# Initial Care of Burns

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# What is a burn?

- Cutaneous injury caused by heat, electricity, chemicals, friction, or radiation.


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# First Degree Burns

- Epidermis affected only
- Red or pink, dry, painful, blanches to touch
- Epidermis is intact
- Spontaneous healing within 7 days. Outer injured epithelial cells peel
- Seldom clinically significant

# Superficial Partial Thickness

- Entire epidermis & portion of dermis (Papillary dermis)
- Homogenous pink
- Painful
- Blisters
- Blanches
- Hair usually intact
- Does not scar, may pigment differently

# Deep partial thickness

- Reticular dermis
- Mottled red and white
- Not painful to pinprick or pressure
- Does not blanch
- Heals > 3 weeks
- Usually scars
- Need to excise and graft

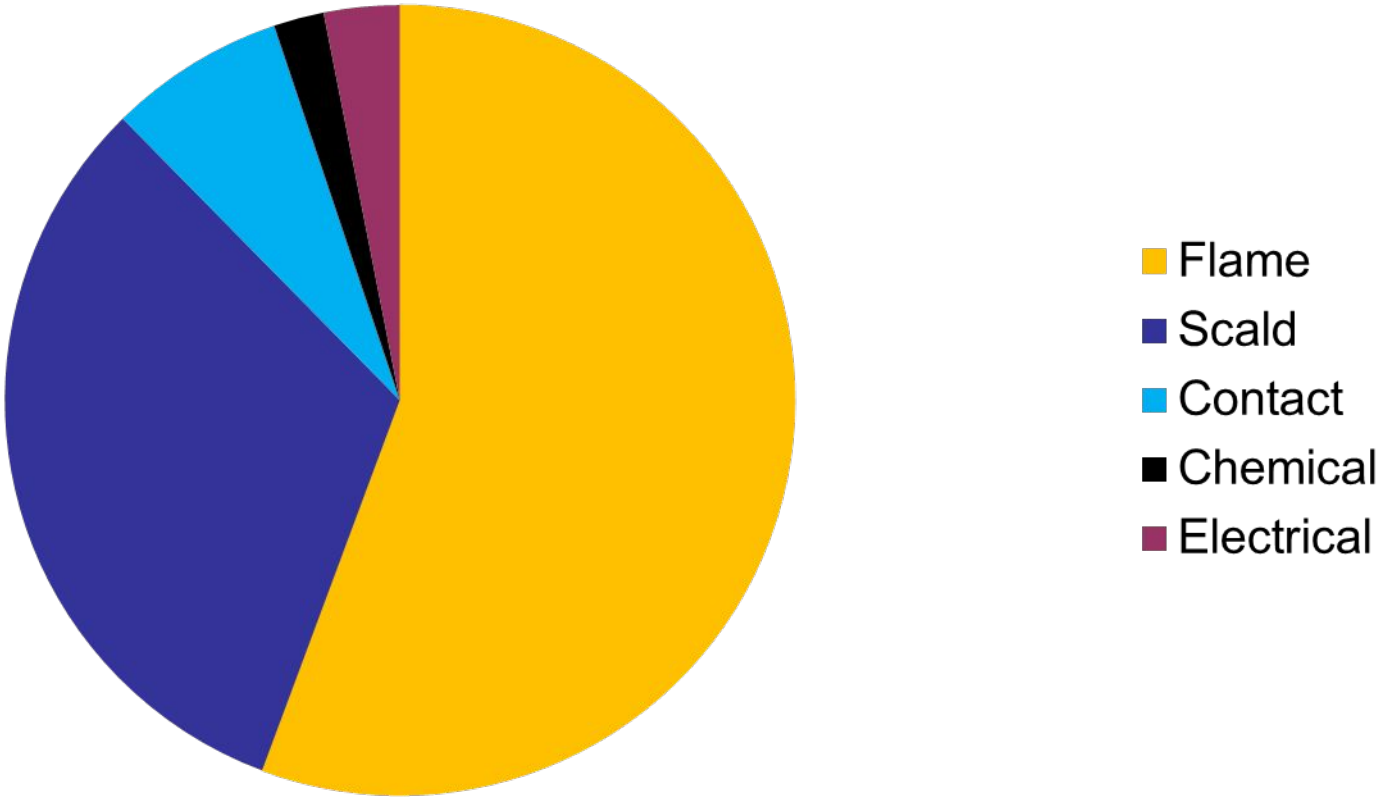
# Deep Partial Thickness

# Full Thickness: 3rd degree

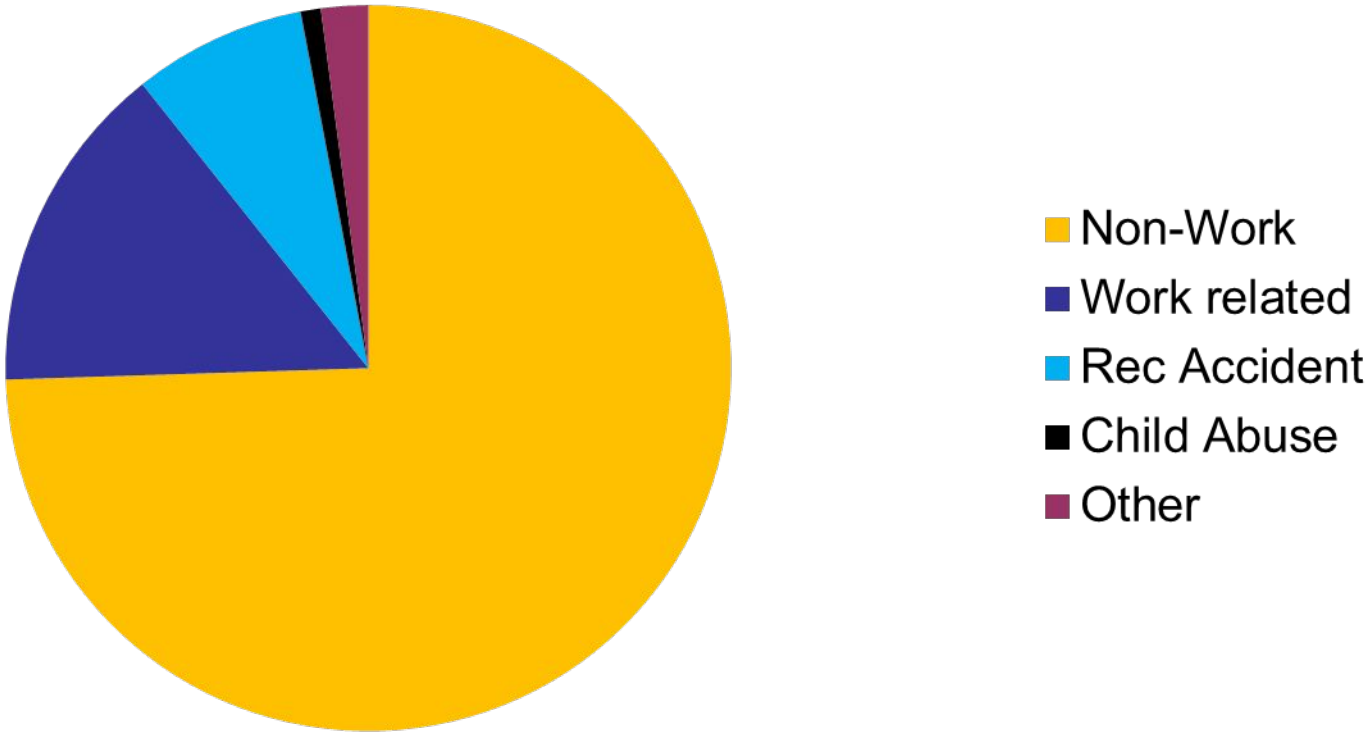
- May go into fat or deeper
- Red, white, brown, black
- Inelastic and leathery
- painless or numb
- Heals only from the periphery
- Always excise and graft

# Etiology

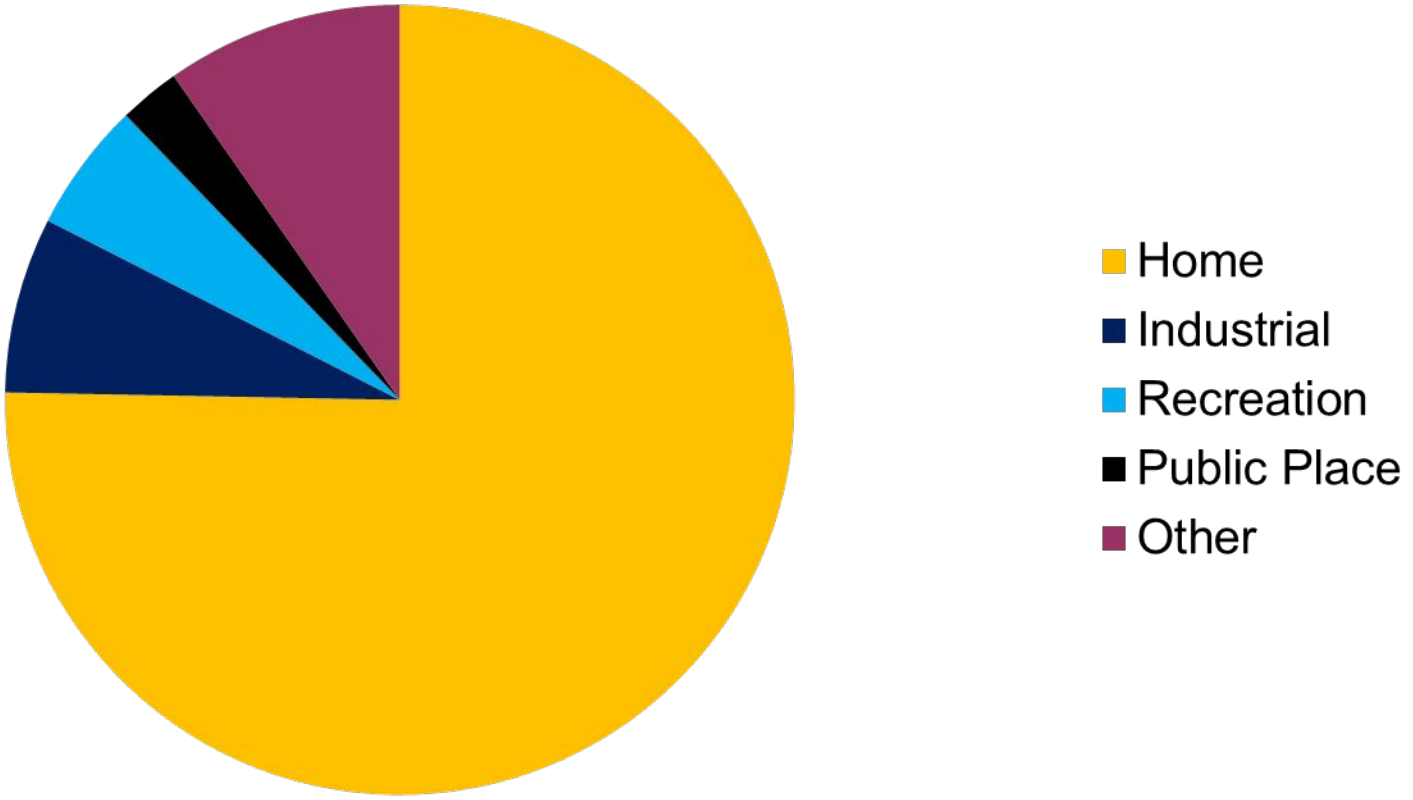
# Types of burns



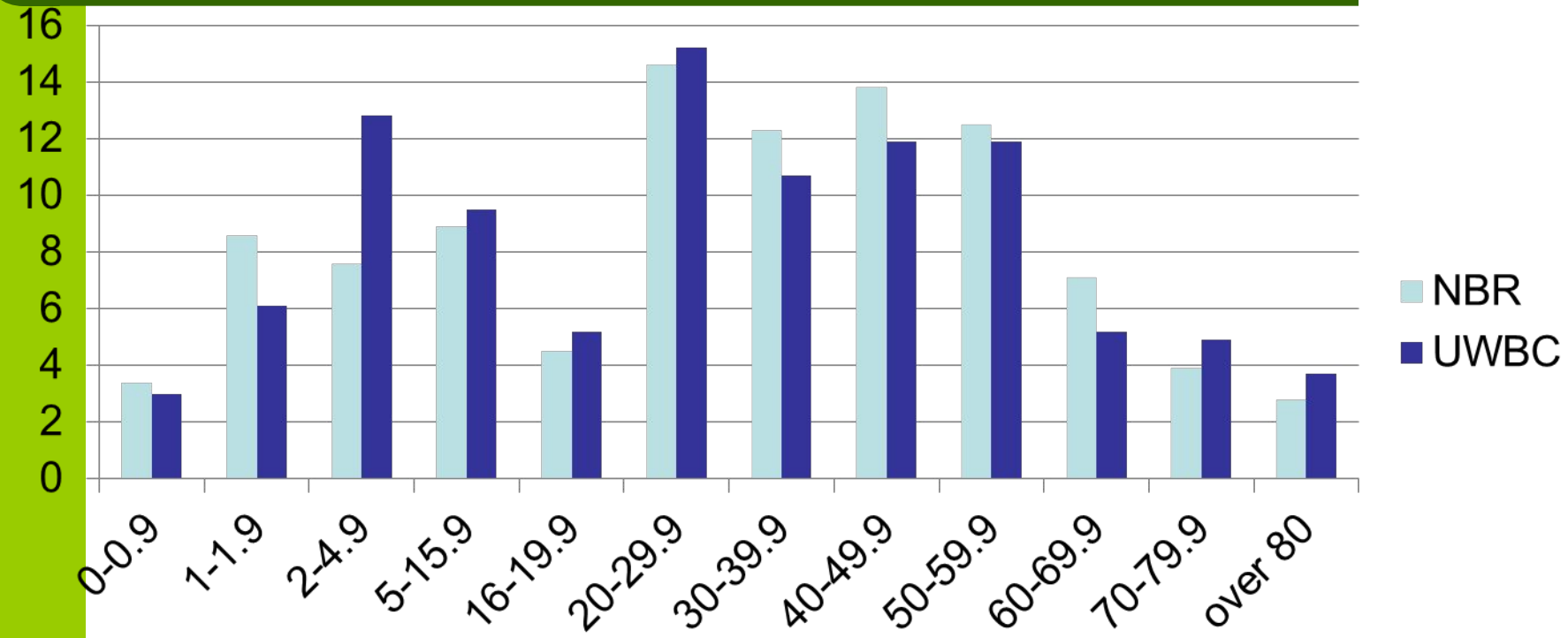
# Circumstances of injury



# Where do burns occur



# Admissions by age



# Inhalation Injury

Exposure to heat and toxic products of combustion

- 50% of fire deaths are related to inhalation injuries
- Asphyxia/Carbon Monoxide displacement of oxygen

# Inhalation injury diagnosis

- Closed-space fire
- Face burns

# Terminology

- Inhalation injury “nonspecific”
  - Thermal injury
    - Upper airway
    - Heat and toxic fumes
  - Local chemical irritation
    - Throughout airway
    - Primarily toxic fumes
  - Systemic toxicity
    - CO

# Signs and symptoms

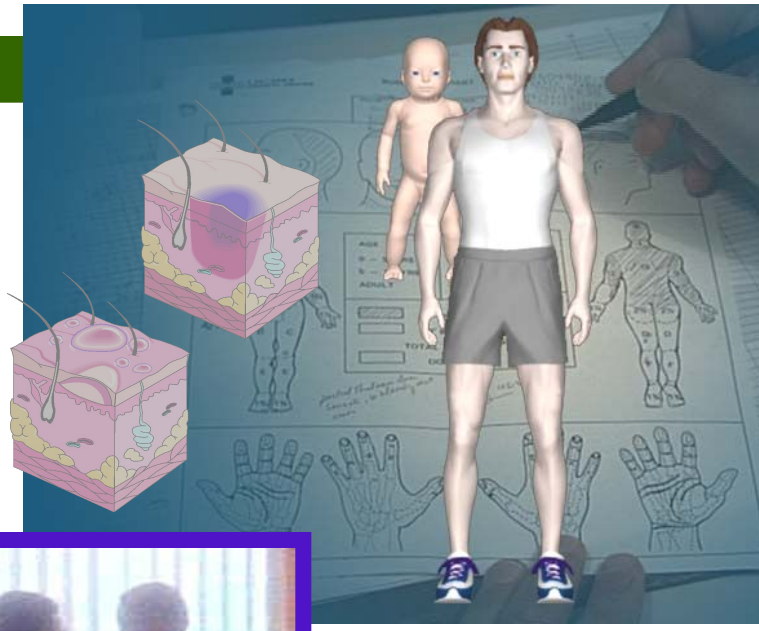
- Lacrimation
- Cough
- Hoarseness
- Dyspnea
- Disorientation
- Anxiety
- Wheezing
- Conjunctivitis
- Carbonaceous sputum
- Singed hairs
- Stridor
- Bronchorrhea

# Pathophysiology

- *The* main factor responsible for mortality in thermally injured patients
- Carbon monoxide the most common toxin
  - 200 times greater affinity
  - Competitive inhibition with cytochrome P-450

# Determine Burn Severity

- % BSA involved
- Depth of injury
- Age
- Associated/pre-existing disease or illness
- Burns to face, hands, genitalia



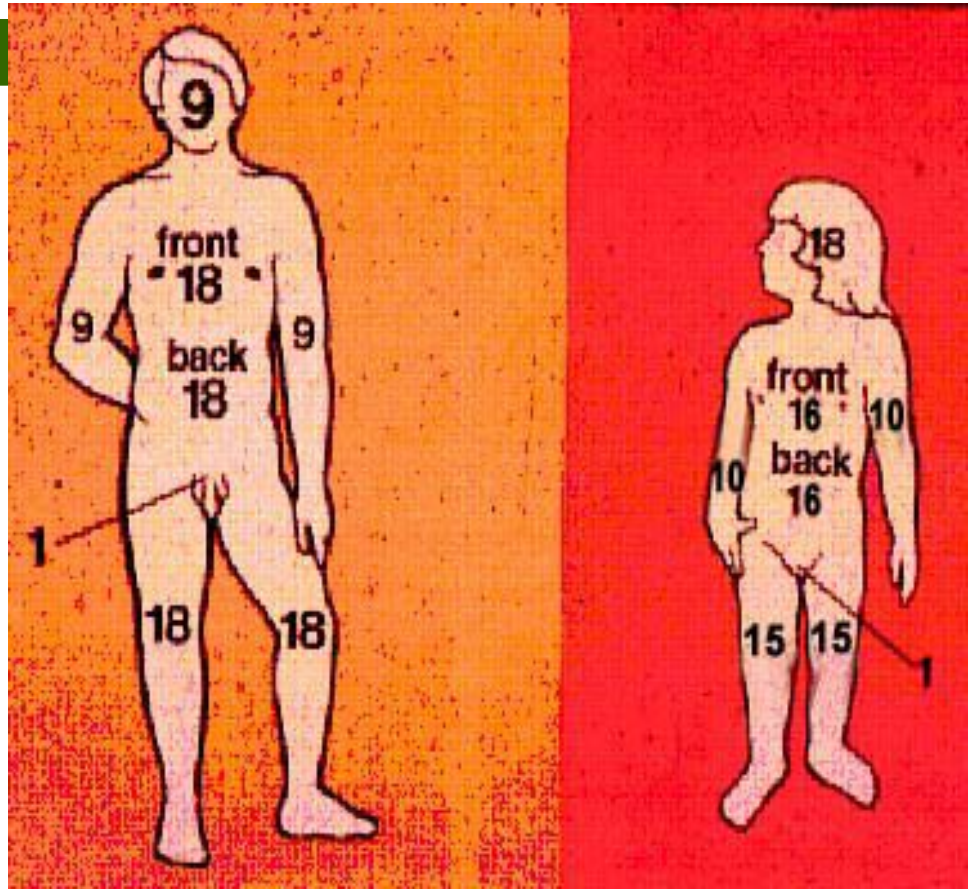
# Burn Extent

Total Body Surface Area (TBSA)?

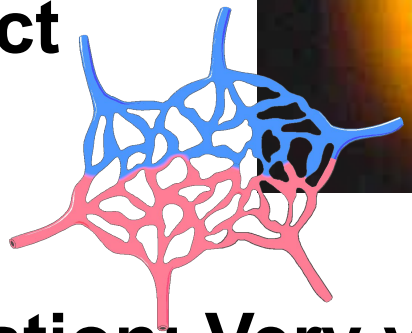
- Rule of nines
- Lund and Browder chart
- Patients palm = about 1% TBSA

# **Extent of Burn** :"Rule of Nines"

- **Adult anatomical areas = 9% BSA (or multiple)**
- **Not accurate for infants or children due to larger BSA of head & smaller BSA legs.**
- **Burn diagrams illustrate adult – child differences**



# Burn Depth



## Factors

- Temperature
- Duration of contact
- Dermal thickness
- Blood supply
- Special Consideration: Very young and very old have thinner skin

# Burns begin at 44 degrees C

- 6 hours for burns to occur at
  111 degrees F (44 C)

- 1 second of burns to occur at
  140 degrees F (60 C)

# Pain control

# Ice Pack-----DO NOT USE EVER

- DOES NOT
  - Reverse temperature
  - Inhibit destruction
  - Prevent edema
- DOES
  - Delay edema
  - Reduce pain

# Non-medication methods

- Cover burns with plastic wrap
  - Wet dressings will stick and cause more pain
  - Other burn dressings are expensive and not necessary
  - Quik Clot is expensive and will not provide any patient benefit

# Medication

- Medications
  - Opioids
  - Narcotics
  - Pain medications
  - IV Analgesia

# Resuscitation

# IV access

- < 15% TBSA – oral resuscitation
- 15 – 40% TBSA – one large bore IV
- > 40% -- two large bore IV's
- IV's should be in the upper extremities
- Suture IV's started through burns

# Field resuscitation

- Start IV with LR, through burn OK
  - < 6 years = 125mL/hr
  - 6-13 years = 250mL/hr
  - >13 years = 500mL/hr

Contact


Contact Burn


Scald Burn


Flame Burn

Grease Burn