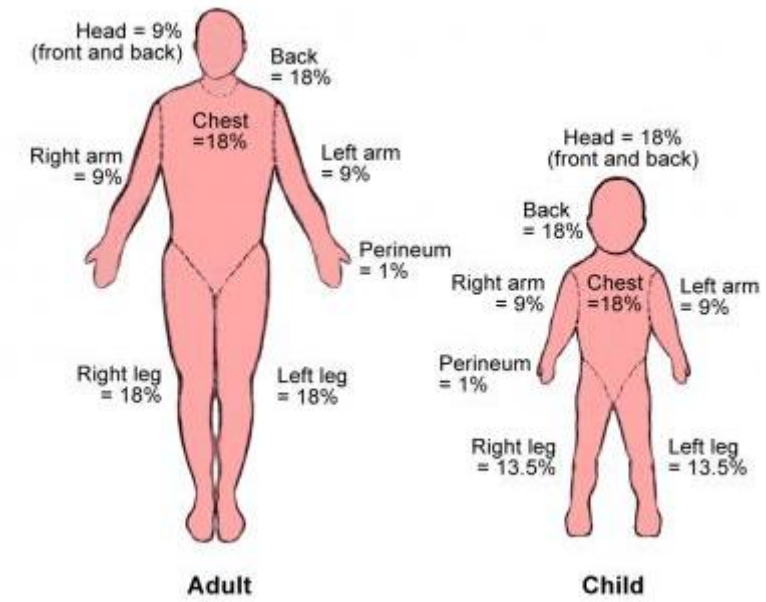
Unit VII – Problem 8 – Clinical: Burns

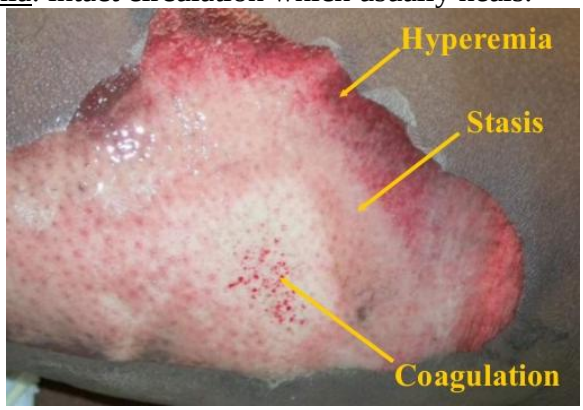
- **Define burn.**
  - It is a chronic disease caused by thermal injury of the tissues (reconstruction of deformities will take a long time).
- **Epidemiology:**
  - **Notice that 90% of burns can be prevented.**
  - **Commonly occurring among males and cause differ according to age group:**
    - ✓ Children: flame-related burns.
    - ✓ Young adults (20-40 years): work-related burns.
- **Etiology:**
  - **Scalds are the most common cause and composing around 80% of burn cases (scald: to burn –someone or something- with hot liquid or steam).**
  - Flame burns (13%).
  - Flash burns.
  - Contact burns.
  - Electrical burns.
  - Chemical burns (2-5%).
- **How to manage a case of burn?**
  - **Pre-hospital care:**
    - ✓ Stop burning process and remove the source.
    - ✓ Make sure that patient's airway is patent.
    - ✓ Cover the wound with clear sheet or gauze.
    - ✓ Transport the patient immediately to the hospital.
  - **Hospital care:**
    - ✓ Determine the size and depth of the wound.
    - ✓ Classify the burn according to its severity.
    - ✓ Initial management (ABCDEs):
      - ❖ A: Airway.
      - ❖ B: Breathing.
      - ❖ C: Circulation.
      - ❖ D: Depth of burn.
      - ❖ E: Extent of injury.
    - ✓ Fluid resuscitation is very important to prevent dehydration in the patient.
    - ✓ Wound management + pain killers + antibiotics (I there is a high risk for sepsis).
- **Classification of burn according to its severity:**

Degree of Burn	1st Degree	2nd Degree Partial Thickness	2nd Degree Deep Burns	3rd Degree	4th Degree
Involvement	Epidermis	Epidermis + Dermis	E+ D	E+D+Subcut tissue	E+D+S+muscles, tendons & bone
Appearance					
Symptoms & Signs	Pain ++	Pain ++++	Painful -less severe	Painless,insensitive, Severe Edema	No Edema
Healing	3-5 days , spontaneous No Scarring	2 weeks, min scarring, minimal discolouration	2-6 weeks Hypertrophic scarring / formation of contractures	No spontaneous healing	No spontaneous healing

- **Determining the extent of a burn:**
  - **Rule of 9s:**



- **Pathophysiology of burn:**
  - **There are 3 zones within a burn:**
    - ✓ Zone of coagulation: most intimate contact with the heat source; composed of dead and dying cells.
    - ✓ Zone of stasis: initially intact circulation, often ceases within 24 hours and becomes non viable.
    - ✓ Zone of hyperemia: intact circulation which usually heals.

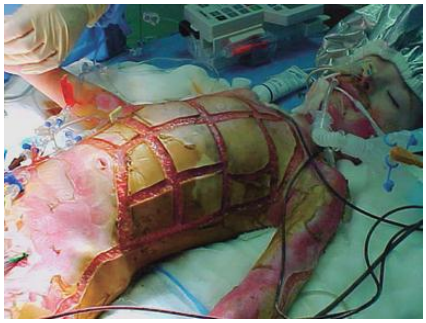


  - **Burn shock:**
    - ✓ When there is a burn, there will be increased vascular permeability and edema.
    - ✓ Loss of body fluids occur with: large burn surfaces (difficult to control), tachypnea and increased metabolic rate.
    - ✓ There is a risk of hypovolemia and cellular shock.
    - ✓ Calculation of fluid requirements:
      - ❖ *Weight (kg) x % of burn x 2-4 cc/kg/% of burn*
      - ❖ *Example*: 100 kg patient with 50% Total Body Surface Area (TBSA) burn:
        - ➢ (100 kg) x (50%) x (2 cc) = 10,000 cc/24 hours.
        - ➢ give half of this volume in first 8 hours = 10,000 x 0.5 = 5000 cc (which is equal to 400 cc/hour initially).
    - ✓ How to know if you have adequate resuscitation?
      - ❖ *Adjust fluid volume according to patient's response through urine output:*
        - ➢ 0.5 ml/kg/hour in adults.
        - ➢ 1 ml/kg/hour in pediatrics.

- **What to monitor in burn patient?**
  - Urine output, blood pressure, pulse, temperature, pulse oxymetry, CVP, arterial lines, ABG, ECG, CXR and NGT.
- **Criteria for outpatient management:**

Appropriate	Inappropriate
• Patients with small burns who have demonstrated understanding of wound care, pain control and therapy.	• Abused patients. • Patients with dementia. • Intoxicated patients. • Homeless patients. • Comorbid conditions. • Patient with language barrier.

- **Hospital admission and burn center transfer:**
  - 2nd or 3rd degree burns greater than 10% of TBSA in patients younger than 10 years or older than 50 years of age.
  - 2nd or 3rd degree burns greater than 20% TBSA in patients of other age groups.
  - 2nd or 3rd degree burns which involve the face, hands, feet, genitalia, perineum or major joints.
  - 3rd degree burns greater than 5% TBSA in patients of any age group.
  - Electrical burns including lightening injury.
  - Chemical burns.
  - Inhalation injury.
  - Burn injury in patients with pre-existing medical disorders.
  - A lack of qualified personnel or equipment for the care of children.
  - Suspected abuse or substance abuse.
- **Inpatient management:**
  - **Initial evaluation and resuscitation.**
  - **Initial wound care:**
    - ✓ Stop burning process.
    - ✓ Analgesia.
    - ✓ Tetanus prophylaxis.
    - ✓ Escharotomy (surgical procedure used to treat 3rd degree burns).
    - ✓ Cover (dressing):
      - ❖ Goal:
        - ➢ Prevention of wound desiccation.
        - ➢ Control of pain.
        - ➢ Reduction of wound colonization and infection.
        - ➢ Prevention of added trauma to the wound.
      - ❖ The addition of a gauze wrap minimizes soiling of both clothing and unburned skin and protects the wound from the external environment.



  - **Definitive wound closure.**
  - **Rehabilitation and reconstruction.**
- **Complications of burn:**

Acute	Chronic
Infection (wound infection, pneumonia, sepsis and UTIs)	Disfigurement
Deep Venous Thrombosis (DVT)	Hypertrophic scar formation
	Contractures.
	Heterotropic ossification.