Pediatric Trauma Emergencies - ALS

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Pediatric Trauma Emergencies - ALS
(Abdominal Trauma)

OVERVIEW:

Blunt and penetrating traumas are major causes of morbidity and mortality in the United States. Pediatric abdominal anatomy differs from adults in several unique ways.

There is significantly less protection due to thinner muscle walls and less fat.
Ribs protecting the thoracic abdomen have increased flexibility more easily allowing the ribs to injure the abdominal organs.
Solid organs within the pediatric abdomen have a larger surface area thus a greater area is exposed for potential injury.
The organ attachments are also more elastic, increasing the chances of tearing and shearing injuries.
Lastly, the bladder extends to the umbilicus in the pediatric patient, increasing its chance of injury.

When performing a focused abdominal assessment, be organized, efficient, and thorough.

Initial abdominal examinations only identify injury about 65% of the time; secondary exams are needed when there is a high index of suspicion for abdominal trauma.

A proper abdominal examination involves exposing the entire abdomen from the nipple line to the groin and using a standard examination sequence of inspection, auscultation, percussion, and palpation.

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1. Demonstrates proper assessment techniques / Physical skills.
    a. Scene Survey
    b. HPI – Complete
    c. Signs and Symptoms
    d. SAMPLE
    e. OPQRST
    f. MOI – NOI
        i. Blunt
        ii. Penetrating
        iii. Speed
        iv. Restraints
        v. Protective Equipment
        vi. LOC
        vii. Time of Injury occurred
    g. Need for ALS.
    h. Pulse Ox
    i. End Tidal CO_2
    j. Place on Cardiac Monitor/Obtain 12 lead EKG.
    k. IV Access
    l. Primary Assessment
        i. XABCDE Format
    m. Life Threat Bleeding
        i. Assessment
        ii. Correction
    n. Airway
        i. Assessment
        ii. Correction
    o. Breathing
        i. Assessment
        ii. Correction

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1. Ventilate at a rate of least 30 per min.
2. Proper volume/Device
3. Pulse Ox at least 94%

p. Circulation
   i. Assessment
   ii. Correction
q. Disability
   i. Assessment
   ii. Correction
r. Exposure
   i. Assessment
   ii. Correction
s. C-Spine Precautions
t. Place on Cardiac Monitor
u. IV Access a second site if time permits.
   i. Maintain SBP
      1. Less than 30 days
         a. 60 mm/hg.
      2. 1 month to 1 year
         a. greater than 70 mm/hg.
      3. Greater than 1 year of age
         a. 70 +(2x Age(years) mm/hg.
   ii. Bolus 20 ml/kg. revaluate
      1. No improvement repeat bolus 1 time.
v. Treat pain if indicated - Refer to Pediatric Pain Management Protocol
w. Consider Ondansetron 0.1mg/kg. slow IVP over 2-5 minutes max 4 mg per dose follow Pediatric Pain Management Protocol

2. Demonstrates the following skills.
   a. Proper Physical Exam
      i. Pediatric Assessment Triangle.
         1. Across the Room Assessment
      ii. Head to toe format/Foot to Head
      iii. All major body parts/systems

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iv. Vital Signs / Documentation

b. Properly able to properly Backboard/C spine with size appropriate equipment
c. Frequently assess for Shock
d. Impaled Objects
e. Evisceration of Abdominal Organs
f. Proper CPR skills to current AHA Standards
g. Pulse Ox Measurement
h. Oxygen/Ventilation based on Assessment.
i. Demonstrates the appropriate transport mode and destination.
j. Transport as soon as safe to do so to the proper destination.

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Competency – ODEMSA – Regional Protocols – **Pediatric Trauma Emergencies – ALS - (Abdominal Trauma)**

Student's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

FTO's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

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Pediatric Trauma Emergencies - ALS
(Burns)

OVERVIEW:

Burns are a devastating form of trauma associated with high mortality rates, lengthy rehabilitation, cosmetic disfigurement, and permanent physical disabilities.

Thermal, chemical, electrical, nuclear radiation or solar sources may cause burns.

Burns can affect more than just the skin. They can affect the body's fluid and chemical balance, temperature regulation, and musculoskeletal, circulatory, and respiratory functions.

Burns are classified by degree:

- 1° **Superficial -** some reddening to skin,
- 2° **Partial-thickness -** has blistering and deep reddening to the skin, and
- 3° **Full-thickness -** causes damage to all skin layers and is either charred/ black or white/ leathery with little or no pain at the site.

The patient's palm equals approximately 1% of their body surface area when determining the area affected.

This is sometimes more helpful than using the "rule of nines" especially with pediatric patients.

Scald injuries are more common in younger children while flame injuries are more common in older children and account for the most fatalities.

Smoke inhalation is the most common cause of death in the first hour after a burn injury.

Children who have burn injuries are at a greater risk than adults for shock and hypothermia because of their proportionately large body surface.

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1. Demonstrates proper assessment techniques / Physical skills.
    a. Scene Survey
    b. HPI – Complete
    c. Signs and Symptoms
    d. SAMPLE
    e. OPQRST
    f. MOI – NOI
        i. Blunt
        ii. Penetrating
        iii. Speed
        iv. Restraints/Seatbelts/Car seat
        v. Protective Equipment
        vi. LOC
        vii. Time of Injury occurred
    g. Need for ALS.
    h. Pulse Ox
    i. End Tidal CO_2
    j. Place on Cardiac Monitor/Obtain 12 lead EKG.
    k. IV Access
    l. Primary Assessment
        i. XABCDE Format
    m. Life Threat Bleeding
        i. Assessment
        ii. Correction
    n. Airway
        i. Assessment
        ii. Correction
    o. Breathing
        i. Assessment
        ii. Correction

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1. Ventilate at a rate of least 30 per min.
2. Proper volume/Device
3. Pulse Ox at least 94%

p. Circulation
   i. Assessment
   ii. Correction
q. Disability
   i. Assessment
   ii. Correction
r. Exposure
   i. Assessment
   ii. Correction
s. C-Spine Precautions
t. Types of Burns
   i. Thermal
      1. Stop the burning process.
   ii. Chemical
      1. Dry Chemicals
         a. Brush off the substance
         b. Rinse with copious amounts of water for 20 minutes
      2. Liquid Chemicals
         a. Flush area with copious amounts of water for 20 minutes
   iii. Electrical
      1. Ensure Electricity/Energy is turned off.
         a. Remove from the source.
      2. Treat based on an assessment of injuries.
   iv. Radiation /Nuclear Materials
      1. Remove from the source.
      2. Treat based on an assessment of injuries.
u. Remove constricting clothing/Jewelry.
v. Bandage Dry Sterile Dressing
   i. Burn Sheet
w. If in critical respiratory distress

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i. Early placement advanced airway
ii. If Paramedic
1. Place an ET tube

x. If a partial or full-thickness burn involves more than 20% TBSA
i. IV of NS or LR
1. Patients 5 years and younger
a. 125 ml/hr.
2. Patients 6-13 years
a. 250 ml/hr.
3. Patients 14 years and older
a. 500 ml/hr.

y. Pain control – refer to Pediatric Pain Management Protocol

2. Demonstrates the following skills.
a. Proper Physical Exam
i. Pediatric Assessment Triangle.
1. Across the Room Assessment
ii. Head to toe format/Foot to Head
iii. All major body parts/systems
1. Critical Burns
iv. Vital Signs / Documentation
b. Properly able to properly Backboard/C spine with size appropriate equipment
c. Frequently assess for Shock
d. Pulse Ox Measurement
e. Oxygen/Ventilation based on Assessment.
f. Demonstrates the appropriate transport mode and destination.
g. Transport as soon as safe to do so to the proper destination.

The above is a very abbreviated summary of the Protocol.
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Competency – ODEMSA – Regional Protocols – **Pediatric Trauma Emergencies – ALS - (Burns)**

Student's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

FTO's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

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Pediatric Trauma Emergencies - ALS
(Electrical Injuries)

OVERVIEW:

Most electrical injuries are caused by generated electricity, such as that encountered in power lines and household outlets.

Relative to the external damage caused by electrical injuries, internal damage is often more severe and can include damage to muscles, blood vessels, organs, and nerves.

Damaged muscle releases myoglobin and potassium, which can precipitate in the kidneys and cause acute renal failure.

Electrical current as low as 20 mA can cause respiratory arrest and as little as 50 mA can cause ventricular fibrillation.

Although long-bone fractures and spinal injuries can occur due to falls after electrocution, they can additionally occur due to severe tetanic muscle spasms with high amplitude electrocutions.

Before treating any patient with an electrical injury, ensure your personal safety.
Do not touch the patient, if the patient is still in contact with the electrical source.

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1. Demonstrates proper assessment techniques / Physical skills.
    a. Scene Survey
    b. HPI – Complete
    c. Signs and Symptoms
    d. SAMPLE
    e. OPQRST
    f. MOI – NOI
        i. Blunt
        ii. Penetrating
        iii. Speed
        iv. Restraints/Seatbelts/Car seat
        v. Protective Equipment
        vi. LOC
        vii. Time of Injury occurred
    g. Need for ALS.
    h. Pulse Ox
    i. End Tidal CO_2
    j. Place on Cardiac Monitor/Obtain 12 lead EKG.
    k. IV Access
    l. Primary Assessment
        i. XABCDE Format
    m. Life Threat Bleeding
        i. Assessment
        ii. Correction
    n. Airway
        i. Assessment
        ii. Correction
    o. Breathing
        i. Assessment
        ii. Correction

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2. Proper volume/Device
3. Pulse Ox at least 94%

p. Circulation
   i. Assessment
   ii. Correction
q. Disability
   i. Assessment
   ii. Correction
r. Exposure
   i. Assessment
   ii. Correction
s. C-Spine Precautions
t. Types of Burns
   i. Thermal
      1. Stop the burning process.
   ii. Electrical
      1. Ensure Electricity/Energy is turned off.
         a. Remove from the source.
      2. Treat based on an assessment of injuries.
      3. Place on Cardiac monitor obtain 12 lead EKG
u. IV Access a second site if time permits.
   i. Maintain SBP
      1. Less than 30 days
         a. 60 mm/hg.
      2. 1 month to 1 year
         a. greater than 70 mm/hg.
      3. Greater than 1 year of age
         a. 70 +(2x Age(years) mm/hg.
   ii. Bolus 20 ml/kg. revaluate
      1. No improvement repeat bolus 1 time.
v. Pain control – refer to Pediatric Pain Management Protocol
w. Remove constricting clothing/Jewelry.

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x. Bandage Dry Sterile Dressing
    i. Burn Sheet

2. Demonstrates the following skills.
    a. Proper Physical Exam
        i. Pediatric Assessment Triangle.
            1. Across the Room Assessment
        ii. Head to toe format/Foot to Head
        iii. All major body parts/systems
            1. Critical Burns
        iv. Vital Signs / Documentation
    b. Properly able to properly Backboard/C spine with size appropriate equipment
    c. Frequently assess for Shock
    d. Pulse Ox Measurement
    e. Oxygen/Ventilation based on Assessment.
    f. Demonstrates the appropriate transport mode and destination.
    g. Transport as soon as safe to do so to the proper destination.

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Competency – ODEMSA – Regional Protocols – **Pediatric Trauma Emergencies – ALS - (Electrical Injuries)**

Student's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

FTO's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

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Pediatric Trauma Emergencies - ALS
(Head Injury)

OVERVIEW:

Brain injury and its accompanying pathologic processes continue to be a leading cause of mortality associated with trauma.

Whether the injury is due to a blunt or penetrating mechanism, bleeding or swelling of the brain and surrounding tissue may lead to an increase in pressure within the cranial cavity, known as intracranial pressure (ICP).

If the pressure within the skull is not controlled, neurologic changes may produce signs and symptoms ranging from headache to coma with loss of protective reflexes.

Blunt force trauma may result in scalp injury, skull fracture, and meningeal and brain tissue injury.

Penetrating trauma may produce focal or diffuse injury, depending on the velocity of the penetrating object.

Although the pre-hospital provider cannot reverse the brain tissue damage from the initial/ primary brain injury that has already occurred, they can play a major role in preventing or limiting the processes that exacerbate and lead to a secondary brain injury.

The pre-hospital provider's goal is to focus on reversing any hypoxia, hypotension, hypercarbia, acidosis, or increasing intracranial pressure.

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    d. SAMPLE
    e. OPQRST
    f. MOI – NOI
        i. Blunt
        ii. Penetrating
        iii. Speed
        iv. Restraints/Seatbelts/Car seat
        v. Protective Equipment
        vi. LOC
        vii. Time of Injury occurred
    g. Need for ALS.
    h. Pulse Ox
    i. End Tidal CO_2
    j. Place on Cardiac Monitor/Obtain 12 lead EKG.
    k. IV Access
    l. Primary Assessment
        i. XABCDE Format
    m. Life Threat Bleeding
        i. Assessment
        ii. Correction
    n. Airway
        i. Assessment
        ii. Correction
    o. Breathing
        i. Assessment
        ii. Correction

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2. Proper volume/Device
3. Pulse Ox at least 94%

p. Circulation
   i. Assessment
   ii. Correction
q. Disability
   i. Assessment
   ii. Correction
r. Exposure
   i. Assessment
   ii. Correction
s. C-Spine Precautions
t. Obtain Blood Glucose
u. Cardiac Monitor and obtain 12 lead EKG
v. IV Access a second site if time permits.
   i. Maintain SBP
      1. Less than 30 days
         a. 60 mm/hg.
      2. 1 month to 1 year
         a. greater than 70 mm/hg.
      3. Greater than 1 year of age
         a. 70 +(2x Age(years) mm/hg.
   ii. Bolus 20 ml/kg. revaluate
      1. No improvement repeat bolus 1 time

2. Demonstrates the following skills.
   a. Proper Physical Exam
      i. Pediatric Assessment Triangle.
         1. Across the Room Assessment
      ii. Head to toe format/Foot to Head
      iii. All major body parts/systems
         1. Critical Burns
      iv. Vital Signs / Documentation

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b. Properly able to properly Backboard/C spine with size appropriate equipment
    i. Proper Head/Neck Immobilization
    ii. Proper method to secure Patient to the Backboard
    iii. Proper method to secure Back boarded Patient to Stretcher.
c. Frequently assess for Shock
    i. If Shock is noted Refer to the Pediatric Shock Protocol
d. Properly Calculate Age-appropriate GCS
e. Pulse Ox Measurement
f. Oxygen/Ventilation based on Assessment.
g. Demonstrates the appropriate transport mode and destination.
h. Transport as soon as safe to do so to the proper destination.

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_____ _____ Date_____

Printed Name Signature

FTO's Name and Signature – date below:

_____ _____ Date_____

Printed Name Signature

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