PRACTICE GUIDELINE

Effective Date: **9-27-04** Manual Reference: **Deaconess Trauma Services**

TITLE: MANAGEMENT AND TRIAGE OF SEVERELY BURNED PATIENTS

PURPOSE: To provide triage parameters and guidelines for the management of the severely burned patient. To provide guidelines to stabilize thermally-injured persons until they may be transferred to a burn center. To provide information to ensure smooth transfer of the patient to the burn center.

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 as well as the American College of Surgeons.

- Partial thickness burns greater than 10% total body surface area (TBSA).
- Burns involving the face, hands, feet, genitalia, perineum, or major joints.
- Third degree burns in any age group.
- Electrical burns, including lightning injury.
- Inhalation injury.
- Chemical burns.
- Burns injury in patients with significant pre-existing disease that could complicate management, prolong recovery, or affect mortality.
- Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn unit. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
- Burned children in hospitals without qualified personnel or equipment for the care of children.
- Burn injury in patients who will require special social, emotional and / or long-term rehabilitative intervention.

Any burn patient admitted to Deaconess Hospital, regardless of mechanism of injury, should be admitted to a trauma surgeon or have a consult to a trauma surgeon. When deemed necessary by trauma surgeon, plastics will be consulted.

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 air or gases. This will potentially result in rapid upper airway occlusion.
            a) Stridor.
            b) Inability to handle secretions.
            c) Inability to speak; hoarse.
            d) Burns about face and mouth.
            e) Erythema in the pharynx.
            f) If there is any question about airway occlusion, intubate the patient using the oral route under direct visualization.
        ii. Assess for smoke inhalation. This will result in lower airway occlusion or non-cardiogenic 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) Consider bronchoscopy, looking for erythema of the airway and soot deposition in the trachea and bronchi.
                iii) If there is any question about smoke inhalation, intubate the patient and place them on positive pressure ventilation.
        iii. Carbon monoxide poisoning:
            a) Consider carbon monoxide poisoning with any of the above findings, and
            b) Carboxyhemoglobin level >10%:
                i) All burns get oxygen
                ii) Burns with carbon monoxide exposure should have high flow oxygen via a non-rebreathing mask.
                iii) Consider endotracheal intubation for respiratory failure
                iv) Consider the use of a hyperbaric chamber
    B. Breathing
        i. Remember that the patient could have sustained a chest injury in association with the burn injury.
        ii. Assess breath sounds and obtain a chest X-ray.
        iii. 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 okay to place the IV's through eschar if it is the only access site.
        iii. Administer two liters of normal saline solution.

D. Disability
   i. Assess neurologic status.
   ii. If brain injury is suspected, obtain CT scan.
E. Expose
   i. 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.
F. Obtain blood sample for laboratory.
   i. CBC, renal panel, UA, clotting studies, blood alcohol (if necessary).
   ii. Obtain CXR if not already done.
   iii. Obtain EKG in patients over 45 or those who are having arrhythmias.
   iv. Obtain arterial blood gas with carboxyhemoglobin level.
G. Insert Foley catheter and with >20% TBSA burn gastric tube.
H. Consider Nasogastric/orogastric tube if >20% TBSA burn
I. Examine the burn when the patient is otherwise stable.
   i. Rule of nines for second- and third-degree burn only.
   ii. The palm of the patient's hand (without the fingers) is equal to 1% TBSA.
   iii. Assess depth of burn:
      a) First degree: erythematous, dry, painful, blanches (e.g., sunburn).
      b) Second degree (partial thickness): blisters, wet, erythematous, painful, blanches (e.g., blister burn).
      c) Third degree (full thickness): dry, leathery, gray or brown, painless, does not blanch (e.g., surface of football).
      d) Only second and third degree burns are considered when assessing the size of the burn.
   iv. Calculate the fluid requirements:
      a) (2-4 ml) X (wt in kg) X (% TBSA burn) – given over first 24 hours.
      b) One-half given in first 8 hours and the rest given in second 16 hours.
      c) 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]).
   v. Assess for constricting eschar:
      a) Usually on extremity but may be on chest or neck.
      b) Release eschar medially and laterally as follows:
         i) Prep with betadine.
         ii) Use #11 blade.
         iii) Hold between your thumb and forefinger with the blade protruding 1/4 inch.
         iv) Run the blade on the medial and lateral aspect of the involved limb. For chest injuries, release the eschar on the lateral aspect of the chest at the anterior axillary line.
         v) There should be no pain and minimal bleeding.
         vi) Expand the escharotomy with a clamp.
         vii) Cover the site with a dry, sterile dressing.
   vi. Do not administer antibiotics unless there is a concomitant injury.

vii. Administer intermittent boluses of morphine intravenously as needed for pain. If the patient is intubated and stable, you can be moderately liberal with the pain med.

REFERENCES:

- American Burn Association, ADVANCED BURN LIFE SUPPORT COURSE GUIDELINES.
- Deaconess Hospital Policy and Procedure Manual 30-03, PATIENT ROOM PREPARATION AND BED ASSIGNMENT.
- Deaconess Hospital Policy and Procedure Manual 40-06, EMERGENCY MEDICAL TRANSFER AND ACTIVE LABOR (EMTALA) GUIDELINES.

REVIEWED DATE	**REVISED DATE**
JAN 05	9-21-07
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