Burns
A Comprehensive Review
Assessment & Management
Objectives

- Understand types of Burns
- Understand the pathophysiology of the Burns
- Understand Rule of Nine
- Understand Classification of Burns
- Identify best practices in home care setting for the management of patients with Burns
Statistics

- Burn Injuries Receiving Medical Treatment: 450,000 Patients in 2013.
- Fire/Burn/Smoke Inhalation Deaths Per Year in USA: 3,400
- Hospitalizations Related to Burn Injury: 40,000 in 2013
- Survival Rate: 96.6% | Gender: 69% male - 31% female
- Ethnicity: 59% Caucasian, 20% African-American, 14% Hispanic, 7% Other
- Admission Cause: 43% fire/flame, 34% scald, 9% contact, 4% electrical, 3% chemical, 7% other
- Place of Occurrence: 72% home, 9% occupational, 5% street/highway, 5% Recreational/Sport,
Burns are injuries to tissues caused by heat, friction, electricity, radiation, or chemicals.
Classification of Burns

1. **Thermal Burns** – caused by exposure to excessive heat.

2. **Electrical Burns** – caused by direct contact with electricity.

3. **Chemical Burns** – caused by contact with chemicals.
Burn Victim
Types of Burns

- Superficial (1\textsuperscript{st} degree)
- Partial thickness (2\textsuperscript{nd} degree)
- Full thickness (3\textsuperscript{rd} degree)
- Full thickness (4\textsuperscript{th} degree)
Types of Burns

Superficial (1st degree)

• Includes only the outer layer of skin, the epidermis
• Skin is usually red and very painful
• Equivalent to superficial sunburn without blisters Dry in appearance
• Healing occurs in 3-5 days, injured epithelium peels away from the healthy skin
• Hospitalization is for pain control and maybe fluid imbalance
Types of Burns

Superficial (1st degree)
Types of Burns

Second degree: Partial Thickness

- Blisters can be present
- Involve the entire epidermis and upper layers of the dermis
- Wound will be pink, red in color, painful and wet appearing
- Wound will blanch when pressure is applied
- Should heal in several weeks (10-21 days) without grafting, scarring is usually minimal
Types of Burns

Second degree: Full Thickness

- Can be red or white in appearance, but will appear dry.
- Involves the destruction of the entire epidermis and most of the dermis
- Sensation can be present, but diminished
- Blanching is sluggish or absent
- Full thickness will most likely need excision & skin grafting to heal
Types of Burns

Second degree: Partial Thickness
Types of Burns

**Second degree**: Full Thickness
Types of Burns

Third degree:

- All layers of the skin is destroyed
- Extend into the subcutaneous tissues
- Areas can appear, black or white and will be dry
- Can appear leathery in texture
- Will not blanch when pressure is applied
- No pain
Types of Burns

Third degree
Types of Burns

Third degree
Fourth degree

Full thickness burn extends into muscle and bone.
Types of Burns

Fourth degree
The most accurate way to estimate the amount of tissue injury following a burn is to measure the extent of the body surface burned. The "Rule of Nines" method is a simple and reasonably reliable guide in which the various parts of the body are divided into surface areas of 9% each (or multiples of 9%). Burns which cover 20% or more of the body surface can be fatal without treatment.
Rule of Nine

Total Body Surface Area (TBSA)

Can you evaluate the TBSA?
Burn Care

Stop the Burning Process | Remove smoldering clothing | Brush off dry chemicals | Irrigate liquid chemicals

**Airway**
Intubate severe facial burns and severe smoke inhalation
Endotracheal tube 7.5mm or greater (in adults)

**Breathing**
Humidified 02 for possible carbon monoxide poisoning

**Circulation**
Remove constricting clothing | Secure large-bore IV access, use suture instead of tape
Start IV fluids | Place foley to monitor urine output

**Disability**
Examine eyes for injury – irrigate as needed for possible chemical injury or foreign body
Perform a detailed neurologic exam for electrical injuries
Calculate burn size score | Keep patient warm
Burn Care

Apply Clean, dry dressings

Tetanus prophylaxis

Keep patient warm
Common Treatment

- Vaseline Gauze
- Xeroform Gauze
- Topical Antibiotic Ointments
- Silver Sulfadiazine
- Sulfamylon Cream
- Biafine Cream
- Medical Grade Honey