



Burn Mass Casualty Incident Surge Annex

**Annex to the Mid-South Emergency Planning Coalition
Response Plan**

June 2024

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ACRONYMS

ABA:	American Burn Association
ABLS:	Advanced Burn Life Support
AEMT:	Advanced Emergency Medical Technician
ASPR:	Assistant Secretary for Preparedness and Response
BMCI:	Burn Mass Casualty Incident
BRCA:	Burn and Reconstructive Centers of America
CBRN:	Chemical, Biological, Radiological, Nuclear
CSC:	Crisis Standards of Care
EMS:	Emergency Medical Services
EMT:	Emergency Medical Technician
EOC:	Emergency Operations Center
ERC:	Emergency Response Coordinator
ESC:	Emergency Services Coordinator
ESF8:	Emergency Support Function 8 (Public Health and Medical)
FEMA:	Federal Emergency Management Agency
HCC:	Healthcare Coalition
HICS:	Hospital Incident Command System
HPP:	Hospital (Healthcare) Preparedness Program
HRTS:	Healthcare Resources Tracking System
IC:	Incident Commander
ICS:	Incident Command System
IV:	Intravenous
MCG:	Tennessee Department of Health Mission Coordination Group
NDMS:	National Disaster Medical System
NRP:	Nationally Registered Paramedic
RHC:	Regional Healthcare Coordinator
RHOC:	Regional Health Operations Center
RMCC:	Regional Medical Communications Center
SME:	Subject Matter Expert
SNS:	Strategic National Stockpile
SRCC:	Southern Region Burn Coordination Center
START:	Simple Triage and Rapid Treatment
TBSA:	Total Burn Surface Area
TDH:	Tennessee Department of Health
TEMA:	Tennessee Emergency Management Agency
TNHAN:	Tennessee Health Alert Network

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1.0 INTRODUCTION

1.1 PURPOSE

This annex provides guidance to support a burn mass casualty incident (BMCI) response in which the number and severity of burn patients exceeds the capability and capacities of hospital facilities or resources in the Mid-South Emergency Planning Coalition region (MSEPC). The plan identifies the processes and specialized resources that exist within and external to the Mid-South Emergency Planning Coalition that must be engaged in a BMCI response.

1.2 SCOPE

1.2.1 Definition of Key Terms

Medical surge is the ability to expand capabilities to provide medical evaluation and care to the injured or ill during events, that greatly increase demand causing health care facilities to exceed the limits of their normal treatment capacity. Large events require the healthcare system to expand and change medical services available to meet the needs of the public.

Surge Management works to increase the surge capacity of healthcare systems.

A **mass casualty incident** (MCI) is any situation in which the needs of victims exceed the abilities of available medical resources to manage each patient.

A **Burn Mass Casualty Incident** (BMCI) is defined as any catastrophic event in which the number of burn victims exceeds the capability and capacities of local healthcare coalition resources and burn center(s) to provide care.

A **Burn Center** is a unit within a hospital that specializes in the treatment of burns.

An **American Burn Association (ABA) Verified Burn Center** is a burn center that has successfully demonstrated their ability to maintain burn center quality by promoting patient safety, cost containment, regional education and outreach, injury prevention, innovation and research, and advocacy.

1.2.2 Plan Framework

The broad functions for preparedness and response during a burn surge event are as follows:

1. Provide appropriate scene triage, treatment, and transport to the appropriate hospital destination by EMS according to protocols approved by the Tennessee Department of Health, Office of EMS.
2. Provide stabilizing care to burn patients at designated trauma centers and other hospitals until adequate resources become available to allow for transport to a facility with appropriate burn care resources.
3. Determine the most appropriate location of care based on the transportation, resources available, patient condition, and number of patients.
4. Obtain burn subject matter expertise in decision making.
5. Assure a consistent level of care by moving patients and resources, as needed.
6. Support the tracking of burn patients throughout the incident.
7. Ensure necessary communications and coordination processes are in place to support the above functions.

1.3 SITUATION

1.3.1 Local Risks for BMCI

Mid-South Emergency Planning Coalition Region Relative Risks for BMCI

High Risk	Medium Risk	Low Risk
<ul style="list-style-type: none"> • Fire/Explosion at a Mass Gathering • Fire/Explosion at High Density Living Setting • Railway Fire/Explosion in Populated Area • Transportation Fire/Explosion in Populated Area • Industry/Chemical Fire/Explosion in Populated Area 	<ul style="list-style-type: none"> • Fire/Explosion at a Nightclub/bar • Pipeline Fire/Explosion in Populated Area • Earthquake with Fire in populated area 	<ul style="list-style-type: none"> • Wildfire in Populated Area • Radiological Release in Populated Area

1.3.2 Healthcare Facilities

There are 16 acute care hospitals in Mid-South region, including one Level I Trauma Center and one Comprehensive Regional Pediatric Center, and the state of Tennessee's only American Burn Association (ABA)-verified Burn Center

Each acute care hospital providing emergency care may receive burn patients and should be able to provide initial assessment and stabilization.

1.3.3 Burn Care Resources

The Firefighter's Burn Center at Regional One Health is the only Burn Center within a 250-mile radius and the only ABA verified burn center in Tennessee. As required by the ABA, the Firefighter's Burn Center follows guidelines set forth by the ABA regarding burn care quality, research, and rehabilitation.

American Burn Association Disaster Response Plan¹

The American Burn Association (ABA)- designated Southern Region¹ encompasses Burn Centers located along the southeast and gulf coasts of the United States extending from Virginia through Texas, including West Virginia, Kentucky, Tennessee, Arkansas and Oklahoma.

For a BMCI occurring anywhere within the Southern region of the United States the Southern Region Coordination Center (SRCC) serves as a communications and coordination center to support Burn Center(s) with burn bed census and/ or patient triage and transfer.

Agencies requesting assistance include:

- SRCC Burn Centers
- Affected ABA Burn Centers
- ABA Regional Coordinator(s)
- ABA Central Office
- Department of Health & Human Services (DHHS) or designee

Although all Mid-South facilities fall within the southern region, MSEPC healthcare facilities are encouraged to reach out to the Firefighter's Burn Center directly if they have any questions or concerns regarding the clinical care or transfer of a burn patient. Contact information is located within section 2.2 of this Annex.

Additional information regarding the ABA Disaster Response Plan for the Southern Region can be found in section 3.2 of this Annex.

Burn Consultation App

The Firefighter's Burn Center at Regional One uses a Burn Consultation Software Application from the Burn and Reconstructive Centers of America (BRCA) for communication with 56 hospitals in the area.

Regional One has an active outreach program continuing to work with area hospitals, conducting training on the Burn App as new facilities and new users are onboarded.

1.4 RESPONSE ASSUMPTIONS

During the response, key points and assumptions of the Annex include:

- All hospitals providing emergency care may receive burn patients and should be able to provide initial assessment and stabilization, assist in transfer, and patient tracking if needed.
- The Burn Center, Level I trauma center, and trauma round robin facilities should plan for a major role in the receipt and care of burn patients and understand their role in a BMCI.
- Regional One Burn Center invites all those hospitals receiving burn casualty victims to call for immediate and ongoing consultation and utilize the Burn app.
- Regional One Burn Center, and the Southern Region Burn Coordination Center, will assist hospitals with secondary triage and assistance in relocation of the patient to a center able to provide definitive burn care.
- Care of critical burns is extremely resource-intensive and requires specialized staff, expert advice, and critical care transportation assets.
- Severe burn patients often become clinically unstable within 24 hours of injury, complicating transfer plans after this time frame.
- Burn center placement may require transport of patients across the country, depending on the severity of injury and the number of patients injured.
- Existing regional surge planning processes and expectations of preparedness and coordination will be followed.
- EMS agencies, in collaboration with the RMCC and RHC, EMS Consultant, and RHC within the jurisdiction will have primary responsibility for response including initial casualty distribution and subsequent triage of patients for forward movement.
- Federal resources (e.g., ambulance contracts, National Disaster Medical System DMAT teams, DOD teams), though potentially available to assist, cannot be relied upon to mobilize and deploy for the first 72 hours.

2.0 CONCEPT OF OPERATIONS

In the event of a burn mass casualty incident, fire departments would provide first response to the event for rescue, fire suppression, and initial emergency medical care. The EMS response, both ground and air, would be initiated for triage, treatment, and transportation. Advanced life support care would be provided at the scene by paramedics, advanced EMTs, and nurses. Patients would be transported by ground or air ambulances to trauma centers, pediatric centers, or other designated hospitals in their respective areas based upon existing State EMS protocols. Receiving facilities would provide initial stabilization including airway control, pain management and initial fluid resuscitation for patients while seeking interfacility transfers to a higher level of care if needed.

Regional Medical Communication Centers (RMCCs) would provide coordination to distribute patients to the most appropriate hospital within the HCC. Secondary transfer to in-state specialty burn centers of the most severely burned patients would occur when beds are available. If appropriate, or if local or state resources are overwhelmed, patients would be transferred out-of-state to burn centers using existing transfer agreements and/or through coordination with the ABA's Southern Region Burn Coordination Center.

2.1 ACTIVATION

Activation of this plan, or any portion thereof, is determined on a case-by-case basis. Generally, this plan will be activated anytime a healthcare facility has exceeded or reasonably anticipates exceeding burn resources capability and capacity. In some cases, at the smallest hospital, even one critical burn patient could overwhelm immediate local resources. Depending upon the size and scope of an incident, local resources and number of burn centers, response to the burn disaster situation may be a tiered, staged response.

Following incident recognition, EMS and the RMCC will coordinate to determine the level of activation required.

Then the following activities may occur:

- RMCC will activate HRTS to alert regional hospitals and partners of the event.
- Placing HRTS in disaster mode triggers hospitals & health care system partners to evaluate the level of response required and enhances situational awareness.

- Availability of facilities to receive patients will be monitored through HRTS by the RMCC, RHC, and the EMS Consultant.
- Resource coordination will be managed via the RHC, EMS Consultant, and local and state emergency management utilizing HRTS and WebEOC (for emergency management).

2.2 NOTIFICATIONS

The Mid-South Emergency Planning Coalition (MSEPC) Executive Director, or Executive Board members, when necessary, will utilize pre-established public health systems to share emergency information, warnings, and situational awareness across medical disciplines, jurisdictions, and Coalition members during public health and medical emergencies. This is typically accomplished via systems such as ReadyOp and the Healthcare Resource Tracking System (HRTS). Additionally, information may be passed to Coalition members via email or direct phone call, when necessary. Finally, during events, the Executive Director may convene healthcare partners via conference call or face-to-face meetings to coordinate information sharing and response actions between partners and Coalition members.

MSEPC essential information elements to be shared include:

- Bed Availability (HRTS)
- Resource Capabilities (HRTS)
- Organization and Service Capabilities (HRTS)
- Facility Status (form shared via ReadyOp and HRTS message board). This form allows the MSEPC and the RHC to quickly identify the facility status of mission critical systems such as electricity, water, and medical gases.

2.3 ROLES AND RESPONSIBILITIES

Response actions of the MSEPC partners would reflect that of a Multi-Agency Coordination (MAC) System. Within a MAC, each entity operationally responds within its own organization and/or discipline's incident command structure but works together to incorporate facilities, information systems, and internal and external communication systems. A MAC coordinates interagency cooperation, mutual aid agreements, common procedures, terminology, training and qualifications into an integrated common operating system that ensures effective interagency and inter-jurisdictional coordination.

2.3.1 Mid-South Emergency Planning Coalition

The overall role of the Coalition in a burn mass casualty event includes, but is not limited to, the following:

- Promote a common operating picture through shared information.
- Support patient tracking.
- Assist with resource management between partner entities, particularly within the healthcare sector for healthcare resources.
- Work with local municipalities and county emergency management to process resource requests as appropriate.

2.3.2 Emergency Management

City-level support for respective jurisdictions will be coordinated among each utilizing assigned staff. The Shelby County Emergency Management and Homeland Security Agency will facilitate county-wide interagency coordination, provide centralized situation assessment and public information, coordinate the mobilization of county-level government resources in response to an emergency, and coordinate community disaster recovery.

If responding agencies, including the hospitals, have exhausted critical resources available through routine channels and through mutual aid, local EMA will request resources from the State Emergency Operations Center (SEOC) at TEMA. TEMA will coordinate emergency assistance to local jurisdictions from state agencies, other counties, other states, or the federal government.

2.3.3 Emergency Medical Services

EMS will triage, treat, decontaminate if needed, and transport casualties to appropriate local healthcare facilities in accordance with established TN EMS MCI protocols.

2.3.4 Regional Medical Communications Center

The RMCC serves as the 24/7 communications coordination center during all mass casualty events. The RMCC has communication capabilities to reach Coalition hospitals, EMS, other RMCCs, and local and state EOCs. The RMCC interacts directly with on-scene responders to provide information to MSEPC partners during events. RMCC will activate HRTS to alert regional hospitals and partners of the event. They will work with on-scene EMS personnel to distribute patients to hospitals capable of receiving patients according to their triaged acuity level.

RMCC has regularly-utilized referral options in place associated with their additional role as the region's air medical critical care transport. If transport is needed out of the region, or out state, RMCC has pre-established contacts with the closest burn, pediatric, and other specialty centers.

2.3.5 Public Health

During a BMIC, the role of public health is to support, as the lead agency for ESF-8, the response to a disaster within their jurisdiction. Each jurisdiction's emergency planning efforts are led by an Emergency Response Coordinator (ERC) who is responsible for developing the Health Department's Basic Emergency Operations Plan detailing lead responsibilities of public health during natural or manmade emergencies. Public Health would receive any county-level requests to the County EMA through their role as ESF-8. Once received, public health would ensure these requests are fulfilled in a timely and efficient manner.

TDH maintains the State Health Operations Center (SHOC) that assists with coordinating medical response at the state level, working closely with the ESF-8 Coordinator at the SEOC.

2.3.6 Firefighter's Burn Center at Regional One Health

As the only full-service burn center for a 200-mile radius, the Firefighters Burn Center provides lifesaving care for patients ages 14 and up who require emergency and continuing burn treatment. The center is the only center in the Mid-South and State of Tennessee verified by the American Burn Association and the American College of Surgeons. The comprehensive services at the Firefighters Burn Center allow for treatment from when the patient suffers a burn injury through intensive care, rehabilitation, wound treatment, and reconstructive surgery. The center features a dedicated emergency room, two operating rooms, 14 intensive care-capable rooms, rehabilitation facilities, wound care, and hyperbaric oxygen therapy.

The multidisciplinary burn team comprises board-certified plastic and burn surgeons, advanced practicing practitioners, nurses, and occupational and physical therapists. The team follows the patient throughout their journey, allowing them to build relationships that enhance the level of care they deliver. This full continuum of care includes inpatient and outpatient services, maximizes the burn patient's needs, and provides optimal outcomes.

2.3.7 Hospital Facilities

During an emergency, hospitals are responsible for providing secondary triage and assessment, basic decontamination, emergency care/treatment, and isolation/quarantine of patients. Each hospital has an emergency response plan to address internal plan activation, emergency staffing, surge capacity including additional bed expansion, isolation patient management, acquisition of additional supplies/equipment/pharmaceuticals, emergency evacuation, shelter-in-place, fatality management, and coordination with the local EMA and other hospitals in the region.

As patient numbers increase beyond the capacity of the impacted hospital, they will:

- Activate their internal Emergency Operations Plan (EOP).
- Contact the RMCC.
- Coordinate response efforts through the MSEPC.
- Maintain current bed availability through the Healthcare Resource Tracking System (HRTS).
- Share information and resources as outlined in the MSEPC Bylaws and Memorandum of Understanding (MOU).

2.4 SPECIAL CONSIDERATIONS

2.4.1 Combined Injuries

The Firefighter's Burn Center has its own emergency room. All burn patients are taken to the Firefighter's Burn Center emergency room unless the patient has suffered a traumatic injury. (MVC, fall, blast, or electrical injury). The burn patient is triaged in the Level One Trauma Center before transferring to the Burn center. The burn patient will be assessed in the trauma center, and burn treatment will begin immediately by the Burn Center Team.

2.4.2 Inhalation Injuries^{2,3}

Inhalation injury is a nonspecific term that refers to damage to the respiratory tract or lung tissue from heat, smoke, or chemical irritants carried into the airway during inspiration. Often referred to as smoke inhalation injury (Mlcak, 2022). Pertinent information includes exposure to flame, smoke, or chemicals; duration of exposure; exposure in an enclosed space; and a history of loss of consciousness (Walker et al., 2015).

When resources are limited, as they would be in a mass casualty situation, the decision to intubate is critical. Signs or symptoms that may trigger the decision to intubate include:

- Decreased mental status (secondary to direct trauma or inhalation of toxic gases, such as carbon monoxide or cyanide)
- Facial burns with evidence of thermal injury to the upper airway (characterized by edema of the lips, oral mucosa, hoarseness, or stridor)
- Evidence of subglottic inhalation injury (soot in the sputum, hypoxemia, and tachypnea)

2.4.3 Patient Decontamination

For most scenarios resulting in burn patients, fire and EMS can, and should, perform proper decontamination procedures at the scene. Clear communication as to the decontamination status of each patient transported should be relayed to the receiving facility to ensure the safety of all personnel.

For circumstances where patients may self-report after an exposure, all hospitals have access to either a portable or fixed decontamination system for managing adult and pediatric patients. Therefore, hospitals must have the capacity to decontaminate more than one patient at a time and be able to decontaminate both ambulatory and non-ambulatory patients. The decontamination process must be integrated with local, regional, and state planning.

2.5 OPERATIONS - MEDICAL CARE

2.5.1 Triage and Secondary Triage

MSEPC services and facilities use Simple Triage and Rapid Treatment (START) Triage and JumpSTART Triage specifically for pediatric patients. Both practices are standardized throughout the state of Tennessee. Healthcare coalitions provide training and logistical support for hospitals and pre-hospital services.

Burn Survivability

There are three critical factors in determining patient survivability:

- Total Burn Surface Area (TBSA) size
- Age
- Presence of inhalation injury

Burn size is the most readily identified factor in determining the potential survivability of patients with burns. Accurate assessment of the percentage of TBSA burn is critical for appropriate application of triage criteria, especially in a disaster.

Health care providers who are inexperienced with calculating this may wish to consider implementing one or more of the following strategies, if staffing allows:

1. Two independent providers calculate % TBSA burn. If the difference is greater than 5%, recalculate.
2. Have one provider calculate % TBSA burn. A second person calculates unburned (or superficial, first degree burn) areas. If the sum is different than 95-100%, recalculate.
3. Use digital photographs and coordinate consultation with the nearest regional burn center via the scene incident commander when possible.

In general, patients with burns do not develop decompensated shock immediately after injury, unless there are associated injuries or medical conditions in addition to the burn. Patients with inhalation injury will fare worse than those without inhalation injury. Some patients will have to be treated as “expectant”. Definitive treatment must be delayed or withheld for expectant patients to adequately treat those with a better chance of survival.

Other factors including presence of associated injuries and/or pre-existing health status have an impact on resources (i.e., personnel, supplies, equipment and time) required for prioritizing patient care. Survivability thresholds will depend on the magnitude of the event and the resources available locally, regionally and nationally.

Age, in years	Percent TBSA burn size									
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	≥ 90
0-1.9	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
2-4	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
5-19	Outpatient	Green	Yellow	Delayed	Yellow	Red	Immediate	Red	Grey	Grey
20-29	Green	Green	Yellow	Yellow	Yellow	Red	Red	Red	Grey	Grey
30-39	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Grey	Grey
40-49	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Grey	Grey
50-59	Green	Green	Yellow	Yellow	Red	Red	Red	Red	Grey	Grey
60-69	Green	Yellow	Red	Red	Red	Red	Red	Red	Grey	Grey
≥ 70	Green	Red	Red	Red	Red	Red	Red	Red	Grey	Grey

Thus, situation awareness and good communication are essential during initial triage. The scene incident commander will relay reliable information to the RHOC and RMCC, and work in conjunction with the local burn center in this response phase. The following grid provides an example of triage decisions that may become necessary in the setting of overwhelmed resources, or in austere conditions, where altered standards of care need to be instituted. This survivability grid utilizes the same 4-color code scheme used for EMS personnel. Survivability will differ if the patient has also sustained an inhalation injury.

Red patients should be prioritized for care at a Burn Center, whenever feasible. Yellow and Green patients can be transported to other acute care facilities with available staff and beds.

2.5.2 Treatment

Initial Burn Care and Stabilization

Every hospital that receives trauma patients should be prepared to provide stabilizing care for burn patients including airway management, initial fluid resuscitation, and pain management.

At times, weather, overwhelming demand, and other conditions may require that the initial receiving facility hold the patient awaiting transfer, in which case specialty consultation should be obtained. Care of major burn patients is extremely resource intensive and this consultation should be obtained as soon as possible. Patients with major burn injuries will require critical care transport.

After the initial resuscitation, burn surgery can be deferred for a few days while appropriate triage and transportation occurs. During this time, basic antimicrobial burn dressings must be applied (e.g., bacitracin and petrolatum-impregnated gauze or silver impregnated dressings if available). It should be noted that after the first few days, complications are likely to increase if the patient is not transferred to a specialty facility.

Management for 24 hours

Care of the burned patient in a non-burn center for 24-72 hours may be required while arrangements for interfacility transfer can be made. During this time, patient care treatment priorities for the first 24 hours should be guided by the ABA's recommendations (see section 3.4 of this Annex for additional information). Treatment priorities should be further guided by consultation with Burn Subject Matter experts at Burn Centers.

2.5.3 Supplies

MSEPC has partnered with the Burn Center to develop an official supply kits that have been purchased, in part by MSEPC, and will be provided to all facilities as they participate in burn trainings organized jointly by the Burn Center and MSEPC. Furthermore, remaining supply kits items will be provided by the facility and all supplies will be maintained by the facility where they are housed. Rotation of stock will be offered by the Burn Center to ensure all supplies are in date and available

for use. Informational handouts including burn triage placards, poster, and quick reference materials will also be made available as part of each kit.

Once complete, supply kits will include, but are not solely limited to, the following:

Wound Care Supplies

- Kerlix (6-inch rolling)
- Ace Wraps (4-inch and 6-inch)
- 4x4's
- Scissors or Trauma Sheers
- Xeroform (Petroleum-based dressing or Non-stick dressing)
- Mild Soap
- Water Basins
- Washcloths and Towels

Airway Supplies

- Non-Rebreather/ Simple Face Mask/ Nasal Cannula
- Laryngoscope/ Blades/ Batteries
- 7.5 and above ETT
- Tube Tamer
- Tape

Pharmacy/Medications

- Ringers Lactate (at least 30 Liters)
- Pain Medications (Fentanyl)
- Sedation Medications (Versed/ Precedex/ Ketamine)
- Albumin 5%
- Silvadene (Silver Sulfadiazine)
- Polysporin (Bacitracin)
- Cyanokits (Inhalation Injury)

General Care

- Isolation Gowns
- Fluid warmers
- Bear Huggers
- Blankets
- Indwelling or external catheters, Urinals (for accurate output measurement)

- Extra pillows to elevate extremities

2.5.4 Referrals

Facilities wishing to refer and/or transfer a burn patient should first seek consultation from the Burn Center. Additionally, resources related to burn patient referrals are included in Section 3 of the Annex and should be reviewed by all providers.

2.6 REHABILITATION AND OUTPATIENT FOLLOWUP SERVICES

Rehabilitation typically begins within 24 hours of injury. The American Burn Association certifies the Burn Center's Therapy Specialists. The certification is based on a rigorous process that requires additional training, education, and patient care experience working together with the burn center's clinical providers and nursing teams to implement optimal therapy plans. The patient benefits from working with the same providers throughout their treatment. By providing cohesive, person-centered care targeted specifically to burn injuries, we help patients return to independent living at a rate that exceeds national and regional averages. Our patients experience better function, fewer significant surgeries, and faster healing than those treated at similar facilities.

The Burn Center refers discharged burn patients and patients from outside facilities to the Wound Care Center, located across the hall from the Burn Center, allowing the burn patients to have a continuum of care unique to the Firefighter's Burn Center.

3.0 RESOURCES

3.1 KEY CONTACTS

ROLE	KEY CONTACTS
Regional Medical Communication Center (RMCC)	Memphis MedCom Regional One Health, Memphis (901) 545-8181 Bill Simmering, Manager Email: wsimmering@regionalonehealth.org
Regional Healthcare Coordinator (RHC)	Mid-South Emergency Planning Coalition Heather Fortner, Executive Director Email: hfortner@midsouthepc.org Cell: (865) 679-4608
EMS Consultant	Tennessee Department of Health, EMS Mike Duck, Region 8 Email: James.Duck@tn.gov Cell: (901) 212-4444

3.2 TRAINING AND EXERCISES

MSEPC and the Burn Center are actively collaborating to develop a training program that will be offered to all Mid-South facilities as well as facilities to the Coalition to our immediate east – WATCH. This training program will offer patient care information to clinicians and physicians taught Burn Center staff as well as programmatic information related to event activation and notification, resource requests, and patient tracking taught by MSEPC staff.

Initial Burn Care Training to include the following concepts:

- Referral criteria to send to Burn Centers
- Telehealth consultations and procedures
- TBSA calculations
- Primary and secondary burn surveys (palmar method)
- Wound care basics and debridement
- Airway management and smoke inhalation basics
- Fluid resuscitation
- Pain management
- Pediatric considerations and referral patterns

MSEPC will continue to include several burn patients regardless of the overall scenario in future scenarios as it has done in the past along with other vulnerable populations. MSEPC will establish a schedule to include routine patient tracking exercises, monthly at best and quarterly at least.

3.3 SOUTHERN REGION BURN RESPONSE PLAN

<h2 style="margin: 0;">Southern Region Burn Mass Casualty Incident (BMCI) Response Plan</h2>	
<p>The American Burn Association (ABA)- designated Southern Region¹ encompasses Burn Centers located along the southeast and gulf coasts of the United States extending from Virginia through Texas, including West Virginia, Kentucky, Tennessee, Arkansas and Oklahoma</p>	
<ul style="list-style-type: none"> • For a BMCI occurring anywhere within the Southern region of the United States the Southern Region Coordination Center (SRCC)² serves as a communications and coordination center to support Burn Center(s) with burn bed census and/ or patient triage and transfer • A BMCI is defined as any incident where capacity and capability significantly compromises patient care, as identified in accordance with individual BC(s), state, regional or federal disaster response plans 	
<h3 style="margin: 0;">Requesting Assistance from the ERBDC for BMCI Response and Coordination</h3>	
<p>Upon request by a referring BC(s) the SRCC</p> <ul style="list-style-type: none"> • Conducts a bed census of southern region BCs • Supports and assists with regional efforts for patient triage and transfer 	<p>Agencies requesting assistance include:</p> <ul style="list-style-type: none"> • SRCC BCs • Affected ABA BCs • ABA Regional Coordinator(s) • ABA Central Office • Department of Health & Human Services (DHHS) or designee
<p>To request SRCC assistance contact:</p> <ul style="list-style-type: none"> • SRCC at University of Alabama at 800-359-0123 	<p>Upon notification SRCC:</p> <ul style="list-style-type: none"> ○ Activates the Southern Region Burn Disaster Plan ○ Conducts burn bed census of non-affected Southern BC(s) for 02, 12, 24, 72 H intervals <p>Coordinates requests for patient transfer between referring and receiving BC(s)</p>

Definitions

1. Southern Region – one of five American Burn Association-designated regions. Refer www.ameriburn.org Homepage for a map of all regions.
2. Southern Region Coordination Center

3.4 ABA BURN TRANSFER FORM



Courtesy of the

American Burn Association

Advanced Burn Life Support (ABLS)

Learn more about the ABA and ABLS at www.ameriburn.org

Burn Center Referral Criteria

A burn center may treat adults, children, or both.

Burn injuries that should be referred to a burn center include:

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.

Excerpted from Guidelines for the Operation of Burn Centers (pp. 79-86), Resources for Optimal Care of the Injured Patient 2006, Committee on Trauma, American College of Surgeons

Severity Determination

First Degree (Partial Thickness)

Superficial, red, sometimes painful.

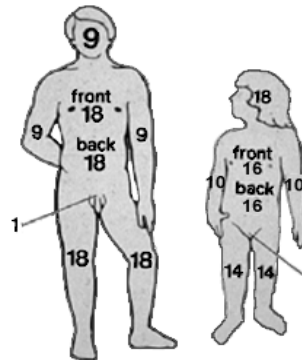
Second Degree (Partial Thickness)

Skin may be red, blistered, swollen. Very painful.

Third Degree (Full Thickness)

Whitish, charred or translucent, no pin prick sensation in burned area.

Percentage Total Body Surface Area (TBSA)



3.5 ABA PATIENT CARE PRIORITIES FOR THE FIRST 24 HOURS



Just-in-Time Training Summary Sheet
Patient Care Priorities for the
First 24 hours in Burn Mass Casualty for Non-Burn Physicians
(Based upon "Guidelines for Burn Care Under Austere Conditions")

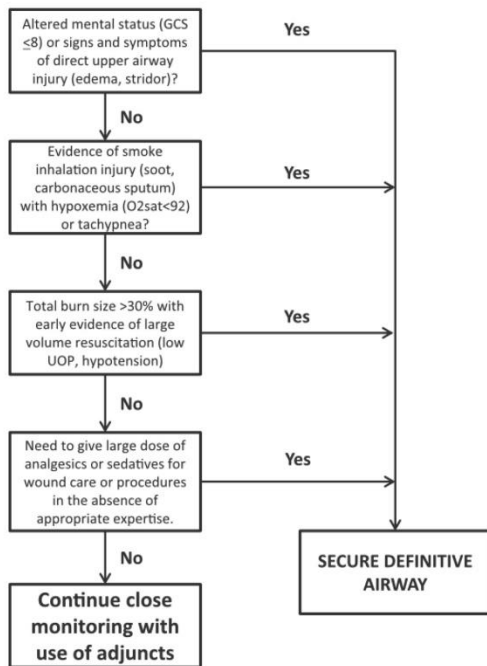
TRIAGE

1. If facility resources are overwhelmed, triage according to the "Resource Triage Diagram for Burn Injury in a Disaster" (see Appendix). To estimate Total Body Surface Area (TBSA) burn use the "Rule of Nines" or Palmar Method (See Appendix). Note: Only 2nd and 3rd degree burns are tallied.
2. Direct exposure to ionizing radiation (even as low as 2-6 Gy) may change the above triage categories (worsened outcomes)
3. Consider concomitant injuries from the effect of the blast. Follow Advanced Trauma Life Support (ATLS) guidelines.

DECONTAMINATION FOR RADIATION EXPOSURE

1. Determined by a radiation meter such as a Geiger-Mueller meter with a pancake probe. Readings of greater than two times background in counts per minute (cpm) are considered positive for contamination. If not available, all patients should be considered contaminated.
2. There can also be internal contamination (e.g., pulmonary secretions).
3. Irrigate with water or saline. Contain runoff. Follow proper disposal of contaminated clothing/supplies.

AIRWAY/BREATHING



Considerations:

- If there is a lack of ventilators, separate the need for airway protection from the need of mechanical ventilation.
- Utilize airway adjuncts where necessary.
- May need to ration oxygen.
- Conduct periodic airway/ventilator needs assessment rounds.
- C-spine precautions as needed.

Figure 2. Proposed decision matrix for airway management during burn disasters.

CIRCULATION (RESUSCITATION)

1. Patients with burns less than 20% BSA can be effectively resuscitated from burn shock using oral solutions; many patients with burns up to 40% TBSA can also be safely resuscitated in this manner.
 - a. There are many formulas for oral rehydration solutions, but all include clean water, glucose, and electrolytes (see Appendix).
 - b. Adults and children > 2 years should be allowed to take sips from a cup frequently, with the goal of consuming approximately 8 to 10 ounces every 10 to 15 minutes.
 - c. Very young children < 2 years should be given a teaspoon of fluid every 1 to 2 minutes.
 - d. Oral fluids should be given in amounts tolerated by the patient, accepting the occasional episode of nausea and vomiting as inevitable but not a reason to discontinue oral therapy.
2. For patients with burns >20%, IV resuscitation, if supplies permit, should be utilized using the Parkland formula. In resource-constrained environments, IV resuscitation may need to be restricted to survivable burns >40%.
 - a. Total mL 24 hour fluid requirement = 4mL LR x Kg body weight x %TBSA
 - b. Give ½ during the first 8 hours post injury and ½ during the following 16 hours
 - c. Example: 4mL x 70 Kg patient x 50% TBSA = 14,000mL
 - d. Give 7000mL during first 8 hours (875mL/hour) and 7000mL during following 16 hours (437.5mL/hour)
 - e. Monitor hourly urine output: 30-50mL/hour for adults, 1m/Kg/hour for children
 - f. Other endpoints of resuscitation as able: Vital signs, Hct, Lactate, Base Deficit
 - g. Increase/decrease fluids by 10-20% each hour according to urine output. Beware of abdominal compartment syndrome if fluid rate gets to 6mL/Kg/hour.

If the patient is not responding to increases crystalloid volume consider 5% Albumin or FFP. If means of communication available, contact a burn surgeon for assistance or consider re-triage of resources.

WOUNDS

Recommendations adapted from "Guidelines for Burn Care Under Austere Conditions: Surgical and Nonsurgical Wound Management"

1. If the burn injury has just occurred, remove smoldering clothing and flush for a few minutes with any readily available water source (cool to lukewarm temperature). This will stop the burning process and provide some pain relief.

Caution: Avoid hypothermia, especially in patients with larger TBSA burns.
2. Identify and train a wound-care team.
3. Prepare a venue for wound care.
4. Determine availability of topical antimicrobials and plan their rational use.
5. Provide adequate analgesia and anxiolysis.
 - a. Benzodiazepines
 - b. Opioids, Ketamine
6. Mafenide acetate (Sulfamylon) and silver sulfadiazine (Silvadene) creams should be used when available (especially contaminated and/or deeper wounds). Twice daily ideal, once daily acceptable.
 - a. Alternatives are Bacitracin, Polysporin with Vaseline or Xeroform gauze interface.
7. Alternatives to creams/ointments
 - a. Silver-based dressings: *e.g.*, Acticoat™, Kerra Contact® Ag, Silverlon®
 - b. Aqueous solutions: *e.g.*, Mafenide acetate solution, Dakin's
8. For patients with minor burns (<10% TBSA), consider having them do their own wound care or help each other if resources are limited.

APPENDIX

Table 1. Resource triage diagram for burn injury in a disaster

Age	0-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-79.9	80-89.9	≥90
Burn size group, % TBSA all										
0-1.99	Very high	Very high	High	High	High	Medium	Medium	Medium	Low	Low
2-4.99	Outpatient	Very high	High	High	High	Medium	Medium	Medium	Low	Low
5-19.99	Outpatient	Very high	High	High	High	High	Medium	Medium	Low	Low
20-29.99	Outpatient	Very high	High	High	High	Medium	Medium	Medium	Low	Low
30-39.99	Outpatient	Very high	High	High	Medium	Medium	Medium	Low	Low	Expectant
40-49.99	Outpatient	Very high	High	Medium	Medium	Medium	Medium	Low	Low	Expectant
50-59.99	Outpatient	Very high	High	Medium	Medium	Low	Low	Expectant	Expectant	Expectant
60-69.99	Outpatient	High	Medium	Medium	Low	Low	Low	Expectant	Expectant	Expectant
≥70	Very high	Medium	Low	Low	Low	Expectant	Expectant	Expectant	Expectant	Expectant
Burn size group, % TBSA no inhalation injury										
0-1.99	Very high	Very high	High	High	High	High	Medium	Medium	Medium	Medium
2-4.99	Outpatient	Very high	High	High	High	High	High	Medium	Medium	Medium
5-19.99	Outpatient	Very high	High	High	High	High	High	Medium	Medium	Low
20-29.99	Outpatient	Very high	High	High	High	Medium	Medium	Medium	Medium	Low
30-39.99	Outpatient	Very high	High	High	Medium	Medium	Medium	Low	Low	Expectant
40-49.99	Outpatient	Very high	High	High	Medium	Medium	Medium	Low	Low	Expectant
50-59.99	Outpatient	Very high	High	Medium	Medium	Low	Low	Expectant	Expectant	Expectant
60-69.99	Very high	High	Medium	Medium	Low	Low	Expectant	Expectant	Expectant	Expectant
≥70	High	Medium	Medium	Low	Low	Expectant	Expectant	Expectant	Expectant	Expectant
Burn size group, % TBSA with inhalation injury										
0-1.99	High	Medium	Medium	Medium	Medium	Medium	Low	Low	Expectant	Expectant
2-4.99	High	High	High	High	High	Medium	Medium	Medium	Low	Low
5-19.99	High	High	High	High	Medium	Medium	Medium	Medium	Low	Low
20-29.99	Very high	High	High	Medium	Medium	Medium	Medium	Low	Low	Expectant
30-39.99	Very high	High	High	Medium	Medium	Medium	Medium	Low	Low	Expectant
40-49.99	Very high	High	Medium	Medium	Medium	Low	Low	Low	Low	Expectant
50-59.99	High	Medium	Medium	Medium	Medium	Low	Low	Expectant	Expectant	Expectant
60-69.99	Medium	Medium	Medium	Low	Low	Low	Expectant	Expectant	Expectant	Expectant
≥70	Medium	Medium	Low	Low	Expectant	Expectant	Expectant	Expectant	Expectant	Expectant

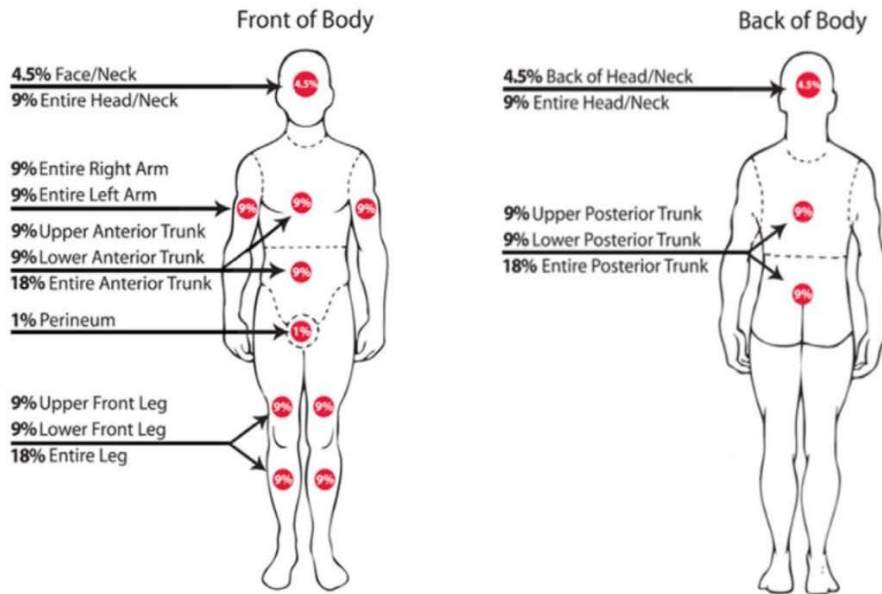


Figure 1. Depiction of the Rule of Nine's and Palmar Method of burn size estimation. For the Rule of Nines, each body region has a surface area in a multiple of nine. In the Palmar Method, the patient's palm represents approximately 1% of that patient's BSA. Reprinted with courtesy from The Burn Center at Saint Barnabas Medical Center, Livingston, New Jersey.

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APPENDIX (Continued)

Table 2. Composition of oral glucose-electrolyte solutions and clear liquids (based on 62–64, 66–68)

Solution	Na⁺	K⁺	Cl⁻	Base	Glucose	Osmolality
Rehydration						
WHO-UNICEF ORS salts	90	20	80	10 (citrate)	111 (20 g/L)	310
WHO-UNICEF reduced osmolality ORS salts	75	20	65	10 (citrate)	75 mmol/L	245
Meyer's solution	85	0	63	29 (citrate)	0	160
Rehydralyte®	75	20	65	30	139 (25 g/L)	325
Infalyte® or Ricelyte® liquid, oral	50	25	45	36 (citrate)	30 g/L as rice syrup solids	270
Lytren®	50	25	45	10 (citrate)	111 (20 g/L)	290
Pedialyte®	45	20	35	10 (citrate)	140 (25 g/L)	250
Resol®	50	20	50	11 (citrate)	111 (20 g/L)	270
Gatorade®	20	3	20	3	250 (35 g/L)	280
Cola	2	0.1	2	13 (HCO ₃)	730	750
Ginger ale	3	1	2	4 (HCO ₃)	500	540
Apple juice	3	28	30	0	690	730
Chicken broth	250	8	250	0	0	450
Tea	0	0	0	0	0	5

ORS, oral rehydration solution. Manufacturer information: Rehydralyte: Abbott Pharmaceutical Company, Abbott Park, IL; Infalyte: Mead Johnson and Company, Glenview IL; Ricelyte: Mead Johnson and Company, Glenview, IL; Lytren: Mead Johnson and Company, Glenview, IL; Pedialyte: Abbott Pharmaceutical Company, Abbott Park, IL; Gatorade: Gatorade Company, Chicago, IL.

Images from *J Burn Care Res* 2016; 37:e427–39

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