



# Chemical and Electrical Burn

## History

- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history / Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

## Signs and Symptoms

- Burns, pain, swelling
- Ocular burns/vision changes
- Loss of consciousness
- Hypotension/shock
- Compartment syndrome
- Airway compromise/distress could be indicated by hoarseness/wheezing
- Electrical may be misleading with small contact/external burn and major internal injury – burn/trauma center recommended

## Differential

- Thermal / Chemical / Electrical Burn Injury
  - Superficial (1<sup>st</sup> Degree) red – painful (Don't include in TBSA)
  - Partial Thickness (2<sup>nd</sup> Degree) blistering
  - Full Thickness (3<sup>rd</sup> Degree) painless/charred or leathery skin
- Radiation injury
- Blast injury

**Assure Chemical Source is NOT Hazardous to Responders.**  
**Assure Electrical Source is NO longer in contact with patient before touching patient.**

Assess Burn / Concomitant Injury Severity

**< 5% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn**  
 No inhalation injury, Not Intubated,  
 Normotensive  
 GCS 14 or Greater  
 Minor Burn

**5-15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn**  
 Suspected inhalation injury or requiring intubation for airway stabilization  
 Hypotension or GCS 13 or Less  
 (When reasonably accessible, transport to a Burn Center)  
 Serious Burn

**>15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn**  
 Burns with Multiple Trauma  
 Burns with definitive airway compromise  
 (When reasonably accessible, transport to a Burn Center)  
 Critical Burn

	Age Appropriate Airway Protocol(s) AR 1, 2, 3, 4, 5, 6, 7 <b>if indicated</b>
	Thermal Burn Protocol TB 9
	Pain Control Protocol UP 11 <b>if indicated</b>
	Identify Contact Points
	<b>Eye Involvement</b> Irrigate Involved Eye(s) with Normal Saline for 30 minutes Continue irrigation during transport
	<b>Chemical Exposure / Burn</b> Flush Contact Area with Normal Saline for 15 minutes Continue irrigation during transport
	Decontamination Procedure <b>if indicated</b>
	Age Appropriate Cardiac Protocol(s) <b>if indicated</b>

**Rapid Transport** to appropriate destination using  
**Trauma and Burn:**  
**EMS Triage and Destination Plan**

**Notify Destination or Contact Medical Control**

Trauma and Burn Protocol Section



# Chemical and Electrical Burn

## Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, and Neuro**
- **Green, Yellow and Red In burn severity do not apply to Triage systems.**
- **Refer to Rule of Nines.**
- **Transport and Destination:**
  - In general, chemical and electrical burns should be transported to a burn center.
  - Burn center should be initial destination choice unless EMS system access is limited by time and/or distance.
  - When EMS transport to burn center is limited, transport to and stabilization at local center is appropriate.
- **Chemical Burns:**
  - Refer to Decontamination Procedure.
  - With dry powders/substances, gently brush or wipe off prior to irrigation. Do not aerosolize by brushing too vigorously.
  - Normal Saline or Sterile Water is preferred, however if not available, do not delay irrigation and use tap water. Other water sources may be used based on availability.
  - Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids.
  - Flush contact area for minimum of 15 minutes and continue until arrival at receiving facility.
  - Hydrofluoric acid burns:
    - Monitor ECG for peaked T waves which can be sign of hypocalcemia.
  - Eye involvement:
    - Irrigation is recommended for a minimum of 30 minutes and continue until arrival at receiving facility.
- **Electrical Burns:**
  - Remember the extent of the obvious external burn from an electrical source does not always reflect more extensive internal damage not seen. Small external injury may have large internal injury.**
  - Do not refer to as entry and exit sites or wounds.**
  - DO NOT contact patient until you are certain the source of the electrical shock is disconnected.
  - Attempt to locate contact points (generally there will be two or more.) A point where the patient contacted the source and a point(s) where the patient is grounded.
  - Sites will generally be full thickness (3<sup>rd</sup>).
  - Cardiac Monitor: Anticipate ventricular or atrial irregularity including VT, VF, atrial fibrillation and / or heart blocks.
  - Attempt to identify the nature of the electrical source (AC / DC), the amount of voltage and the amperage the patient may have been exposed to during the electrical shock.
  - Lightning strike:**
    - Lightning strike victims are amenable to airway, breathing, cardiac compressions as well as early defibrillation.
    - Use concept of reverse triage with multiple casualties. Resuscitate lightning strikes as the priority.
    - Lightning strike victims found alive do not often deteriorate quickly.