

EMERGENCY TREATMENT OF BURN PATIENTS

1 IMMEDIATE EMERGENCY BURN CARE

1. Treat according to ACLS or ABLIS protocol.
2. Use airway and C-Spine precautions.
3. Stop the burning process.

2 AIRWAY MANAGEMENT

1. Administer high-flow 100% oxygen to all burn patients. Be prepared to suction and support ventilation as necessary.
2. If an inhalation injury is suspected, consider intubation. Burns sustained in an enclosed space are more likely to result in an inhalation injury. Other indications of an inhalation injury include:
 - + Dark or reddened oral and/or nasal mucosa.
 - + Burns to the face, lips or nares; singed eyebrows; and/or singed nasal hairs.
 - + Carbon or soot on teeth, tongue or oral pharynx.
 - + Raspy, hoarse voice or cough.
 - + Stridor or inability to clear secretions may indicate impending airway closure.
 - + Mental status changes.

3 TOTAL BODY SURFACE AREA

4 FLUID RESUSCITATION

IN A PRE-HOSPITAL SETTING, SET FLUID TO:

- < 5 years 125 mL/hr
- 6-12 years 250 mL/hr
- ≥ 13 years 500 mL/hr

ONCE THE PATIENT IS IN THE EMERGENCY DEPARTMENT, USE THE FOLLOWING FORMULA* TO CALCULATE FLUIDS:

- 2-4 mL Ringer's Lactate x kg body weight x TBSA / 16 = hourly infusion rate
- Calculate fluids from time of accident.

- A** Adult ≥13 2 mL
- C** Child <13 3 mL
- E** Electrical 4 mL

For TBSA >20%, consider placing Foley catheter to accurately measure urine output. Consult burn center if urine is black, brown, red or <1 mL/kg/hr.

TITRATE RINGER'S LACTATE BASED ON URINE OUTPUT:

- + Adult or young adolescent >30kg 30-50 mL/hr
 - + Children <30kg 1 mL/kg/hr
 - + High-voltage electrical injury 75-100 mL/hr
- Consult Burn Center if urine is black/brown/red or <1 mL/kg/hr.

*Parkland formula for Burn Fluid Management

5 INJURIES

TREAT BURN PATIENT AS TRAUMA PATIENT AND CHECK FOR:

1. **Head injury** — Burns do not cause altered consciousness. If the patient has limited response to stimuli, look for another cause, such as head injury, anoxia or severe inhalation injury.
2. **Fractures.**
3. **Spinal injuries.**
4. **Soft tissue damage.**
5. **Foreign bodies** (especially in explosions).

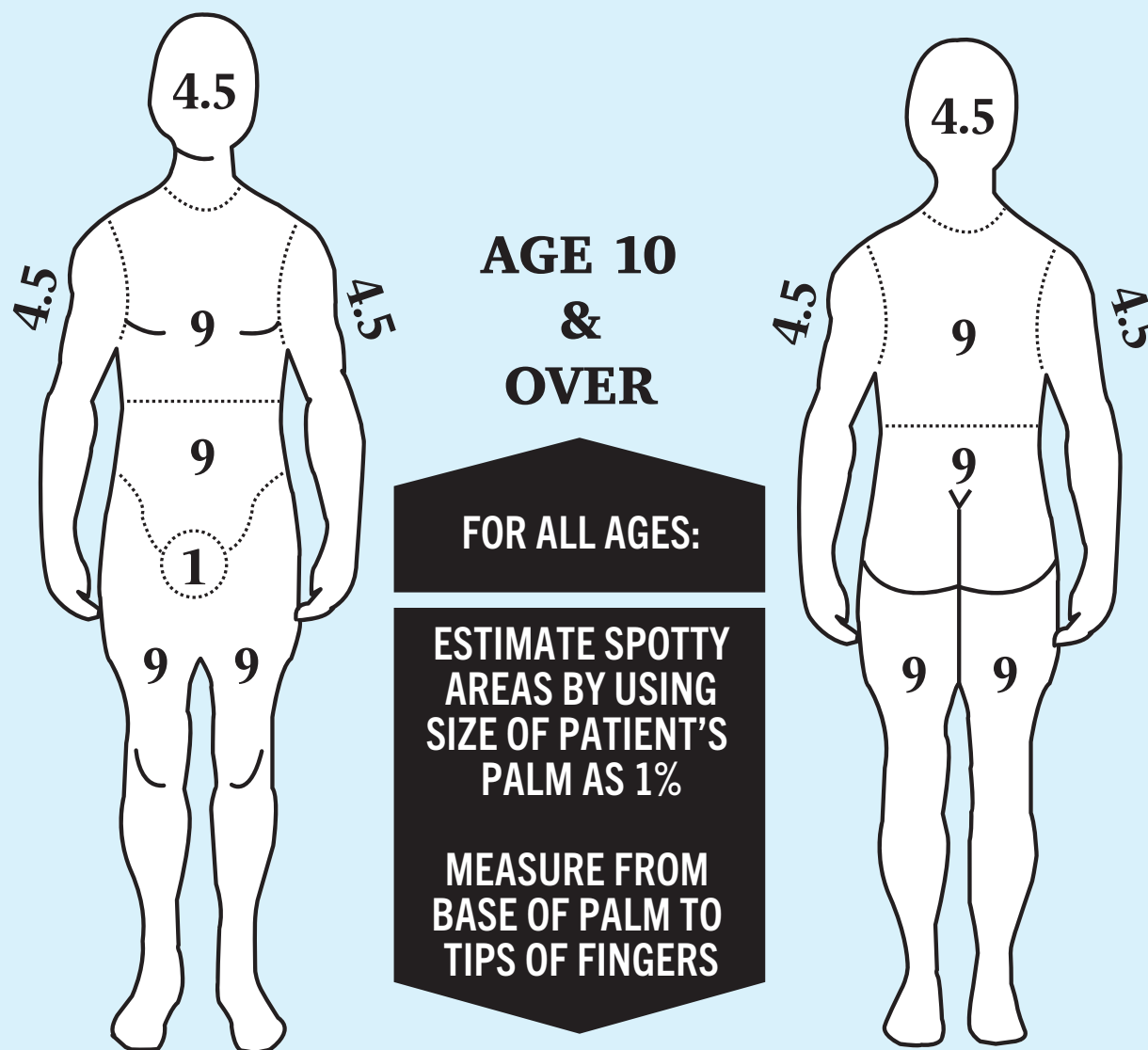
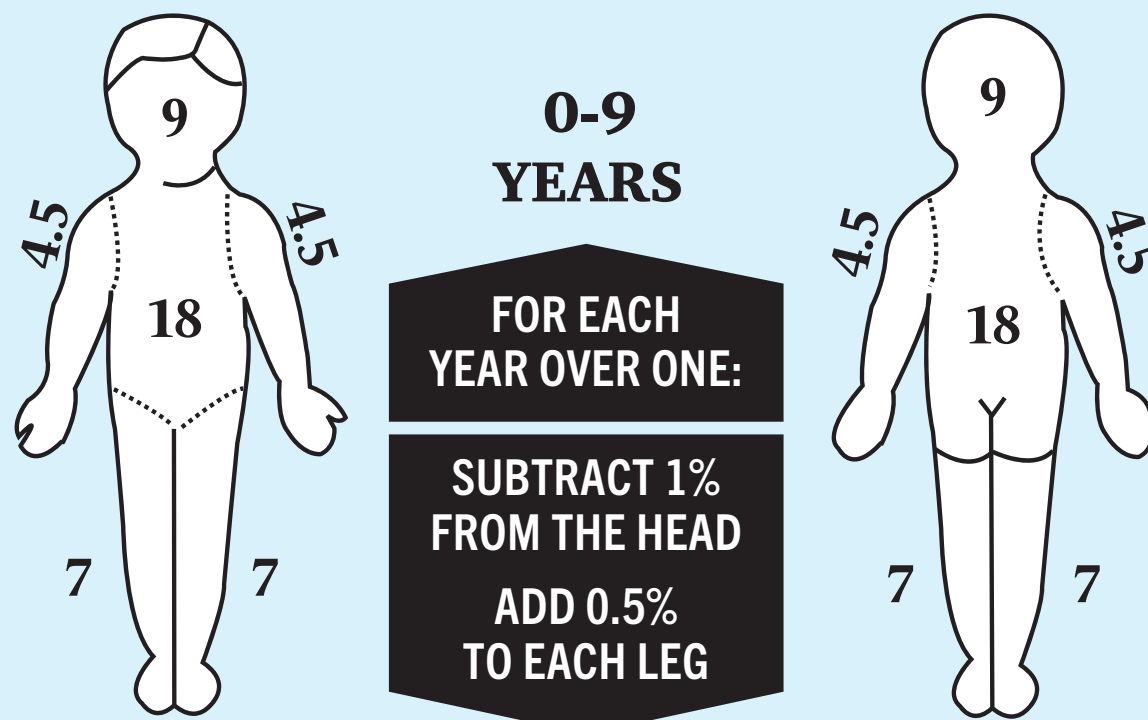
Proceed with emergency treatment of any concomitant injuries and prevent further injuries.



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TOTAL BODY SURFACE AREA BY PERCENTAGE RULE OF NINES



6 ESTIMATE DEPTH OF BURN INJURY

First-degree burns:

- + Are marked by red, pink or darkened skin.
- + Are painful and warm to touch.
- + No blisters or skin sloughing present.
- + Not included in TBSA calculation.

Second-degree burns:

- + Are moist, reddened, blistered and painful to touch.
- + Blanch to touch.
- + Are at risk of developing into a third-degree burn. Regularly reassess second-degree burns to ensure the injury has not converted to a third-degree burn.

Third-degree burns:

- + Are dry/tight/leathery, brown/tan/waxy or pearly white.
- + Are devoid of blanching or capillary refill.
- + Are relatively pain-free, lacking blisters and may initially appear as second-degree.
- + Need skin grafting to heal.

Fourth-degree burns:

- + Have a charred appearance.
- + Extend below the dermis and subcutaneous fat into the muscle, bone or tendon.

7 OBTAIN PATIENT HISTORY

Obtain the following patient information:

- + How was the patient burned? Enclosed space? Any deaths at scene?
- + When did it happen?
- + Are there concomitant injuries? Rule out associated trauma.
- + Are there chemical burns — what was the agent? Concentration? Obtain Material Safety Data Sheets.
- + PMH/PSH? Allergies? Medications? Last Tetanus? Drug/alcohol history?
- + When was the patient's last meal?

8 PAIN MANAGEMENT

Give all pain medication via IV. Provide morphine sulfate (if not contraindicated) in the following proportions:

- + **Adults:** 4-8 mg IV every 2-4 hours PRN
- + **Children:** Titrate IV by weight (0.05-0.1 mg/kg every 1-2 hrs PRN or consult burn center surgeon.
- + Do not use ice, iced normal saline or iced water as a comfort measure.

9 WOUND CARE MEASURES

- + Remove all clothing, diapers, jewelry, metal and restrictive garments.
- + Consult the Burn Center concerning circumferential burns of the extremities or thorax. Escharotomies are occasionally necessary at the referring facility.
- + Assess the 5 Ps (pain, pallor, paralysis, paresthesia and pulselessness).
- + Elevate HOB and burned extremities to decrease swelling.
- + Wound debridement usually not necessary.
- + Apply sterile, dry dressings for transport.
- + Do not apply ice, ointments or creams.
- + Maintain body heat — wrap in blankets, prevent unnecessary exposure.

10 OTHER INTERVENTIONS

- + Labs: CBC, PT, PTT, fibrinogen, ABG with CK, lactic acid, carboxyhemoglobin, myoglobinuria and electrolytes.
- + X-ray: CXR and areas of suspected trauma.
- + Insert NG tube and decompress stomach if nausea and vomiting are present, patient is intubated, TBSA >20% and/or transport by air.
- + Keep patient NPO.
- + Monitor patient's vital signs and peripheral pulses every 15 minutes.



855-863-9595
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24/7 LINE TO BURN SURGEON OR BURN PROVIDER FOR PATIENT CONSULTS, REFERRALS AND TRANSFERS

AMERICAN BURN ASSOCIATION'S GUIDELINES FOR BURN PATIENT REFERRAL

ADVICE ON TRANSFER AND CONSULTATION

- These guidelines are designed to aid in clinical decision making. If you have sustained a burn injury, please seek medical advice from a medical professional.
- Local and regional infrastructure, resources and relationships may determine the necessity and timeliness of burn center referral.
- These guidelines are not meant to be definitive care recommendations. They may facilitate building the proper referral network within the local healthcare community.

	Immediate Consultation with Consideration for Transfer	Consultation Recommendation
Thermal Burns	<ul style="list-style-type: none"> • Full thickness burns • Partial thickness ≥10% TBSA* • Any deep partial or full thickness burns involving the face, hands, genitalia, feet, perineum, or over any joints • Patients with burns or other comorbidities • Patients with concomitant trauma • Poorly controlled pain 	<ul style="list-style-type: none"> • Partial thickness <10% TBSA* • All potentially deep burns of any size
Inhalation Injury	<ul style="list-style-type: none"> • All patients with suspected inhalation injury 	<ul style="list-style-type: none"> • Patients with signs of potential inhalation such as facial flash burns, singed hairs or smoke exposure
Pediatrics (≤14 years, or <30 kg)	<ul style="list-style-type: none"> • All pediatric burns may benefit from burn center referral due to pain, dressing change needs, rehabilitation, patient/caregiver needs, or non-accidental burns 	
Chemical Injuries	<ul style="list-style-type: none"> • All chemical injuries 	
Electrical Injuries	<ul style="list-style-type: none"> • All high voltage (≥1000V) electrical injuries • Lightning injuries 	<ul style="list-style-type: none"> • Low voltage (<1000V) electrical injuries should receive consultation and consideration for follow up in a burn center to screen for delayed symptom onset and vision problems