

Protocol 10-2

SECTION: Pediatric Trauma Emergencies

PROTOCOL TITLE: Injury – Burns – Thermal

REVISED: 06/2017

OVERVIEW:

Burns are a devastating form of trauma associated with high mortality rates, lengthy rehabilitation, cosmetic disfigurement, and permanent physical disabilities. Thermal, chemical, electrical, (nuclear) radiation or solar sources may cause burns. Burns can affect more than just the skin. Burns are classified by degree, 1° (superficial) some reddening to skin, 2° (partial thickness) has blistering and deep reddening to the skin, and 3° (full thickness) causes damage to all skin layers and is either charred / black or white / leathery with little or no pain at the site. The patient’s palm equals 1% of body surface area when determining the area affected. Scald injuries are more common in younger children while flame injuries are more common in older children and account for the most fatalities. Smoke inhalation is the most common cause of death in the first hour after a burn injury. Children who have burn injuries are at a greater risk than adults for shock and hypothermia because of their proportionately large body surface.

HPI	Signs and Symptoms	Considerations
<ul style="list-style-type: none"> Type of exposure (heat, gas, chemical) Inhalation injury Time of injury Past medical history Medications Other trauma 	<ul style="list-style-type: none"> Burns, pain, swelling Dizziness Loss of consciousness Hypotension/ shock Airway compromise, distress Singed facial or nasal hair Hoarseness, wheezing 	<ul style="list-style-type: none"> Superficial (1°), red and painful Partial thickness (2°), blistering Full thickness (3°), painless and charred leathery skin Chemical, Thermal, Radiation

	EMR	EMT	A	I	P
1. Stop the burning process:	•	•	•	•	•
a. Thermal burns: Lavage the burned area with sterile water or saline to cool skin. Do not attempt to wipe off semisolids (grease, tar, wax, etc.) Do not apply ice. Dry the body when the burn area is greater than or equal to 10% TBSA to prevent hypothermia.	•	•	•	•	•
b. Dry chemical burns: Brush off dry powder, then lavage with copious amounts of tepid water (sterile, if possible) for 20 minutes. Continue en route to the hospital.	•	•	•	•	•
c. Liquid chemical burns: Lavage the burned area with copious amounts of tepid water (sterile, if possible) for 20 minutes. Continue en route to the hospital.	•	•	•	•	•
2. Support life-threatening problems.	•	•	•	•	•
3. Perform general patient management.	•	•	•	•	•

BURNS

Protocol 10-2

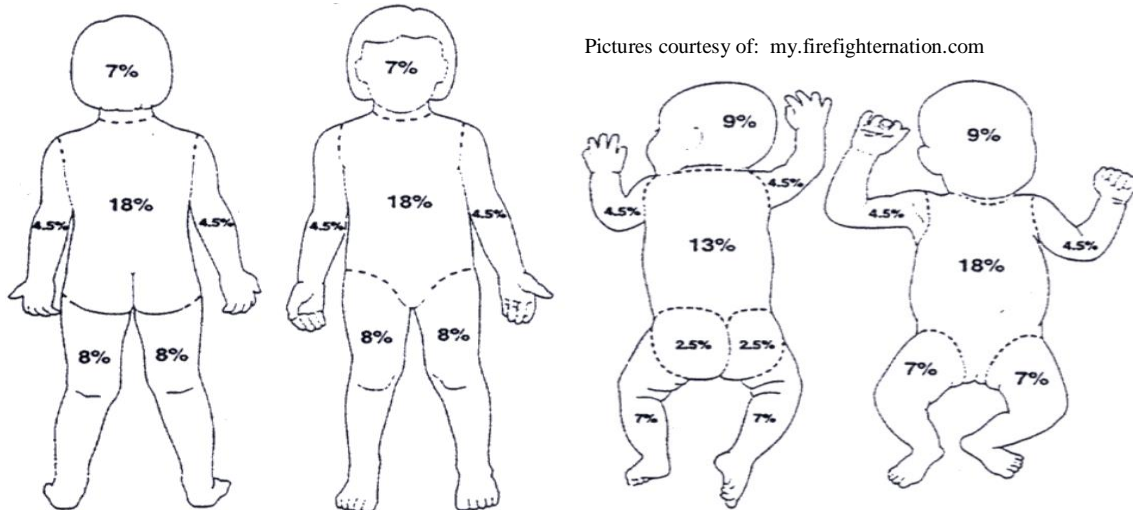
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BURNS

	EMR	EMT	A	I	P
4. Administer oxygen, via non-rebreather mask, at 10 - 15 L / min. as necessary. Use humidified oxygen if suspected inhalation injury and when available.	•	•	•	•	•
5. If the patient is in critical respiratory distress, consider early placement of an advanced airway. <i>*Endotracheal Intubation / cricothyrotomy are reserved as Paramedic only.</i>		•	•	•	•
6. Remove clothing from around burned area, but do not remove/peel off skin or tissue. Remove and secure all jewelry and tight fitting clothing.	•	•	•	•	•
7. Assess the extent of the burn using <u>the rule of nines</u> and the degree of burn severity.	•	•	•	•	•
8. Cover the burned area with a clean, dry dressing. Wet dressing may be used if the burned TBSA is less than 10%.	•	•	•	•	•
9. If a partial or full thickness burn involves more than 20% TBSA, establish an IV of NS or LR (if available). Infuse the fluid amounts listed as below. If the patient develops signs and symptoms of fluid overload respiratory distress (dyspnea, crackles, rhonchi, decreasing SpO ₂), slow the IV to KVO. a. For patients 5 years and younger, start at 125mL/hr. b. For patients 6-13 years, start at 250mL/hr. c. For patients 14 years and older, start rate at 500 mL/hr.			•	•	•
10. For pain control, refer to the <u>Pediatric Pain Management protocol</u> .	•	•	•	•	•
11. Perform ongoing assessment as indicated and transport major burns to Level 1 Burn Center. Transport minor burns to appropriate facility.		•	•	•	•

****Normal Saline or Lactated Ringers are fluids of choice in burn patients****

Excessive fluid resuscitation can lead to compartment syndromes.



PEARLS:

1. Remove patient's clothing as appropriate. Remove rings, bracelets and other constricting items in areas of burn, if possible.
2. Critical burns: burns over $> 25\%$ TBSA, 2° burns $> 10\%$ TBSA, 2° and 3° burns to the face, eyes, hands, or feet, electrical burns, respiratory burns, deep chemical burns, burns with extremes of age or chronic disease, and burns with associated major traumatic injury. These patients should be transported directly to a VCU Pediatric Emergency department, if possible.
3. Have a high index of suspicion and a low intubation threshold when treating burn patients with possible airway involvement. Early intubation is recommended in significant inhalation injuries.
4. Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
5. Burn patients are prone to hypothermia – never cool burns that involve $> 15\%$ TBSA.
6. Never overlook the possibility of multi-system trauma.
7. Burns are extremely painful. Strongly consider pain management medications as needed.
8. Assess for potential child abuse and follow appropriate reporting mechanism as needed.
9. Keep the child warm and protect from hypothermia. Be cautious with cool dressings.

Protocol

10-2

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BURNS

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