MASS CASUALTY BURN TREATMENT
STRATEGIES FOR SCARCE RESOURCE SITUATIONS

Harborview Medical Center (HMC)
Transfer Center 1-888-731-4791

INITIAL ASSESSMENT

Call UW Transfer Center to talk with a Burn Fellow/Attending, who can assist with triage, care of burn injured patients and transfer

Mass Casualty Burn Consultation Guide:

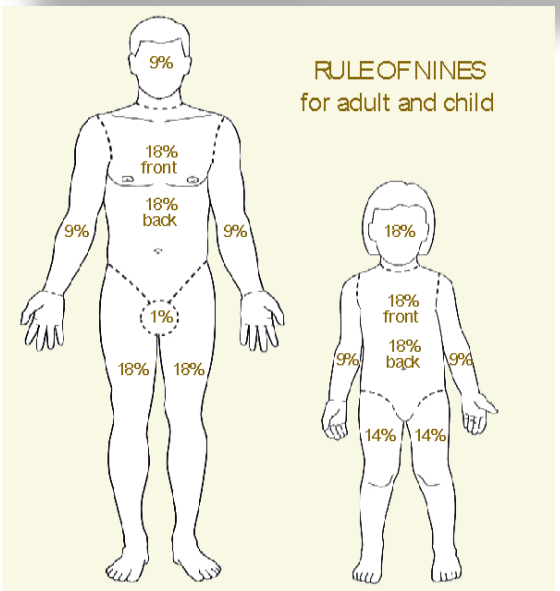
1. ≥ 20 % TBSA adults, ≥ 15% peds (2nd/3rd degree)
2. Circumferential 3rd degree burn
3. Respiratory injury/inhalation
4. Burn plus trauma or other comorbidities
5. High-voltage electrical (1000V) or chemical injury

YES

NO

OUTPATIENT MANAGEMENT
< 20% TBSA adults, < 15% TBSA pediatrics

- Oral fluid (sports drinks, electrolyte solution)
- PO pain management
- Refer to burn dressing guide and supply list
- Elevate extremity burns



DO NOT COUNT 1st DEGREE BURNS when calculating the Rule of Nines TBSA (Total Body Surface Area)

- **1st degree: red intact skin , no blisters**
- **2nd degree: red/pink, moist, sensate, blisters, blanches**
- **3rd degree: dry, leathery, insensate, non-blanching**

(see photos below for reference)

PRIMARY ASSESSMENT & INTERVENTIONS

6. Protect yourself using body substance isolation. Stop the burning process, cover with loose linen, keep warm

7. **Perform standard primary and secondary survey for any trauma patient.** Do not be distracted by burn tissue

8. **Airway/Breathing** - Assess for altered LOC, obstruction, respiratory compromise, burns to face or oropharynx
   - 8a. Administer 100% oxygen via non rebreather/ETT, if suspected inhalation injury (enclosed space, carbonaceous sputum, COHgb ≥ 10%)
   - 8b.Carbon monoxide (CO) exposure signs and symptoms:
     - HA and nausea (20%-30%)
     - Confusion (30%-40%)
     - Coma (40%-60%)
     - Death (>60%)
   - 8c. Consider intubation for GCS ≤ 8, ≥40% TBSA, direct upper airway injury, deep facial burns

9. **Circulation** - Assess vital signs. Hypovolemic shock signs including tachycardia are common >20% TBSA
   - 9a.2 large bore IV/IO's
   - 9b. **Initial** fluids LR/NS if estimated TBSA ≥ 20% adults and ≥15% pediatrics : (See secondary assessment for next steps in fluid resuscitation #12c)
     - ≤ 5 years: 125 mL/hr
     - 6-13 years: 250 mL/hr
     - ≥ 14 years : 500 mL/hr
   - 9c. Treat adult SBP <90 and pediatric SBP < [70 + (2x age in years)] with IV/IO fluid bolus. Avoid extra fluid when possible

10. **Disability** – Assess neurologic status: GCS/AVPU, check pupils, cervical spine protection, if trauma, high-voltage (>1000 V) injury

11. **Expose/Estimate** - Brush away loose material if concern for chemical exposure, remove clothing, jewelry, and contact lens. Protect from heat loss; hypothermia occurs quickly
    - 11a. Circumferential trunk or extremity burn: elevate extremities, check pulses. Full-thickness eschar may need surgical release

Additional Burn Center Consults

- **Cyanide Poisoning** – Consider if severe metabolic acidosis despite adequate fluid resuscitation as outlined in 12c.
- **Electrical**–If myoglobin in urine (red pigment) there is a risk of rhabdomyolysis
- **Chemical and radiologic** – consider need for antidote or specific therapies. Consult Poison Control

SECONDARY ASSESSMENT & INTERVENTIONS

YES

12. **Adjuncts-**
    - 12a. **Nasogastric or orogastric –** Intubated patients
    - 12b. **Estimate TBSA** using Rule of Nines chart
    - 12c. **Consensus formula LR/NS**: 3 mL x kg x % TBSA= fluids in 24 hrs. Give ½ in first 8 hrs and ½ in next 16 hrs. Increase/decrease fluids by 20% hourly to target UO
    - 12d. **Pediatrics**:<30kg, add maintenance fluid (below) using D5LR in addition to Consensus formula in #12c
      - 4 m x 1st 10 kg
      - 2 m x 2nd 10 kg
      - 1 mL x remaining kg = total mL/hr
    - 12e. **Foley** – Target urine output (uo) 30 mL/hr adults or 1mL/kg/hr in pediatrics < 30 kg.
    - 12f. **Pain control** –Use small doses of opioids
13. **History** – AMPLET or SAMPLE mnemonic
14. **Head to Toe Assessment**

YES

CRITICAL BURN FEATURES

15. TBSA >25% partial thickness or >10% full-thickness burns
16. Circumferential full thickness burns
17. Burn plus trauma or other comorbidities
18. Hemodynamic instability despite ongoing fluid resuscitation as outlined in 9b and 12c

CRITICAL: High priority for transfer to Burn Center.

YES

NO

SERIOUS BURN FEATURES

19. Secondary priority for transfer-may have to manage in place awaiting transfer (up to 72 hours)
    - 20. Refer to burn dressing guide and supply list
    - 21. Infection control – provider gown, glove, and mask when wounds exposed. No prophylactic antibiotics
    - 22. Intubated: Consider tube feeds
      - 22a. Non-intubated: encourage high calorie PO

Category	Resource and Recommendations	Strategy	Conventional	Contingency	Crisis
A. Command and Control, Communication, Coordination	**General Preparedness Information** • 23. HMC Burn Center is an ABA/ACS verified burn center in the WAMI region with 18 ICU and 23 acute care beds. • 24. Mass burn incidents are unusual but do occur. The ability of non-burn hospitals to triage and initially treat victims is critical to successful response and should be a planning goal of all hospitals with numbers of victims depending on the facility size and role in the community. • 25. In a major incident, victims may require care at the initial receiving hospital for up to 72 hours until transfer to definitive burn care. • 26. The role of the Disaster Medical Control Center (DMCC) in any major event is to distribute patients from the scene to area hospitals. There are different DMCC's in the region. HMC is the DMCC for King County. Patient distribution is often done by the DMCC with limited information from the field. In an event involving many burn patients it is highly probable that multiple ED's will receive patients and be responsible for their initial triage/stabilization. • 27. Notification: In a major burn incident, HMC, DMCC, NWHRN, Public health and area EOC's will be notified. • 28. If HMC is unable to accommodate casualties or require assistance with transportation/resource issues, multiple levels of coordination and communication will need to occur between area hospitals, DMCC, Healthcare coalitions, Public Health, area EOC's and potentially other regional burn centers depending on the magnitude of the event and extent of injuries. *(See Burn Surge Annex, pending 2021)*	*Prepare*			
B. Space	**Capacity** • 29. Each facility is encouraged to activate its own internal contingency/disaster plan if needed to manage multiple burn patients. • 30. In a major event, some burn ICU patients may need to be cared for in non-burn center acute care units. • 31. In coordination with HMC Burn Center, forward movement to other burn centers in adjoining states may be needed.	*Adapt*			
	• 32. National Disaster Medical System (NDMS) patient movement may need to be utilized.	*Adapt*			

Category	Resource and Recommendations	Strategy	Conventional	Contingency	Crisis
C. Supplies (for 72 hours)	**Outpatient/ Supplies Planning** • 33. Institutions should prepare based on role in community. Outpatient clinics and urgent care centers may also cache appropriate supplies for their location and patient population. Suggested burn dressing supplies (per patient) (see below) **Inpatient Supplies Planning** • 34. Institutions should prepare based on role in community. In contingency or crisis situations non-burn centers may be asked to stabilize or potential provide extended care to burn patients. Suggested burn dressing supplies (per patient) (see below)	*Prepare* *Increase Supply*			
D. Staffing	**Staff** 35. Strong consideration should be given to training physician and nursing staff on care of major burns pre-incident and having quick-reference cards/materials available for burn stabilization.	*Adapt*			
	36. Level II & III Trauma Centers should consider having a cohort of providers trained in the ABA Advanced Burn Life Support (ABLS) and ACS Disaster Management Emergency Preparedness (DMEP). 37. Identify staff with prior burn treatment experience (i.e., military).	*Adapt*			
	38. See Staffing Scarce Resource Card for further staffing considerations.	*Conserve*			
	39. Staff should have access to just-in-time training provided to non-burn nursing and physician staff reinforcing key points of burn patient care (including importance of adequate fluid resuscitation, urine output parameters, principles of analgesia, dressing changes, wound care, and monitoring).	*Adapt/Substitute*			
	40. In a Mass casualty event, call the HMC Transfer Center 1-888-731-4791 for consultation in caring for burn patients. 41. NDMS personnel and other supplemental staff may be required.	*Prepare*			
E. Special	**Special Considerations** Consider availability of resources for: 42. Pediatrics: age-and size appropriate equipment: intravenous, intraosseous access devices, medication dosing guides. Consider using color-coding pediatric guides.				

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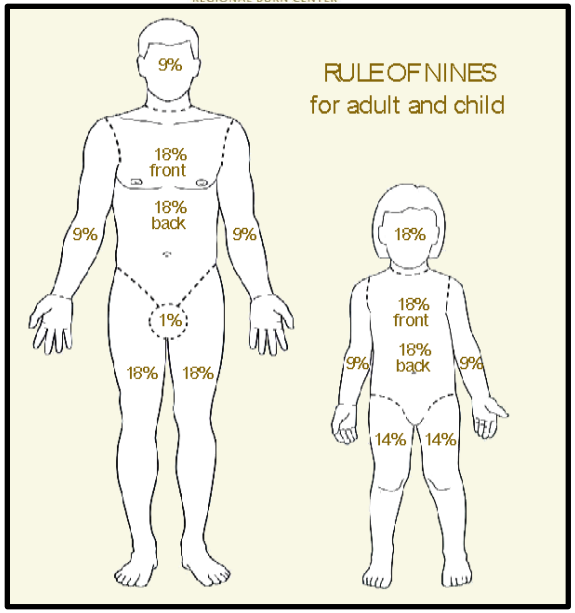
F. Triage	**Critical Burn Features : Survivability Grid** 43. The following grid provides an example of triage decisions that may become necessary in the setting of overwhelmed resources or in austere conditions where crisis standards of care may be instituted. The survivability grid utilizes the same 4 color scheme used for EMS personal. Survivability will differ if the patient has sustained an inhalation injury. 44. Use of the survivability table should be done in close collaboration with the Burn Center but should **NOT** substitute for a more global assessment of the patient. (See ABLS 2018 update) http://ameriburn.org/wp-content/uploads/2019/08/2018-abls-providermanual.pdf 45. If Burn Center resources are limited, critical burn patients may need to be cared for in non-burn centers. Just in Time training and on-line resources are available to non-burn centers in these situations. Please refer to: https://crisisstandardsofcare.utah.edu/Pages/home.aspx; This website requires registration and login password. please consider planning ahead and gaining access before an event occurs.	*Re-Allocate*			

UW Medicine
HARBORVIEW MEDICAL CENTER
REGIONAL BURN CENTER



Burn Dressing Guide and Supply Estimates:

- Goal for partial thickness burn healing is to keep the wound moist and free from infection
- **1st degree burn:**
  - **1st degree burns do not count when calculating the TBSA using the Rule of Nines burn chart.** Apply lotion or ointment and leave open to air. No dressings needed
- **2nd degree burn:**
  - Apply a greasy gauze dressing with thin layer of antibiotic ointment. Change every 1-2 days
  - Or apply silver impregnated dressing to moist burns on flat surfaces. Dressing must lay flat against the burn. Secure in place with elastic, netting etc. Change every 7 days
- **3rd degree burn:**
  - Apply SSD and cover with thin layer of gauze Change every 1-2 days

- SSD 400 gm jar: 1 jar per 9% tbsa
- Antibiotic ointment: 1 tube per 9% tbsa
- Greasy gauze 4 in x 9 yard roll: 1 roll per 9% tbsa
- Gauze 6 inch x 3 yd roll: 1 roll per 9% tbsa
- 4x4 gauze: (1 box or boat) per 4% tbsa

Adult	SSD (Jar)	Greasy gauze (roll)	Antibiotic ointment (tubes)	Kerlix roll (6 in)	4x4 Gauze (Boat or package)	4x8 Gauze	18x18 Gauze	Elastic netting (inch)	Silver Impregnated drg
Head	1	1/4 face	8	-	1	3	-	10 inch	-
Arm	1	1	8	1	-	-	1-2	6 inch	Three 8x 8s OR One 8x 20
Hand/Fingers	1/4	1/4	1	1/2	1	1	-	Hand 4 in Fingers 1 in	-
Torso (ant/post)	2 each side	2	16	2	-	-	2	12 inch	Four 8 x 8s OR Two 8x 20s
Perineal (ant/post)	1/2 each side	1/4	1	-	1	1	2	12 inch	Two 8x 8s
Leg	2	2	8	2	-	-	3-4	10 inch	Six 8x 8s OR Four 8x 20
Foot/Toes	1/2 each	1/4	1	1/2	1	1-2	-	6 inch	-

References:

- *i. American Burn Association. Advanced Burn Life Support Provider Manual 2018 Update. http://ameriburn.org/wp-content/uploads/2019/08/2018-abls-providermanual.pdf*
- *ii. American Burn Association. 2013 Burn Care Resources in North America US Burn Centers available from http://ameriburn.org/BCRDPublic.pdf*
- *iii. American College of Surgeons, ATLS: Advanced Trauma Life Support. 2018, Chapter 9, Pgs 169-185*
- *iv. DMEP: Disaster Management and Emergency Course, American College of Surgeons Committee on Trauma, Subcommittee on Disaster And Mass Causalities 2016 112-120*
- *v. Buidelines for Burn Care Under Austere Conditions: Introduction to Burn Disaster, Airway and Ventilator Management, and Fluid Resuscitation; ABA, J Burn Care&Res; Sep-Oct,2016; Kearns, Randy D.*
- *v1: Guidelines for Burn Care Under Austere Conditions: Special Etioloiges: Blast, Radiation, and Chemical Injuries; ABA, JBurn Care&Res 38(1) e482; Cancio, Leopoldo C; Jan-Feb, 2017*
- *viii. https://crisisstandardsofcare.hsc.utah.edu/ Requires login and password, recommend obtaining during planning not response.*

1st degree Superficial

2nd degree Partial Thickness

3rd degree Full Thickness

Approved: 2/24/2020

Next Update: 02/2023

Washington State Department of Health

NORTHWEST HEALTHCARE Response Network