

## Fractures/Dislocations

- I. Assure that the patient's airway is open and that breathing and circulation are adequate.
- II. Expose the injured area to locate and identify suspected fractures/dislocations.

**Note:**  
**Consider any wound near a fracture site to be the result of bone protrusion from an open fracture!**

- III. Control bleeding as appropriate.
- IV. Assess for shock. **If shock is present, refer immediately to the Shock Protocol!**
- V. Evaluate and record the pulse(s), sensory and motor functions distal to the suspected fracture/dislocation site before splinting.
- VI. Splint the fracture/dislocation, keeping the following guidelines in mind:
  - A. An open fracture should be covered with a dry sterile dressing and any bleeding controlled.
  - B. An injured joint should be immobilized in the position in which it was found.
  - C. A severely angulated extremity fracture should be straightened by applying gentle traction to it. If resistance is encountered, the extremity should be splinted in the angulated position.
  - D. A femur fracture should be splinted with a traction splint.
  - E. If the patient is hypotensive, an unstable pelvic fracture should be splinted with the MAST (if available and regionally approved<sup>1</sup>) according to the **Shock Protocol**.
- VII. Transport the patient in a position of comfort, keeping the patient warm.
- VIII. Obtain and record the patient's vital signs, including the status of the distal pulse(s), repeat en route as often as the situation indicates.
- IX. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report.

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<sup>1</sup> "Regionally approved" means approved by the appropriate regional emergency medical advisory committee (REMAC) for use in that region.

## **Adult Major Trauma – Continued**

III. Assess the patient's circulatory status.

**A. If the pulse is absent (Traumatic Cardiac Arrest):**

1. Extricate the patient rapidly.
2. Initiate transportation **immediately**. (Refer to item IV below.)
3. Perform CPR according to AHA/ARC standards.
4. Take appropriate steps to control hemorrhage.
5. Apply and inflate MAST, if available and regionally approved<sup>1</sup>, or elevate the foot of the backboard 30 degrees if MAST not available or not regionally approved<sup>1</sup>.
6. Record all patient care information, including all treatment provided, on a Prehospital Care Report (PCR).

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

1. Take appropriate steps to control hemorrhage.
2. Extricate the patient rapidly.
3. Initiate transportation **immediately**. (Refer to item IV below.)
4. Apply and inflate MAST, if available and regionally approved<sup>1</sup>, in adults with severe hypotension, or hypotension with unstable pelvic fracture, according to **the Shock Protocol**, or elevate the foot of the backboard 30 degrees if MAST not available or not regionally approved<sup>1</sup>.
5. Keep the patient warm en route.
6. Obtain and record the patient's initial vital signs, including capillary refill, repeat en route as often as the situation indicates.
7. Record all patient care information, including all treatment provided, on a Prehospital Care Report.

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## **Pediatric Major Trauma – Continued**

III. 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 standards.

**Note:**  
**Do not use the Automated External Defibrillator (AED) in Pediatric Cardiac Arrest!**

2. Take appropriate steps to control hemorrhage.
3. Elevate the foot of the backboard 30 degrees.

**Note:**  
**Do not use MAST In Pediatric Major Trauma!**

4. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report.

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

1. Identify any life-threatening hemorrhage, if present go to step C.
2. Initiate transport **immediately** while assessing the circulatory status.
3. Elevate the foot of the backboard 30 degrees.

**Note:**  
**Do not use MAST in Pediatric Major Trauma!**

4. Keep the child warm en route.

## Pediatric Major Trauma – Continued

5. Obtain and record the patient's initial vital signs, including capillary refill, repeat en route as often as the situation indicates.
6. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report.

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

1. Initiate transport **immediately** while taking appropriate steps to control hemorrhage.

**Caution:**  
**Relatively small amounts of blood loss may be life-threatening in small children!**

2. Assess for shock en route, **if clinical picture of shock is present (tachycardia, capillary refill greater than 2 seconds, cold clammy skin, thirst, restlessness and/or hypotension):**
  - a. Elevate the foot of the backboard 30 degrees.

**Note:**  
**Do not use MAST  
in Pediatric Major Trauma!**

- b. Keep the child warm en route.
3. Obtain and record the patient's initial vital signs, including capillary refill, repeat en route as often as the situation indicates.
4. Record all patient care information, including all treatment provided, on a Prehospital Care Report.

### IV. Transport to the appropriate hospital.

1. Transport the patient to the nearest designated **Regional or Area Trauma Center designated to receive pediatric patients** if the total time elapsed between the estimated time of injury and the estimated time of arrival at the Trauma Center is less than one hour (see Appendices for a list of the New York State Designated Trauma Centers designated to receive pediatric trauma patients); **or**

## Shock – Continued

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

- I. Assure that the patient’s airway is open and that breathing and circulation are adequate.
- II. Administer high concentration oxygen, and **be prepared to ventilate the patient!**
- III. Place the patient in a face-up position **and** elevate the patient’s legs or the foot of the backboard 30 degrees.
- IV. Apply MAST, if available and regionally approved<sup>1</sup>:
  - A. In adults with major blunt trauma, **if the systolic blood pressure is below 50 mm Hg and signs of inadequate perfusion are present**, inflate all three compartments to the recommended pressure **or** until the pop-off valves of all three compartments pop open.
  - B. In adults with major blunt trauma, **if the systolic blood pressure is below 90 mm Hg and signs of inadequate perfusion and unstable pelvic fracture are present**, inflate all three compartments to the recommended pressure **or** until the pop-off valves of all three compartments pop open.

**Note:**  
**Do not delay patient transport to apply and inflate MAST!**

- Caution:**
- **If the patient has pulmonary edema, do not apply MAST!**
  - **If the patient has a penetrating chest injury, do not apply MAST!**
  - **If the patient has unilaterally decreased breath sounds, do not apply MAST!**
  - **If the patient has an evisceration or an impaled object in the abdomen or legs, inflate only the MAST compartments not overlying the evisceration or impaled object!**
  - **If the patient is known to be pregnant, inflate only the MAST’s leg compartments!**
  - **If the patient has a cardiac related problem, do not apply MAST!**
  - **If the patient is a child, do not apply MAST!**

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## Appendix – Pediatric

### Appropriate Ventilatory Rates for Assisted Ventilation

<u>Age Group</u>	<u>If Respiratory Rate Is:</u>	<u>Ventilate At:</u>
Infant (<1 yr)	< 30/min	20/min
Toddler (1-2 yr)	< 25/min	20/min
Preschooler (3-5 yr)	< 20/min	20/min
School Age (6-12 yr)	< 15/min	20/min
Adolescent (13-18 yr)*	< 10/min	12/min

### Appropriate Ventilatory Rates for Hyperventilation in Severe Head Injury with Coma and Seizures or Herniation

<u>Age Group</u>	<u>Hyperventilate At:</u>	
Infant (<1 yr)	25/min	➔
Toddler (1-2 yr)	25/min	
Preschooler (3-5 yr)	25/min	
School Age (6-12 yr)	25/min	
Adolescent (13-18 yr)*	20/min	

Hyperventilate only in GCS<8 and one or more are present:

- Active seizures
- Asymmetric pupils
- Cushing’s reflex
- Periodic breathing
- Neurologic posturing
- Neurologic deterioration

### Criteria for Tachypnea (Rapid Respiratory Rate)

<u>Age Group</u>	<u>Hyperventilate At:</u>	
Infant (<1 yr)	>60/min	➔
Toddler (1-2 yr)	>40/min	
Preschooler (3-5 yr)	>35/min	
School Age (6-12 yr)	>30/min	
Adolescent (13-18 yr)*	>30/min	

Use this formula to estimate the upper limit of respiratory rate in pediatric patients 1-10 yr

$40-(2x \text{ age})$

### Criteria for Tachycardia (Rapid Heart Rate)

<u>Age Group</u>	<u>Heart At:</u>	
Infant (<1 yr)	>160/min	➔
Toddler (1-2 yr)	>150/min	
Preschooler (3-5 yr)	>140/min	
School Age (6-12 yr)	>120/min	
Adolescent (13-18 yr)*	>100/min	

Use this formula to estimate the upper limit of heart rate in pediatric patients 1-10 yr

$150-(5x \text{ age})$

### Criteria for Hypotension (Low Blood Pressure)

<u>Age Group</u>	<u>Blood Pressure:</u>	
Infant (<1 yr)	>60/mm Hg	➔
Toddler (1-2 yr)	>70/mm Hg	
Preschooler (3-5 yr)	>75/mm Hg	
School Age (6-12 yr)	>80/mm Hg	
Adolescent (13-18 yr)*	>90/mm Hg	

Use this formula to estimate the lower limit of systolic blood pressure in pediatric patients 1-10 yr

$70+(2x \text{ age})$

\*Adult Value Used