

MANAGEMENT OF PATIENT WITH BURNS



Definition

- Injuries that result from direct contact or exposure to any physical, thermal, chemical, electrical, or radiation source are termed as Burns.

STATISTICS

- An estimated 265000 deaths every year are caused by burns.
- One of leading causes of disability-adjusted life-years (DALYs) lost in low- and middle-income countries.

Problem Statement : India

- 70 lakh burn injury cases annually
- Over 10,00,000 people are moderately or severely burnt every year
- 1.4 lakh people die of burn every year.
- Around 70% of all burn injuries occur in most productive age group (15-35 years).
- Majority are women & children.
- As many as 80% of cases admitted are a result of accidents at home (kitchen-related incidents)

CLASSIFICATION

Etiology

➤ Based on **Cause**

- **Thermal**
- **Electrical**
- **Chemical**
- **Radiation**
- **Inhalation**

Thermal Injuries

- Most common
- Types : Dry & wet

Contact

- Direct contact with hot object (i.e. pan or iron)
- Anything that sticks to skin (i.e. tar, grease or foods)



Flame

- Direct contact with flame (dry heat)
- structural fires / clothing catching on fire

▶ Scalding

- ▶ Direct contact with hot liquid / vapours (moist heat)
- ▶ Cooking, bathing or car radiator overheating
- ▶ Single most common injury in the paediatric pt



Electrical Burns

- Usually follows accidental contact with exposed object conducting electricity
 - Electrically powered devices
 - Electrical wiring
 - Power transmission lines
- Can also result from Lightning
- Damage depends on intensity of current

- **Low-tension injuries(<1000 V)**

- Low energy burns → Minimal damage to subcutaneous tissue
- Entry & Exit points – fingers → small deep burns
- AC → Tetany within muscles, cardiac arrest due to interference with normal cardiac pacing
- **High-tension injuries(>1000V)**
 - Earthed high tension lines → Arc over the patient → Flash burn

- **Severity depends upon:**

- what tissue current passes through (Low voltage/ High voltage)
- width or extent of the current pathway
- AC or DC
- duration of current contact



- Lightning

- HIGH VOLTAGE!!!
- Injury may result from
 - Direct Strike
 - Side Flash

Chemical Burns

- Usually associated with industrial exposure
- Accidental mishandling of household cleaners

Degree of tissue damage determined by

- Chemical nature of the agent
- Concentration of the agent
- Duration of skin contact

Acids- Eg- Formic acid, sulphuric acid

Alkalis - Eg. Lime, potassium hydroxide



Radiation Exposure

- Waves or particles of energy that are emitted from radioactive sources
- Alpha radiation
 - ✓ Large, travel a short distance, minimal penetrating ability
 - ✓ Can harm internal organs if inhaled, ingested or absorbed
- Beta radiation
 - ✓ Small, more energy, more penetrating ability
 - ✓ Usually enter through damaged skin, ingestion or inhalation

INHALATION

- **Smoke and inhalation injury**

- carbon monoxide poisoning

- inhalation injury above glottis

- inhalation injury below glottis

According Depth of burn

- *Superficial Partial-Thickness (First Degree burn)*

cause-Sunburn

Low-intensity flash

Skin involvement- Epidermis

Symptoms- Reddened, Tingling, Pain that is soothed by cooling



Deep Partial-Thickness (Second Degree)

Cause

- Scalds
- Flash flame
- Contact burns
- chemical

Skin involvement- Epidermis, upper dermis, portion of deeper dermis

Manifestations- Blisters that are red, shiny. Severe pain caused by nerve injury ,mild to moderate edema

- Recovery in 2 to 4 weeks, some scarring and depigmentation contractures



Full-Thickness (Third Degree)

Cause-

- Flame
- Prolonged exposure to
- hot liquids
- Electric current
- Chemical

Skin involvement- Epidermis, entire dermis, and sometimes subcutaneous tissue; may involve connective tissue, muscle, and bone

Manifestations- Dry; pale white, Leathery, visible thrombosed blood vessels

- Pain free, all skin elements and local nerve endings are destroyed, surgical intervention required for healing



4th Degree

E+D+S+muscles, tendons & bone



TYPES OF BURNS



The diagram shows a human hand and forearm with three distinct burn areas. At the bottom, there are yellow and orange flames. The first burn is on the forearm, showing redness and blanching. The second is on the wrist, showing blisters. The third is on the hand, showing a dark, charred area. Three callout boxes point to these areas, each containing a title and a list of characteristics.

SUPERFICIAL

- + Painful
- + No Edema
- + Redness
- + Blanches With Pressure

PARTIAL THICKNESS

- + Blistered
- + Moist
- + Painful

FULL THICKNESS

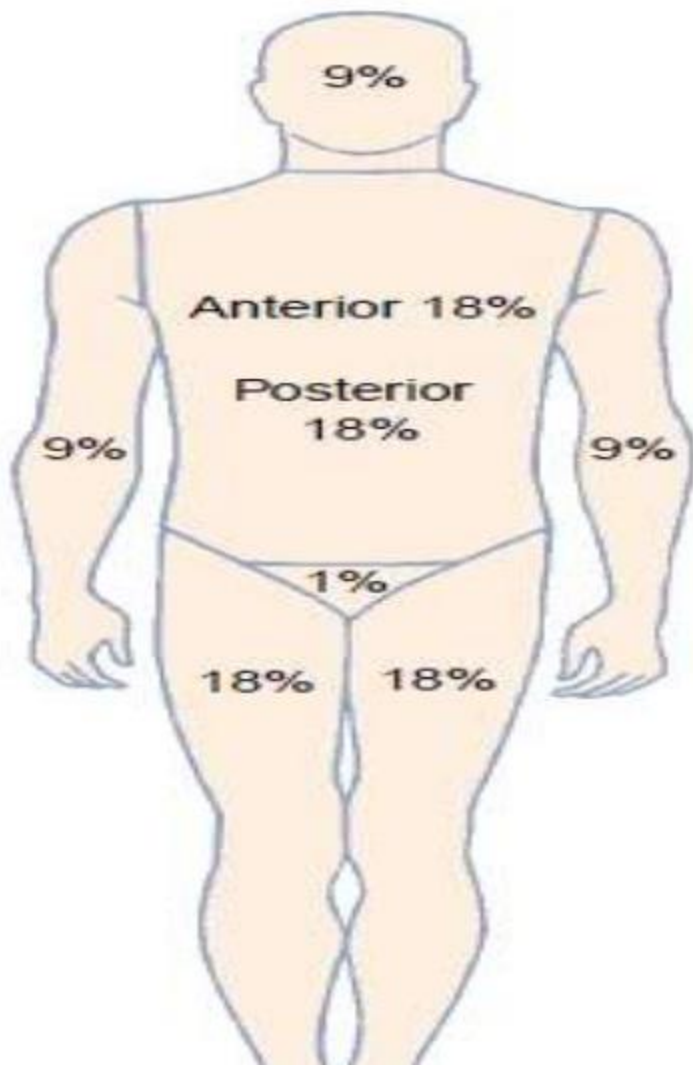
- + Dry
- + Discolored
- + No Pain

Extent of Body Surface Area Injured

- **RULE OF NINES,**
- **LUND AND BROWDER METHOD,**
- **PALM METHOD.**

RULE OF NINES

- **An estimation of the TBSA involved in a burn is simplified by using the rule of nines**
- **The rule of nines is a quick way to calculate the extent of burns. The system assigns percentages in multiples of nine to major body surfaces**



Head = 18%
(front and back)

Back
= 18%

n

Right arm
= 9%

Chest
= 18%

Left arm
= 9%

Perineum
= 1%

Right leg
= 13.5%

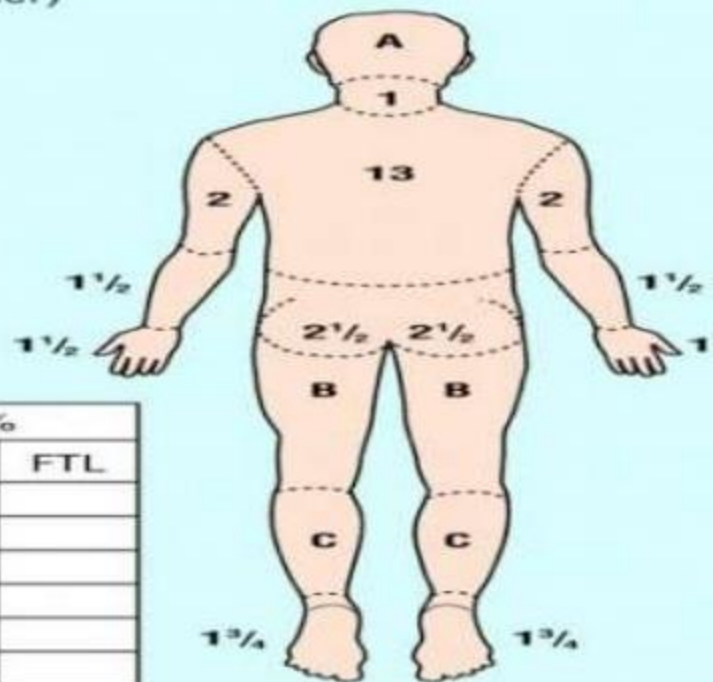
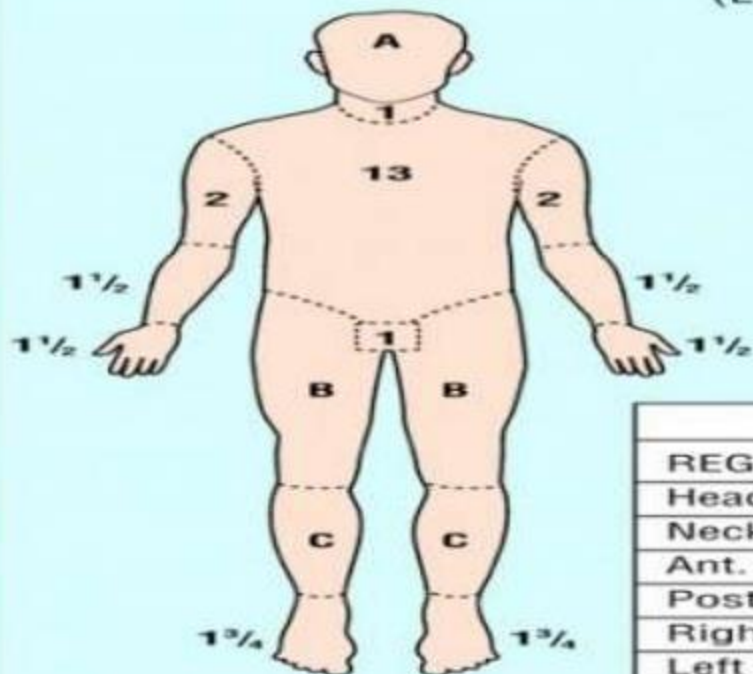
Left leg
= 13.5%

LUND AND BROWDER METHOD

- A more precise method of estimating the extent of a burn is the Lund and Browder method, which recognizes that the percentage of TBSA of various anatomic parts
- By dividing the body into very small areas and providing an estimate of the proportion of TBSA

% Total Body Surface Area Burn

Be clear and accurate, and do not include erythema (Lund and Browder)



REGION	%	
	PTL	FTL
Head		
Neck		
Ant. trunk		
Post. trunk		
Right arm		
Left arm		
Buttocks		
Genitalia		
Right leg		
Left leg		
Total burn		

AREA	Age 0	1	5	10	15	Adult
A = 1/2 OF HEAD	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2	3 1/2
B = 1/2 OF ONE THIGH	2%	3 1/4	4	4 1/4	4 1/2	4 3/4

PALM METHOD

- In patients with scattered burns, a method to estimate the percentage
- of burn is the palm method. The size of the patient's palm is approximately 1% of TBSA.



Location of burn

- **Burns to face, neck, chest and back may inhibit respiratory function due to mechanical obstruction secondary to edema, eschar formation**
- **Burns to the ear, nose are susceptible to infection because of poor blood supply**
- **Burns to buttocks, genitalia are susceptible to infection because of contamination**
- **Burns on extremities cause circulatory compromise and neurologic impairment.**