



KEY POINTS

Burns are a leading cause of unintentional injury and death in children

1. Burn injuries should be managed as a trauma case and require primary and secondary survey
2. Total Body Surface Area (TBSA) calculation is essential for adequate fluid resuscitation

BURN ASSESSMENT

- A burn diagram, (the pediatric Lund and Browder chart), is used to estimate the total body surface area (TBSA) of the burn (represented as a % of body surface area)
- *Superficial burns are not included in the TBSA calculation***

BURN CENTER REFERRAL

1. $\geq 10\%$ TBSA partial and/or full thickness age ≤ 10
2. Full thickness burns $\geq 5\%$ TBSA any age
3. Inhalation injury
4. Electrical burns (including lightning injury)
5. Concomitant trauma in which the burn injury poses the greatest risk of morbidity and mortality
6. Chemical burns
7. Burned children in hospitals without qualified personnel or equipment for the care of children

This list is not comprehensive. Refer to American Burn Association Burn Center Referral Criteria

PAIN MANAGEMENT

- Mild pain may be managed with acetaminophen and/ or ibuprofen
- Severe pain will require IV opioids as needed (e.g. IV morphine or fentanyl)

EMERGENCY DEPARTMENT ASSESSMENT

- **AIRWAY:** Signs of airway burn/ inhalation injury: stridor, hoarseness, respiratory distress
- **BREATHING:** Full thickness and/or circumferential chest burns may require escharotomy to permit chest expansion
- **CIRCULATION:** IV fluid resuscitation (refer to fluid management)
- **DISABILITY:** If altered conscious state, consider airway support
- **EXPOSURE:** Expose whole body for assessment of burn depth and total body surface area of burn

HISTORY: Mechanism of injury (consider the potential of non-accidental injury and report appropriately if concerns)

CLASSIFICATION OF BURNS BY DEPTH

Burn Depth	Appearance	Sensation	Healing time
Superficial (epidermis only)	Dry, red	Painful	3 to 6 days
Superficial partial-thickness (epidermis and papillary dermis)	Blisters, moist, red, weeping	Painful to temperature, air and touch	7 to 21 days
Deep partial-thickness (epidermis and reticular dermis)	Blisters; Wet or waxy dry; Variable color (patchy white to red)	Painful to pressure only	>21 days, usually requires surgical treatment (skin grafting)
Full thickness (epidermis and dermis)	Waxy white to leathery gray to charred and black; Dry and inelastic	Painful to deep pressure only	Rare, unless surgically treated (skin grafting)

FLUID MANAGEMENT

- For patients with burns measuring greater than 10% TBSA, a burn resuscitation formula such as the Parkland Formula is used to estimate the fluid volume requirements for the first 24 hours

Parkland formula = $4\text{mL} \times \% \text{ TBSA burned} \times \text{Weight (kg)}$

Give $\frac{1}{2}$ in **first 8h** since the time of injury

Give $\frac{1}{2}$ in the **next 16h**



- Children $<30\text{kg}$ should receive maintenance fluid with D5W $\frac{1}{2}$ NS in addition to calculated requirements (use 4:2:1 rule)
- Warmed ringer's lactate is used in fluid resuscitation to prevent hypothermia

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