MANAGEMENT AND TRIAGE OF SEVERELY BURNED PATIENTS

OBJECTIVES:

1. To provide triage parameters and guidelines for the management of the severely burned patient.
2. To provide guidelines to stabilize thermally injured persons until transfer to a burn unit.
3. To provide information to insure smooth transfer of the patient to the burn unit.

DEFINITIONS:

Severely burned patient: This is a patient with a severe burn injury who should be transferred for specialized care to a burn center. The definitions are derived from the classification of burns and guidelines proposed by the American Burn Association.
- Partial and full thickness burns that involve >10% total body surface area (TBSA) in patients < 10 years or > 50 years of age.
- Partial or full thickness burns > 20% TBSA in other age groups.
- Partial and full thickness burns involving the face, eyes, ears, hands, feet, perineum, or that involve the skin over major joints.
- Burns associated with significant fractures or other major injury.
- High voltage electrical burns.
- Inhalation injury.
- Lesser burns in patients with significant pre-existing disease.

GUIDELINES:

1. Assess the ABC.s. Do not allow your attention to be diverted by the thermal cutaneous burn. Look for life-threatening injuries first.
   a. Airway:
      i. Assess for upper airway injury caused by the inhalation of hot gases or products of combustion. This will potentially result in rapid upper airway occlusion.
         a) Stridor.
         b) Inability to handle secretions.
         c) Inability to speak; hoarseness.
         d) Burns about face and mouth.
         e) Singed nasal hairs
         f) Erythema in the pharynx.
         g) If there is any question about airway occlusion, intubate the patient using the oral route under direct visualization.
ii. Assess for smoke inhalation. This may result in lower airway occlusion or noncardiogenic pulmonary edema:
   a) All of the above signs, plus:
   b) A history of being burned in an enclosed environment.
   c) Carbonaceous sputum.
   d) Soot in the airway and around the nose and mouth.
   e) Uncontrollable coughing:
      i) Obtain chest X-ray. REMEMBER: the initial chest X-ray may be normal with severe smoke inhalation.
      ii) If there is any question about smoke inhalation, intubate the patient and place them on positive pressure ventilation.
      iii) Consider bronchoscopy, looking for erythema of the airway and soot deposition in the trachea and bronchi.

iii. Carbon monoxide poisoning:
   a) Consider carbon monoxide poisoning with any of the above findings, and
   b) Carboxyhemoglobin level >10%:
      i) Apply FiO2 at 100%.

iv. Consider cyanide intoxication in enclosed space fires.

b. Breathing:
   i. Assess breath sounds and obtain a chest X-ray.
   ii. Treat according to the chest injury guidelines.

c. Circulation:
   i. Assess for shock and treat accordingly.
   ii. Insert two large bore IV’s. These may be placed peripherally or centrally. It is acceptable to place the IV’s through the burn wound if it is the only access site.
   iii. Administer two liters of warmed normal saline solution.

d. Disability:
   i. Assess neurologic status.

e. Expose: Remove all clothing and constricting bands or jewelry. Place patient on clean sheet. Sterile sheets are not required. Do not immerse burn into water or ice. Prevent hypothermia.

2. Obtain blood sample for laboratory.
   a. CBC, renal panel, UA, clotting studies, blood alcohol (if necessary).
   b. Obtain CXR if not already done.
   c. Obtain EKG in patients over 45 or those who are having arrhythmias.
   d. Obtain arterial blood gas with carboxyhemoglobin level.

3. Insert Foley catheter and NG/OG tube in patients with >20% TBSA burn.

4. Examine the burn when the patient is otherwise stable.
   a. Rule of nines for second and third degree burn only.
   b. The palm of the patient’s hand (without the fingers) is equal to 1% TBSA.
   c. Assess depth of burn:
      i. First degree: erythematous, dry, painful, blanches (e.g., sunburn).
      ii. Second degree (partial thickness): blisters, wet, erythematous, painful, blanches (e.g., blister burn).
      iii. Third degree (full thickness): dry, leathery, gray or brown, painless, does not blanch (e.g., surface of football).
   d. Calculate the fluid requirements:
      i. (4 ml) X (wt in kg) X (% TBSA burn) given over first 24 hours.
      ii. One-half given in first 8 hours after the burn and the rest given in second 16 hours. NOTE: calculate first 8 hours from time of burn, not time of presentation to ED.
      iii. Maintain urine output at 0.5 ml/kg/hr in the adult (1.0 ml/kg/hr in child and 2.0 ml/kg/hr in infant <1 year).
   e. Assess for constricting eschar:
      i. Usually on extremity but may be on chest or neck.
      ii. Release eschar medially and laterally as follows:
         a) Prep with Betadine.
         b) Use electrocautery unit if possible or scalpel
         c) There should be no pain and minimal bleeding.
         d) The eschar will spread apart when incised to the proper depth.
e) Cover the site with saran wrap.
f) Do not administer antibiotics unless there is a concomitant injury requiring antibiotics.
g) Administer intravenous boluses of morphine intravenously as needed for pain. Keep the patient comfortable.

5. Transfer
   A. Marshalltown Medical and Surgical Center is not a burn center. We work in concert with other facilities in the state offering specialized Burn care.
   B. MMSC will accept all burn wounds from the scene, by air or ground, assess and stabilize the patient. If the patient can receive definitive care at this facility, the patient will be admitted. If the patient requires Burn Center care, the patient is transferred.

6. Send the following with the patient:
   A. EMTALA Transfer Form.
   B. Medical Records.
   C. Laboratory results
   D. X-rays.

Adopted by Trauma Care Committee, December 2004

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