TIMOTHY J. HARNAR BURN CENTER

Protocols for Transport

Regional Transfer Center Phone #: 1-800-345-9911
UMC Burn Clinic #: 806-743-2373

For burns greater than 20% Total Body Surface Area, the following should be completed prior to transfer:

1. Stop the burning process.

2. Protect the airway. Upper airway and/or pulmonary injuries should be considered, most commonly smoke inhalation injuries, especially in the following instances.

    a. Injury occurred in an enclosed space
    b. The patient has carbonaceous sputum
    c. Elevated arterial carboxyhemoglobin
    d. Obvious intraoral burn seen on physical examination
    e. Obvious respiratory distress, such as voice changes, wheezing, stridor

3. High flow oxygen, preferably humidified, by face mask is required for all burns you might consider transferring to the burn center. Ventilate by bag or appropriate ventilator if the patient is intubated as recommended by the physicians

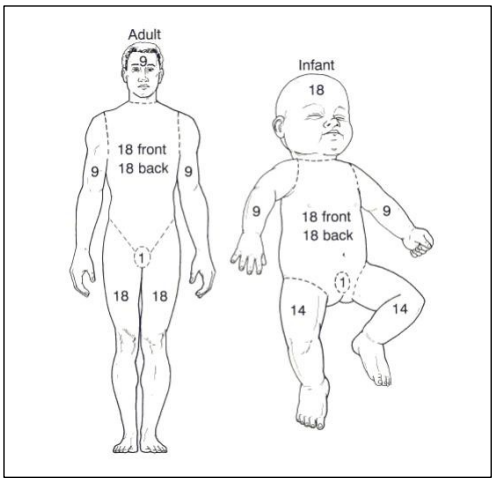
4. Start two large bore IV's with Lactated Ringers solution. Upper extremities are preferred. Lines may be started through burns if necessary. Interosseous (IO) access is acceptable if unable to obtain peripheral access. Subclavian or internal jugular lines are not recommended, unless other IV access cannot be obtained.

5. Starting points for EMS fluid resuscitation (see # 9 for the modified formulas that should be used by hospitals while assessing and preparing for transport):

    a. For children 5 years and younger: 125 ml LR per hour
    b. For children 6-13 years old: 250 ml LR per hour
    c. For patients 14 years and older: 500 ml LR per hour

6. Provide adequate monitoring and documentation of neurological status and peripheral pulses.

7. Remove all of the patients clothing, jewelry, etc. Determine % TBSA by using the rule of nines.



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UMC HEALTH SYSTEM

8. **<u>Protect against hypothermia</u>. Make all attempts to keep the patient warm. If the patient is to be transported by air in a cabin that is not well heated, reflective thermal blankets are suggested.**

9. Once % TBSA is calculated, began fluid resuscitation with LR based on the following resuscitation formulas:

Fluid Resuscitation Formulas

- **Adult**: Thermal and Chemical Burns: 2 ml LR x kg body weight x % TBSA (second and third degree burns only)

- **Children** (< 14 years old): 3 ml LR x kg body weight x % TBSA (second and third degree burns)

- **Infants & Young Children (≤ 30kg):** (< 14 years old): 3 ml LR x kg body weight x % TBSA **<u>plus</u>** LR with Dextrose 5% at maintenance rate
    - Maintenance Fluids in Children
        - 4ml/hour for each kg up to 10 kg
        - 2ml/hour for each kg from 11 - 20 kg
        - 1 ml/hour for each kg > 20kg

- **All Patients with High Voltage Electrical Injuries**: 4 ml LR x kg body weight x % TBSA (second and third degree burns)

Give ½ of fluid requirement over the first 8 hours from time of injury, and the second ½ over the next 16 hours.

10. Monitor urine output via Foley catheter. Goal urine output:

    a. **Adults and older children (> 30kg)**
        i. 0.5 ml/kg/hour (30 - 50 ml/hour)
    b. **Smaller children (up to 30kg)**
        i. 1 ml/kg/hour
    c. **Adult patients with high voltage electrical injuries with evidence of myoglobinuria:**
        i. 75 – 100 ml/hour until urine clears.

11. A nasogastric tube should be placed for
    a. Intubated patients
    b. Patients with associated trauma

12. Medications:
    - Pain medications may be administered intravenously. Morphine is preferred.
    - Tetanus toxoid should be administered if no record within the last one year.
    - **<u>No antibiotics should be administered</u>**
    - Other IM, oral, or subcutaneous medication is not suggested.

13. Wound Care: If transfer is to be accomplished within the first four to six hours after injury, it is suggested that a **clean dry sheet** or blanket be placed on the burns. <u>Do not</u> use ointments, creams or moist dressings on large burns.
    - Exception: tar burns – Do not remove tar, coat tar in petroleum based product such as mineral oil, wrap with gauze, and transfer to the burn center.

Special Considerations for Electrical Injuries:

1. Attempt to obtain the amount of voltage in which the patient came in contact

2. Cardiac monitoring should be provided for patients with electrical injuries

3. High voltage electrical injuries (>1000V) are associated with myonecrosis and myoglobinuria. Acute renal failure can develop unless adequate urine output is assured.
   - Urine output:
     - Adult Electrical Burns: 75-100 cc/hr
     - Children Electrical Burns (<40kg): 2 ml/kg/hr

Special Considerations for Chemical Injuries:

1. Protect the trauma team with the appropriate personal protective equipment.

2. For powdered chemical, dust off loose powder.

3. Irrigate with copious amounts of water. Do not delay decontamination waiting to identify chemical or find antidote.

Special Considerations for Children with Burns Over 20% Total Body Surface Area:

1. Fluid Resuscitation
   a. **Children** (< 14 years old): 3 ml LR x kg body weight x % TBSA (second and third degree burns)

   b. **Infants & Young Children (≤ 30kg):** (< 14 years old): 3 ml LR x kg body weight x % TBSA **plus** LR with Dextrose 5% at maintenance rate
      i. Maintenance Fluids in Children
         1. 4ml/hour for each kg up to 10 kg
         2. 2ml/hour for each kg from 11 - 20 kg
         3. 1 ml/hour for each kg > 20kg

2. Adequate urine output is considered:
   a. Young Children (weighing ≤ 30kg): 1 ml/kg/hour
   b. Pediatric (Weighing > 30 kg,up to age 17): 0.5 ml/kg/hour

3. Children are especially susceptible to hypothermia with large burns and great care must be taken to keep the patient's temperature within normal range.

Special Considerations for Geriatric (≥ 65 years old) Burns:

1. Risk of Mortality is greater
   a. Early intervention is essential
   b. Thinner skin, pre-existing conditions, decreased reserves make the patient a higher risk.
2. Monitor resuscitation:
   a. High risk of fluid overload
   b. May require additional fluid resuscitation due to limited reserves and thin skin mean burns may be deeper than they appear.
3. Aggressive respiratory care required.