Department of Nursing – Guideline DN.G.ISS.13.011

SUBJECT/TITLE: **Transfer Guidelines for Acute Burn Injuries**

PURPOSE: To provide step-by-step guidelines for patient assessment of the adult and pediatric patient from referring hospital to University of Iowa Hospitals and Clinic's Burn Trauma Center.

SCOPE: Intensive and Speciality Services: 8JC

DEFINITIONS: None

GUIDELINE:

A. Assessment

1. Primary Survey-The initial assessment of the burn patient should include a primary assessment through the methodology of ABCDEF:
    a) A=Airway maintenance with Cervical spine protection
    b) B=Breathing and Ventilation
    c) C=Circulation and Cardiac status with hemorrhage control
    d) D=Disability, Neurological Deficit and Gross Deformity
    e) E=Expose (Completely undress, Examine for major associated injuries and maintain a warm Environment)
    f) F=Fluid resuscitation
        i. Airway - The airway and breathing must be assessed immediately. Observe for signs of inhalation such as carbonaceous sputum, facial burns, singed nasal hairs, agitation, tachypnea, dyspnea, hoarseness, brassy cough, rales, rhonchi, ulcerations of the mucous membranes, and erythema of the oropharynx or nasopharynx. Assess the adequacy of rate and depth of respiration. High flow oxygen should be started on patients with suspected inhalation injury. Consider endotracheal intubation. Circumferential full thickness burns of the trunk may impair ventilation and must be closely monitored.
        ii. C-Spine Injuries - Stabilize the spine prior to interventions that may flex or extend the spine for those patients in whom cervical spine injury is suspected by the mechanism of injury or for those with altered mental status.
        iii. Circulation - Assessment of circulation includes evaluation of blood pressure, pulse rate, skin color, sensation, peripheral pulses, and capillary refill. The circulation of the extremity may be impaired as a

result of edema formation and/or circumferential burns.

iv. Disability - Assess the patient's level of consciousness. If not alert and oriented, consider associated injuries, carbon monoxide and cyanide poisoning, substance abuse, hypoxia, or pre-existing medical conditions. Determine a Glasgow Coma Score (GCS).

v. Exposure, Examine and Environmental Control - Stop the burning process. Remove all clothing and jewelry. Clothing adherent to the burn should be left undisturbed. Remove contact lenses. **Keep the Patient warm.**

2. Secondary Survey - A complete secondary survey should be conducted from head-to-toe to rule out any associated injuries. Determine size of burn injury by using the Rule of Nines or the Lund and Browder chart.

3. Obtain History - Obtain as much information as possible regarding the incident.

   a) Circumstances of the Injury

      i. What type of injury?

      ii. Did injury occur in a closed space and possibility of smoke inhalation?

      iii. Was there related trauma?

   b) Medical History (AMPLET)

      i. **A**llergies

      ii. **M**edications/alcohol/drugs

      iii. **P**re-existing disease or associated illnesses; **P**ast medical history; Pregnancy

      iv. **L**ast meal or drink

      v. **E**vents/**E**nvironment related to the injury

      vi. **T**etanus and childhood immunization

B. Management Principles

1. Stop the burning process by removing clothing from the involved areas. Flush all areas in contact with chemical. Remove all jewelry.

2. Administer oxygen. Be prepared to suction the airway and support ventilation, if necessary. Give 100% oxygen to all patients with burns greater than 15% or more of the total body surface. If indicated by signs of inhalation injury, endotracheal intubation may be performed.

3. Determine the severity of the Burn and Fluid Resuscitation. If the burns involve more than 15% TBSA (**second and third degree**), initiate an intravenous infusion of Ringer's Lactate through 1-2 large bore cannulas. To determine fluid needs, use the Parkland consensus formula:

   a) (% BSAB) (Weight in kg) (4 ml/hour LR)

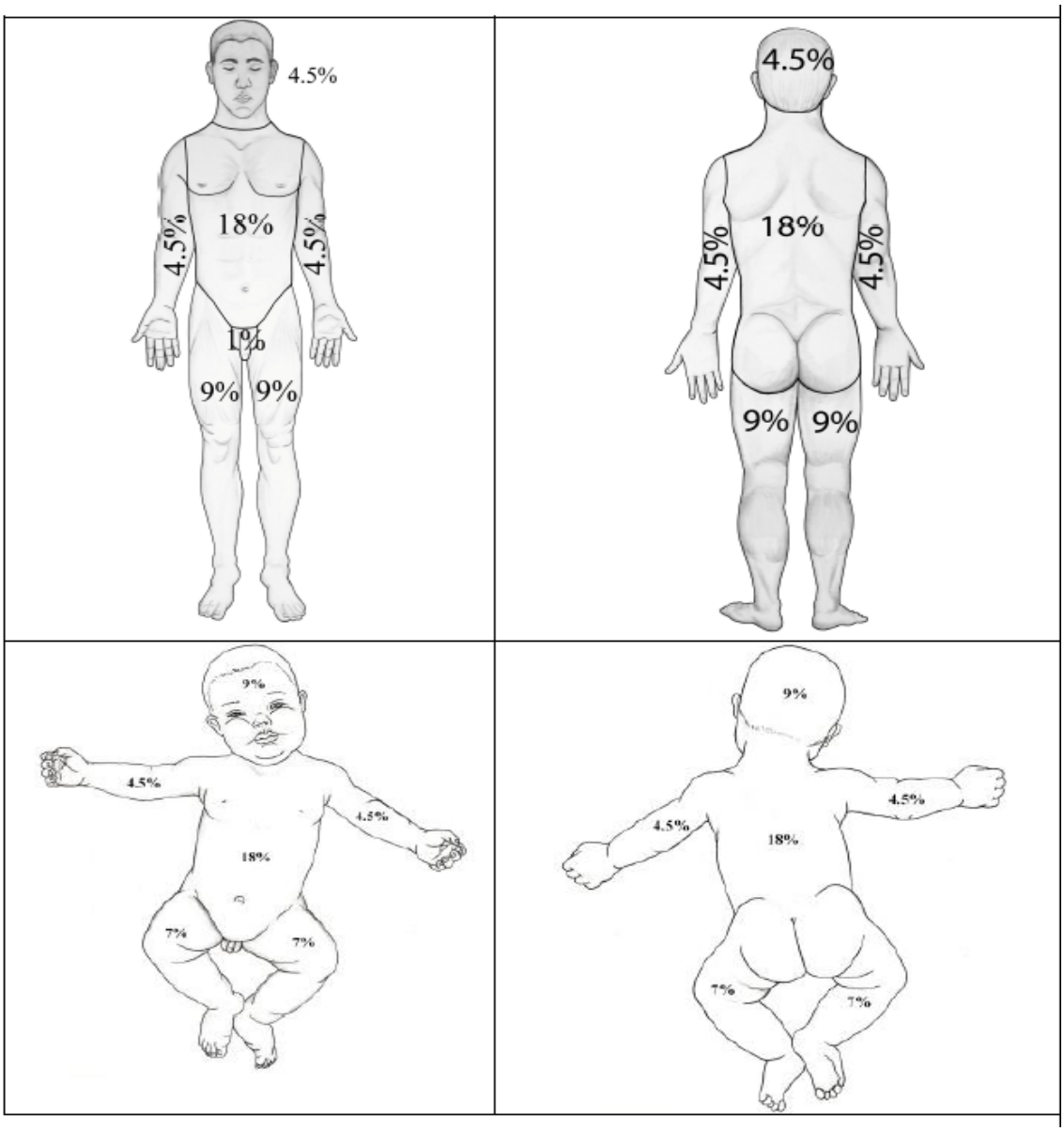
b) Give ½ of this volume in first 8 hours post injury, and remaining ½ of the volume over the next 16 hours following injury.

c) Sample Calculation:

i. (60% BSAB) (80kg) (4ml) = 19,200ml/24hr

ii. Give 9,600ml/first 8hr = 1,200ml/hr (initial rate that determines titration schedule)

4. The most common guide for making an initial estimate of burn extent is the "Rule of Nines". The "Rule of Nines" is based on the fact that in an adult, various anatomic regions represent approximately 9% or a multiple thereof—of the TBSA. In the infant or child, the "Rule" deviates because of the larger surface area of the child's head and the smaller surface area of the lower extremities. See diagrams.



5. For scattered burns of limited extent, clinicians can use the size of the patient's hand—including the fingers---to approximate 1% of his/her total body surface area. Using the patient's hand-size as a guideline, the extent of irregularly scattered burns can be estimated. Please feel free to consult with UIHC Burn/ Trauma Center and they will help with burn size estimation as well as resuscitation rates. To get in contact with the Burn/Trauma Center call 866-890-5969.

6. A foley may be indicated for close monitoring of urinary output in patients with burns of ≥15% BSA receiving intravenous fluid resuscitation. The burn/trauma center can help make that determination with you.
7. Morphine (or opioid equivalent) is indicated for control of pain associated with burns. Narcotics should only be given intravenously and generally small, titrated doses work best.
8. Circumferential burns of the chest may restrict chest expansion. Assess respiratory effort for signs of compromised chest expansion. A chest escharotomy may be necessary. Circumferential burns of the extremity may result in decreased circulation. Frequently assess the involved extremity for the 5 **P**s: **P**ain, **P**allor, decreasing **P**ulse or **P**ulselessness, progressive **P**arathesia and **P**aralysis, signs of circulatory compromise. Doppler assessment may be necessary if pulses are difficult to palpate. Escharotomies may need to be performed. Please consult with UIHC Burn/ Trauma Center prior to carrying out this procedure. 866-890-5969
9. Maintain patient's temperature by keeping the patient warm. Avoid the use of wet bandages, sheets or blankets.

C. Initial Procedures Specific to Type of Burn

1. Thermal Burns-Cover the burn area with plastic wrap, transparent film, or a clean dry sheet. Do not apply ice, wet bandages, ointments, or medicated creams. Leave blisters intact. If you cool the injury, use tap water at 95-100 degrees.
2. Electrical Injuries-Place patient on cardiac monitoring and assess for additional internal damage. Consider C-spine immobilization.
3. Chemical Injuries-Remove all contaminated clothing and immediately flush with copious amounts of water at 95-100 degrees. Prior to flushing, be sure to remove all powder residues from the skin. All intact blisters should be broken and removed to

allow for adequate flushing of the injured tissue. Assess the eyes for chemical injuries and irrigate with normal saline if contamination is possible. Do not cover injury with plastic wrap or occlusive bandage. If possible, continue irrigation of wound throughout transport.

D. Referral Criteria

1. Burn Unit Referral Criteria

   a) Partial thickness burns greater than 10% total body surface area (TBSA).

   b) Burns that involves face, hands, feet, genitalia, perineum, and major joints.

   c) Third degree (full thickness) burns in any age group/

   d) Electrical burns including lightning injury.

   e) Chemical burns

   f) Inhalation Injury

   g) Burn Injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.

   h) Any patient with burns and concomitant trauma in which the burn injury poses the greatest risk or morbidity and 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.

   i) Burned children in hospitals without qualified personnel or equipment for the care of children.

   j) Burn injury in patients who will require special social, emotional, or rehabilitative intervention.

   k) Resources for Optimal Care of the Injured Patient, American College of Surgeons and The American Burn Axssociation

E. E. Transfer Process

1. Documentation needs to accompany patient during transfer. Records need to include essential information about the injury as well as physical findings and the extent of the burn. A flow sheet to document all resuscitative measure, history, treatments and medications should be completed prior to transfer.

2. Physician-to-physician and nurse-to-nurse contact is essential to ensure that the patient's needs are met throughout the transfer. The burn center and referring physician working in collaboration, should make the decision as to the means of transportation and the required stabilization measures.

REFERENCES:

Advanced Burn Life Support Manual 2015: American Burn Association

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