

# Burns

# Burn Classification

- Burns are classified by:
  - Cause
  - Depth
  - Extent (the rule of nines)

# Types of Burns: CAUSE

- **Thermal Burn**: caused by conduction or convection
  - Ex. Hot liquid, fire or steam
- **Electrical Burn**: caused by the passage of electrical current through the body. There is typically an entrance & an exit wound.
  - Ex. lightning
- **Chemical Burn**: occurs when certain chemical compounds come in contact with the body.
  - Ex. Sulfuric acid, lye, hydrochloric acid, gasoline

# Depth of Injury

- **Traditional**: 1<sup>st</sup> degree, 2<sup>nd</sup> degree, 3<sup>rd</sup> degree
- We now use **Modern** terminology:
  - **Superficial**: involves only the outer epidermis; heals without scarring
  - **Superficial Partial-Thickness**: involves epidermis & the upper portion of the dermis; pain & blisters; heals with min to no scarring
  - **Deep-Partial Thickness**: complete destruction of the epidermis & the majority of the dermis; blisters, edema; heals with hypertrophic scars & keloids

# Depth of Injury Continued

- **Full-Thickness**: complete destruction of the epidermis & dermis along with partial damage of the subcutaneous fat layer; require grafts & susceptible to infection
- **Subdermal**: complete destruction of the epidermis, dermis, & subcutaneous tissue; may involve muscle & bone; often requires surgical intervention

# Zones of Injury

- **Zone of Coagulation**: area of greatest destruction, tissue necrosis, irreversible cell damage
- **Zone of Stasis**: damaged tissue, area of less severe injury that possesses reversible damage and surrounds the Zone of Coagulation
- **Zone of Hyperemia**: Pink, no cell death, the area surrounding the Zone of Stasis that presents with inflammation, but will fully recover without any intervention or permanent damage



# Criteria for Hospitalization

- 20% or greater TBSA (total body surface area)
- 10% or greater TBSA in child or older adult
- 5% or greater full thickness burn
- Burns to any of the 4 special areas
- Burns to the eyes or ears



# 4 Special Areas

- If any of the 4 special areas are burned, it is classified as a severe burn and will require hospitalization
- Special areas: face, hands, feet, groin

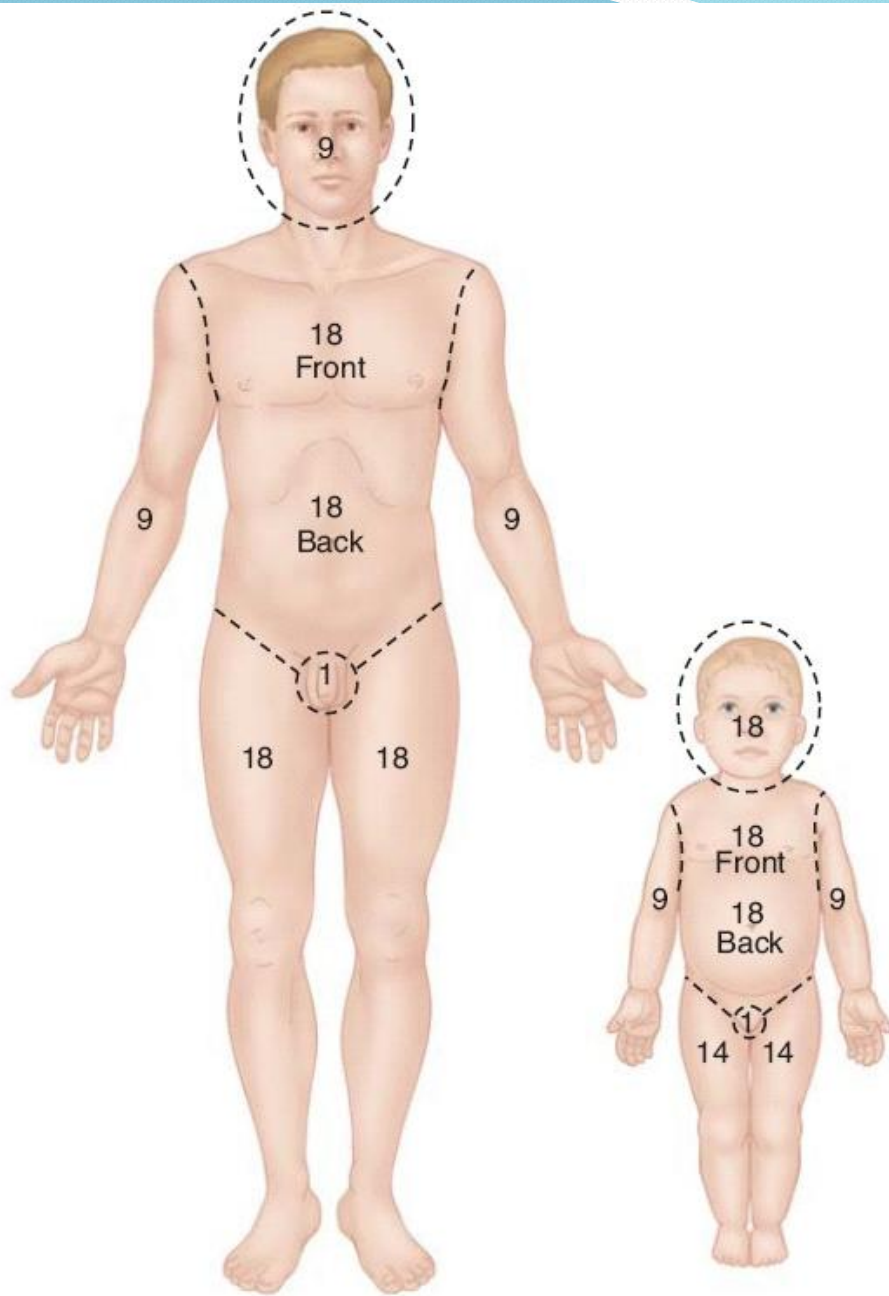
# Calculating TBSA (extent)

- ADULTS: RULE OF NINES

Head & neck	9 %
Anterior trunk	18 %
Posterior trunk	18 %
Bilateral anterior arm, forearm and hand	9 %
Bilateral posterior arm, forearm and hand	9 %
Genital region	1 %
Bilateral anterior leg and foot	18 %
Bilateral posterior leg and foot	18 %

# Calculating TBSA

- **Children**: Rule of Nineteen
- A child under one year has 9 % taken from the lower extremities and added to the head region. Each year of life, 1 % is distributed back to the lower extremities until age 9 when the head region is considered to be the same as an adult.



# PT Intervention

- Burn scar contracture interfere with rehab and for the most part are PREVENTABLE
- Positioning
  - To prevent contracture (avoid the position of comfort)
  - To minimize edema
  - To minimize pressure
- Splinting / Casting
- Therex
- Gait Training
- Scar Management

Body area	Contracture predisposition	Preventive positioning
Neck	flexion	Extension
Anterior axilla	Shoulder add	Shoulder abd
Posterior axilla	Shoulder ext	Shoulder flex
Antecubital space	Elbow flexion	Elbow extension
Forearm	pronation	Supination
Wrist	flexion	Extension
Dorsal hand / finger	MCP hyperextension IP flexion Thumb add	MCP flexion IP extension Thumb abd
Hip	Flexion, add, ER	Ext, abd, IR
Knee	flexion	Extension
Ankle	PF	DF

















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- <http://www.flickr.com/photos/pinkheadedbug/sets/72157594173479689/>

# Questions??

- Giles, S.M., (2010), PTA EXAM The Complete Study Guide, Scorebuilders: Scarborough, Maine.