



DEDER GENERAL HOSPITAL

EMERGENCY BURN MANAGEMENT PROTOCOL

Adults

The **Rule of 9s** is commonly used to estimate the burned surface area in adults. The body is divided into anatomical regions that represent 9% (or multiples of 9%) of the total body surface area. The outstretched palm and fingers approximate to 1%.

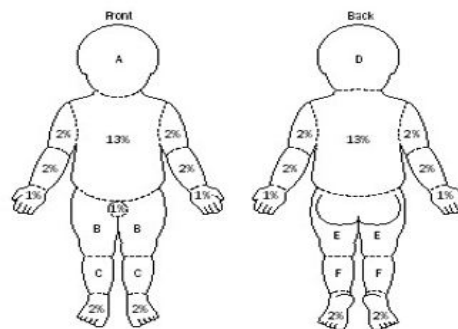
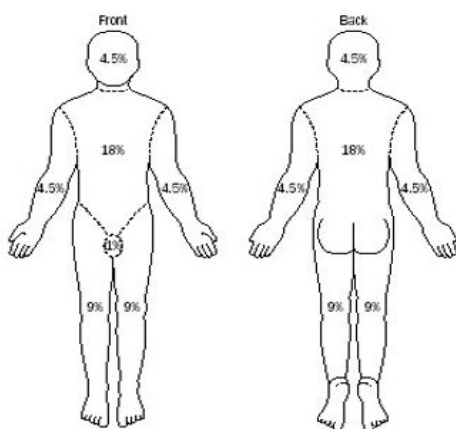
Children

The **Rule of 9s** is modified for infants and children since their heads and lower extremities represent different proportions of body surface area.

PREPARED BY: HSQU

ADOPTED FROM STG 2021

IF THE BURNED AREA IS SMALL, ASSESS HOW MANY TIMES YOUR HAND COVERS THE AREA



Area	By age in years			
	0	1	5	10
Head (A/D)	10%	9%	7%	6%
Thigh (B/E)	3%	3%	4%	5%
Leg (C/F)	2%	3%	3%	3%

JULY 2016 E.C

DEDER, EASTERN ETHIOPIA



PROTOCOL APPROVAL SHEET

NAME OF PROTOCOL: EMERGENCY BURN MANAGEMENT PROTOCOL

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INTRODUCTION

Burn is a traumatic injury to the skin or other tissues caused by thermal, chemical, electrical, radiation or cold exposures. Burns are an acute wound and pass through series of healing steps. The most common type of burn in children is from a scald injury; in adults, the most common burn occurs from a flame.

Table 15.3: Classification of burns based on the depth of injury (*Adapted from, Med Clin North Am 1997 and Am Fam Physician 1992*)

Depth	Appearance	Sensation	Healing time
First degree (Superficial)	Dry (no blister) Erythematous Blanches with pressure	Painful	3-6 days
Second degree (partial-thickness)-superficial	Blisters Moist, red, weeping Blanches with pressure	Painful (even to air)	7 to 21 days
Second degree (partial-thickness)-deep	Blisters (easily unroofed) Wet or waxy dry Variable color (cheesy white to red) Does not blanch with pressure	Senses pressure only	Perceptive >21 days-requires surgical treatment
Third degree (full thickness)	Waxy white to gray or black Dry and inelastic No blanching with pressure	Deep pressure only	Rare, unless surgically treated
Fourth degree (extending beyond the skin)	Extends into fascia and/or muscle	Deep pressure only	Never, unless surgically treated

A thorough and accurate estimation of burnt surface area is essential to guide therapy.

Table 15.4: Burn injury severity grading (modified from the American Burn Association burn injury severity grading system. J Burn Care Rehabil 1990)

Burn type	Criteria	Disposition
Minor	<p><10% TBSA burn in adults</p> <p><5%TBSA burn in young or old</p> <p><2% full-thickness burn</p> <p>No face, hand, perineum or feet involvement</p>	Outpatient
Moderate	<p>10-20%TBSA burn in adults</p> <p>5-10% TBSA burn in young or old</p> <p>2-5% full-thickness burn High voltage injury Suspected inhalation injury Circumferential burn</p> <p>Medical problem predisposing to infection (e.g., diabetes mellitus)</p>	Admit
Major	<p>>20% TBSA burn in adults</p> <p>>10% TBSA burn in young or old</p> <p>>5 %full-thickness burn High voltage burn</p> <p>Known inhalation injury</p> <p>Any significant burn to face, eyes, ears, genitalia, or joints</p> <p>Significant associated injuries (fracture or other major trauma)</p>	Refer after emergency management (Make sure the referral center provides burn services)

TBSA: total body surface area; Young or old: <10 or >50 years old; Adults: >10 or <50 years old

Treatment

Objectives

- Prevent ongoing burn
- Secure airway and maintain ventilation
- Correction of fluid and electrolyte deficits
- Prevention and management of infection
- Avoid or minimize permanent disability

Non pharmacologic

Emergency measures

- Remove clothing and jewelry.
- Maintain adequate airway and give oxygen via face mask
- Consider early intubation for any sign of breathing difficulty, airway burn, swelling, or suspected inhalation injury, full-thickness burns of the face or perioral region, circumferential neck burns, acute respiratory distress, progressive hoarseness or air hunger, respiratory depression or altered mental status,
- Establish two large-bore peripheral IV lines in unburned skin.
- Insert NG tube and avoid oral fluids in children with burns greater than 15% BSA and adults with partial thickness burns of >20% of body surface area due to frequent development of ileus.
- Insert Foley catheter
- Wrap all wounds with sterile towels until further decision is made.

Pharmacologic management

Fluid resuscitation

- Ringer's lactate or NS 4mL/kg/% BSA burned: 1/2 the fluid is given over the first 8 hrs calculated from the time of onset of the injury and the remaining 1/2 is given at an even rate over the next 16 hrs. (Parkland formula)
- The rate of the infusion is adjusted according to the patient's response to therapy.
- Adequacy of the resuscitation is reflected by vital signs, skin turgor, adequate urine output (1mL/kg/hr. in children and 0.5 mL/kg in adults). Clinical signs of adequate perfusion are monitored every hour for the first twenty-four hours
- During the 2nd 24 hrs. patients begin to reabsorb edema fluid and to diurese. ½ of the first day fluid requirement is needed as Ringer's lactate in 5% dextrose.
- Oral supplementation may be started after 48hr post burn

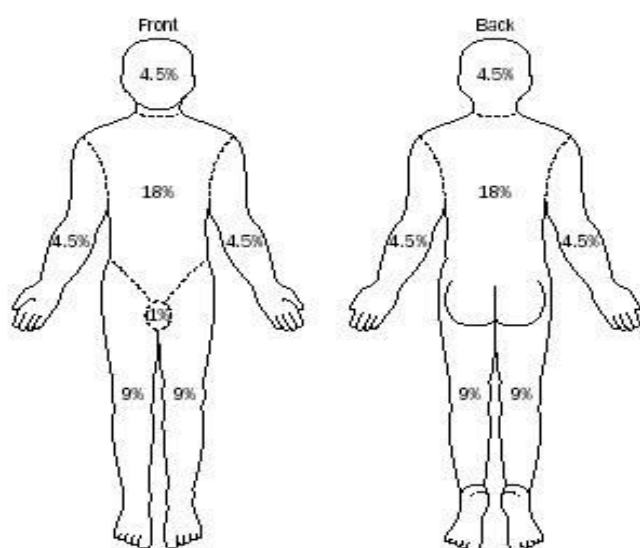
Estimate body surface area of the Adults

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The outstretched palm and fingers approximate to 1%.

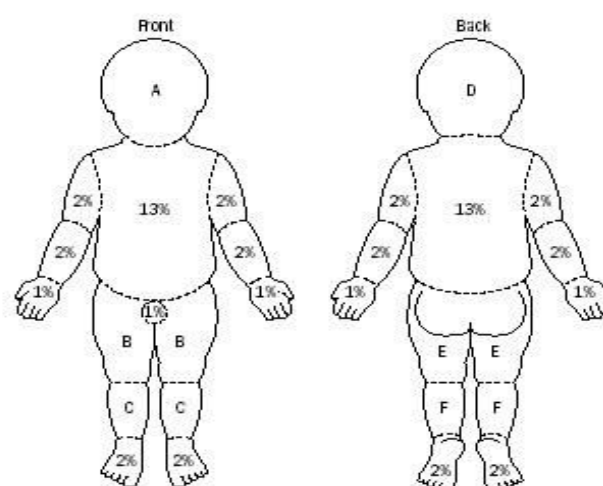
If the burned area is small, assess how many times your hand covers the area



burnt body-

Children

The **Rule of 9s** is modified for infants and children since their heads and lower extremities represent different proportions of body surface area.



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Pharmacologic management

Wound management

Minor burns

- Treated in an outpatient setting
- Debride all loose skin. Blisters are better not excised
- Cleanse with mild soap and irrigate with isotonic saline.
- The wound is then covered with Silver sulfadiazine and properly dressed.
- The first dressing change and dressing evaluations are performed 24-48 hrs after injury
- **Silver sulfadiazine cream 1%**, apply daily with sterile applicator (not on the face or in patients with a sulfa allergy)

OR

- **Fusidic acid**, thin films of 2% cream applied to skin 3-4 times daily.

Moderate and severe burns

- Do all recommended for minor burns
- Apply local antibiotic or Vaseline coated dressing
- Antibiotic prophylaxis is not recommended unless there is obvious infection.

Prevention of stress ulcer – for severe burns only

First line for patients who are able to take oral medications

- **Omeprazole**, 40mg, oral, daily
- **First line** for patients who are unable to take oral medications
- **Cimetidine**, 200mg-400mg IV, every 12 hours

Tetanus prophylaxis

- **Tetanus immunization** should be updated for any burns deeper than superficial-thickness.

Pain management:

First line use depending on pain severity and response in step wise fashion

- **Paracetamol**, 500-1000mg P.O., 4-6 times a day

OR

- **Tramadol** 50-100mg, Slow IV or P.O, 3-4 times daily (maximum 400mg/day)

OR

- **Morphine hydrochloride injection** (for severe pain only), 10-20 mg IM OR SC, repeat every 4 hours PRN.

OR

- **Pethidine** 50mg IM every 4 hrs (depending on the need) or 5-10 mg IV 5 minutes

Systemic antibiotics

- Not indicated for prophylaxis
- When there is evidence of infection (e.g. persistent fever, leukocytosis) take specimens for culture and start empiric antibiotics based on suspected site of infection.
- If wound infection is the suspected source of infection empiric antibiotics should cover *Pseudomonas aeruginosa*, other gram-negative bacteria's and *Staphylococcus aureus*

Prevention, management and follow up of complications

- Electrolytes-Hyperkalemia, hyponatremia/hypermnatremia
- Acute Kidney Injury-Correction fluid deficit, avoidance of nephrotoxic medication
- Malnutrition-burn patients require high calorie and high protein diet
- Deep vein thrombosis-Prophylaxis with heparin if patient is immobilized
- Joint Contractures-proper wound care and physiotherapy
- Psychiatric attention
- Urine output should be strictly followed with goal of 1-2ml/kg/hr, do urinalysis to check for rhabdomyolysis
- Always suspect and report burns mainly in children and the elderly as abuse especially hand and glove type of pattern

Adherence monitoring mechanism

The implementation of this protocol will be monitored by chart round on weekly basis based the availability of case.