LEGACY HEALTH

LEGACY OREGON BURN CENTER

Legacy Emanuel Medical Center

Objectives

- Skin and burn assessment
- Evaluation of the burn patient
  - Primary assessments
  - Airway management & Fluid Resuscitation
- Transfer Criteria

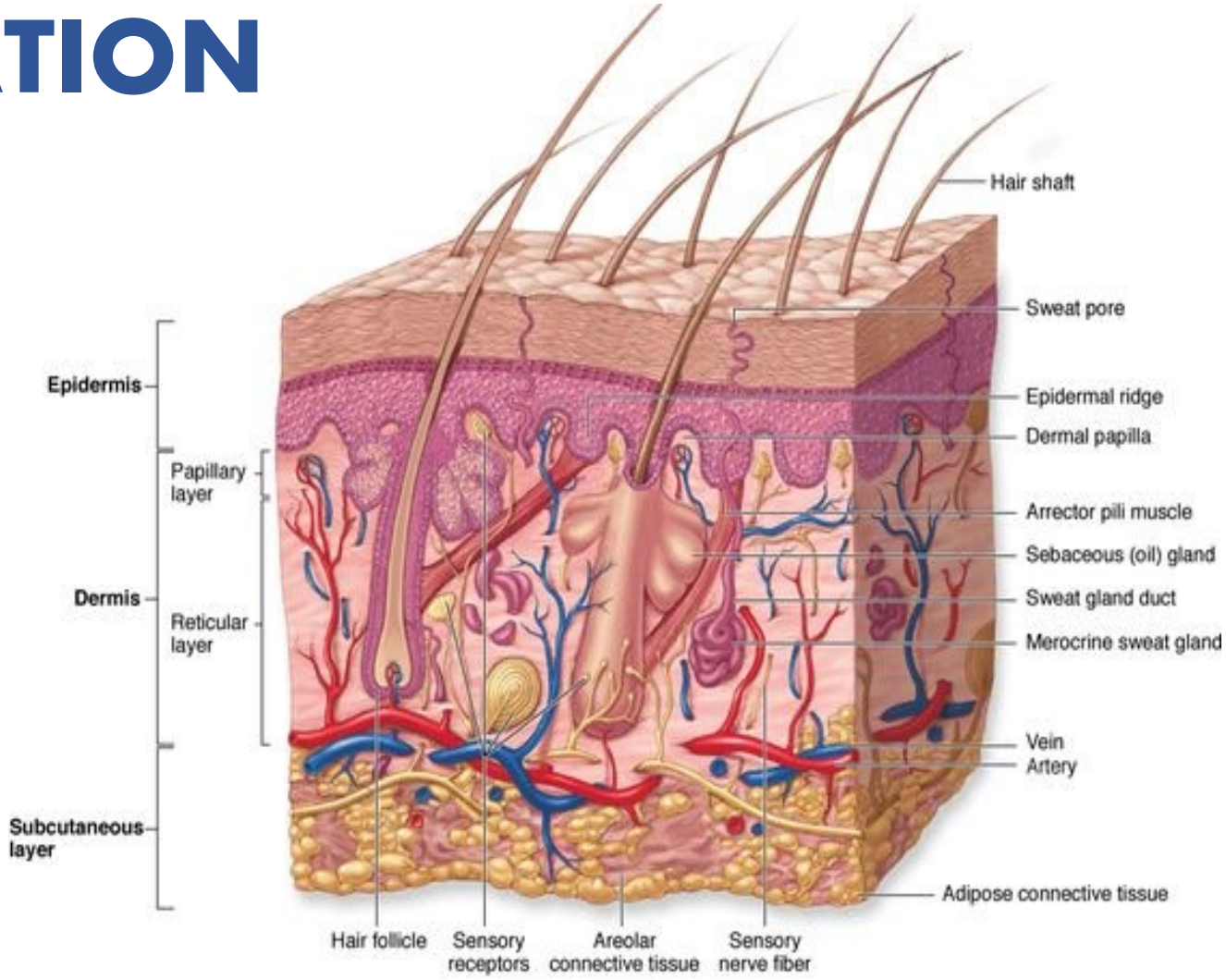
The Functions of the Skin

- **Protect against infection**
- **Prevent loss of body fluids**
- **Regulate body temperature**
- Excrete body waste
- Produce vitamin D
- Serve as sensory organ
- Determine identity

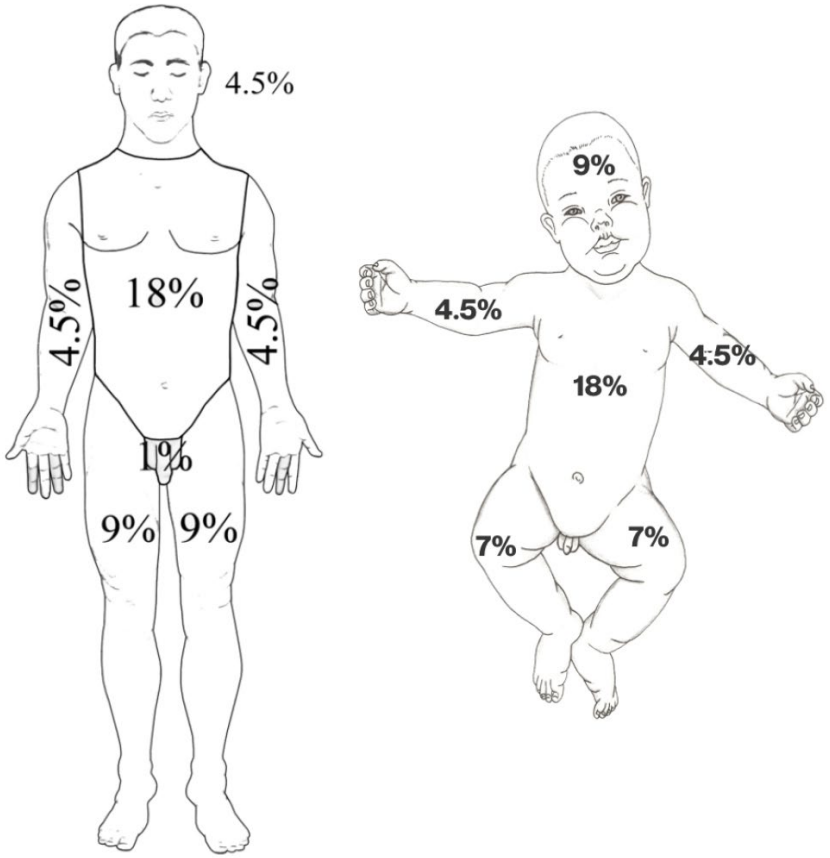
- *The first three functions are critical to survival in the first 24 hours post burn injury and where attention should be focused.*

BURN CLASSICFICATION

- Superficial
- Partial thickness
- Deep partial thickness
- Full thickness



TBSA CALCULATION



Rule of Nines

Palmer Method

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SUPERFICIAL

- Damage to epidermis only
- Intact skin
- Bright red and blanchable
- Soft
- Painful – nerve endings intact
- Usually heals in 5-10 days
- Treatment: Lotion, Tylenol and Ibuprofen for pain management, oral hydration
- **NOT calculated in TBSA**

PARTIAL THICKNESS

- Damage to epidermis and dermis
- Bright red & blanchable
- Soft
- Blisters present - intact or open
- Often moist
- Minor edema may be present
- Treatment – greasy gauze & polysporin/bacitracin to open areas, Tylenol & Ibuprofen for pain, oral hydration
- Follow up in clinic – should heal in 7-14 days
- Calculated in TBSA

DEEP PARTIAL THICKNESS

- Damage to epidermis, dermis and mildly into subcutaneous in small areas
- Ranges from bright red to pale, blanching slows down
- Moist, blisters present, usually open
- Will most likely heal in 2-3 weeks with specialized wound care
- May need inpatient care and IV fluids based on surface area
- May need IV and oral pain management – Oxycodone, Norco, Dilaudid, Fentanyl
- May or may not need transfer to Oregon Burn Center
- Calculated in TBSA

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FULL THICKNESS

- Damage to epidermis, dermis, subcutaneous layer and beyond
- Dry in appearance
- Firm to touch
- White, dusky, tan, brown or black in color
- Will most likely need surgical intervention to heal and need transfer to Oregon Burn Center
- IV fluids, tube feeding, expert wound care, collaborative team approach (Speech Therapy, Physical Therapy, Occupational Therapy, Psychology, multimodal pain management plan, case worker, burn survivor support)
- Calculated in TBSA

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68% Found down in apartment fire

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Fourth Degree Burn

- Burned through epidermis, dermis, subcutaneous tissue, muscle, and bone
- Charred appearance
- May appear cracked
- Immobility of area
- Always emotionally taxing

Mechanisms of Burns

Contact

Thermal

Scald

Flame

Chemical

Electrical

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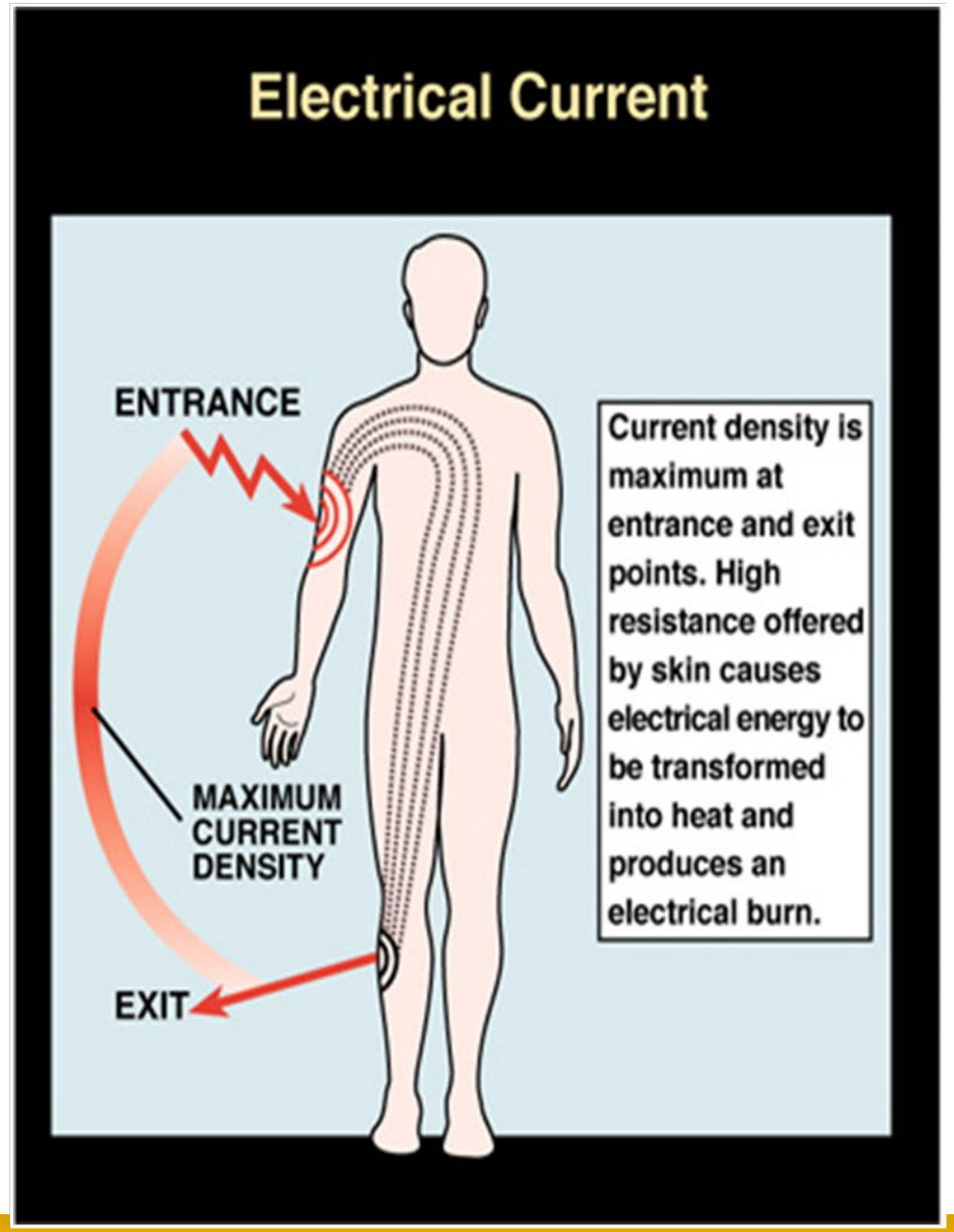


Current Injuries

- Contact and ground points
- Deep, hidden tissue damage present
- Risk of myoglobinuria/kidney failure
- Limb loss commonFlame injuries may also be involved
- Needs a 12 lead and tele q6hrs

Chemical Burns

****CALL POISON CONTROL****

- Decontamination/irrigation
- Liquids and powders
- Contact to skin or ingested
- Commonly on the job injuries or unsupervised children

Initial Assessment

PRIMARY ASSESSMENT – Burn Focused

A- airway
- Assess for symptoms – are they hoarse, can they swallow, 02 sats, requiring oxygen?
- Presence of soot does not always mean inhalation/airway injury

B-Breathing
- Is there chest rise and fall, breathe sounds, is the torso soft, are there torso burns?
- Escharotomies are required at times to allow for chest movement

C- circulation
- Hemodynamic stability – palpable pulses in all burned extremities (circumferential), stable blood pressure, elevated HR expected, establish access as able

D-Disability
- Most burn patients present awake and conscious
- If not, consider CO poisoning, associated injuries, substance use, hypoxia, pre-existing medical conditions

E-Exposure
- Remove all clothing and jewelry
- Keep patient **CLEAN, WARM, DRY**

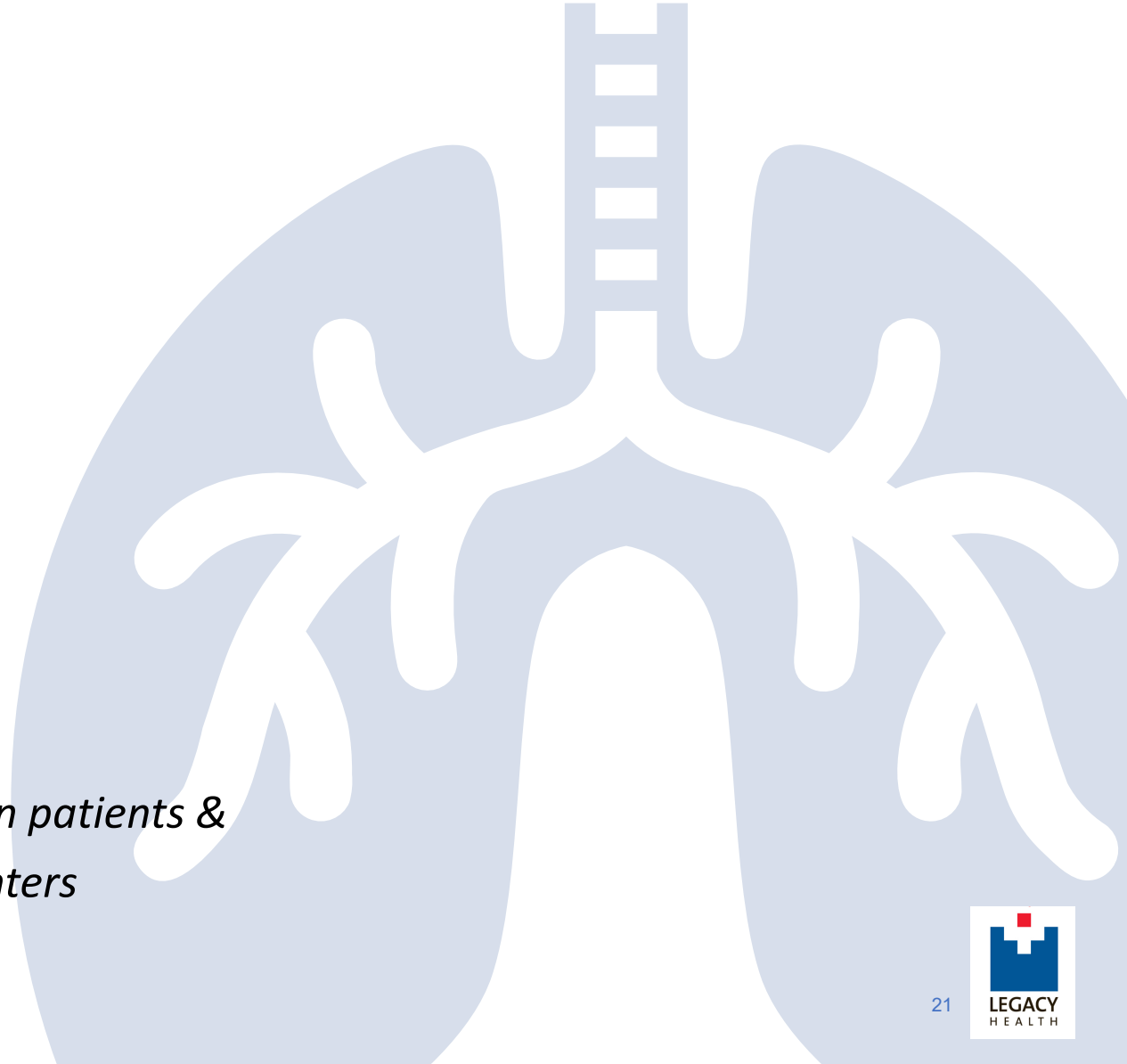
Interventions and Management

Airway Management

Signs and Symptoms

- Carbonaceous sputum
- Facial burns
- Singed nasal hairs
- Agitation due to hypoxia
- Intercostal retractions
- Hoarseness, stridor
- Inability to swallow

****Inhalation injuries are present in 10-20% of burn patients & identified in 60-70% of patients who die in burn centers*



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Types of Inhalation Injuries

Inhalation above the glottis

- Most heat damage occurs above true vocal cords
- Results in severe edema that may occlude airway
- Early intubation preferred

Inhalation below the glottis

- Almost always chemical
- Chemicals adhere to smoke particles and cause direct damage to epithelium of large airways as inhaled
- Requires bronchoscopy to diagnose severity

Carbon Monoxide Poisoning

- Caused by improper use of outside equipment inside
  - Generators, Grills, Propane heat sources inside or in tents, cars left running
- Signs and symptoms
  - May have cherry red skin – only present in 50% of cases
  - O2 sats are normal
  - Cyanosis and tachypnea not usually present
  - Headache, dizziness, N/V, confusion, blurred vision
- Carboxyhemoglobin level required
  - Normal <2%
  - Smokers average 5-9%
  - Potential poisoning >9%

TREATMENT

- 100% O2 through nonrebreather or ventilator
- Hyperbaric Chamber

Hypothermia

- No ice water, use cool water on the burn to stop the heat
- Cool no longer than 5 min

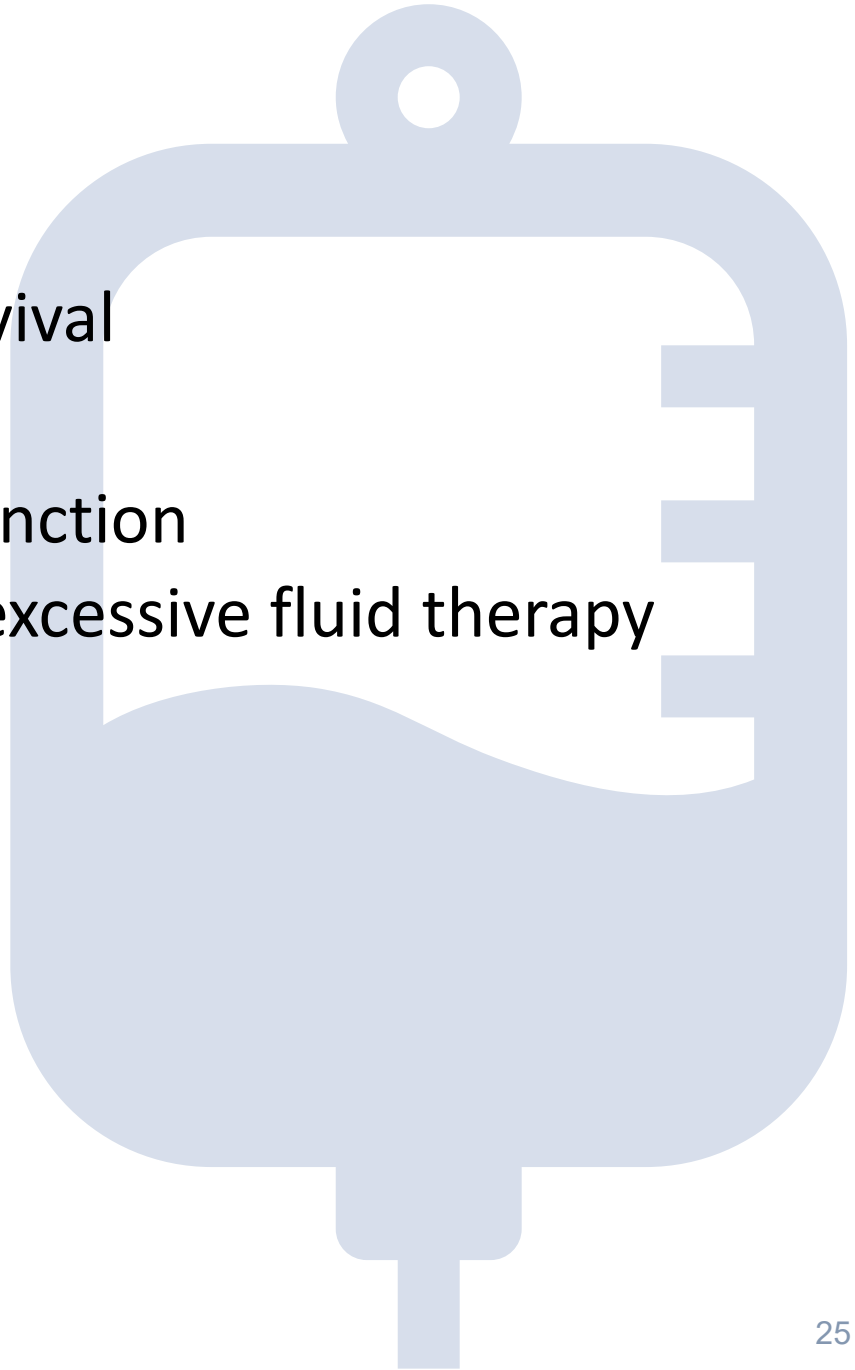
CLEAN WARM & DRY

Fluid Resuscitation

- Proper fluid management is critical to survival
- Objectives are to
  - Maintain tissue perfusion and organ function
  - Avoid complications of inadequate or excessive fluid therapy

5 and younger LR @ 125/HR
6 – 12 LR @ 250/HR
13 and older LR @ 500/HR
< 30KG D5LR 4:2:1 Formula

1 – 10 Kg = 4 ml per Kg
11 – 20 Kg = 2 ml per Kg
21 – 30 Kg = 1 ml per Kg



Over vs Under Resuscitation

- Edema is usually at its max in 48hrs post burn
- Risk for restricted blood supply due to edema - compartment syndrome
- Electrolyte imbalances due to insensible losses
- Patients sensitive to excess fluids are
  - Elderly
  - Children
  - Pre-existing cardiac disease

- Results in burn shock causing lack of perfusion to organs
- Damage to the kidneys is common
- Type of volume matters
  - LR
  - Plasmalyte
  - Albumin

CLEAN WARM & Dry

- Wrap in dry sheet for transfer, only apply dressing if directly advised
- Utilize bear hugger, warm blankets for temp control
- DO NOT ice, soak or wrap in wet gauze
- Monitor urine output
- Start fluids per provider recs
  - Fluids should always be LR
- Establish IV access – Okay to go through burned tissue
- If circumferential burn is present, pulses should be checked q1hr

CONSULT PROCESS

- Be prepared to answer questions about the patient/connect the charge RN to the ED provider requesting the consult
- Have pictures prepared or in process
- Info we will want
  - Name, DOB
  - Time of injury
  - Estimated TBSA
  - Mechanism of injury
  - Overall impression (VS, LOC, labs if resulted)

ABA Transfer Criteria

- 2nd degree burns > 10 %
- Burns to hands, face, feet, genitals, major joints
- 3rd degree burns
- Electrical burns
- Chemical burns
- Inhalation injuries
- Burns with pre-existing medical condition
- Burns accompanied by trauma where the burn is the greater risk to life
- Burns to children in hospitals without pediatric services
- Patients with special social, emotional or rehabilitative needs

QUESTIONS?

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Picture email for consult calls: oregonburncenter@lhs.org
Website for pictures: www.sagediagram.com/rita

Burn Presentation Feedback Form

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