trauma (Including Traumatic Cardiac Arrest)

## FIELD TRIAGE DECISION SCHEME: THE NATIONAL TRAUMA TRIAGE PROTOCOL



When in doubt, transport to a trauma center.  
For more information on the Decision Scheme, visit: [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage)



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
CENTERS FOR DISEASE CONTROL AND PREVENTION

**Note:**

**The following management may be instituted before or during extrication or enroute as appropriate. In no case should patient transport be delayed because of this management!**

- I. Establish and maintain airway control while manually stabilizing the cervical spine.
- II. Perform initial assessment.
- III. Assess level of consciousness.
- IV. Assess the patient's ventilatory status:
  - A. **If the ventilatory status is inadequate:**
    1. Insert an oropharyngeal airway if no gag reflex is present or a nasopharyngeal airway if a gag reflex is present.
    2. Ventilate the patient with an adjunctive device and high concentration oxygen at a rate of 12 breaths per minute. Each ventilation given over one second assuring that there is sufficient chest rise with each ventilation.
    3. Expose the patient's chest to locate and identify injuries and open wounds.
    4. Seal any open chest wounds with an occlusive dressing; stabilize impaled objects in the chest.
  - B. **If the ventilatory status is adequate, administer high concentration oxygen as soon as possible.**
- V. Assess the patient's circulatory status.
  - A. **If the pulse is absent (Traumatic Cardiac Arrest):**
    1. Update the responding EMS unit immediately.
    2. Perform CPR according to AHA/ARC/NSC standards and apply an AED.
    3. Take appropriate steps to control hemorrhage.

**Adult Major Trauma, continued**

**B. If the pulse is present:**

1. Take appropriate steps to control hemorrhage.
2. Update the responding EMS unit **immediately**.
3. Keep the patient warm while waiting for arrival of EMS unit.

**C. If life-threatening hemorrhage is present:**

1. Take appropriate steps to control the hemorrhage.
2. Update the responding EMS unit **immediately**.
3. Keep the patient warm while waiting for arrival of EMS unit.
4. Assess for hypoperfusion enroute.

**D. If one or more signs of hypoperfusion are present, refer immediately to the Hypoperfusion Protocol!**

1. Take appropriate steps to control life threatening hemorrhage.
2. Update the responding EMS unit **immediately**.
3. Keep the patient warm while waiting for arrival of EMS unit.

VI. Update responding EMS unit if not already completed above.

**Note:**  
**Consider Air Medical Transport per regional protocol.**

VII. Perform Physical Exam.

VIII. Obtain History using SAMPLE.

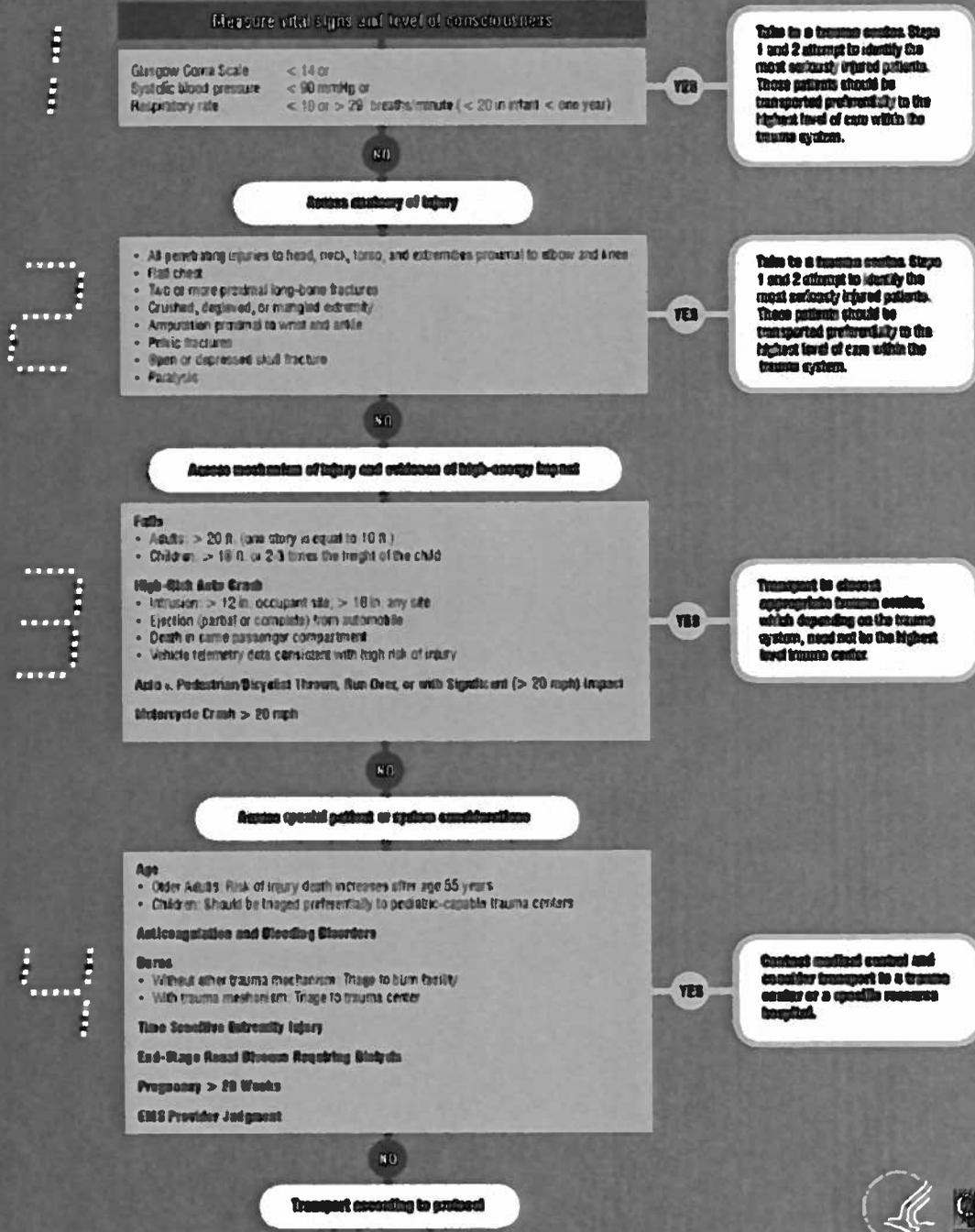
IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.

X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.

XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

# Pediatric Major Trauma (Including Traumatic Cardiac Arrest)

## FIELD TRIAGE DECISION SCHEME: THE NATIONAL TRAUMA TRIAGE PROTOCOL



When in doubt, transport to a trauma center.  
For more information on the Decision Scheme, visit: [www.cdc.gov/FieldTriage](http://www.cdc.gov/FieldTriage)



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## **Pediatric Major Trauma, continued**

- I. Establish and maintain airway control while manually stabilizing the cervical spine.
- II. Perform initial assessment.
- III. Assess level of consciousness.
- IV. Assess the child's ventilatory status, including exposing the chest to locate and identify injuries.
  - A. **If ventilatory status is inadequate (the child is cyanotic, the respiratory rate is low for the child's age):**
    1. Ventilate the child with a pocket mask or bag-valve-mask and high concentration oxygen at a rate of up to 20 breaths per minute. Each ventilation given over one second assuring that there is adequate chest rise with each ventilation.
    2. Seal any open chest wounds with an occlusive dressing. Stabilize impaled objects in the chest.
  - B. **If ventilatory status is adequate (the child is breathing spontaneously at a respiratory rate appropriate for the child's age and cyanosis is absent), administer high concentration oxygen (preferably humidified) by a face mask as soon as possible.**

### **Caution:**

**Adequate ventilation *may* require disabling the pop-off valve if the bag-valve-mask is so equipped!**

- V. Assess the child's circulatory status by palpating the brachial pulse in infants and the carotid pulse in children older than one year of age.
  - A. **If the pulse is absent (Traumatic Cardiac Arrest):**
    1. Initiate transport immediately while performing CPR according to AHA/ARC/NSC guidelines.
    2. Take appropriate steps to control hemorrhage.

### **Note:**

**Automated External Defibrillator (AED) should not be used in a Pediatric Cardiac Arrest *unless* the AED is equipped for and FDA approved for use on children!**

## **Pediatric Major Trauma, continued**

3. Elevate the patient's feet 8 – 12 inches if no trauma to the legs.
4. Keep the patient warm while waiting for arrival of EMS unit.
5. Update the responding EMS unit.

### **B. If the pulse is present:**

1. Identify any life-threatening hemorrhage, if present proceed to step "C".
2. Take appropriate steps to control hemorrhage.
3. Update the responding EMS unit.
4. Keep the child warm while waiting for arrival of EMS unit.

### **C. If life-threatening hemorrhage is present:**

1. Take appropriate steps to control the hemorrhage.
2. Update the responding EMS unit **immediately**.
3. Elevate the foot of the backboard 8 - 12 inches.
4. Keep the child warm while waiting for arrival of EMS unit.

- VI. Update responding EMS unit if not already completed above.
- VII. Perform Physical Exam
- VIII. Obtain History using SAMPLE.
- IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

## **Suspected Head or Spinal Injuries** (Not Meeting Major Trauma Criteria)

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**Note:**

**If the patient is found in a standing position, continue your assessment and provide constant manual stabilization of the head and neck in the position found. Maintain manual stabilization of the cervical spine until the responding EMS unit takes over care.**

- I. Establish and maintain airway control while manually stabilizing the head and neck.
- II. Perform initial assessment.
- III. Assess level of consciousness.
- IV. Assess the patient's ventilatory status and assist the patient's ventilation as necessary; administer high concentration oxygen and suction as necessary.
  - A. If the ventilatory status is inadequate, ventilate the patient with an adjunctive device and high concentration oxygen at a rate of 12 breaths/minute (adult) or a rate of up to 20 breaths/minute (child). Assure that the chest rises sufficiently with each ventilation.
  - B. If the ventilatory status is adequate, administer high concentration oxygen as soon as possible.
- V. Assess the patient's circulatory status.
- VI. Assess pulses, motor function and sensation in all extremities.
- VII. Update the responding EMS unit.
- VIII. Perform Physical Exam.
- IX. Obtain History using SAMPLE
- X. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.
- XI. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.
- XII. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

# **Special Considerations**

# Oxygen Administration

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## I. Perform initial assessment.

### A. If the patient requires oxygen therapy:

1. Assure that the patient's airway is open and that breathing and circulation are adequate. **If the airway is obstructed, perform obstructed airway maneuvers according to AHA/NSC/ARC standards.**

**Note:**

1. **Oxygen should never be withheld from patients requiring it, even though they may have a past medical history of chronic obstructive pulmonary disease!**
2. **When administering oxygen, monitor the patient carefully for any slowing of respirations, be prepared to ventilate the patient as necessary!**
3. **In patients who are being chronically maintained on oxygen and who have called EMS for a condition other than one requiring high concentration oxygen by these protocols, continue the administration of oxygen at the previously prescribed rate of flow.**

### 2. Administer **high-concentration oxygen.**

- a. **First choice—Non-rebreather mask at 12 LPM or greater so reservoir bag does not collapse during inhalation. If reservoir bag collapses and does not refill adequately, increase to 15 LPM.**
- b. **Second choice—Nasal cannula at 6 LPM (used only if a mask is not tolerated).**

**Note:**

**There is no contraindication to high concentration oxygen in pediatric patients in the prehospital setting. Administration of oxygen is best accomplished by allowing the parent to hold the face mask, if tolerated, 6 to 8 inches from the child's face.**

## Oxygen Administration, continued

### B. If the patient demonstrates inadequate ventilations:

1. Assist the patient's ventilations with high concentration oxygen using a positive pressure adjunctive device.
  - a. First choice—Bag-valve-mask (BVM) with reservoir and supplemental oxygen.

**Caution:**  
**Adequate ventilation *may* require disabling the pop-off valve  
if the bag-valve-mask unit is so equipped!**

- b. Second choice—Pocket mask with supplemental oxygen set at greater than 10 LPM.
    - c. Third choice—Flow restricted oxygen powered ventilation device.

### C. If one or more signs of respiratory distress or respiratory arrest are present, refer immediately to the Respiratory Distress Protocol (M-11) or the appropriate Respiratory Arrest Protocol (M-7 or M-8)!

- II. Complete all other steps required in the individual treatment protocols that indicate the need for oxygen administration.
- III. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.

# Hypoperfusion

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**Note:**

**Request Advanced Life Support if available.**

**Note:**

**For the purpose of this protocol, Adult Hypoperfusion is defined as:**

- 1. Signs of inadequate perfusion, such as:**
  - A. Altered mental state (restlessness, inattention, confusion, agitation)**
  - B. Tachycardia (pulse greater than 100)**
  - C. Pale, cool, moist skin**
  - D. Rapid shallow respirations**
  - E. Extreme thirst**
- 2. If a cardiac cause for hypoperfusion is suspected, refer immediately to the cardiac related protocol!**

**Note:**

**For the purpose of this protocol, Pediatric Hypoperfusion is defined as signs of inadequate perfusion, such as:**

- 1. Altered mental status**
- 2. Tachycardia (see appendix-A [pediatric])**
- 3. Weak or absent distal pulses**
- 4. Pallor**
- 5. Cold, clammy, or mottled skin**

**Caution:**

**Manually stabilize the head and cervical spine if trauma of the head and neck is suspected!**

- I. Perform initial assessment.**
- II. Assure that the patient's airway is open and that breathing and circulation are adequate.**
- III. Administer high concentration oxygen, and be prepared to ventilate the patient!**

## **Hypoperfusion, continued**

- IV. Place the patient in a face-up position and elevate the patient's legs 8 - 12 inches if there is no trauma to the legs.**
- V. Keep the patient warm while waiting for arrival of EMS unit.**
- VI. Update the responding EMS unit.**
- VII. Perform Physical Exam.**
- VIII. Obtain History using SAMPLE.**
- IX. Ongoing assessment. Repeat the initial assessment and record the patient's vital signs, including the level of consciousness as often as the situation indicates.**
- X. Provide a Hand-off Report to arriving EMS unit, which will take over care of your patient.**
- XI. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR) or other approved equivalent.**

## **Emergency Childbirth, Resuscitation and Stabilization of the Newborn**

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**Note:**  
**Request Advanced Life Support if available.**

- I. Perform initial assessment.
  - A. Assure that the mother's airway is open and that breathing and circulation are adequate.
  - B. Assess the mother for hypoperfusion. **If one or more signs of hypoperfusion are present, refer immediately to the Hypoperfusion Protocol!**
  - C. Obtain the mother's history to determine if the mother is in labor. The history includes:
    1. How long have you been pregnant?
    2. Number of previous pregnancies
    3. Number of previous births
    4. Frequency and duration of uterine contractions
    5. Recent vaginal discharge or bleeding
    6. Presence of urgency to move bowels or pressure in vaginal area
  - D. Be prepared to handle additional patient(s) in addition to the mother.

**Caution:**  
**Do not permit the mother to go to the bathroom!**

- E. Determine if the mother is having contractions.
  1. **If the mother is having contractions perform a visual inspection of the external genitalia and perineum for bulging and/or crowning. Have your partner present during this exam. If there is crowning prepare for immediate delivery by:**
    - a. Updating the responding EMS unit immediately.
    - b. Informing the mother of the need for immediate delivery
    - c. Insuring a private, clean and sanitary environment
    - d. Positioning and draping the mother
    - e. Placing the OB kit within easy reach
    - f. Warming several towels (if possible)

## Emergency Childbirth, continued

**Caution:**

**Never delay or restrain delivery under normal circumstances!**

### II. Delivery procedures:

- A. During delivery support the infant's head with one hand while gently guiding it out of the birth canal to prevent an explosive delivery. Using your other hand with a sterile dressing, support the perineum (area between the vagina and the anus) to help prevent tearing during delivery of the head.
- B. If the amniotic sac has not broken, use your finger or a clamp to puncture the sac and pull it away from the infant's head and mouth as they appear.
- C. Attempt to prevent the infant's head from coming in contact with fecal material or other contaminants.
- D. As soon as the head delivers continue to support the infant's head with one hand. Tell the mother to stop pushing. Inspect the infant for the umbilical cord wrapped around the neck.
  1. If the umbilical cord is wrapped around the infant's neck: Gently loosen the cord and slip it over the infant's head.
  2. If the umbilical cord is wrapped too tightly around the infant's neck or wrapped around the neck more than once, preventing the delivery of the infant, immediately clamp the umbilical cord with two clamps and cut the cord between them.
- E. Suction the infant's oropharynx only if the airway is obstructed or artificial ventilations are required.
  1. Insert a compressed bulb syringe 1 –1 ½ inches into the infant's mouth.
  2. Suction the infant's oropharynx while controlling the release of the bulb syringe with your fingers.
  3. Repeat suction as necessary.
- G. Instruct the mother to begin pushing during contractions.
- H. As soon as the infant has delivered, quickly dry the infant and place the infant on a warm towel (if available) in a face-up position with the head lower than the feet. Keep the infant at the level of the mother's vagina until the cord is cut.

## Emergency Childbirth, continued

**Caution:**  
**Spontaneous respirations should begin within 30 seconds.**

- I. Perform an initial assessment of the infant. Quickly assess the infant's respiratory status, pulse and general condition.
  1. **If the infant is breathing spontaneously and crying vigorously and has a pulse greater than 100/min:**
    - a. Clamp the umbilical cord 1 minute after birth with two clamps three inches apart. The first clamp will be 8 – 10 inches from the baby. Place the second clamp 3 inches from the first clamp towards the mother.
    - b. Cover the infant's scalp with an appropriate warm covering.
    - c. Wrap the infant in a dry, warm blanket or towels *and* a layer of foil over the layer of blankets or towels, *or* use a commercial-type infant swaddler if one is provided with the OB kit. **Do not use foil alone!**
    - d. Ongoing assessment. Obtain and record vital signs, as often as the situation indicates.
    - e. **Keep the infant warm and free from drafts.**
  2. **Monitor the infant's respirations continuously. If the infant is not breathing spontaneously and crying vigorously:**
    - a. **If the infant's respirations are absent or depressed (less than 30/minute in a newborn):**
      - i. Rub the infant's lower back gently.
      - ii. Snap the bottom of the infant's feet with your index finger gently.
    - b. **If the respirations remain absent or become depressed (less than 30/minute in a newborn) despite stimulation, or if cyanosis is present:**
      - i. Clear the infant's airway by suctioning the mouth and nose gently with a bulb syringe.



**Emergency Childbirth, continued**  
**VI. Complicated Childbirth.**

**A. Breech Birth**

**1. If the buttocks presents first:**

- a. Update the responding EMS unit **immediately**.
- b. Administer high concentration oxygen to the mother.
- c. Place the mother in a face-up position with her hips elevated.

**2. If a limb presents first:**

- a. Update the responding EMS unit **immediately**.
- b. Administer high concentration oxygen to the mother.
- c. Place the mother in a face-up position with her hips elevated

**B. Prolapsed Umbilical Cord**

- a. Update the responding EMS unit **immediately**.
- b. Administer high concentration oxygen to the mother.
- c. Place the mother in a face-up position with her hips elevated.
- d. Treatment based on specific signs and symptoms.

**C. Multiple Births**

- a. Update the responding EMS unit **immediately**.
- b. Deliver each multiple birth according to the above protocol for **Uncomplicated Childbirth**, making sure to clamp each umbilical cord between births.
- c. **If the anticipated second birth does not occur after 10 minutes, update the responding EMS unit!**
- d. A Prehospital Care Report (PCR) must be completed for each patient.

**Emergency Childbirth, continued**

- a. Update the responding EMS unit **immediately**
- b. Administer high concentration oxygen to the mother.
- c. Place the mother in a face-up position with her hips elevate.
- d. Treatment based on specific signs and symptoms.

**C. Multiple Births**

- a. Update the responding EMS unit **immediately**.
- b. Deliver each multiple birth according to the above protocol for **Uncomplicated Childbirth**, making sure to tie each umbilical cord between births.
- c. **If the anticipated second birth does not occur after 10 minutes, update the responding EMS unit!**

## Refusing Medical Aid (RMA)

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**Note:**

Certified First Responders must not make an independent decision regarding a patient's refusal of medical care or transport.

The Certified First Responder must assure that additional EMS resources (consisting of an EMT or AEMT) will evaluate the patient.

**Note:**

Request Advanced Life Support if the patient's condition warrants the need.

**Note:**

All competent adults have the right to refuse medical treatment and/or transport. It is the responsibility of the prehospital care provider to be sure that the patient is fully informed about their situation and the possible implications of refusing treatment or transport.

- I. Follow the protocol for "General Approach to Prehospital Patient Management" and any other specific treatment protocol, which is required according to the patient's condition and your assessment of the patient.
- II. When the patient or legal guardian refuses treatment or requests that you discontinue further treatment of the patient, do not initiate any new treatment modalities.
- III. Discuss with the patient the need for treatment and/or transport. If the patient still refuses treatment or transport and you feel that the patient's condition requires treatment or transport, allow the patient's family members, friends, or anyone else who is familiar with the patient to try and convince the patient of the need for treatment or transport. Update the responding EMS unit. Contact Medical Control per regional protocol and consider assistance from law enforcement.
- IV. If patient still refuses treatment or transport and the patient is 18 years of age or older, or is an emancipated minor, or is the parent of a child, or has married:
  - A. Assess level of consciousness using AVPU.
  - B. Attempt to obtain vital signs and repeat vital signs and AVPU every 5 – 10 minutes.

## **Refusing Medical Aid (RMA), continued**

- C. Evaluate the patient for any apparent medical or physical conditions, which may limit the patient's ability to think rationally. For example:
  - 1. Psychiatric or behavioral disorders.
  - 2. Patient presents a danger to themselves or others.
  - 3. Current alcohol or drug use.
  - 4. History of disease effecting mental capacity (i.e. Alzheimer's).
  - 5. Evidence of abuse to the patient.
  - 6. Inability to ambulate.
  
- D. If patient is Alert with and there is no evidence of any apparent medical or physical conditions, which may limit the patient's ability to think rationally:
  - 1. If patient still refuses treatment or transport offer to call Medical Control or the patient's own physician and have the patient speak with the physician.
  - 2. If patient still refuses treatment or transport continue to step VI.
  
- E. If patient is not Alert or there is evidence of an apparent medical or physical condition, which may limit the patient's ability to think rationally:
  - A. Obtain assistance from Law Enforcement and if possible contact Medical Control for direction. Update the responding EMS unit.**
  
- V. If the patient still refuses treatment or transport and is under the age of 18, or is not an emancipated minor, or is not the parent of a child, or is not married:
  - A. These individuals cannot give effective legal/informed consent to treatment and therefore, conversely, cannot legally refuse treatment.
  - B. In an emergency situation when a parent or guardian is not available to give consent, emergency treatment and transport should be rendered based on implied consent.
  - C. In an emergency or non-emergency situation when a parent or guardian is present, the EMS provider must obtain consent from the parent or guardian prior to rendering treatment or transport.
  - D. If a parent or guardian is refusing to give consent for treatment or transport, and the EMS provider feels that treatment or transport is necessary, the EMS provider should obtain assistance from a Law Enforcement agency. Medical Control should be contacted and the parent or guardian should be allowed to speak with the physician.
  - E. If the parent or guardian is still refusing treatment or transport and Law Enforcement is not directing the removal of the patient to a hospital, proceed to VI.

## **Refusing Medical Aid (RMA), continued**

- VI. For any patient who refuses treatment or transport, the EMS provider must advise the patient, or if applicable the parent or guardian, of the possible consequences of their refusal.
- VII. Complete a Prehospital Care Report (PCR) or approved equivalent for the patient. At a minimum the following patient information must be documented or the EMS provider must document the reasons why this patient information cannot be documented.
  - A. Documentation Information:
    1. Age and sex.
    2. Patient's name, address, and date of birth.
    3. Chief complaint.
    4. Subjective and objective patient assessment findings.
    5. Pertinent history as needed to clarify the problem (mechanism of injury, previous illnesses, allergies, medications, etc.)
    6. Level of consciousness (AVPU).
    7. One complete set of vital signs
    8. Treatment given and the patient's response.
    9. Parent or guardian's name if applicable.
    10. Identification information of any Law Enforcement personnel, Medical Control, and EMT or AEMT directly involved with the refusal of treatment or transport.
    11. *Document that risks and consequences were explained and understood.*

**SEMAC  
Advisories  
and  
Bureau of  
EMS Policies**

## **SEMAC Advisories**

### **Bureau of Emergency Medical Services Policies**

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This section of the protocol book contains medical advisories approved by the State Emergency Medical Advisory Council (SEMAC) and those policy statements published by the NYS DOH Bureau of Emergency Medical Services (BEMS), which will assist you in the use of certain protocols and patient care.

SEMAC Advisories are guidelines, which are issued under the authority of Article 30 of the Public Health Law, Section 3002-a(2) and with the Commissioner of Health's approval. While these guidelines do not have the weight of law, the issuance of guidelines are statutorily authorized and approved by the Department of Health as appropriate guidance for prehospital patient care. They should be followed in the same manner as the statewide or regional patient care protocols.

Bureau of EMS policy statements are issued by the Department of Health and are to be used to assist the EMS provider in direct and in-direct patient care. Policy statements carry the weight of regulation, but are designed to be flexible to meet Public Health needs without following a lengthy regulatory reform process. These policies are designed to assist you in providing appropriate pre-hospital healthcare and provide a standard by which all NYS certified EMS providers can function. The policies which have been included in this book are only policies which have been currently enacted and relevant to patient care and protocols.

All SEMAC Advisories and BEMS policy statements can be found on the Bureau of EMS web site at <http://www.health.state.ny.us/nysdoh/ems/main.htm>. We encourage all providers and agencies to check the web site frequently for updated information.

<b>Advisory No.</b>	<b>97-01</b>
<b>Title</b>	<b>Emergency Care of Persons with Hemophilia</b>
<b>Date Approved</b>	<b>February 4, 1997</b>
<b>Page</b>	<b>1 of 1</b>

### **Emergency Care of Persons with Hemophilia**

There may be no visible signs of bleeding in a person with hemophilia but bleeding episodes may be life threatening. Above all, prompt treatment (infusion of clotting factor concentrate) is essential. For a conscious patient, follow the guidelines below:

- Listen to the patient and family members. They are very knowledgeable about bleeding disorders.
- Ask if the patient has his own clotting factor concentrate.
- Allow the patient, a family member or caregiver to infuse the factor and/or bring the factor to the hospital. **(If it appears transport may be delayed Medical Control should be contacted as soon as possible.)**
- Assess the patient.
- Stabilize the patient:
  - R – Rest
  - I – Ice
  - C – Compression
  - E – Elevate
- Make early contact with Medical Control for guidance on treatment and most appropriate destination.
- Transport to the appropriate hospital.

Since factor concentrates are not stored by all hospitals in New York State, if the patient does not have factor concentrate, consult with Medical Control for hospital destination. (NOTE: The patient or family members may be able to identify the hospital with the most appropriate resources needed to best deal with a specific emergency for hemophilia patient.)

**Issued by:**

**Mark Henry, MD**  
**Chair**  
**State Emergency Medical Advisory Committee**

**Barbara A. DeBuono, MD**  
**Commissioner**  
**Department of Health**

Advisory No.	97-02
Title	Biphasic Automated External Defibrillator
Date Approved	February 4, 1997
Page	1 of 1

## **Biphasic Automated External Defibrillator**

The Food and Drug Administration (FDA) has recently approved an Automated External Defibrillator (AED) which uses a low energy "biphasic waveform" similar to the technology currently used in implantable cardioverter-defibrillator (ICD). This allows the unit to determine the patient's chest impedance (resistance to electrical flow) and delivers a measured shock in response to that impedance. We can anticipate the FDA approval of more units/models using the biphasic waveform technology in the near future.

Some EMS providers have expressed concern that the units are not set to deliver shocks at the traditionally higher energy settings (200 J to 360 J). This advisory is to clarify that the biphasic automated external defibrillator, as approved by the FDA, is an acceptable device which can be used as outlined in the current New York State, Statewide Basic Life Support Adult Treatment Protocols for the Automated External Defibrillator (AED).

Traditional AED ("monophasic waveform") units, currently approved by the FDA, also remain an acceptable device used as outlined in the current New York State, Statewide Basic Life Support Adult Treatment Protocols for the Automated External Defibrillator (AED). **As always, the decision on the purchase of specific medical devices should be done with the approval of your Service Medical Director and under the guidelines of the Regional Emergency Medical Advisory Committee (REMAC).**

Issued by:

Mark Henry, MD  
 Chair  
 State Emergency Medical Advisory Committee

Barbara A. DeBuono, MD  
 Commissioner  
 Department of Health

Advisory No.	97-03
Title	Hyperventilation in Severe Traumatic Brain Injury
Date Approved	August 7, 1997
Page	1 of 3

**Note:** This advisory guideline announces important changes in the *Statewide Basic Life Support Adult and Pediatric Treatment Protocols*. Revised copies of each of the protocols affected by these changes are attached. Revised copies of each of the protocols affected by these changes are also being sent to all emergency medical services agencies statewide. Regional Emergency Medical Advisory Committees, and regional, system, and service medical directors are directed to facilitate use of the revised protocols at the local level, and are further advised to modify local protocols, policies, and procedures accordingly.

## **Hyperventilation in Severe Traumatic Brain Injury**

Current *Statewide Basic Life Support Adult and Pediatric Treatment Protocols* stipulate that hyperventilation, at a rate of 20 breaths per minute in an adult and 25 breaths per minute in a child, should be employed in major trauma whenever a head injury is suspected, the patient is not alert, the arms and legs are abnormally flexed and/or extended, the patient is seizing, or has a Glasgow Coma Scale of less than 8. The State Emergency Medical Advisory Committee has reviewed these protocols, and concludes, on the basis of recent scientific evidence, that in the patient with severe traumatic brain injury (Glasgow Coma Scale score < or = to 8) following open or closed head injury, aggressive hyperventilation should be avoided in the prehospital setting, unless there are active seizures or signs of transtentorial herniation.

Although hyperventilation was used throughout the 1970s and 1980s in the acute management of severe traumatic brain injury, its use has undergone critical reappraisal in recent years. This has occurred following the publication of several reports linking excessive hyperventilation ( $P_aCO_2 < 25$  mm Hg) to cerebral ischemia, as well as a large prospective randomized study which failed to demonstrate any benefit, but instead demonstrated a slight detriment, to head injured adult patients ventilated to achieve a  $P_aCO_2$  of 25 mm Hg versus head injured adult patients ventilated to achieve a  $P_aCO_2$  of 35 mm Hg. In 1995, the Brain Trauma Foundation, in collaboration with the American Association of Neurological Surgeons and the Joint Section on Neurotrauma and Critical Care, published evidence-based Guidelines for the Management of Severe Head Injury, which call for moderation in the use of hyperventilation in the acute management of severe traumatic brain injury. The State Emergency Medical Advisory Committee has reviewed these guidelines, and the scientific evidence on which they are based, and endorses the guidelines pertaining to initial resuscitation as an appropriate standard of prehospital care for patients with severe traumatic brain injury. With respect to integration of brain-specific treatments into the initial resuscitation of the severe head injury patient, the Guidelines state:

"The first priority for the head-injured patient is complete and rapid physiologic resuscitation. No specific treatment should be directed at intracranial hypertension in the absence of signs of transtentorial herniation or progressive neurological

deterioration not attributable to extracranial explanations. When either signs of transtentorial herniation or progressive neurological deterioration not attributable to extracranial explanations are present, however, the physician should assume that intracranial hypertension is present and treat it aggressively. Hyperventilation should be rapidly established. The administration of mannitol is desirable, but only under conditions of adequate volume resuscitation."

With respect to resuscitation of blood pressure and oxygenation, the Guidelines state:

"Hypotension (systolic blood pressure < 90 mm Hg) or hypoxia (apnea or cyanosis in the field or a  $P_aO_2$  < 60 mm Hg) must be scrupulously avoided, if possible, or corrected immediately."

With respect to use of hyperventilation in the acute management of severe traumatic brain injury, the Guidelines state:

"The use of prophylactic hyperventilation ( $P_aCO_2$  < 35 mm Hg) therapy during the first 24 hours after severe TBI should be avoided because it can compromise cerebral perfusion during a time when cerebral blood flow (CBF) is reduced."

With respect to acute neurologic deterioration or refractory intracranial hypertension, the Guidelines state:

"Hyperventilation therapy may be necessary for brief periods when there is acute neurological deterioration, or for longer periods if there is intracranial hypertension refractory to sedation, paralysis, cerebrospinal fluid (CSF) drainage, and osmotic diuretics."

Thus, normal ventilation is now recognized as the appropriate standard of care for initial management of severe traumatic brain injury. Yet, it is difficult for prehospital personnel to know whether they are achieving normal ventilation, particularly when using a bag and mask. To avoid this problem, prehospital personnel are advised to utilize strategies that maximize oxygen delivery and minimize inadequate ventilation. The State Emergency Medical Advisory Committee believes that these goals can best be accomplished by utilizing ventilatory rates that are likely to avoid both hyperventilation and hypoventilation, hence to assure adequate ventilation, an approach which is consistent with the 1997 Edition of the Advanced Trauma Life Support Course of the American College of Surgeons.

It is assumed that the recommended rates for assisted ventilation contained in the 1992 Edition of the Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiac Care of the American Heart Association, 12 breaths per minute (1 breath every 5 seconds) for an adult and 20 breaths per minute (1 breath every 3 seconds) for a child 8 years of age or less, are sufficient to support adequate ventilation. Thus for adults with severe traumatic brain injury (Glasgow Coma Scale score < or = to 8), the assisted ventilatory rate should be 12 breaths per minute (1 breath every 5 seconds), while for children 8 years of age or less with severe traumatic brain injury (Glasgow Coma Scale score < or = to 8), the assisted ventilatory rate should be up to 20 breaths per minute (1 breath every 3 seconds). Only if active seizures, or signs of transtentorial herniation such as fixed or asymmetric pupils, neurologic posturing (decerebrate or decorticate),

Cushing's reflex (hypertension and bradycardia), periodic breathing (Cheyne-Stokes, central neurogenic, ataxic breathing), or neurologic deterioration (further decrease in Glasgow Coma Scale score of 2 or more points), are present may hyperventilation be considered, and ventilatory rates increased to 20 breaths per minute in adults and to 25 breaths per minute in children. The *Statewide Basic Life Support Adult and Pediatric Treatment Protocols* have been modified to reflect this change, and Regional Emergency Medical Advisory Committees, and regional, system, and service medical directors are advised to modify local protocols, policies, and procedures accordingly.

### Selected References

1. Brain Trauma Foundation, American Association of Neurological Surgeons, Joint Section on Neurotrauma and Critical Care: Guidelines for Management of Severe Head Injury. New York: Brain Trauma Foundation, 1995.
2. Obrist WD, Langfitt TW, Jaggi JL, et al: Cerebral blood flow and metabolism in comatose patients with severe head injury. J Neurosurg 1984;61:241-253.
3. Muizelaar JP, Marmarou A, Ward JD, et al: Adverse effects of prolonged hyperventilation in patients with severe head injury: a randomized clinical trial. J Neurosurg 1991;75:731-739.
4. Bouma GJ, Muizelaar JP, Stringer WA, et al: Ultra early evaluation of regional cerebral blood flow in severely head injured patients using xenon enhanced computed tomography. J Neurosurg 1992;77:360-368.

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<b>Advisory No.</b>	<b>97-04</b>
<b>Title</b>	<b>Medical Anti-Shock Trousers</b>
<b>Date Approved</b>	<b>August 7, 1997</b>
<b>Page</b>	<b>1 of 3</b>

**Note:** This advisory guideline announces important changes in the *Statewide Basic Life Support Adult and Pediatric Treatment Protocols*. Revised copies of each of the protocols affected by these changes are attached. Revised copies of each of the protocols affected by these changes are also being sent to all emergency medical services agencies statewide. Regional Emergency Medical Advisory Committees, and regional, system, and service medical directors are directed to facilitate use of the revised protocols at the local level, and are further advised to modify local protocols, policies, and procedures accordingly.

### **Medical Anti-Shock Trousers**

Current Statewide Basic Life Support Adult and Pediatric Treatment Protocols stipulate that Medical Anti-Shock Trousers (MAST), also known as the Pneumatic Anti-Shock Garment (PASG), should be inflated if the systolic blood pressure is below 90 mm Hg in adults or below 70 mm Hg in children and signs of inadequate perfusion are present, if MAST (PASG) are available. The State Emergency Medical Advisory Committee has reviewed these protocols, and concludes, on the basis of recent scientific evidence, that prehospital MAST (PASG) use in New York State should be considered only in adult major blunt trauma with severe hypotension (systolic blood pressure < 50 mm Hg) and hypotension (systolic blood pressure < 90 mm Hg) associated with unstable pelvic fracture.

In 1989, Mattox et al, in a prospective randomized study of 911 adult trauma patients, mostly with penetrating injuries, found that MAST (PASG) use was associated with longer scene times, and worsened the survival of adult patients with systolic hypotension (BP < 90 mm Hg) as well as those with primary thoracic injuries who presented in traumatic cardiac arrest. In 1992, Cooper et al, in a retrospective study of the efficacy of MAST (PASG) use in 436 pediatric trauma patients, mostly with blunt injuries, from the National Pediatric Trauma Registry who presented in hypotensive shock, found similar results. In 1993, Cayten et al reported the results of a retrospective study of MAST (PASG) use in 629 hypotensive adult trauma patients which concurred with Mattox's findings, although they were able to demonstrate a small but statistically significant survival advantage in severe hypotension (BP < 50 mm Hg). While there have been no prospective studies and no published trauma registry data in support of MAST (PASG) use for hypotension associated with unstable pelvic fractures, retrospective reviews and cases reports consistently support MAST (PASG) use in such circumstances.

In 1997, O'Connor et al performed a collective review of the scientific literature as an evaluation of MAST (PASG) in various clinical settings. On the basis of this review, Domeier et al developed a position paper on use of MAST (PASG) for the National Association of EMS Physicians, the Summary Recommendations from which, as they pertain to trauma, are summarized below.

MAST (PASG) are "usually indicated, useful, and effective" (Class I evidence) for:

- None.

MAST (PASG) are "acceptable, of uncertain efficacy, [although the] weight of evidence favors usefulness and efficacy" (Class IIa evidence) for:

- "Hypotension due to suspected pelvic fracture;
- Severe traumatic hypotension (palpable pulse, blood pressure not obtainable). \*\*

MAST (PASG) are "acceptable, of uncertain efficacy, may be helpful, probably not harmful" (Class IIb evidence) for:

- "Penetrating abdominal injury;
- Lower extremity hemorrhage (otherwise uncontrolled); \*
- Pelvic fracture without hypotension; \*
- Spinal shock. \*\*

MAST (PASG) are "inappropriate, not indicated, may be harmful" (Class III evidence) for:

- "Adjunct to CPR;
- Diaphragmatic rupture;
- Penetrating thoracic injury;
- Pulmonary edema;
- To splint fractures of the lower extremities;
- Extremity trauma;
- Abdominal evisceration;
- Acute myocardial infarction;
- Cardiac tamponade;
- Cardiogenic shock;
- Gravid uterus."

\* Data from controlled trials not available. Recommendation based on other evidence. The literature cited supports the conclusion that the role of MAST (PASG) in the prehospital emergency medical care of adult and pediatric patients is extremely limited. The State Emergency Medical Advisory committee agrees with the National Association of EMS Physicians that the weight of the evidence favors the usefulness and efficacy of MAST (PASG) only for adult major blunt trauma with severe hypotension (systolic blood pressure < 50 mm Hg) and hypotension (systolic blood pressure < 90 mm Hg) associated with unstable pelvic fracture, a position which is consistent with the 1997 Edition of the Advanced Trauma Life Support Course of the American College of Surgeons.

The State Emergency Medical Advisory Committee (SEMAC) therefore recommends their use under these circumstances, although Regional Emergency Medical Advisory Committees (REMAC) may prescribe their use under other circumstances to address specific local conditions. The *Statewide Basic Life Support Adult and Pediatric Treatment Protocols* are being modified to reflect this change, and Regional Emergency Medical Advisory Committees, and regional, system, and service medical directors are advised to modify local protocols, policies, and procedures accordingly.

## **Selected References**

1. **Mattox KL, Bickell W, Pepe PE, et al: Prospective MAST study in 911 patients. J Trauma 1989;29:1104-1112.**
2. **Cooper A, Barlow B, DiScala C, et al: Efficacy of MAST use in children who present in hypotensive shock. J Trauma 1992;33:151.**
3. **Cayten CG, Berendt BM, Byrne DW, et al: A study of pneumatic antishock garments in severely hypotensive trauma patients. J Trauma 1993;34:728-735.**
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5. **O'Connor RE, Domeier RM: Collective review: An evaluation of the pneumatic anti-shock garment (PASG) in various clinical settings. Prehosp Emerg Care 1997;1:36-44.**
6. **Domeier RM, O'Connor RE, Delbridge TR, et al: Position paper: National Association of EMS Physicians: Use of the pneumatic anti-shock garment (PASG). Prehosp Emerg Care 1997;1:32-35.**

### **Issued by:**

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**Department of Health**

# ADVISORY

**Title:**

**Secondary Confirmation of ETT**

**Effective Date:**

**07/01/2002**



**Number:**

**02-01**

**Replaces/Supersedes:**

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## **Purpose**

To promote the use of adjuncts for secondary confirmation and monitoring of endotracheal tube placement in adult and pediatric patients.

## **Background**

Endotracheal intubation in adult and pediatric patients with severe respiratory failure or arrest can be a vital intervention for the prehospital advanced life support provider. However, since **failure to detect improper placement of an endotracheal tube can be fatal**, utmost care must be taken to ensure proper placement. Advanced life support providers should use both *primary* and *secondary* confirmation of endotracheal tube placement to reduce the chance of unrecognized misplacement or dislodgement. Use of a secondary confirmation device is particularly important in the prehospital setting and ambulance environment where movement of the patient at the scene and during transport increase the potential for unrecognized dislodgement.

Primary confirmation techniques for verifying correct intratracheal placement of the endotracheal tube include direct visualization of the endotracheal tube passing through the vocal cords, visual inspection of the chest for **presence** of symmetric chest rise, auscultation at the epigastrium for **absence** of gurgling sounds and auscultation at the anterior and lateral chest walls for **presence** of equal bilateral breath sounds.

Secondary confirmation techniques for verifying correct intratracheal placement of the endotracheal tube are used both following initial intubation and subsequently throughout transport. Secondary confirmation devices include *exhaled carbon dioxide (CO<sub>2</sub>) detector devices* and *esophageal detector devices*. Both qualitative and quantitative exhaled carbon dioxide (CO<sub>2</sub>) detector devices can be used for secondary confirmation and continuous monitoring. Qualitative devices indicate the presence of exhaled carbon dioxide (CO<sub>2</sub>) by change in color. Quantitative devices use digital numeric read outs or waveforms to document presence of exhaled carbon dioxide (CO<sub>2</sub>). Secondary confirmation devices are **not a substitute** for primary confirmation techniques that rely upon direct visualization and auscultation, but serve as an **additional method** of documenting proper endotracheal tube placement.

## **Implementation**

### **General Considerations**

For *secondary* confirmation of proper endotracheal tube placement, the prehospital care provider should use an exhaled carbon dioxide (CO<sub>2</sub>) detector device. Options for secondary confirmation include:

qualitative capnometry (colorimetric),  
quantitative capnometry (digital readout), or  
quantitative capnography (continuous waveforms)

When using exhaled carbon dioxide (CO<sub>2</sub>) detector devices, assessment should be made after six ventilations to clear any retained carbon dioxide that may be present after bag mask ventilation.

Because levels of carbon dioxide may be too low to register on exhaled carbon dioxide (CO<sub>2</sub>) detector devices in patients who are in cardiac arrest (or have severe airway obstruction or pulmonary edema), use of an esophageal detector device may be helpful. Esophageal detector devices (EDDs), both syringe and bulb types, suggest proper tube placement by noting easy aspiration of the syringe or rapid re-expansion of the bulb.

### **Pediatric Considerations**

When using a colorimetric device in children, a pediatric sized device is recommended for pediatric patients under 15 kg. If an adult sized device must be used in a pediatric patient due to the non-availability of a pediatric device, it should be removed from the breathing circuit immediately after proper endotracheal tube placement has been confirmed. This is due to the larger amount of dead space within the adult sized device, which will interfere with proper ventilation of patients under 15 kg (approximately 2 ½ years of age).

When using a capnographic device, the adapters should be consistent with manufacturer's recommendations for age or size of patients.

At present, esophageal detector devices are marketed for use in children 5 years of age and above by one manufacturer. The American Heart Association *Emergency Cardiovascular Care Guidelines 2000* notes that while the EDD has been used successfully in children, it appears unreliable for children below 1 year of age, and there are insufficient data in emergency intubations in infants and children to recommend their routine use.

## **Limitations**

Adjuncts for secondary confirmation of proper endotracheal tube placement may not be reliable under certain circumstances. As with many devices, there are limitations and special considerations that can affect results and interpretation. However, when interpreted along with primary confirmation, secondary confirmation provides further verification of successful intubation and helps to eliminate unrecognized esophageal intubation and dislodgement.

### **Exhaled Carbon Dioxide (CO<sub>2</sub>) Detector Devices**

- **Exhaled carbon dioxide (CO<sub>2</sub>) detector devices may detect residual CO<sub>2</sub> in the stomach from previous bag-valve-mask ventilations, mouth-to-mouth ventilations, or carbonated beverages. This might lead an advanced life support provider to think the tube is in the trachea when in actuality the device is detecting CO<sub>2</sub> from the stomach. Therefore, it is always recommended to administer six ventilations to clear any residual CO<sub>2</sub> from the trachea before performing the exhaled CO<sub>2</sub> measurement.**
- **Exhaled colorimetric carbon dioxide (CO<sub>2</sub>) detector devices that become contaminated with gastric acid or acidic drugs, such as epinephrine or lidocaine, may not be reliable. A color change that will be consistent with exhaled CO<sub>2</sub> may result but it will not change with ventilation. The EMS provider may think the tube is properly placed but it could be either in the esophagus or the trachea.**
- **Exhaled carbon dioxide (CO<sub>2</sub>) detector devices may not register CO<sub>2</sub> in circumstances where not enough CO<sub>2</sub> is delivered to the lungs or exhaled because of conditions such as cardiac arrest, status asthmaticus, and pulmonary edema. In such circumstances, there is insufficient CO<sub>2</sub> production to produce a color change (colorimetric device) or register a digital reading (capnometry), although carbon dioxide waveform (capnographic) devices register even very low concentrations of carbon dioxide. Therefore, in cardiac arrest, it is recommended that when the exhaled carbon dioxide (CO<sub>2</sub>) detector device does not register CO<sub>2</sub>, an EDD device also be used, especially if signs of primary confirmation are present.**

- **Pediatric exhaled carbon dioxide (CO<sub>2</sub>) detector devices** should be employed as per manufacturer recommendations to assure use of the appropriate size for infants and children. Note that in children less than 2 kg (approximately 4½ lb), CO<sub>2</sub> monitors may not register CO<sub>2</sub> even if the tube is in the trachea. With very small infants, the smaller volumes of CO<sub>2</sub> exhaled are insufficient to produce a color change (colorimetric device), a digital readout, or the characteristic waveform (capnographic devices).

### **Esophageal Detector Devices**

- **Esophageal detector devices may give misleading results** when there is **excessive gas in the stomach due to CPR** and there is easy pull back of the syringe or rapid expansion of the bulb. In this situation, the EMS provider may believe the endotracheal tube is properly placed in the trachea but it could be in the esophagus.
- **Esophageal detector devices may meet resistance to air pull** when the tube is actually in the trachea in situations such as: **clogging of the tube with thick secretions, morbid obesity, or COPD**. In these situations, the advanced life support provider might think that the tube is in the esophagus when it could be in the trachea.

### **Application**

To confirm proper placement of an endotracheal tube, advanced life support providers should use both primary and secondary confirmation:

Primary confirmation includes:

- ✓ Direct visualization of the endotracheal tube passing through the vocal cords,
- ✓ Observation of chest rise with positive pressure ventilation,
- ✓ Auscultation of the epigastric region for absence of gurgling, and
- ✓ Auscultation of the anterior and lateral chest walls for presence of breath sounds.

### **Secondary confirmation includes:**

- ✓ Exhaled carbon dioxide (CO<sub>2</sub>) detection, using colorimetric device, capnometry or capnography.
- ✓ If the CO<sub>2</sub> detector does not register CO<sub>2</sub> and a pulse is present, rely on the CO<sub>2</sub> device.

- ✓ If the CO<sub>2</sub> detector does not register CO<sub>2</sub> and the patient is in cardiac arrest, test with the esophageal detector device.
- ✓ When in doubt about proper tube placement, visualize correct placement of the tube between the cords or remove the tube.

**Prehospital providers must continue to confirm proper tube placement with clinical signs of adequate ventilation and end tidal CO<sub>2</sub> detector devices throughout treatment and transport.** This is particularly important because the potential for dislodgement of the tube during patient movement and patient transport is high.

As with any adjunct, it is important to have proper training in its use, to follow the manufacturer's recommendations, know the device's indications and limitations, and to follow medical protocols.

### **QA/QI**

The SEMAC will develop a process to monitor the success rate of endotracheal intubation by prehospital providers, to be implemented by the REMACs. This will include at least the following:

1. Develop and implement a process to track use of secondary confirmation devices by type in adult and pediatric patients being intubated.
2. Develop and implement a process to record physician verification of proper tube placement on arrival at the emergency department.
3. Develop and implement a process to provide continuing education and appropriate remediation based on the results of 1 and 2 above.

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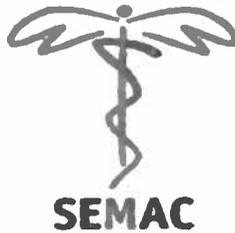
# ADVISORY

**Title:**

**AED for Pediatric Patients**

**Effective Date:**

**07/01/2002**



**Number:**

**02-02**

**Replaces/Supercedes:**

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**Purpose**

To promote safe and effective use of FDA-approved, pediatric-modified Automatic External Defibrillators (AED) in the pediatric patient under age 8.

**Background**

Early defibrillation has been shown to reduce morbidity and mortality in patients suffering ventricular fibrillation (VF). The use of AEDs by certified or licensed professionals and the trained lay person has been promoted, in the hope that it will result in more rapid application of this lifesaving therapy in appropriate patients. Thus far the use of AEDs has been limited to patients 8 years of age or older. Concerns about the amount of energy delivered by the previously available equipment, and about the ability of the available equipment to accurately diagnose ventricular fibrillation in pediatric patients has prevented recommendation of AED use in patients less than 8 years. (1).

The Food and Drug Administration (FDA) has recently approved an adaptation to an AED that allows the device to deliver a lower dose of electricity. The dose delivered by this device is 50 joules. This would deliver a dose of 5 joules/kg in the average 10 kg, 1 year old child, and a dose of 2 joules/ kg in the average 25 kg, 8 year old child. Although the maximum safe energy dose for infants and children has not been established, current guidelines for therapeutic defibrillation recommend 2-4 joules/kg. Older animal studies and one recent case report in a child suggest that much higher doses may be well tolerated. (2-4)

The AED, for which the pediatric pad and cable adapter has been designed, has been shown in one published study of 191 children, aged 1 day-12 years, to accurately detect "shockable" rhythms. (5) This study included 74 patients under 1 year of age and documented a specificity for "shockable" rhythms of 100%, in that the AED correctly identified "non-shockable" rhythms 100% of the time, thereby precluding an inappropriate shock. Previous concerns that rapid sinus tachycardia or SVT in an infant or small child might be mistaken for VF or VT by the machine, therefore, were not confirmed by this study. Furthermore, recent data show that up to 19% of pediatric patients with cardiopulmonary arrest, present with ventricular fibrillation, and that pediatric survivors of VF arrest have better neurologic outcomes than those with asystolic arrest. (6-9)

These data, coupled with the apparent safety of this new device, and the decision of the FDA to approve the device with the contingency that the first 50 patients would be carefully monitored by the manufacturer, led the State Emergency Medical Advisory Committee to reconsider the application of AED programs to children under age 8.

In October 2001, the State Emergency Medical Advisory Committee (SEMAC) approved the use of FDA approved pediatric-modified AEDs in children under age 8, by both trained EMS professionals and trained laypersons.

The SEMAC recommendation includes the need for careful monitoring of the use of pediatric-modified AEDs in New York State in accordance with FDA guidelines, as well as the need for additional training in use of the pediatric AED pad and cable system for all potential users of pediatric-modified AEDs both in proper use of AEDs, and in pediatric basic life support (PBLs), including cardiopulmonary resuscitation (CPR).

The SEMAC previously approved, and continues to recommend, use of the standard AED pad and cable system for children 8 years of age and older.

## **Implementation**

The SEMAC recommends that EMS programs and Public Access Defibrillation (PAD) programs that choose to use automated external defibrillators (AEDs) in pediatric patients under 8 years of age, should adhere to the following:

- Use only equipment that has been FDA-approved for pediatric use.
- Use approved AEDs according to the manufacturer's instructions, with due attention to operating procedures, maintenance and expiration dates.
- Have a training program that includes (1) specific orientation to the pediatric capable AED, with particular attention to indications (no signs of circulation, especially with sudden collapse, and for the large majority of pediatric patients, the continued importance of initial respiratory/airway management, and (2) training in infant and pediatric basic CPR

- Have a quality assurance/improvement program that requires the collection of data on all pediatric AED use and a mechanism of sharing that data on a regular basis with the local REMAC and the SEMAC. At a minimum the data should include: age of patient, device used, condition of patient when applied, outcome of patient and any adverse events noted (equipment failure, burns under pads, etc.)

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