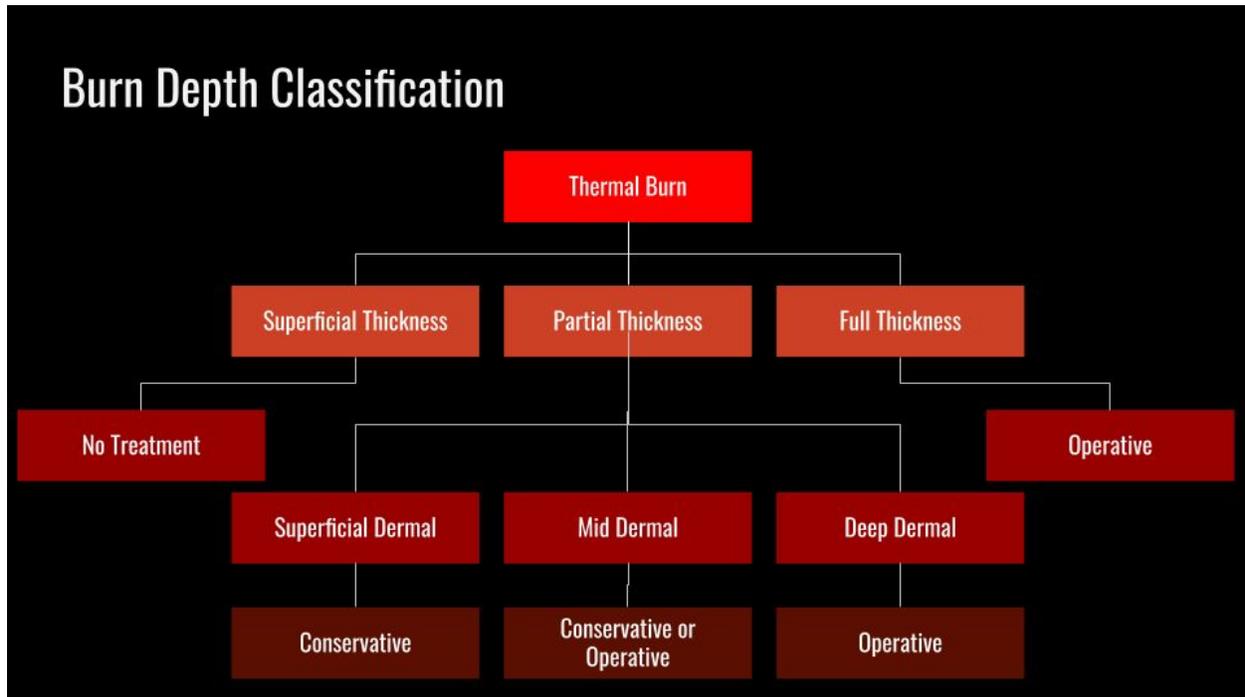


Burns

- Classification



- Burn Depth Characteristics

- Superficial thickness burns:
 - Appearance: erythema
 - Pain: mild to moderate
 - Cap refill: fast
 - Healing time: few days
- Superficial dermal burns:
 - Appearance: pink, wet, blisters
 - Pain: Severe
 - Cap refill: fast
 - Healing time: 2-3 weeks
- Mid dermal burns:
 - Appearance: superficial dermal + deep dermal
 - Pain: +/-
 - Cap refill: slow/fast
 - Healing time: 3-6 weeks
- Deep dermal burns:
 - Appearance: red, less wet, +/- blisters, petechiae

- Pain: +/-
- Cap refill: sluggish/absent
- Healing time: > 6 weeks
- Full thickness burns:
 - Appearance: white/brown/black, dry, leathery
 - Pain: absent
 - Cap refill: absent
 - Healing time: require surgery
- **Burn Depth Progression**
 - Burns tend to appear more superficial on initial assessment
 - Final burn depth determination should be made on day 2-3 at which point the decision for conservative management vs operative management should also be made
 - If treating conservatively, the patient should be reassessed at 2-3 weeks as superficial burns should be healed by this time
- **Estimation of TBSA %**
 - Rule of nines
 - Evidence reports generally overestimates TBSA
 - Can be used as a quick estimation, especially in burns that affect a whole body part (limb, or head, etc)
 - Palm method ("Hand method")
 - Best for < 15% or > 85% TBSA
 - Use patient's hand not provider's hand
 - 1% is given for the whole hand, from wrist crease to finger tips including thumb
 - Lund Browder chart
 - Gold standard, shown to be accurate with good interrater reliability
 - Use age adjusted version
 - For infants, use the BC Children's Hospital diagram found here: <http://policyandorders.cw.bc.ca/resource-gallery/Documents/BC%20Children's%20Hospital/CC.16.43.B%20Burn%20Diagram%200-1yr.pdf>
- **Fluid Resuscitation**
 - Ringer's lactate is the fluid of choice
 - Consider 5% albumin at 8-12 post burn injury, particularly if fluid rates are reaching 6cc/kg/TBSA in adults

- Hourly re-assessments of end-organ perfusion and volume status required to properly adjust fluid infusion rate
- Avoid boluses if possible
- Vancouver General Hospital clinical practice guideline:

Initial Fluid Resuscitation	
STEP 1	Calculate initial 24h resuscitation fluid requirements = (3ml of Ringers Lactate)(kg) (% TBSA from Plastics consult) / 24h. ½ of this IVF is administered in the first 8 hours (post burn) and the second ½ is delivered in the remaining 16 hours.
STEP 2	Determine the administered pre-hospital IVF volume, subtract this from your above calculation, and adjust your treatment appropriately.
STEP 3	Monitor urine output hourly and decrease or increase the RL infusion by 20% to maintain urine output between 30-50ml/hr (50-100ml/hr for high-voltage electrical burns). Avoid boluses if possible. NOTE: Hour to hour fluid resuscitation is critical, particularly during first 24 hours. OVER-RESUSCITATION IS AS HARMFUL AS UNDER-RESUSCITATION.
STEP 4	If urine output is $\leq 15\text{ml/hr}$ for two or more consecutive hours despite increasing fluid rate OR patient requires twice current calculated rate for more than two hours: CALL ICU FELLOW OR ATTENDING, flush urinary catheter, assess breath sounds and bladder pressure. Consider initiating 5% albumin infusion at 1/3 of current resuscitation rate and make up the remainder of rate with RL. Titrate rate as above based on urine output.
STEP 5	At 8 hours post-burn, calculate the PROJECTED 24 hour resuscitation if fluid rates are kept constant. If the projected 24 hour resuscitation requirement exceeds 6ml/kg/% TBSA burn or 350ml/kg total, the following steps are recommended: <ul style="list-style-type: none"> I) Initiate 5% albumin infusion at 1/3 of current resuscitation rate and make up the remainder of rate with RL. Titrate infusion to urine output as described above. After 24 hours post burn, titrate infusion down to maintenance and continue albumin until 48 hours post burn. II) Watch for signs of Intra-Abdominal Hypertension (bladder pressure $\geq 15\text{mmHg}$, increased airway pressures, decreased urine output, hypotension) and extremity compartment syndromes (absent doppler signal or pulses that are diminishing on serial exams q30-60 minutes should prompt consideration of escharotomy)

- For pediatrics:
 - Same formula except must add 75% of maintenance fluids in the form of D5NS for > 5kg children or D10NS for <5kg children
 - Generally, albumin is considered at 24 hours post burn injury
- **Core Body Temperature**
 - Evidence shows that patient's transferred to burn centres have a high risk of hypothermia
 - For adults: cool the burn, warm the patient
 - For pediatrics: warm the patient (as risk of hypothermia is high)

- **Burn Blisters**
 - Conflicting evidence; however, expert opinion is that blisters should be debrided
 - Small 1-2 cm blisters can be aspirated and dressed with anything simple

- **Wound Care**

Adults	Pediatrics
<ul style="list-style-type: none"> ● Face <ul style="list-style-type: none"> ○ Polysporin if small ○ Mepitel and gauze if large ● Everywhere except face/genitals <ul style="list-style-type: none"> ○ Acticoat ● Ears and genitals <ul style="list-style-type: none"> ○ Flamazine (*daily changes) 	<ul style="list-style-type: none"> ● Face <ul style="list-style-type: none"> ○ Polysporin only ● Everywhere except face/genitals <ul style="list-style-type: none"> ○ Acticoat ● Genitals <ul style="list-style-type: none"> ○ Toilet trained: Polysporin and jelonet ○ Non toilet trained: Acticoat and tegaderm

- **Indications for Intubation**

Indications for intubation	
<u>2011 ABA guidelines</u>	<u>Traditional</u>
<ul style="list-style-type: none"> ● Full thickness facial burns ● Stridor ● Respiratory distress ● Swelling on laryngoscopy ● Upper airway trauma ● Altered mentation ● Hypoxia/hypercarbia ● Hemodynamic instability 	<ul style="list-style-type: none"> ● Suspected smoke inhalation ● Oropharynx soot ● Hoarseness ● Dysphagia ● Singed facial hair ● Oral edema ● Oral burn ● Non-full thickness facial burn

- Singed nasal hairs or facial burns alone are not indications to intubate
- Use of a nasopharyngoscope can be helpful in decision making to directly determine if there is an upper airway injury

