**OPERATIONAL GUIDELINES: Emergency Care of moderate and severe thermal burns in adults**

**OBJECTIVE:**

Provide guidelines describing the appropriate treatment for the adult burn patients in the Emergency Department.

**GUIDELINES:**

All trauma cases – including patients with burn injuries – should be treated by initially following the guidelines for Advanced Trauma Life Support (ATLS) to ensure that life-threatening injuries are addressed immediately. ABCDs first! After addressing the ABCDs of life support, focus turns to burn injuries.

The initial assessment and management of the patient with moderate and severe thermal burns will be reviewed here. Details of burn classification, burn management in children, treatment of minor burns, and other issues related to burn management are discussed separately.

**Procedure:**

**INITIAL ASSESSMENT AND TREATMENT**

**Initial interventions** — Assessment and initial treatment of severe burns is performed simultaneously with trauma resuscitation ([algorithm 1](https://www.uptodate.com/contents/image?imageKey=EM%2F51484&topicKey=EM%2F350&source=see_link)).

1. Stabilize ABC’s
2. Assess for Evidence of respiratory distress and smoke inhalation
3. Remove any burned clothing and debris
4. Obtain information from EMS and bystanders if there is knowledge of what chemicals, plastics, or other materials burned. Also, ask if it was in an open or closed space, and if there was an explosion (eliminates blast injury).

**Burn Management Guidelines**

* 1. **Cool the Burn**
     1. Remove the source of burning or additional source(s) of burning
        1. Jewelry or any metal objects that can retain heat
        2. Decontaminate for suspected chemical exposure (Follow institutional Decon/ Haz-Mat policy)
* If powder chemical – Brush, then flush
* If liquid, then flush with copious amounts of water
  + Flush for at least 15 min with luke-warm water
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    1. **Avoid the use of ice to cool any burn**
* Cooling of burns is only effective when performed within the initial 2 minutes of injury or if the burning agent is present. Use luke warm water to cool the affected area.
* Avoid secondary injury and minimize potential for wound conversion
  + 1. Avoid use of cold saline or cold water soaked dressings on burns, however room temperature water is not contraindicated in cooling a minor burn (Venter, Karpelowsky, Rode, 2006)
    2. If history of fire in an enclosed space, suspect smoke inhalation – Upgrade to Trauma Alert

##### Partial Thickness Burn Wounds (2nd Degree):

* + 1. Definition:
       1. Destruction of epidermis and varying layers/ depth of the dermis
    2. Characteristics:
       1. Historically described as blistered or moist if blisters are removed
          1. Extremes of age may present with blistered wound that has deeper areas below the blister, therefore the presence of blister does not

guarantee partial-thickness depth.

* + - * 1. Wound Coloration/Appearance:

1. Wound bed coloration and appearance will vary according to the depth of dermis that is injured:
   1. Superficial partial-thickness burns typically present with varying stages of bullous blister. Once the blister is

removed, the wound bed may be red or variations of pink

* 1. Deep partial-thickness burns may be pale pink, white, yellow or deep red and may present with or without blister
     + - 1. Vascularity:

1. Blanches with pressure
2. May range from brisk to sluggish or absent depending on depth and coloration of the wound
   * + - 1. Pain:
3. Superficial partial-thickness are very painful when exposed to air as well as to palpation
4. Deep partial-thickness may be painful but pain is typically dull to minimal
   * + - 1. Prognosis:
5. Blister removal is highly recommended to complete accurate wound assessment and to facilitate more rapid healing.
6. Partial-thickness burn wounds that heal within 14 days typically

have minimal risk for hypertrophic scarring, although mechanisms of injury such as grease have a higher probability for discoloration

scarring.

1. Deep partial-thickness burn wounds have a higher probability to result in scarring due to the depth of structural involvement and can result in contracture and hypertrophic scarring if healing is delayed or if the wound becomes infected.
   * 1. Recommended Treatment:
        1. Gently cleanse wound with Chlorhexadine soap and rinse thoroughly with tap water. If the wound is on the face or ears use a mild soft soap as the chlorhexidine can cause Ototoxicity leading to hearing loss that can be permanent.
        2. Apply Bacitracin Ointment and cover with non-adherent Xeroform or adaptic.
           1. Antibiotic Ointment is preferred on hands, feet and areas that may have increased exposure to bacteria/ increased risk of infection
           2. Wrap loosely with absorbent gauze dressing (Kerlix)
           3. The patient’s tetanus immunization status should be evaluated and updated if appropriate. Should be within the past 5 years.
           4. Avoid use of Silver Sulfadiazene Cream 1% (Silvadene) in 2nd Degree burn wounds (Wasiak et al, 2010).
2. The high concentration of silver delays wound healing and is likely to be ineffective or harmful in the treatment of partial-thickness

burns.

1. Wounds treated with Silvadene also develop a thick layer of pseudoeschar that obscures future wound bed evaluation.
   * + - 1. Routine administration of prophylactic antibiotics does not protect against cellulitis and their use is not recommended (ABA chapter 2, 2001).

##### Full Thickness Burn Wounds (3rd Degree):

* + 1. Definition:
       1. Complete destruction of epidermis, dermis and may extend though subcutaneous tissue into fat and muscle.
       2. Full-thickness burn wounds may present with accompanying blister,

Specifically, in the extremes of age.

* + 1. Characteristics:
       1. Wound Coloration/ Appearance:
          1. Charred, white to tan or black
          2. Dry, leathery or waxy texture/ feel
       2. Vascularity:
          1. Since vascular bed is destroyed, Full-thickness burn wounds do not blanch due to complete destruction of cutaneous vascular supply.
       3. Pain:
          1. Insensate, however may have deep pressure sensation
          2. Minimal to no pain, unless infection/ cellulitis is present
       4. Prognosis:
          1. Full thickness burn wounds require surgical management with excision and skin grafting. Full-thickness burn wounds present multiple complications that result in the potential for extensive scarring, especially when located in areas of high tension and movement such as fingers, joints, axilla and neck.
    2. Recommended Treatment:
       - 1. Referral to Burn Center for further evaluation and treatment
       1. The patient’s tetanus immunization status should be evaluated and updated if appropriate
       2. Full-thickness/ 3rd degree burns require excision and skin grafting to heal
       3. Routine administration of prophylactic antibiotics does not protect against cellulitis and their use is not recommended

##### EVALUATION:

Due to the individualized response to burn injury, individual outcomes will be defined by the clinician treating the patient and should be determined by the individual patient response to therapy.

**Emergency Department communication options regarding burn patients**

If a patient meets Moderate Risk criteria and you would like to discuss with a burn provider, options for communication are: Call the Upstate Burn Transfer Center (24-hr Burn Attending availability): 866 464-5449

**Operating Hours Outpatient Burn Recovery Center Outpatient Burn Recovery Center**

750 East Adams Street

Syracuse, New York 13201

Phone: 315-464-1800

Fax: 315 464-2607

**All Patients MUST Call for an Appointment**

**Helpful Information when calling the Outpatient Burn Center**:

Demographics: Name, Age, DOB, MR#

HPI: Date of Injury, circumstances & mechanism of injury, burn size, location & depth

Pt. Contact information (Home / Cell #)

What was done to treat burn in ED



