
Burns in an UC setting

— By Elizabeth Holler PA-C —

Objectives

- Identifying burn mechanisms
- Burn classifications
- Locations and extent of burn injury
- Severity of burn
- Treatment of burns
- When to refer

Burn mechanisms

Heat

- Depth is related to contact temperature, duration of contact and thickness of skin

Electrical discharge

- Depends on the pathway of the current, the resistance, and strength and duration of current flow

Burn mechanisms

Chemicals

- Caustic reaction, including alteration of pH, disruption of cellular membranes and direct toxic effects of metabolic processes.
- Severity depends on duration of exposure and nature of the agent.
- Acid burns- coagulation necrosis of the tissue
- Alkaline-liquefaction necrosis
- Systemic-life threatening and local damage can include full thickness of skin and underlying tissues

Burn mechanisms

Radiation

- Most common is sunburn
- Radiation burns from therapeutic radiation therapy or procedures

Friction

- Combination of mechanical disruption of the tissues as well as heat generated by friction

Classification by depth

Superficial

- Aka epidermal burns
- Painful, dry, red and blanch with pressure
- No blisters
- Common in sunburns



Partial thickness

- Epidermis and portions of the dermis
- Superficial or deep
 - Superficial
 - Blisters within 24 hours
 - Painful, red and weeping and blanch
 - Deep
 - Extend deeper into the dermis
 - Damage hair follicles and glandular tissues
 - Painful to pressure only. DO NOT BLANCH WITH PRESSURE
 - Blister
 - Wet or waxy
 - Mottled colorization

Superficial partial thickness



Deep partial thickness



Full thickness

- Extend through and destroy all layers of dermis and injure underlying SubQ tissue
- Burn eschar is intact
- Anesthetic or hypo-aesthetic
- Waxy white to leathery gray to charred and black
- Skin is dry and inelastic
- No blanching
- Hair can be pulled from follicles
- No vesicles or blisters

Full thickness



Fourth degree burns

- Deep
- Life threatening

Extend through the skin into underlying soft tissue and can involve muscle and/or bone

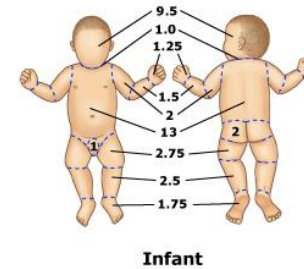
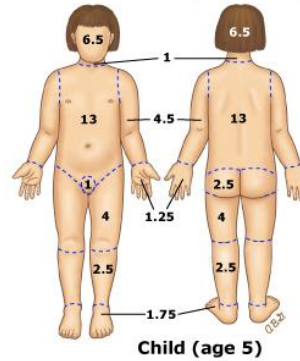
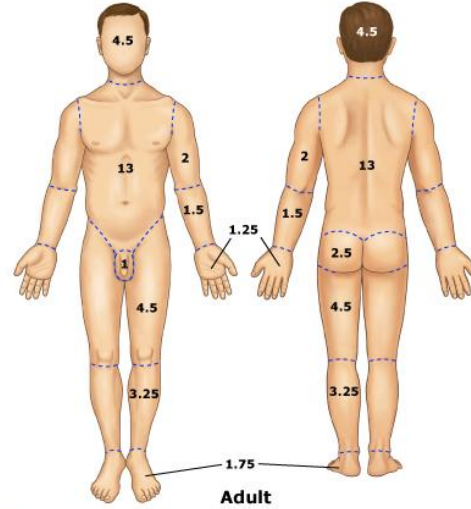


Extent of burns

Methods of estimation of Total Body Surface Area (TBSA)

- Lund-Browder
 - Most accurate
- Rule of nines
 - Adults only
 - Head = 9%
 - Each arm = 9%
 - Each leg = 18%
 - Anterior and posterior trunk each = 18%
- Palm method
 - Both children and adults
 - Palm of patient's hand (not fingers) = 0.5%
 - With fingers = 1%

Lund-Browder chart



Treatment

Accurate classification determines treatment

Criteria for minor burns according to the American Burn Association

- Partial-thickness burns <10% TBSA in patients 10-50 y/o
- Partial-thickness burns <5% TBSA in patients under 10 or over 50
- Full-thickness burns <2% TBSA in any patient without other injury

Also...

Classification of minor burns

To be considered minor, burns must also meet the following:

- Isolated injury
- Does NOT involve face, hands, perineum or feet
- Does NOT cross major joints
- Is NOT circumferential

Consider patient and comorbidities

Treatment of burns

- Removal of clothing, jewelry, etc
- Cooling
 - Room-temperature or cool tap water
 - Applied for no longer than 5 minutes
 - Exception: covered with wet gauze for no longer than 30 minutes
 - NO ICE OR ICE COLD WATER
- Cleaning
 - Mild soap and tap water
 - Chlorhexidine wash (without alcohol)
 - NO POVIDONE-IODINE
 - Debride opened blisters

Treatment of burns

- Skin dressings
 - Most superficial burns do NOT need dressings
 - Partial and full thickness burns may be dressed
 - Fingers and toes should be dressed

Basic dressing

- Topical antibiotic
- 1st layer-Nonadherent gauze
- 2nd layer-Fluffed dry gauze
- Outer layer-elastic gauze roll

Make sure to individually wrap fingers and toes

Treatment of burns

Pain management

- Acetaminophen and NSAIDs alone or in combination with opioids are sufficient enough for analgesia for small burn injuries
- Elevation of extremities
- Applying gauze soaked in cool water for up to 30 minutes
- For more severe burns, IV analgesics

****Don't forget the Tetanus**

When to Refer?

Most minor burns can follow up at a burn center to ensure proper healing.

Superficial minor burns to functional areas (joint, hands, feet)

Thin skin (very young, very old or perineum)

Cosmetic areas (face)

Full thickness burns

Complications (infection or development of necrotic tissue)

UNC Burn Center

919-966-3571

Case Study #1

54 y.o. Female presents with burn to right fingers when touching mashed potatoes last night. She's noticed some blisters but they have not popped. Reports using aloe and motrin with mild relief.

BP: 147/98, Pulse: 88, Resp: 16, Temp: 36.8 °C (98.2 °F), SpO2: 97%, Pain: 8

Skin: Skin is warm. There is erythema (scattered less than 1 cm blisters on base of right 2-4th fingers. Intact. Mild swelling.

Case Study #1

Treatment:

Cooling

Clean wound

Acetaminophen and Ibuprofen prn pain

With or without antibiotic ointment?

Dressing?

Case Study #2

37 y/o female presents with chemical burn on left hand and fingers on the dorsal aspect x 30 minutes. She has a previous thermal burn on the same area that has already been seen and treated by the UNC burn clinic 2 weeks ago. The injury occurred at work. She was cleaning and got the chemical on hands, which caused the burn. She is unsure of the name of the chemical. Pain is rated a 10/10.

PMHx, current meds, allergies: none

Case study #2

Physical exam:

Pt has superficial partial thickness burns on the dorsal aspects of her 2nd and 3rd fingers. This appears to be over her healed thermal burns. No blisters. No weeping. Painful with palpation and blanching does occur.

What do you do?

Treatment

IRRIGATE, IRRIGATE, IRRIGATE

NO CREAMS

CALL UNC BURN CENTER

DRY DRESSING