

BURN INJURIES & ITS MANAGEMENT

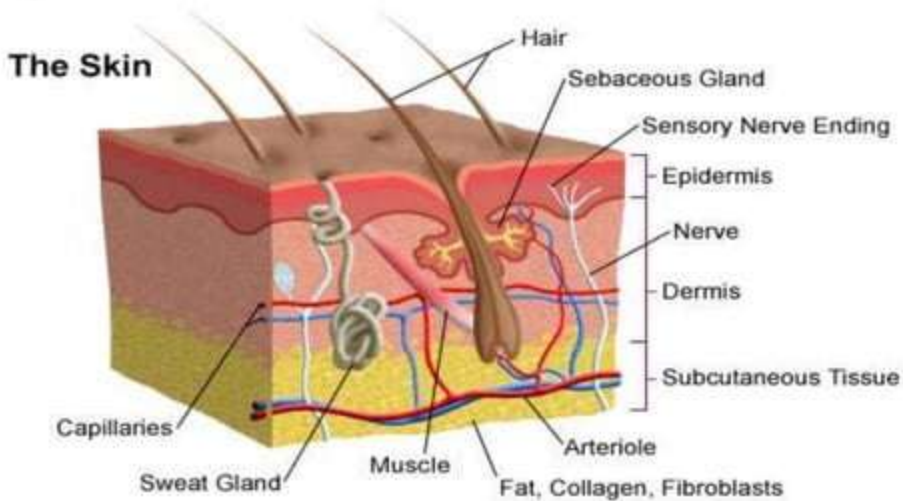
Prepared by

Saeeda Tariq

GENERAL OVERVIEW OF SKIN

- The skin has an important role to play in the fluid and temperature regulation of the body. If enough skin area is injured, the ability to maintain that control can be lost. The skin also acts as a protective barrier against the bacteria and viruses that inhabit the world outside the body.
- The anatomy of the skin is complex, and there are many structures within the layers of the skin. There are three layers:
 - Epidermis, the outer layer of the skin
 - Dermis, made up of collagen and elastic fibers and where nerves, blood vessels, sweat glands, and hair follicles reside.

- Hypodermis or subcutaneous tissue, where larger blood vessels and nerves are located. This is the layer of tissue that is most important in temperature regulation.



BURN

- **Burn:** Damage to the skin or other body parts caused by extreme heat, flame, contact with heated objects, or chemicals.
- Burn depth is generally categorized as first, second, or third degree.
- The treatment of burns depends on the depth, area, and location of the burn, as well as additional factors, such as material that may be burned onto or into the skin.
- Treatment options range from simply applying a cold pack to emergency treatment.

BURNS

- ❑ Wounds caused by exposure to:
 - ❑ 1. excessive heat
 - ❑ 2. Chemicals
 - ❑ 3. fire/steam
 - ❑ 4. radiation
 - ❑ 5. electricity
- ❑ Results in 10-20 thousand deaths annually



TYPES OF BURNS

- Thermal

exposure to flame or a hot object

- Chemical

exposure to acid, alkali or organic substances

- Electrical

result from the conversion of electrical energy into heat.

Extent of injury depends on the type of current, the pathway of flow, local tissue resistance, and duration of contact

- Radiation

result from radiant energy being transferred to the body resulting in production of cellular toxins



CHEMICAL BURN



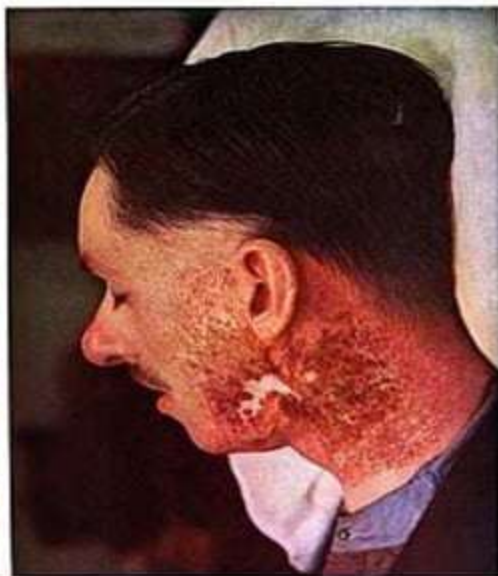
ELECTRICAL BURN



THERMAL BURN



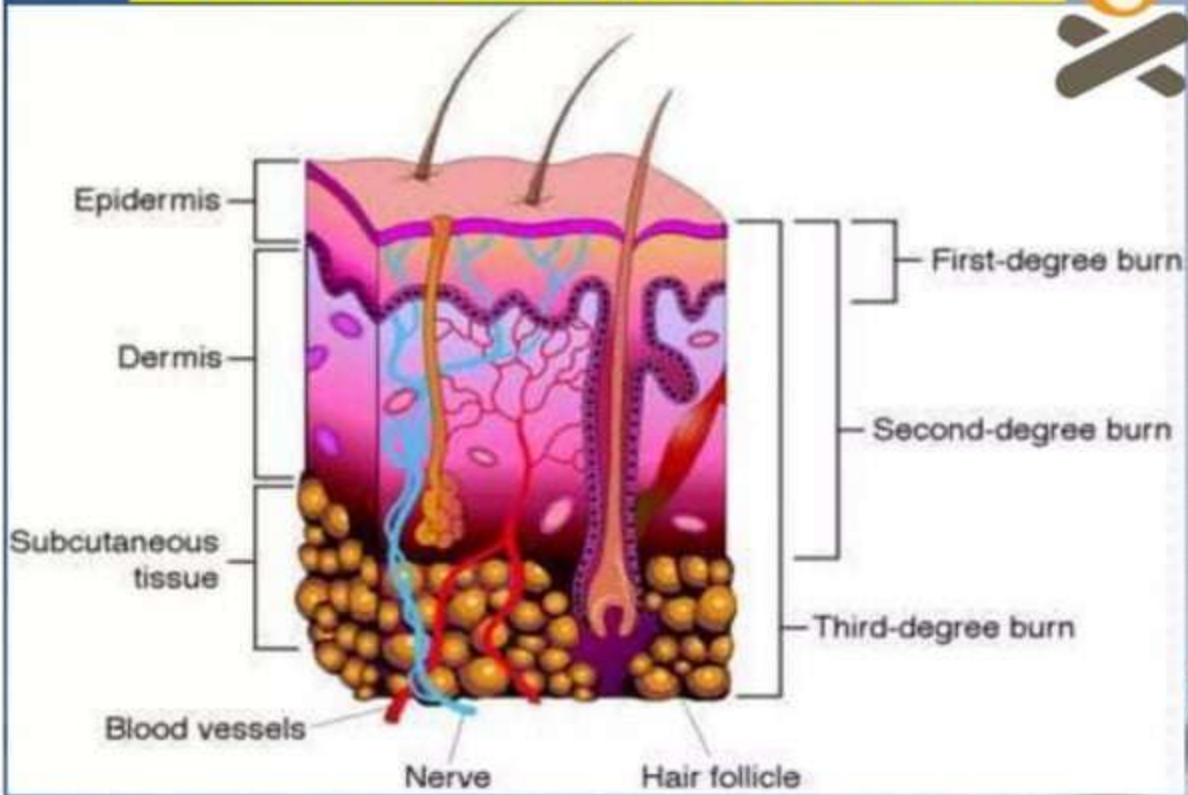
RADIATIONAL BURN



BURN WOUND ASSESSMENT

- Classified according to depth of injury and extent of body surface area involved
- Burn wounds differentiated depending on the level of dermis and subcutaneous tissue involved
 1. superficial (first-degree)
 2. deep (second-degree)
 3. full thickness (third and fourth degree)

Based on degree of burn



Epidermis
Dermis
Hypodermis



First degree
burn



Second degree
burn



Third degree
burn



SUPERFICIAL BURNS (FIRST DEGREE)

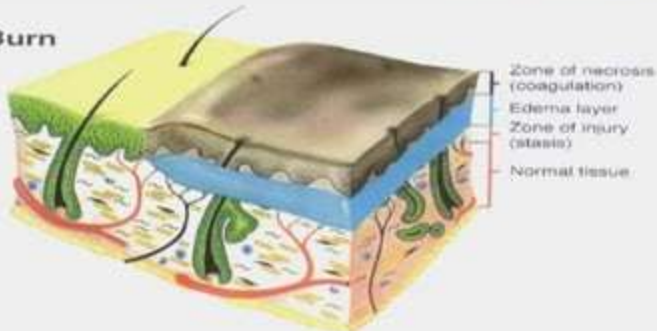
- Epidermal tissue only affected
- Erythema, blanching on pressure, mild swelling
no vesicles or blister initially
- Not serious unless large areas involved
- i.e. sunburn



Superficial Dermal Burn

Characteristics

1. Necrosis confined to upper third of dermis
2. Zone of necrosis lifted off viable wound by edema
3. Small zones of injury



DEEP (SECOND DEGREE)

*Involves the epidermis and deep layer of the dermis

Fluid-filled vesicles –red, shiny, wet, severe pain

Hospitalization required if over 25% of body surface involved

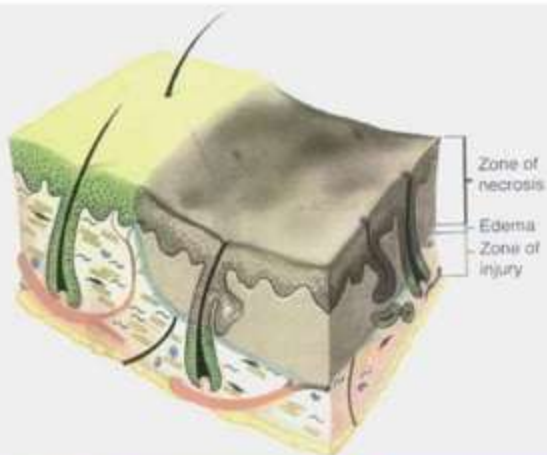
i.e flame



Deep Dermal Burn

Characteristics

1. Necrosis involving majority of skin layers
2. Zone of necrosis adherent to zone of injury
3. Smaller edema layer



FULL THICKNESS (THIRD/FOURTH DEGREE)

- Destruction of all skin layers
- Requires immediate hospitalization
- Dry, waxy white, or hard skin, no pain
- Exposure to flames, electricity or chemicals can cause 3rd degree burns

Full Thickness Burn

Characteristic
No remaining viable dermis



○ Calculation of Burned Body Surface Area

Burn Percentage in Adults: Rule of Nines

RULES OF NINES

Head & Neck = 9%

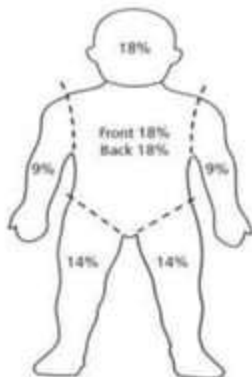
Each upper extremity (Arms) = 9%

Each lower extremity (Legs) = 18%

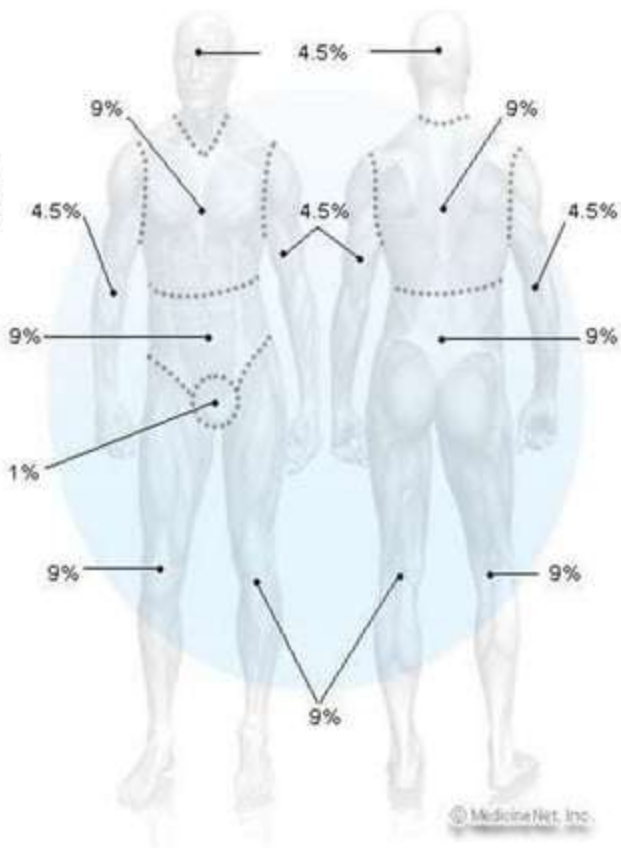
Anterior trunk = 18%

Posterior trunk = 18%

Genitalia (perineum) = 1%



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VASCULAR CHANGES RESULTING FROM BURN INJURIES

- Circulatory disruption occurs at the burn site immediately after a burn injury
- Blood flow decreases or ceases due to occluded blood vessels
- Blood vessel thrombosis may occur causing necrosis

FLUID SHIFT

- Occurs after initial vasoconstriction, then dilation
- Blood vessels dilate and leak fluid into the interstitial space
- Known as third spacing or capillary leak syndrome
- Causes decreased blood volume and blood pressure
- Occurs within the first 12 hours after the burn and can continue to up to 36 hours



FLUID IMBALANCES

- Occur as a result of fluid shift and cell damage
- Hypovolemia
- Metabolic acidosis
- Hyperkalemia
- Hyponatremia

FLUID REMOBILIZATION

- Occurs after 24 hours
- Capillary leak stops
- See diuretic stage where edema fluid shifts from the interstitial spaces into the vascular space
- Blood volume increases leading to increased renal blood flow and diuresis
- Body weight returns to normal
- See Hypokalemia



PHASES OF BURN INJURIES

- Emergent (24-48 hrs.)
- Acute (12 to 14 days)
- Rehabilitative



EMERGENT PHASE

*Immediate problem is fluid loss, edema, reduced blood flow (fluid and electrolyte shifts)

o Goals:

1. secure airway
2. support circulation by fluid replacement
3. keep the client comfortable with analgesics
4. prevent infection through wound care
5. maintain body temperature
6. provide emotional support



ACUTE PHASE

- The acute phase of burns is defined as a period extending from the onset of burns with shock to the time taken for wound epithelialization which normally takes about 12 to 14 days, if management of burns is adequate.

Nursing management of patient in acute / intermediate phase

1. Maintaining proper oxygenation and tissues perfusion
2. Maintaining fluid and electrolyte balance
3. Relieving pain
4. Preventing hypothermia
5. Providing wound care
6. Preventing infection



Nursing management of patient in acute / intermediate phase

8. Relieving anxiety and providing psychological support
9. Graft care
10. Nutritional support
11. Improving mobility
12. Promoting comfort



REHABILITATION PHASE

- Rehabilitation from a burn injury is a lengthy process, which starts on day one and involves a continuum of care through to scar maturation and beyond. It involves a dedicated multidisciplinary team of professionals and the full participation of the patient.

Nursing management of patient in Rehabilitation phase

1. Improving mobility
2. Improving self esteem
3. Promoting independence
4. Cosmetic counselling
5. Vocational training
6. Improving body image




COMMON FLUIDS

- Protenate or 5% albumin in isotonic saline (1/2 given in first 8 hr; 1/2 given in next 16 hr)
- LR (Lactate Ringer) without dextrose (1/2 given in first 8 hr; 1/2 given in next 16 hr)
- Crystalloid (hypertonic saline) adjust to maintain urine output at 30 mL/hr
- Crystalloid only (lactated ringers)



DRESSING THE BURN WOUND

- After burn wounds are cleaned and debrided, topical antibiotics are reapplied to prevent infection
 - Standard wound dressings are multiple layers of gauze applied over the topical agents on the burn wound
 - Nonsurgical management: removal of exudates and necrotic tissue, cleaning the area, stimulating granulation and revascularization and applying dressings. Debridement may be needed
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DIET

- Initially NPO
- Begin oral fluids after bowel sounds return
- Do not give ice chips or free water lead to electrolyte imbalance
- In general, patients get a high-protein diet that also includes fat, plus vitamin and mineral supplements.
- Protein. Patients need a lot of protein while healing because the body will lose protein through the burn wounds and muscles will break down trying to produce extra energy for the healing process. ...
- Carbohydrates. Fat.



GOALS

- Prevent complications (contractures)
- Vital signs hourly
- Assess respiratory function
- Tetanus booster
- Anti-infective
- Analgesics
- No aspirin
- Strict surgical asepsis
- Turn q2h to prevent contractures
- Emotional support



DEBRIDEMENT

- To allow healthy tissue to heal and to prevent more damage or infection, burned tissue is removed in a procedure called burn debridement. Burn debridement can be done by several different methods. They include surgical, chemical, mechanical removal.
- Done with forceps and curved scissor or through hydrotherapy (application of water for treatment)



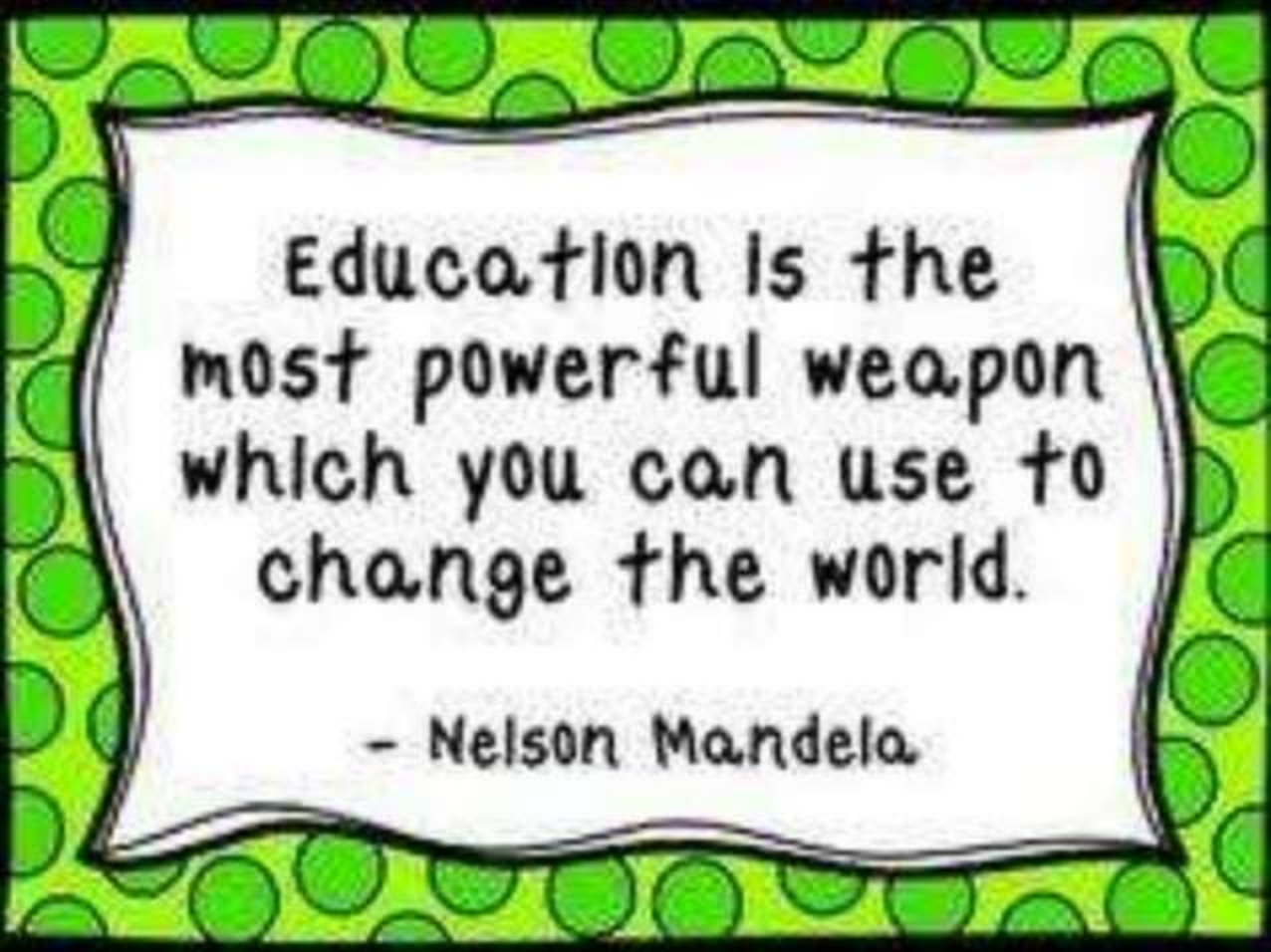
SKIN GRAFTS

- Done during the acute phase
- Used for full-thickness and deep partial-thickness wounds

➤ **POST CARE OF SKIN GRAFTS**

- Maintain dressing
- Use aseptic technique
- Graft should look pink if it has taken after 5 days



The image features a central white rectangular area with a wavy, hand-drawn border. This area is set against a vibrant green background filled with a pattern of smaller, outlined green circles. The text is written in a simple, black, sans-serif font.

Education is the
most powerful weapon
which you can use to
change the world.

- Nelson Mandela