Title: Trauma Burn Guidelines	☐ **Policy** ☐ **Procedure** ☒ **SOP**
Category: Unit/Department Specific **Dept/Prog/Service:** Emergency / Trauma Services	**Distribution:**
Approved: EVP, In-Patient Care Programs **Signature**:	**Approval Date:** Nov. 2018 **Reviewed/Revised Date:** **Next Review Date:** Nov. 2021

CROSS REFERENCES: *CCSO Burn Consultation Guidelines*

1. PURPOSE

To deliver optimal patient care to adult and paediatric burn injured patients within the Northwest Regional Trauma Network (NWRTN).

2. POLICY STATEMENT

To assist staff and physicians with the care of a patient who has sustained a significant burn injury.

3. PROCEDURE

CritiCall (1-800-668-4357) will provide assistance for patient referrals or medical advice from Sunnybrook Burn Centre (for all adult patients) or The Hospital for Sick Children (for all paediatric patients). CritiCall can be accessed at the request of the most responsible physician (MRP). In addition, the Teleburn Program (through CritiCall supports urgent / emergent burn care suggestions and ongoing follow up.

Burn patient initial medical management guidelines

Following establishing airway patency any patient with burns greater than 20% Total Body Surface Area (TBSA) will require volume support. Large-caliber intravenous lines must be established with Ringer's lactate. The typical burn patient requires 2 to 4 mL Ringer's lactate multiplied by patient's weight in kg. multiplied by burn size in % TBSA during the first 24 hours. Generally, 50% of the estimated total volume of fluid is given within the first 8 hours with the remainder during the next 16 hours.

Depth of burn

The depth of the burn is reflective of the layers of skin and tissue affected. In assessing depth remember that the dermis is the vascular layer, so superficial burns, which affect the epidermis, will not bleed.

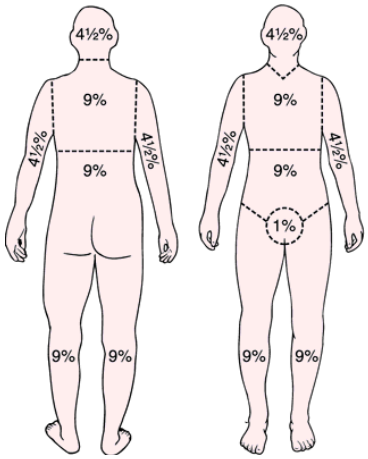
- **Superficial burn:** involves only the epidermis, the burn site is red, painful, dry, and with no blisters.
- **Partial thickness burn:** involves the epidermis and part of the dermis layer of skin. The burn site appears red, blistered, and may be swollen and painful.
- **Full thickness burn:** involves the epidermis and dermis and may go into the subcutaneous tissue. The burn site may appear white, leathery or charred.

After initial assessment of burn area is completed, begin fluid resuscitation. Definitive assessment of depth may change over the course of the first 24 to 48 hours of the wound.

Extent of burn

Determine the extent of partial and full thickness burn injury using one of the following:

- Lund and Browder Chart is based on age and burned area (most accurate).
- The Rule of Nines divides the body into areas of 9% or multiples of 9%, except for the perineum, which is 1%.



- Rule of Palms is used to measure small or scattered burns. A 1% burn is considered to be the size of the patient's hand (including fingers).
- The percentage of TBSA is essential to calculating fluid resuscitation.

Fluid Recommendation

Formula: Weight in kg x 2 mL x % TBSA = the total amount of fluid to be infused in 24 hours from the time of injury.

- Give half of the calculated total during the first 8 hours.
- Give the remaining half over the next 16 hours.

Location of Burn

Burns identified as high risk include:

- Circumferential
  - Assess for increasing pressure to structures under circumferential burns
- Perineal
  - High risk for contamination or infection
- Hands or feet
  - High risk for strictures

Interventions

- Assess and manage pain.
- Remove clothing, jewelry, and non-adherent debris.
- If initial cooling of burn not performed pre-hospital, burn wounds may be covered with wet gauze or towels, which can decrease pain and may be kept on the wound for as long as 30 minutes.
- Elevate extremity to the level of the heart (not above) to promote circulation and assist in reduction of edema.
- Administer tetanus prophylaxis as indicated.
- If maltreatment is suspected, further investigation and notification of social or child protective services is warranted as per policy number M/C-POL-12.
- Consider wound care specialist assessment.

Transfer to a burn center

Any criteria below warrants transfer to a burn centre:

i. Partial-thickness and full-thickness burns greater than 10% of the total body surface area (BSA) in patients under 10 or over 50 years of age.
ii. Partial-thickness and full-thickness burns greater than 20% of the body surface area in other age groups.
iii. Partial-thickness and full-thickness involving the face, eyes, ears, hands, feet, genitalia, or perineum or those that involve skin overlying major joints.
iv. Full-thickness burns greater than 5% of the total body surface area in any age group.
v. Electrical burns, including lightning injury (significant volumes of tissue beneath the surface may be injured).
vi. Significant chemical burns.
vii. Inhalation injuries.
viii. Burn injury in patients with pre-existing illness that could complicate management, prolong recovery, or affect mortality.
ix. Any burn patient in whom concomitant trauma poses an increased risk of morbidity or mortality may be treated initially in a trauma centre until stable before transfer to a burn centre.
x. Burn injuries in patients who will require special social and emotional or long-term rehabilitative support, including cases involving suspected child abuse and neglect.

Procedure

i. Transfer of any patient must be coordinated with the burn-centre physician via Criticall.
ii. All pertinent information regarding test, vital signs, fluid administration, and urinary output should be recorded on the burn / trauma flow sheet and sent with the patient. Any other information deemed important by the referring or receiving physician is also sent with the patient.
iii. Every effort will be made to adequately stabilize patient prior to transfer. Physician attendance will not be necessary during transfer unless it is anticipated the patient will require procedure in transit which only a physician can perform.

4. RELATED PRACTICES AND/OR LEGISLATIONS

Critical Care Services Ontario (CCSO) & Criticall Burn Centre Consultation Guidelines

5. REFERENCES

Ontario Telemedicine Network. (2015). Teleburn, Retrieved from https://support.otn.ca/en/teleburn

Emergency Nurses Association. (2014. Trauma Nursing Core Course (7th Ed.) Des Plaines, IL, ENA

Gauglitz, G.G. & Williams, F.N.(2018) Overview of the management of the severely burned patient. Uptodate. Wolters Kluwer.

BURN CARE PATHWAY:

Arrives to ED
- Primary assessment (ABCDE), Triage
- Sedation/pain management
- Fluid resuscitation Ringers Lactate if > 20% TBSA

(2-4ml x kg x %TBSA burned) ½ first 8 hours, ½ next 16 hours

Document on ED record:

Burn History
- Date/Time of injury
- Mechanism/smoke inhalation
- First aid provided
- Past medical history
- Allergies/medications
- Last meal
- Tetanus date

Burn Assessment
- Blisters +/-
- TBSA burned = %
  See Lund Browder chart
- Depth/Color (pink/white/brown)
- Blanchable +/-

Does patient meet any of the following criteria:
- Children: partial thickness burns >10%, full thickness any size
- Adults: partial thickness burns > 20%(>10% for over 50years), full thickness > 5%
- Chemical, electrical, lightening, high pressure steam
- Face, hands, genitals, perineum, feet
- Flexural joints (neck, axilla, elbow, knee)
- Circumferential deep burns
- Inhalation injury
- Septic burns

YES

Consult Plastics/ Burn Center/Criticall for possible transfer
Specialized Burn Unit
Sunnybrook or Sick Kids

NO

Does patient require admission?
- pain management
- full thickness in adults
- concerns of infection
- suspect abuse
- complex medical condition

NO

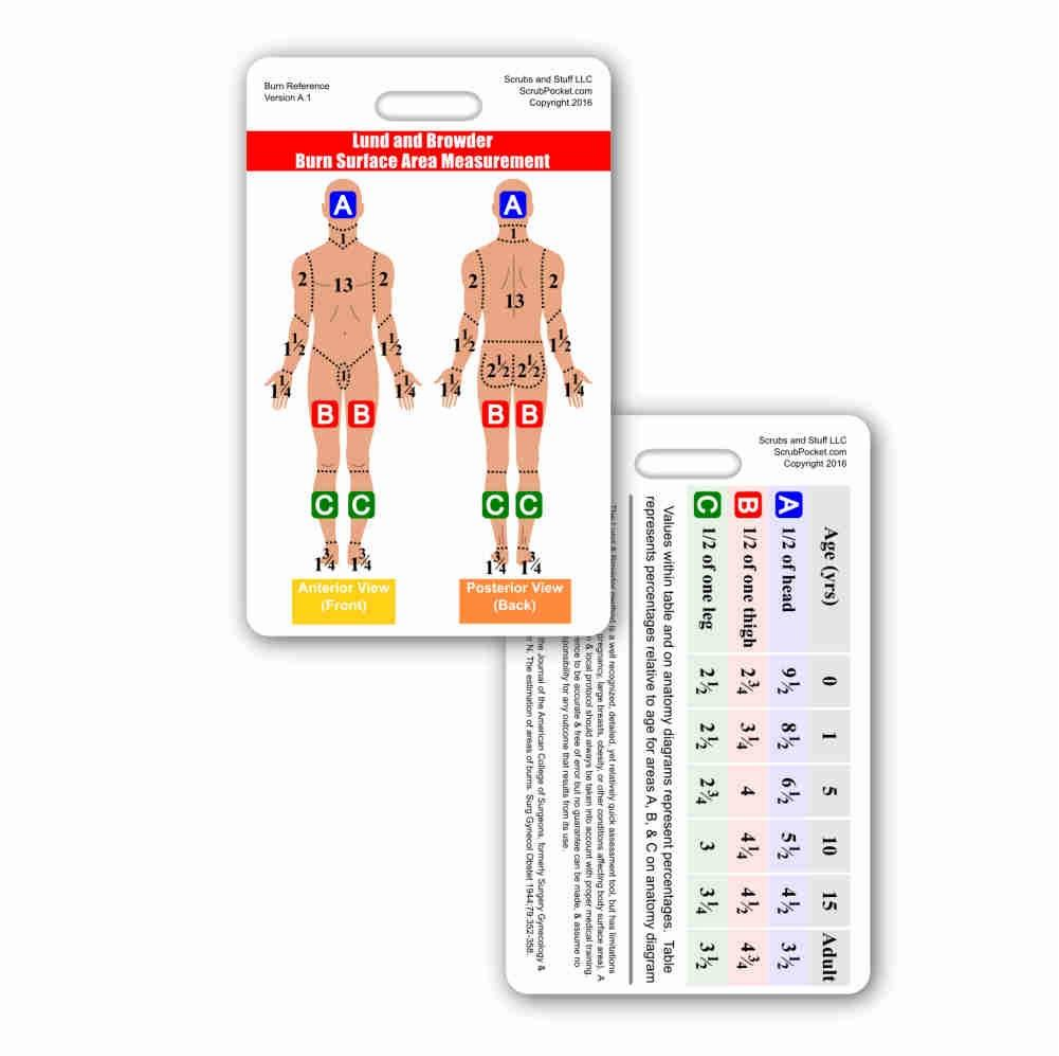
YES

Admission
1. Partial thickness
Uniform, pink, blanchable
AND/OR
2. Full thickness or partial/full
Patchy, white, brown, sluggish cap refill, hemorrhagic

IN EMERGENCY ROOM
1. Consult Plastic Surgeon for review if deemed appropriate by ED physician, fax referral to plastics office
2. Consult Chief of Surgery or designate if Plastics not available
3. Deroof blisters > 1 cm, wash burns with soap/ water.
4. Dress with:
   a. Acticoat flex 3 moistened with Intrasite gel, cover with sterile water moistened gauze, Hypofix, cling, netting to secure. Change Q 3 days
   b. **If Acticoat not tolerated(ongoing pain/burning)**, Adaptic with Bacitracin/Mupirocin, abd pads, cling, netting to secure. Change daily
   - Do not wrap limbs circumferentially
   - Wrap digits individually
   - Allow for mobility of affected limb
5. Facial burns: No dressings, wash with soap and water, apply thin layer of Vaseline to burns, patient to repeat TID
6. Schedule reassessment in 48 -72 hours from initial burn in Peds outpatient (children) or SJCG wound clinic (adults), specify on faxed referral form “Burn”. Instruct patient to confirm F/U apt the next day with referral service.
7. Provide analgesia for 72 hours, instruct to take prior to next apt.

1. Consult Plastic Surgeon for MRP or Pediatrician with plastics consulting
2. If Plastics unavailable, consult chief of surgery or designate
3. Consult CNS Wound care
4. Apply Acticoat flex 3(pediatric) Q 3 days OR if not tolerated, Adaptic with Bacitracin Q daily
5. Pain Management
6. Reassess in 48-72 hours

At 48-72 hour follow-up (in SJCG wound clinic/Peds outpt/ED):
1. Burn reassessment and dressing change:
   a. Full thickness burns = FU with consulting Plastic surgeon
   b. Partial thickness = refer to SJCG wound clinic or Peds outpt for FU/drsg changes
2. Referral to outpt OT consult at TBRHSC if joint involvement



Age (yrs)	A 1/2 of head	B 1/2 of one thigh	C 1/2 of one leg
0	9½	2¾	2½
1	8½	3¼	2½
5	6½	4	2¾
10	5½	4¼	3
15	4½	4½	3¼
Adult	3½	4¾	3½