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# **Burn and Wound Overview**

Presented by:  
Bill Nechtow DO, MS

# Scenerios

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- 2 yo female
- wanders into smoldering ashes of recently extinguished brush fire.



# Mechanism

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- Touro University
  - Medical school
- Memorial hospital
  - Rotations
- Mercy Medical Center
  - General surgery
- University of Iowa
  - Burn elective

Origin Story of a  
burn surgeon



# Mechanism

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- UTMB / Shriners Childrens
  - Galveston, TX
  - Surgical Critical Care / Burn
- Integris
  - OKC
  - 2019 to present

Origin Story of a  
burn surgeon



# Mechanism

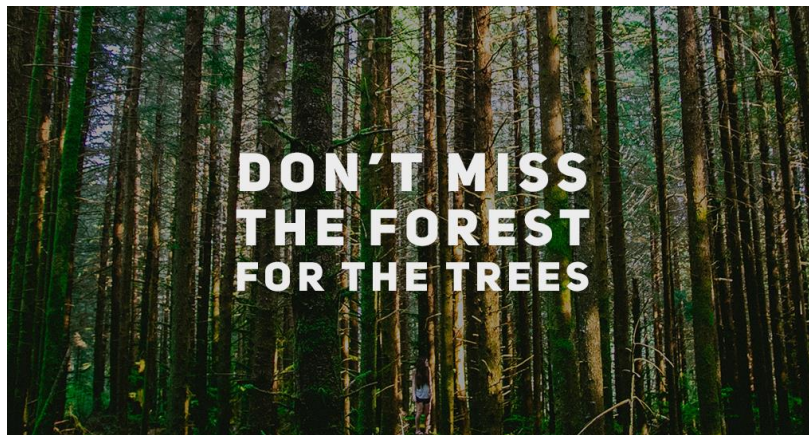
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- Hot
  - Scald
  - Flame
  - Contact
  - Chemical
    - Acid / Base
  - Electric
    - Shock
    - Flash
- Cold
  - Frostbite
- Wound
  - Necrotizing fasciitis
  - Arterial
  - Venous stasis ulcer
  - Tumor
  - Abscess
  - Surgical wound dehiscence

# Like a Trauma!

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- Primary survey
  - ABC's
  - The burn is often the most obvious injury, but other serious and even **life threatening** injuries may be present



# Like a Trauma!

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- “It’s never just a burn”
  - CVA
  - Seizure
  - Non-accidental trauma (child/elderly)
  - Self inflicted / Suicidal ideation
  - Torture
  - Social situation (homeless/ incarceration)
  - Carbon monoxide / cyanide
  - Neuropathic
    - Diabetic / paraplegia
  - Substance abuse
  - Tumor advertised as a burn
  - Insect bite advertised as a burn

# Scenerios

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- 85 yo male
- pants caught fire while welding
- 37% tbsa flame burns



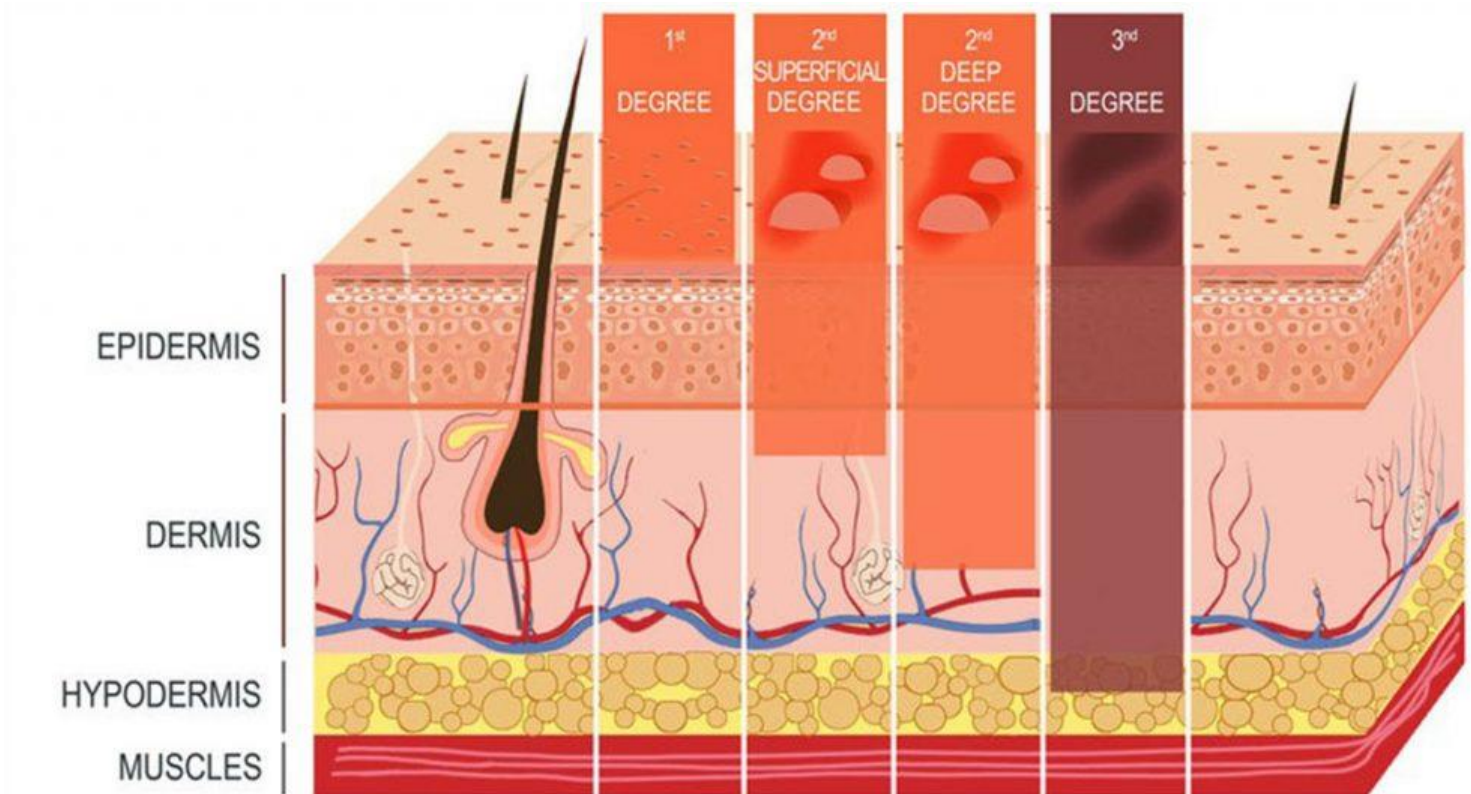


# Like a Trauma!

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- Secondary survey
  - History
  - Medical history
  - accurate weight
  - Complete head-to-toe evaluation of the patient
  - Determine Total Body Surface Area burned
  - Insertion of lines and tubes
  - Initiation of resuscitation fluids
  - Obtaining necessary labs and X-rays
  - Monitoring of fluid resuscitation x Pain and anxiety management
  - Psychosocial support
  - Wound care
- The burn is often the most obvious injury, but other serious and even **life threatening** injuries may be present

# Degree burn



# 1<sup>st</sup> Degree burn

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# 2<sup>nd</sup> Degree / partial thickness

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# 3<sup>rd</sup> or 4<sup>th</sup> degree / full thickness

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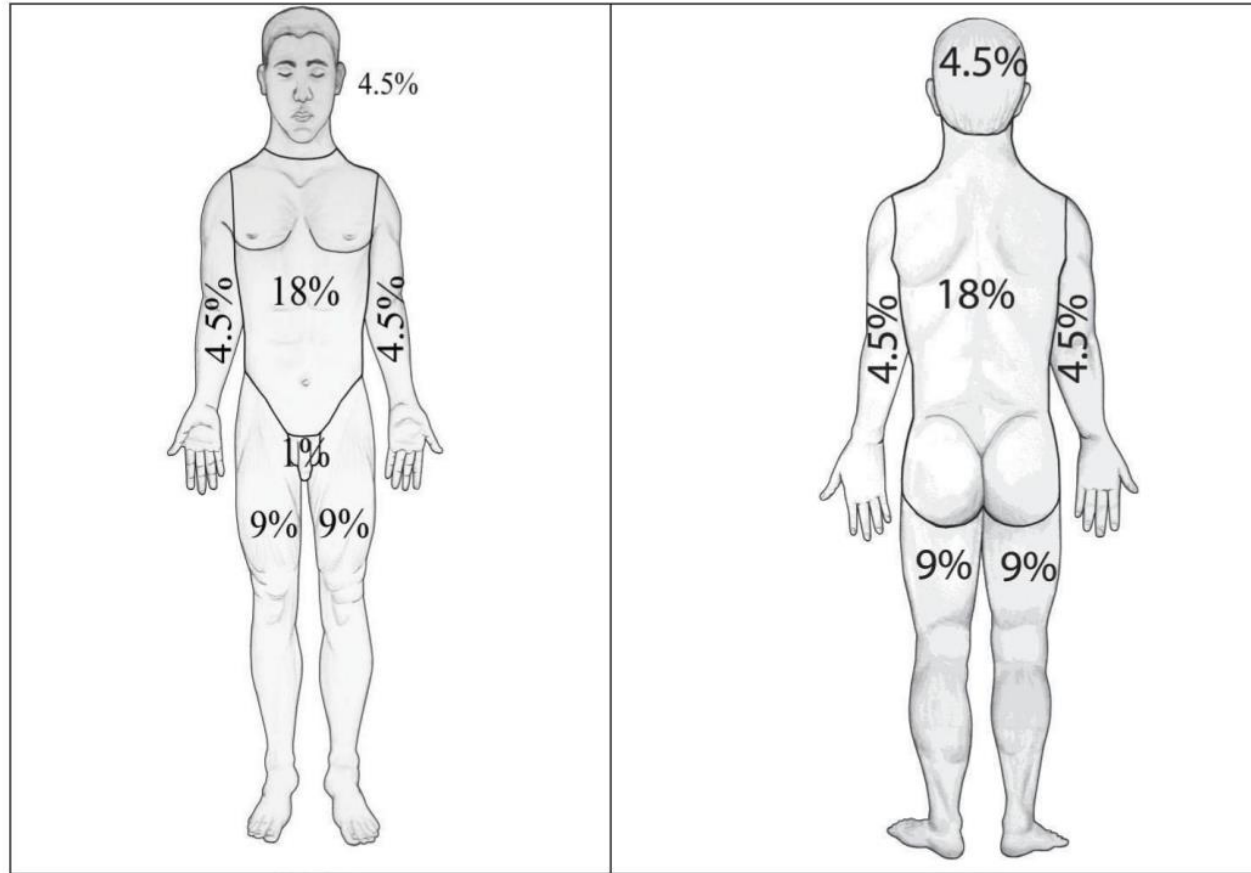
# Indeterminate thickness burn



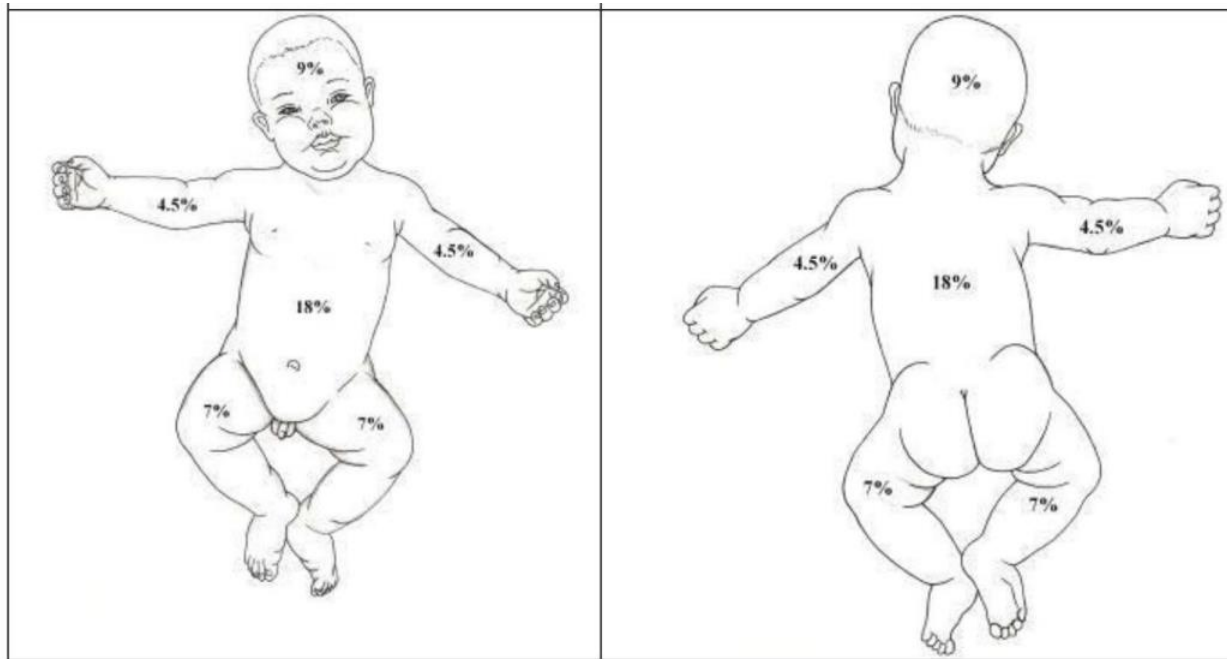
# Determine TBSA 2<sup>nd</sup> and 3<sup>rd</sup> degree

2011 ABLS ProviderManual

Ch. 2 Initial Assessment & Management



# Determine TBSA 2<sup>nd</sup> and 3<sup>rd</sup> degree

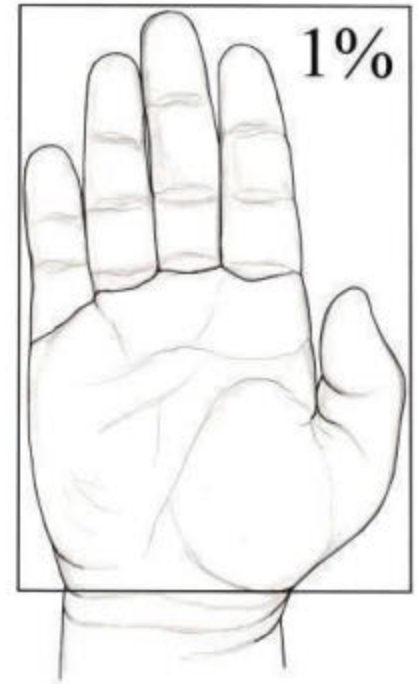




# Burn shock/ Resuscitate

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- Massive tissue injury
- Profound host response
- Decrease CO
- Increase PVR
- Intravascular hypovolemia
- Massive fluid shift from capillary leak
- Tissue edema
- Proportional to TBSA
- Burn shock; combined hypovolemic and distributive
- Intravascular volume in form of fluid resuscitation until organ and tissue perfusion restored



# Sample calculation

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- Parkland Formula
  - 4 mL/ kg /%TBSA / 24 hrs
  - Half of the total over first 8 hrs
  - Remaining half over subsequent 16 hours
  - Lactated Ringers
  
- Reality
  - Many formulas
  - Variation on concept
  - Titrate to UOP

# Resuscitation Challenges

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- Challenges
  - associated traumatic injuries
  - with electrical injury
  - with inhalation injury
  - resuscitation is delayed
  - prior dehydration
  - alcohol and/or drug dependencies (chronic or acute)
  - very deep burns
  - burned after methamphetamine fire or explosion
  - with severe comorbidities (such as heart failure, or endstage renal disease)



# Escharotomy / fasciotomy/ laparotomy

- Escharotomy
- Abdominal compartment syndrome



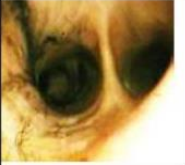




# Inhalation injury

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- Inhalation of superheated gas, steam, liquid, noxious product of combustion
- Associated with CO, cyanide, hypoxia, loss of airway
- Early intubation
- Increases mortality
- Types
  - Non-inflammatory
    - Exposure to toxic gas. eg CO, cyanide
  - Inflammatory
    - Supraglottic
    - Subglottic
    - Combination

# Inhalation injury

Class		Description
No injury		Absence of carbonaceous deposits, erythema, edema, bronchorrhea or obstruction
Mild injury		Minor or patchy areas of erythema, carbonaceous deposits in proximal or distal bronchi
Moderate injury		Moderate degree of erythema, carbonaceous deposits, bronchorrhea, or bronchial obstruction
Severe injury		Severe inflammation with friability, copious carbonaceous deposits, bronchorrhea or obstruction
Massive injury		Evidence of mucosal sloughing, necrosis, endoluminal obliteration

# Burn Center Referral Criteria

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1. Partial thickness burns greater than 10% total body surface area (TBSA).
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
3. Third degree burns in any age group.
4. Electrical burns, including lightning injury.
5. Chemical burns.
6. Inhalation injury.
7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
8. Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn unit. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
9. Burned children in hospitals without qualified personnel or equipment for the care of children.
10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention.

5-May-2023

# Back to the patient – what's next!?

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- Resuscitated
- Escharotomized
- Bronch'd
  
- Buckle up!





# Course

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- “Close the damn wounds”
  - OR
    - excision and skin grafting
      - Auto graft
      - Homo graft
      - Xeno graft
      - Skin substitutes
    - Amputations
    - Reconstruction efforts

# Course

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- Medical management
  - Vent / inhalation injury
  - Cardiopulmonary
  - Comorbidities
  - Pain control
  - Nutrition
  - Complications
  - Physical therapy
  - Occupational therapy
  - Social issues
  - Complex discharge planning

# Course

- Discharge planning and recovery
  - Hypertrophic burn scar
  - Flexion contracture
  - Physical Therapy
  - Occupational therapy
  - PTSD
  - Pain management and withdrawal
  - Recurrence
  - Misc
    - Eg handicap parking stickers
    - MMI for work
    - Pain contracts
    - Becoming a pcp sort of



# Scenerios

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- 36 yo male
- Lineman
- 7000 Volts Electrical conduction



# Hyperbaric Oxygen Chamber

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Decompression Sickness

Carbon monoxide poisoning

Arterial gas embolism

Diabetic foot ulcer

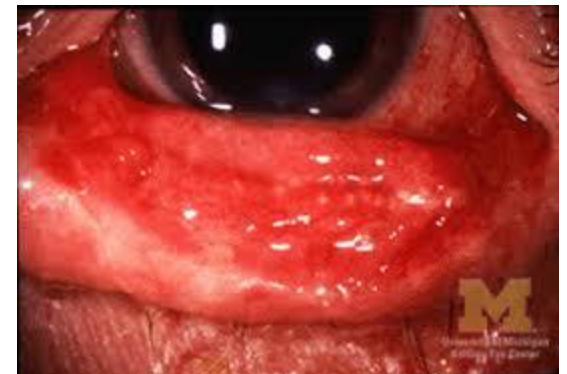
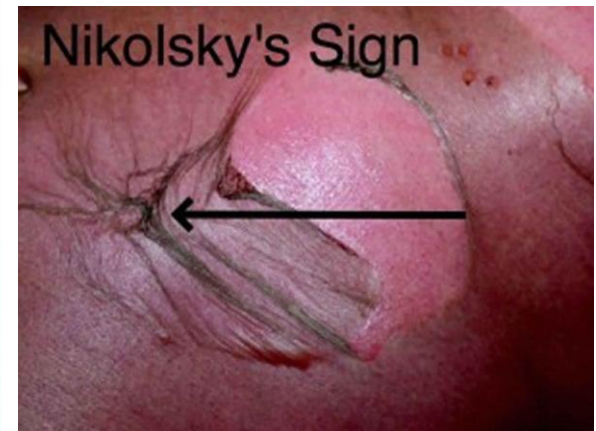
Osteo / soft tissue radionecrosis

Central retinal artery occlusion

5-May-2023

# Stevens Johnson Syndrome

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# Questions

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## Contact the Burn Center

INTEGRIS Baptist Medical Center  
3300 N.W. Expressway  
Oklahoma City, OK 73112

Inpatient Burn Center | 405-949-3345  
Outpatient Burn Clinic | 405-951-2714  
Outpatient Wound Center | 405-552-2857

## Our Doctors

We understand that nothing is more important than the health of you and your family. With a full range of specialties, our highly trained physicians are here to care for all of your health care needs.



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