

# STATE OF MICHIGAN BURN MASS CASUALTY INCIDENT (BMCI) SURGE PLAN



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## Table of Contents

### State of Michigan Burn Mass Casualty Incident Surge Plan #25

#### Contents

Introduction .....	5
Authority .....	8
Definition of a Burn Mass Casualty Incident .....	10
Concept of Operations .....	13
Organizations and Assignment of Responsibilities .....	16
Patient Treatment Recommendations within the BSF .....	21
Patient Transport .....	22
Summary .....	24
Appendices .....	25
SBCC Activation Communications Pathway .....	26
On-going Notification Communications Pathway .....	27
Communication Pathway with the Great Lakes Healthcare Partnership When Burn Capacity Exceeds Michigan Resources .....	28
Medical Communications Pathway during Emergency Response .....	29
Elements of Essential Information (EEI) Report .....	30
Burn Center Referral Criteria Mass Casualty Incident .....	31
American College of Surgeons Burn Unit Referral Criteria .....	32
The Rule of Nines – Lund-Browder Charts .....	33
Burn Surge Facility Treatment Considerations: Responsibilities during a Burn Mass Casualty Incident .....	34
BMCI: FLUID RESUSCITATION .....	43
Michigan Mass Casualty Burn Plan Resource .....	46
Activation/Utilization Guidelines .....	46
Michigan Burn Surge Facilities .....	49
Michigan Burn Centers .....	50
American College of Surgeons Verified Michigan Trauma Centers .....	51
Initial Casualty Report Form .....	53
Follow-up Casualty Report Form .....	54
Burn Surge Facility Casualty Census Form .....	55
Information That Needs to Transfer with a Burn Patient .....	56
EMS Transport Sheet .....	57

Great Lakes Healthcare Partnership.....	59
Great Lakes Healthcare Partnership Resources.....	60
Regional Healthcare Coordinators.....	62
Regional Medical Coordination Centers (MCC) .....	63
Burn Surge Facility Training .....	64
Roles, Responsibilities and Expectations of BSFs .....	65
Exercising.....	66
Supplies.....	67
State of Michigan Burn Mass Casualty Incident Supply Kit .....	70
State Burn Coordinating Center .....	71
Acronyms .....	72
CONTRIBUTORS .....	74

## Introduction

The following Burn Mass Casualty Incident (BMCI) Surge Plan has been developed in an effort to expand the ability to provide burn care, to safeguard and prioritize the utilization of limited resources. The Michigan Department of Health and Human Services (MDHHS) recognizes that no one state has the capability to meet the identified increased capacity needs of a significant incident involving large numbers of burn patients. This plan incorporates the utilization of “adjusted environments of care”<sup>1</sup>, by planning for the provision of stabilizing care for burn patients in facilities that are not normally associated with providing definitive care to burn patients. The ability to standardize the care that will be provided in hospitals that do not provide definitive burn care has been agreed upon in an endeavor to safeguard critical resources and, ultimately, improve outcomes for patients.

This plan incorporates the use of burn stages to provide context for the scope of an incident and should not be viewed as prescriptive. Given even the limited availability of definitive burn care at the national level, it is understood that even a “relatively minor” incident may indicate a need for accessing resources from one or more of the planning partners to ensure the best possible outcomes for patients. This document should be viewed as a guide for planning a coordinated response in a mass casualty burn environment as defined by the burn stages outlined in this text. It is not the intention of the document to suggest patient care practices at Michigan recognized burn centers.

This plan outlines the use of a long-acting silver impregnated dressing to treat burn patients. The identification of this type of dressing is meant to serve as a guide for health care partners. It is understood that the choice of which brand of product to use should and will be based on current practices. The choice to use a silver impregnated dressing for this type of MCI is critical to this plan’s success. Use of this type of dressing significantly reduces the number of patient care hours needed per burn victim and reduces the need for specialty trained nursing care, both of which are critical elements to the success of any plan directed at increasing surge capacity.

This plan develops non-traditional burn care resources to provide surge capacity during an MCI and to protect those facilities with definitive burn care capacity from being overwhelmed through the use of offsite triage and stabilization. By developing this type of surge capacity, facilities can maximize the use of critical definitive care resources.

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<sup>1</sup> [guidelines for burn care under austere conditions .98589-2.pdf \(ameriburn.org\)](#)

The purpose of this plan is to assist local jurisdictions and regional Healthcare Coalitions (HCC) in planning for and providing a uniform coordinated response to a BMCI when the incident has exceeded local resources.

This plan has been designed as an adjunct to local preparedness efforts. It defines what constitutes a BMCI. It also provides guidance to each regional HCC in providing a uniform assessment of current capacity to care for burn patients and an assessment of burn surge capabilities.

This plan applies to all levels of government to include the local, regional, state and/or multi-state level. It provides guidance for:

- Uniform triage of burn patients (Appendix K)
- Categorization of hospital resources
- Critical burn surge supplies based on regional population and projected surge capacity needs
- Staff and training readiness for patient care
- A communication model for the management of BMCI

Efforts are ongoing to coordinate the capacity to care for patients during a BMCI. The MDHHS, Division of Emergency Preparedness and Response (DEPR) participates with the Great Lakes Healthcare Partnership (GLHP) as part of medical and public health preparedness (*Appendix U*). These Health and Human Services (HHS) Region V partners are also working to adopt a similar organizational approach to managing the surge of burn patients from an MCI.

The extent of injury seen in patients involved in a BMCI will vary in degree, criticality and, as such, the extent and intensity of care, resources required will vary significantly. This is critical in assessing existing burn capacity as it relates to the development of resources identified by any state. MDHHS DEPR utilized the planning assumption of 60% of the Health Resources and Services Administration (HRSA) benchmark of 50 patients per million populations will sustain a 30% Total Body Surface Area (TBSA) injury (on average)<sup>2</sup> as a planning paradigm.

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<sup>2</sup> U.S. Department of Health and Human Services, Health Resources and Services Administration, Special Programs Bureau. National Bioterrorism Hospital Preparedness Program, Catalog of Federal Domestic Assistance (CFDA) 93.003; 2004.

It is also understood that federal assets may not be readily available and the need for both self-reliance and the assistance of the partners developed within the GLHP may be critical to optimize patient outcomes.

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## Authority

The Hospital Preparedness Program (HPP) cooperative agreement, as authorized by section 319C-1 of the Public Health Service (PHS) act, as amended by the Pandemic and All-Hazards Preparedness Act (PAHPA)<sup>2</sup> (P.L. 109-417) and the Emergency Medical Services (EMS) and Trauma Systems Section under Part 209 of PA 368 of 1978. Pandemic and All-Hazards Preparedness Act (PAHPA), Public Law No. 109-417<sup>2,3</sup>.

PAHPRA is the Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 (PAHPRA)<sup>4</sup> (Public Law 113-5).<sup>1</sup> Bill H.R. 307 was signed into law to reauthorize the Pandemic and All-Hazards Preparedness Act of 2006 (PAHPA) (Public Law 109-417) and to develop new authorities to sustain and strengthen national preparedness for public health emergencies involving CBRN agents, including emerging infectious disease threats (e.g., pandemic influenza)<sup>4</sup>. Pandemic and All-Hazards Preparedness Reauthorization Act of 2013 (PAHPRA), Public Law 113-5.

PAHPAIA is the Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019 (Public Law 116-22)<sup>5</sup>. Bill H.R. 269/S1379 was signed into law reauthorizing the Pandemic and All-Hazards Preparedness Act of 2006 (PAHPA) (Public Law 109-417). This new law is comprehensive and provides programs with opportunities to improve preparedness and responses, strengthen the emergency response workforce and strengthen the National Health Security Strategy. Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019 (PAHPAIA), Public Law 116-22.

<sup>2</sup> <http://www.phe.gov/preparedness/legal/pahpa/pages/default.aspx>. Accessed July 3, 2023

<sup>3</sup> <http://www.phe.gov/Preparedness/legal/pahpa/Pages/pahpra.aspx>. Accessed July 3, 2023

<sup>4</sup> <http://www.phe.gov/Preparedness/legal/pahpa/section201/Documents/section201-guidance.pdf>.

Accessed July 3, 2023

<sup>5</sup> <https://www.phe.gov/Preparedness/legal/pahpa/Pages/pahpaia.aspx>. Accessed July 3, 2023



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## Definition of a Burn Mass Casualty Incident

For the purposes of this plan, qualitative factors that may cause a local jurisdiction to declare an emergency or disaster may include, but are not limited to mass casualties involving:

- Inhalation injuries
- Size, depth and location of the burn area
- Chemical or radiological contamination/exposure
- Presence of other trauma related injuries which compound the intensity of care and resources required for ongoing patient care
- Casualty transport resources
- Co-existence of other major BMCI in other areas of the State or multi-state region

### **Burn Mass Casualty Incident Stages**

During a **Burn Stage I** incident, state burn centers and burn centers in neighboring states will manage as many patients who meet the Burn Center Referral Criteria (*Table #1*) as available resources permit. Once it is recognized that the potential for the event to exceed local resources exists, then the regional Medical Coordination Center (MCC) and the local Emergency Operations Center (EOC), with the assistance of the State Burn Coordinating Center (SBCC), should begin to coordinate medical response efforts with the Community Health Emergency Coordination Center (CHECC) and the State Emergency Operations Center (SEOC) (*Appendix C*). Burn Surge Facilities (BSFs) will be utilized as needed to care for and house other burn patients pending transfer to recognized burn centers. For Burn Stage I incidents, it is expected that all burn casualties will be transferred within 24-48 hours to burn centers in Michigan and if needed neighboring states. If the existing burn center resources are exhausted, patients will be referred utilizing the process outlined in Burn Stage II.

During a **Burn Stage II** incident, state burn centers will manage as many patients as possible given the resources available for patients meeting the Burn Center Referral Criteria (*Table #1*). When burn center bed capacity has been exceeded, or transport is not feasible, regional BSFs may be utilized to provide care and to house patients. The SBCC, CHECC and the SEOC will facilitate the coordination of other burn resources with the GLHP, as well as the American Burn Association National Network of burn centers, using the BMCI Response Protocol.

During a **Burn Stage III** incident, state burn centers will provide care for as many patients as they have resources to support care that meet the Burn Center Referral Criteria (*Table #1*). When burn center bed capacity has been exceeded or transport is not feasible, regional BSFs may be utilized to care for and house patients. The process for the transfer of patients out of state

utilizing the GLHP will begin once all in state resources are exhausted. This process will be coordinated through established incident command structure.

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**Table #1****BMCI STAGES**

Mass Casualty Burn Stage (BS)	Definition	Plan
<b>Stage I</b>	<p><b>Any event in which local trauma/burn resources are overwhelmed with patients (example: 10-24 patients):</b></p> <ul style="list-style-type: none"> <li>• Have <math>\geq 30\%</math> TBSA burn</li> <li>• Meet Burn Center Referral Criteria (<i>Appendix F</i>).</li> <li>• Qualitative or quantitative nature of injuries exceed local capacity to provide effective care.</li> </ul>	<ul style="list-style-type: none"> <li>• Individual health care facilities will manage the patients.</li> <li>• Regional MCC will communicate with MDHHS CHECC who contacts the SEOC with the SBCC.</li> <li>• The CHECC will communicate with the SBCC who provides consultation and coordinates bed availability for the impacted healthcare facilities.</li> <li>• State burn centers and burn centers in neighboring states in close proximity to the incident will manage as many patients as resources permit. Burn patients are defined at those casualties that meet Burn Center Referral Criteria (<i>Appendix F</i>).</li> <li>• BSFs may be utilized as needed to briefly care for patients until transferred to a recognized burn center.</li> </ul>
<b>Stage II</b>	<p><b>Any event in which regional trauma/burn resources are overwhelmed with patients (example: 25 – 100 patients):</b></p> <ul style="list-style-type: none"> <li>• Have <math>\geq 30\%</math> TBSA burn</li> <li>• Qualitative or quantitative nature of injuries exceeds defined capacity of the region.</li> </ul>	<ul style="list-style-type: none"> <li>• Individual health care facilities will manage patients.</li> <li>• Regional MCC will communicate with MDHHS CHECC, who contacts the SEOC, with the SBCC.</li> <li>• The CHECC will communicate with the SBCC who provides consultation and coordinates bed availability for the impacted healthcare facilities.</li> <li>• State burn centers and GLHP burn centers in neighboring states in close proximity to the incident will manage as many patients as resources permit. Burn patients are defined at those casualties that meet Burn Center Referral Criteria (<i>Appendix F</i>).</li> <li>• BSFs may be utilized as needed to briefly care for patients until transferred to a recognized burn center.</li> <li>• If existing burn center resources are exhausted, patients will be referred utilizing process outlined in Burn Stage III (see below).</li> </ul>
<b>Stage III</b>	<p><b>Any event in which state trauma/burn resources are overwhelmed with patients (example: &gt; 100 patients or the potential to have &gt; 100 patients exists):</b></p> <ul style="list-style-type: none"> <li>• Have <math>\geq 30\%</math> TBSA burn</li> <li>• Qualitative or quantitative nature of injuries exceeds defined capacity of the state.</li> </ul>	<ul style="list-style-type: none"> <li>• Individual health care facilities will manage patients.</li> <li>• Regional MCC will communicate with MDHHS CHECC who contacts the SEOC, with the SBCC.</li> <li>• CHECC in coordination with SEOC supports local MCC and EOCs, respectively.</li> <li>• SBCC assists BSFs and works with MCCs and CHECC to facilitate coordination of other burn resources with Great Lakes Healthcare Partnership and the American Burn Association (ABA) national network of burn centers.</li> <li>• State burn centers will manage as many patients as resources permit who meet Burn Center Referral Criteria (<i>Appendix F</i>) and assist near-by BSFs as able.</li> <li>• If ABA is unavailable or transport is not feasible, BSFs will be utilized to house patients. BSFs will care for and house patients until transport to a more distant burn center can be achieved (preferably within 72 hours). If needed, patients may be transferred to more distant BSFs in Michigan and neighboring states.</li> </ul>

## Concept of Operations

In the event of a BMCI, the 15 BSFs should plan to provide initial treatment and stabilization for burn victims triaged as meeting the criteria for a referral to a burn center. Planning projections should be based on a population ratio of 50 casualties per million, or a minimum of 25 patients<sup>6</sup>. This capacity planning should incorporate the development of non-traditional burn bed resources to include:

- Initial and ongoing training in burn triage
- Categorization of injuries
- Patient care
- Supply caches capable of supporting patient care for at least 72 hours

In order to successfully create an operational statewide plan, four basic premises must be uniformly understood and incorporated into each response plan for BMCIs. The four basic concepts of operational importance are:

1. Regional MCCs which serves as a Multi-Agency Coordination System (MACS) within each HCC to support the burn centers, BSFs and local EOCs.
2. Utilization of a SBCC.
3. Maximum utilization of the state's six burn centers.
4. Establishment of regional BSFs.

These defined resources will support each region's ability to coordinate regional care and movement of burn patients during a BMCI. Once the regional MCC has determined the scope of the BMCI and the needs of the patients, they will contact the CHECC to provide pertinent information and seek assistance. This may include a request for support to coordinate the care and placement of the burn patients. Essential Elements of Information (EEI) form (*Appendix E*) may include:

- Number of patients impacted (may be an estimate).
- An EMResource bed query being initiation.
- Status of any communications from the local EOC about medical health needs (as available).
- The status of the regional MCC activation indicating current staff and any other information which may be pertinent to the incident.

<sup>6</sup> U.S. Department of Health and Human Services, Health Resources and Services Administration, Special Programs Bureau. National Bioterrorism Hospital Preparedness Program, Catalog of Federal Domestic Assistance (CDFA) 93.003:2004

Upon notification the CHECC will evaluate the incident based on information provided through local and regional partners and the potential to have a statewide impact. The CHECC would activate and proceed with further state level communications including the SEOC. The decision to activate the BMCI plan will be based on multiple factors including the number of patients impacted, severity of injuries and burn center bed availability. The CHECC will be in communication with the SBCC, who will assess the status of burn bed capacity statewide. After incident data has been reviewed, the CHECC would continue MDHHS communications and communications with the regional MCC to discuss activation the State of Michigan Burn MCI Surge Plan.

With activation, the CHECC and the SBCC will formalize communications. The SBCC will identify stages based on use of the Initial Casualty Report Form (*Appendix P*):

**Burn Stage I**

- Any event in which local trauma/burn resources are overwhelmed with patients (example: 10-24 patients).

**Burn Stage II**

- Any event in which regional trauma/burn resources are overwhelmed with patients (example: 25-100 patients).

**Burn Stage III**

- Any event in which state trauma/burn resources are overwhelmed with patients (example: Exceeds 100 patients).

- Location of Incident
- Medical Needs of the Patients
- Bed Availability
- Transport Time

Once the BMCI surge plan is activated, the decision to activate a BSF is based on criteria outlined in this plan. Below is a summary of some of the decision making that would be utilized by the CHECC and SBCC:

During a **Burn Stage I** incident:

- State burn centers and burn centers in close proximity to the incident including neighboring states will manage as many patients who meet the Burn Center Referral Criteria (*Appendix F*) as available, resources permit.
- BSFs will be utilized, as needed, to care for and house other burn patients, pending transfer to recognized burn centers.

- For **Burn Stage I** incidents, it is expected that all burn casualties will be transferred within 24-72 hours to burn centers in Michigan. If needed, GLHP neighboring states resources would be utilized if available.
- If the existing burn center resources are exhausted, patients will be referred utilizing the process outlined in Burn Stage II.

During a **Burn Stage II** incident:

State burn centers will manage as many patients as possible given the resources available for patients meeting the Burn Center Referral Criteria (*Appendix F*).

- When burn center bed capacity has been exceeded, or transport is not feasible, regional BSFs may be utilized to provide care and to house patients.
- Aside from those activities already initiated under **Burn Stage II**, the SBCC, CHECC and the SEOC will facilitate the coordination of other burn resources with the GLHP, as well as the American Burn Association (ABA) National Network of burn centers through their regional coordinator network.

**Once the plan has been activated, the SBCC will be responsible for:**

- Activating internal response disaster team at Michigan Medicine.
- Notifying and coordinating with ABA to identify burn centers outside Michigan capable of receiving patients.
- Based on communication with the CHECC, activate BSFs within Michigan.
- Coordinate the triage of all burn patients to in-state and neighboring State burn centers and, if necessary, to in-state and neighboring state BSFs – sending and receiving.
- Support BSFs in the care of burn casualties during the initial 72 hours following the initial incident.
- Provide nurses and surgeons to assist in the secondary triage of burn casualties at the BSFs, if necessary, through telemedicine and/or on-site visits.
- Pediatric strike teams and supplies can be deployed to assist in the stabilization and care of children in a BMCI through the activation of air ambulance services.
- Pediatric patients would be transferred to a burn center for definitive care as quickly as bed availability permits.
- Coordinate, in conjunction with the MCCs and the CHECC the triage, transfer and tracking of burn casualties to out-of-state burn centers.
- Communicate to the similar entity SBCC located within the GLHP as needed when patient management requires resources outside of Michigan.

## Organizations and Assignment of Responsibilities

### Regional Medical Coordination Centers (MCC)

A regional MCC (*Appendix X*) is activated when medical care coordination is needed in response to a real or potential MCI. This is outlined in Tier 2 in the Medical Surge Capacity and Capability <sup>7</sup>. The MCC functions on behalf of the regional HCC supporting Healthcare Organizations (HCOs) and assists the local and state incident management system with medically related coordination and resource allocation. The core component of the MCC operation must remain consistent, recognizing regional variations exist based on resources and assets available.

**The primary functions of the MCC are to support their HCO's and assist incident management officials with:**

- Serving as a support to hospitals, local EOCs, other regional HCCs and provide timely information to the CHECC. The SEOC is kept informed via the CHECC.
- Situational awareness of the HCOs within the HCC.
- Current availability of regional medical resources.
- Coordination of requests and receipt of intra and extra-regional medical resources EEI (*Appendix E*).
- Casualty Transportation System (CTS).
- Serving as the primary mechanism for medical communications with the CHECC (ESF #8)<sup>8</sup> consistent with Regional Preparedness/Response Plans.

### State Burn Coordinating Center (SBCC)

MDHHS Bureau of Emergency Preparedness, EMS and Systems of Care (BEPESoC) has contracted with one healthcare facility to act as the SBCC. This facility is the University of Michigan Health Michigan Medicine Burn Center and is responsible for assisting the regional MCCs, CHECC and the SEOC in managing a BMCI in which the resources of any given Michigan region or state are exceeded. The SBCC must be an American Burn Association (ABA) verified hospital demonstrating expertise in the care of burn patients; as well as the ability to provide staff assistance to MCCs from beyond their geographic region, the state, or other states involved with the management of a coordinated plan for BMCI.

<sup>7</sup> <https://www.phe.gov/Preparedness/planning/mscc/Documents/mscctier2jan2010.pdf>. Accessed July 3, 2023

<sup>8</sup> <https://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>. Accessed July 3, 2023.



**In considering a facility for selection as the SBCC the following capabilities are considered as criteria for designation:**

- ABA verification as a burn center.
- Around-the-clock on call coverage by a burn surgeon and burn disaster response support team.
- Ability to serve in the role and continue to care for patients (under catastrophic conditions).
- Telemedicine capabilities.
- Interoperable communications that include State of Michigan 800 MHz radio.
- Michigan Health Alert Network (MIHAN) participation.
- The SBCC has web publication capabilities. This resulted in the *Emergency Burn Triage and Management* web page found at [www.MichiganBurn.org](http://www.MichiganBurn.org). This resource is open to all but contains a restricted site for management of patient fluid resuscitation during an BMCI.

**To further support Michigan's planning for a BMCI, the SBCC has duties outside of incident response including:**

- Act as a liaison with coordinating burn centers from other states including the GLHP, on an ongoing basis, in support of inter-state planning activities.
- Assist in the development of training protocols for personnel at designated BSFs, burn centers and EMS.
- Assist with education, training and exercises.
- Develop and maintain a process for recording burn casualty reports associated with an MCI in which they are activated.
- Coordinate the maintenance and updating of burn related protocols at the BSF and regional HCCs.
- Coordinate the rotation and updating of burn supply caches located within BSFs or other central locations.
- Coordinate the procurement of critical burn surgery supplies, such as skin Allograft and wound care products. Maintain a database of supply sources and contacts.
- Work with suppliers outside the state and coordinate supply distribution to other in-state burn centers.
- Demonstrate proficiency in the utilization of the MIHAN as well as other web-based resources to facilitate distribution of documents, protocols and databases needed for BMCI preparedness.
- Demonstrate proficiency in the use of the 800 MHz radio.
- Maintain documentation for potential reimbursement.

### **Michigan Burn Centers**

Michigan currently has six healthcare facilities recognized as burn centers (*Appendix N*) by the ABA. They routinely accept burn referrals and are able to provide definitive care for burn patients, as defined by the American College of Surgeons<sup>9</sup>. These centers continue to serve their primary role during a BMCI but will work in conjunction with the SBCC to manage the flow of burn surge patients to ensure the optimal use of the state's definitive burn care capacity.

### **Burn Surge Facilities**

The eight regional HCCs, working with the DEPR have established 15 hospitals to serve as a BSFs (*Appendix M*) strategically located throughout the eight regional HCCs (*Appendix W*).

Each regional HCC who has an ABA burn center identified one BSF (the exception being Region 2 South and Region 6. Region 2 South due to the population density has two BSFs in addition to the three burn centers. Region 6 because of the increasing population density). The Regions without a burn center identified at least two BSFs. The identification of these BSFs allowed for the development and education of the staff within the HCO, which may not typically treat burn patients beyond initial stabilization and transport, to provide care for initial 24-72 hours post incident.

**BSFs are hospitals that can care for burn patients based on the three defined Burn Stage (BS) responses:**

#### **Burn Stage I**

- Any event in which local trauma/burn resources are overwhelmed with patients (example: 10-24 patients).

#### **Burn Stage II**

- Any event in which regional trauma/burn resources are overwhelmed with patients (example: 25-100 patients).

#### **Burn Stage III**

- Any event in which state trauma/burn resources are overwhelmed with patients (example: Exceeds 100 patients).

Each burn surge stage has been created based on an analysis of existing burn resources either currently in existence within each HCC or based on the enhancement of the resources as provided for within this plan. The burns stages are linked to the HCC through the MCCs ability to respond to the burn stage with available resources. Assistance from other HCCs may be necessary and would be designated through collaboration between the SBCC and the CHECC.

<sup>9</sup> American College of Surgeons. (2014). Optimal care of the injured patient. (Chapter 14, pp 100-1) (<https://www.facs.org/~media/files/quality%20programs/trauma/vrc%20resources/resources%20for%20optimal%20care.ashx>). Accessed July 3, 2023

Given the expectation that established state burn centers may initially be overwhelmed and transportation limited, BSFs would be responsible for the initial evaluation and stabilization of burn patients and preparation for transfer, if necessary, during the initial 72 hours. BSFs should have 24-hour coverage with at least 15 nurses and five physicians or Advanced Practice Providers trained at a minimum in American Burn Life Support (ABLS). Patients treated and discharged by BSFs should be referred to a burn center for complications and any needed long-term follow-up.

Michigan has supported the ABLS education statewide for Burn Surge Facilities, EMS and other healthcare providers by offering ABLS Now on-line free of charge for those working in Michigan Healthcare Organizations. For more information on the ABLS Now On-line program go to: [ABLS Now Course – American Burn Association \(ameriburn.org\)](https://www.ameriburn.org/abls-now).

**BSF Basic Selection Criteria:**

- BSFs are preferably Level I or II trauma centers. Telemedicine capabilities are desirable.
- In absence of a Level I or II trauma center, BSFs should, at a minimum, meet the general requirements of a Level III trauma center.
- BSFs must have 24-hour nursing care for burn patients. Sufficient numbers of nurses and physicians should be ABLIS-trained such that an ABLIS-trained nurse or physician should (at a minimum) be able to lead the care provided to patients.
- Each BSF should have at a minimum 15 nurses and five physicians ABLIS-trained to be available in-house during a BMCI.
- BSFs will function as the initial triage, stabilization, resuscitation and transport staging center with support of the region's MCC and the CHECC if a BMCI occurs.

All eight HCCs have at least one ACS verified Level I or II trauma center that is not a burn center but would be best suited to provide this level and complexity of patient care. The goal is a multilateral increase in short-term capabilities across the regions, state and ultimately throughout the GLHP. It is expected that the BSFs will need to care for some burn patients during the initial 72 hours to ensure the Michigan burn center resources are identified for the highest acuity burn casualties. The BSF will receive distance consultation support from the SBCC during this phase. It is expected that the SBCC will provide on-site burn consultation at the BSF for the secondary triage of burn casualties after the incident and as appropriate and able. All BSFs in the state should be prepared to receive burn casualties as triaged by the SBCC (Appendix L).

## Patient Treatment Recommendations within the BSF

A BMCI will stress all impacted hospitals. Care is focused on initial stabilization to include:

Airway, Breathing, Circulation (ABCs)

- Determining the total body surface area (TBSA) burned (Appendix H)
- Fluid resuscitation (*Appendix J*)
- Pain management
- Wound care. Priority is to minimize patient pain, infection potential and to decrease time demands on health care staff until definitive burn care is available.
  - Wound care will typically be limited to the application of Mepilex Transfer Ag (a silver based long-acting dressings). This type of dressing can be applied to burn wounds and left on without having to change them for seven days (except facial burns).
  - Similar burn wounds as well as grossly contaminated wounds will require more frequent daily dressings with silver sulfadiazine cream (Silvadene) or other anti-microbial preparations.
  - Facial burns will be treated with anti-bacterial ointment (Bacitracin/Neosporin) whichever the facility has on hand.
  - Scalp and facial hair should be shaved daily.
  - Scalp wounds should be covered with silver sulfadiazine (Silvadene) cream.

(For complete assessment and treatment recommendations, refer to *Appendix I*)

## Patient Transport

A critical element of this, or any healthcare response plan for a MCI, is the underlying assumption of the ability and availability of resources to transport patients to facilities that are able to provide definitive care based on the nature of the injuries. When planning for patient transport, it is important to assure that there is enough redundancy to cover the multiple transports that will occur during a BMCI.

In order to maximize the ability to provide patient transfer to optimize patient care, MDHHS DEPR and the HCCs are working to create Ambulance Strike Teams and other innovative casualty transport system (CTS) mechanisms. In an event that is categorized as Burn Stage I, a local EOC can request deployment of one or more regional ambulance strike teams or utilize other CTS that are available, as provided within each of the regional HCCs Preparedness Plan. If an incident is categorized as a Burn Stage II or Burn Stage III, then the coordination of a request for regional Ambulance Strike Teams should be considered through consultation between the incident's MCC, CHECC and SEOC.

It is anticipated that any Burn Stage II incident and many Burn Stage III incidents could warrant activation of the National Disaster Medical System (NDMS). NDMS is a federal resource involving a nationwide network of civilian and military hospitals that may be mobilized to support major disasters and MCIs. NDMS uses military aircraft to transfer patients from the affected areas to distant locations across the nation. In addition, NDMS can deploy specialized Disaster Medical Assistance Teams (DMATs) to provide basic medical care within the area impacted by the disaster. The CHECC maintains primary responsibility to collaborate with the SEOC conducting on-going assessments for the need for NDMS. In the event the SEOC activates NDMS based on a request, the CHECC and SEOC will work with the regional MCCs and local EOCs, respectively, to promote an effective and timely response.

### Documentation of Casualties

To utilize resources appropriately and keep from overwhelming the BSFs, careful documentation of all burn casualties is a priority. The following four forms as well as the information placed on the BMCI database will be utilized throughout the incident:

- Essential Elements of Information (*Appendix E*)
- Initial Burn Casualty Report Form (*Appendix P*)
- Follow-up Burn Casualty Report Form (*Appendix Q*)
- Burn Surge Facility Casualty Census Form (*Appendix R*)

The SBCC monitors all incident documentation to assist in the development of an ongoing plan of care for patients as well as an after-action report at the conclusion of the incident for lessons learned and corrective actions.

Patients being transferred must have specific paperwork and information with them. See Appendix S for complete list.

Long transfers (two hours or greater) by ground, must use a MI-Burn EMS Inter-facility Transfer Note form (Appendix T). This information provides the EMS personnel with tips to keep the patient stable during transport and a reminder of necessary communications with both the sending and receiving hospitals. The form also provides the phone numbers of the burn centers for quick reference. There is also a worksheet to calculate necessary medications and supplies prior to transport. The form provides information to the receiving hospital team in the form of a brief report: including vital signs, medications given, airway placement, ventilator support, and intake and output during the transfer.

## Summary

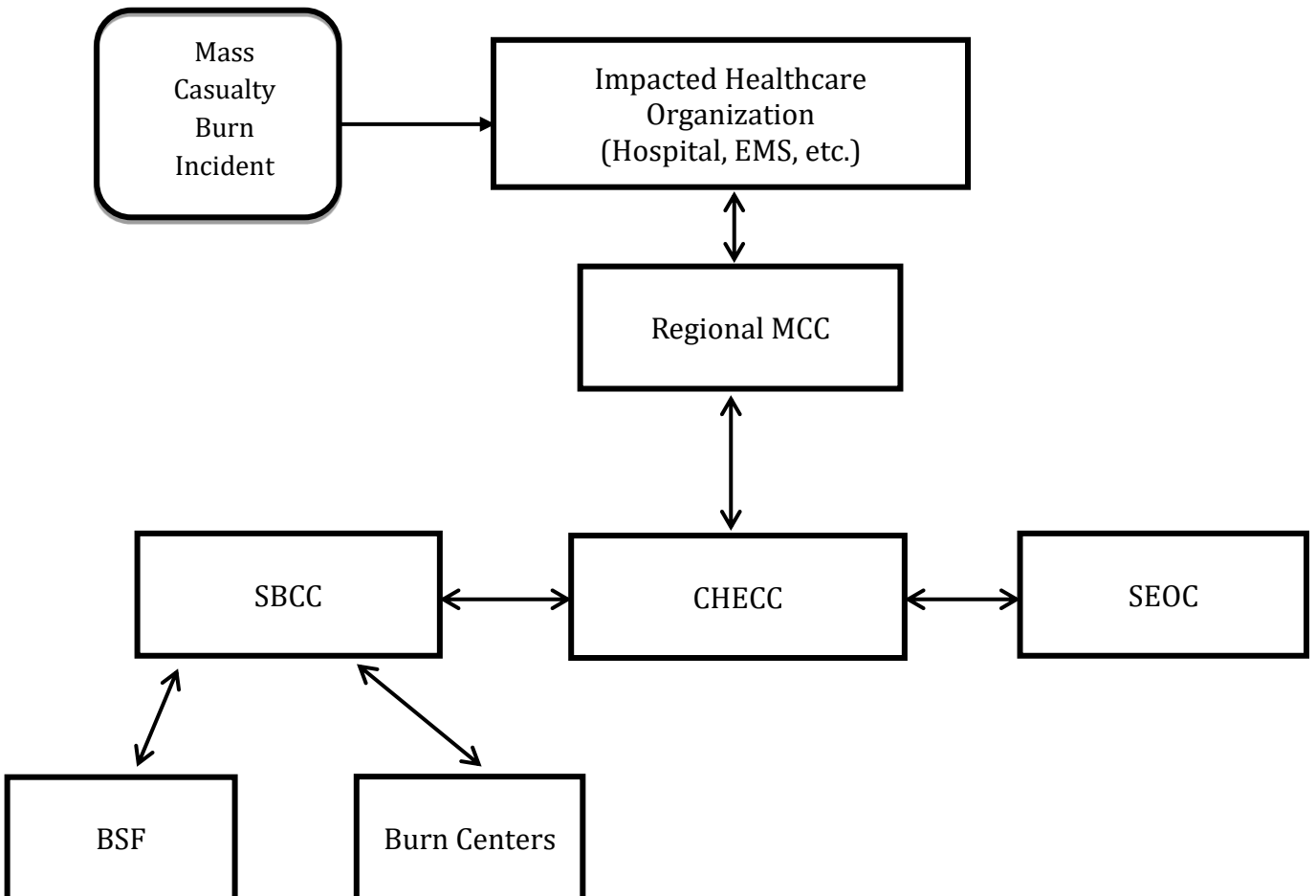
This revised State of Michigan BMCI Surge Plan and its annexes provides the framework and guidelines for a response to a burn mass casualty incident. It guides the user through the necessary steps to activate the SBCC, assess patients, calculate TBSA, and provides resuscitation protocols for hospitals treating burn patients. Casualty information sheets are included in the Annexes of this plan to provide the SBCC with data to determine transfers based on patient criticality. The EMS Inter-facility Transfer Sheets. These sheets not only provide accurate and up to date information on a patients' condition and treatment, but also a helpful worksheet to assist in calculating transport times (greater than 1 ½ hours), fluid, oxygen and medication needs for the transport.



## **Appendices**

## Appendix A

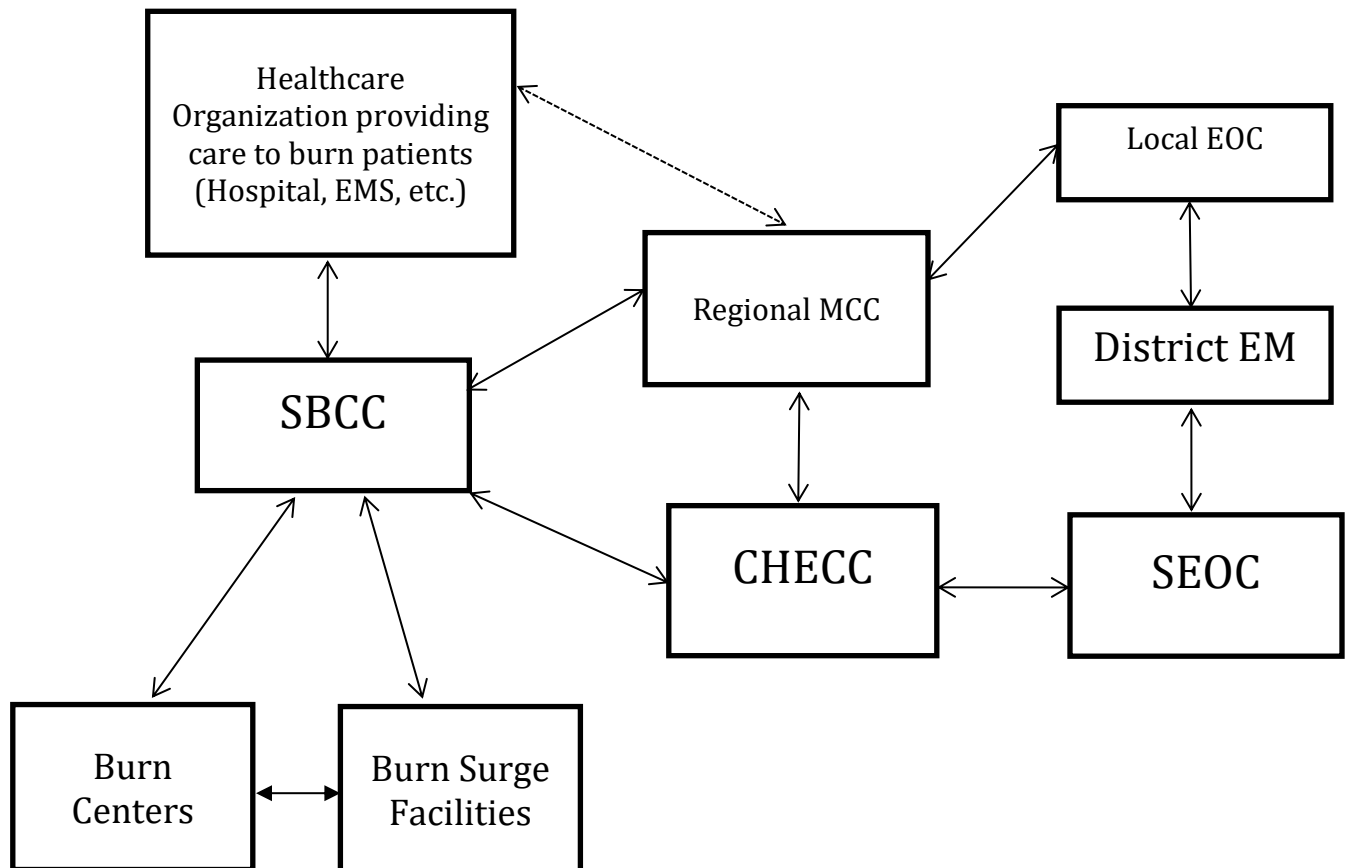
### SBCC Activation Communications Pathway



**BSF** – Burn Surge Facility  
**CH ECC** – Community Health Emergency  
Coordination Center  
**EMS** – Emergency Medical Services  
**MCC** – Medical Coordination Center  
**SBCC** – State Burn Coordinating Center  
**SEOC** – State Emergency Operations Center

## Appendix B

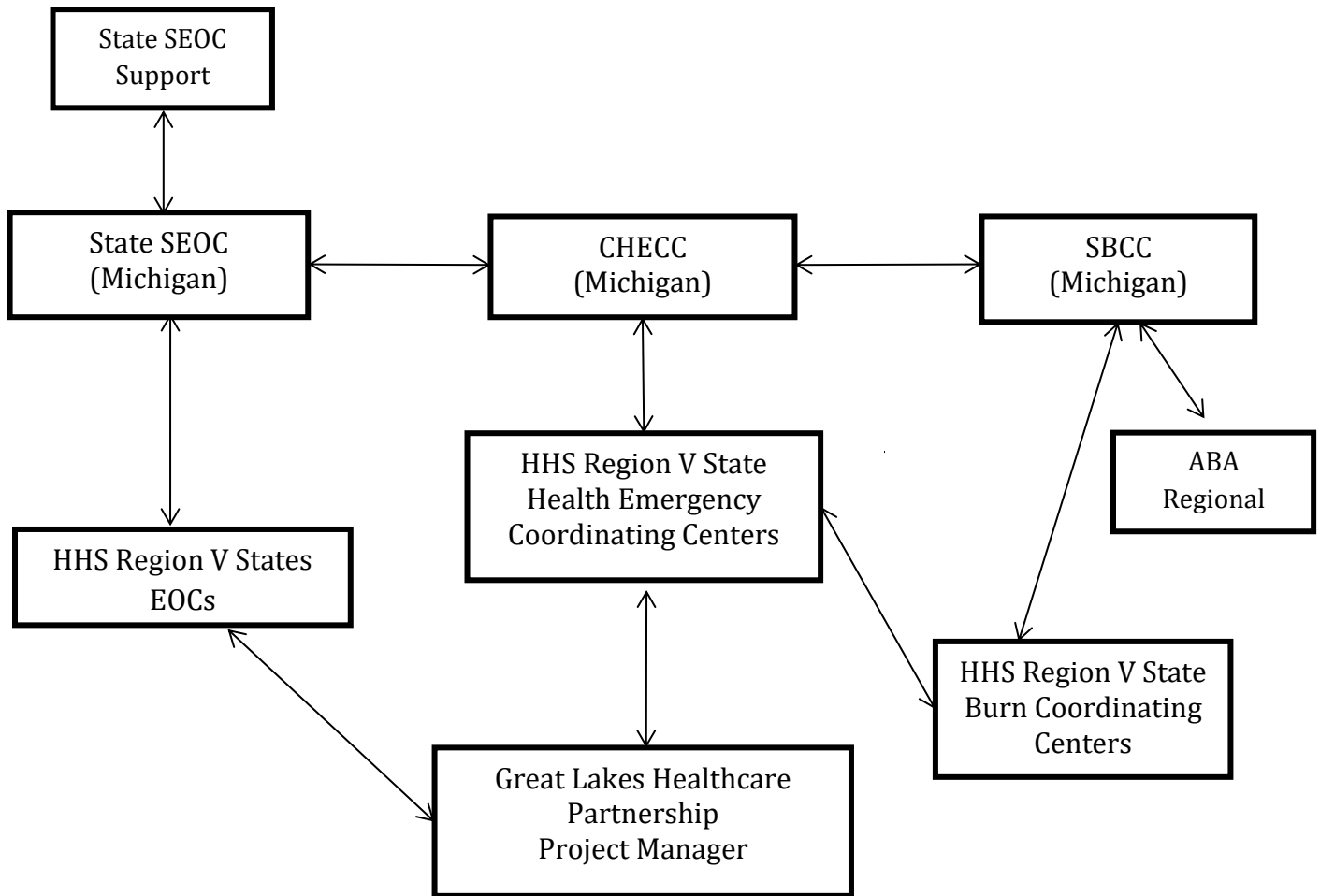
### On-going Notification Communications Pathway



**CHECC** – Community Health Emergency Coordination Center  
**EM** – Emergency Manager  
**EMS** – Emergency Medical Services  
**EOC** – Emergency Operations Center  
**MCC** – Medical Coordination Center  
**SBCC** – State Burn Coordination Center  
**SEOC** – State Emergency Operations Center

## **Appendix C**

### **Communication Pathway with the Great Lakes Healthcare Partnership When Burn Capacity Exceeds Michigan Resources**



**CHECC** – Community Health Emergency Coordination Center

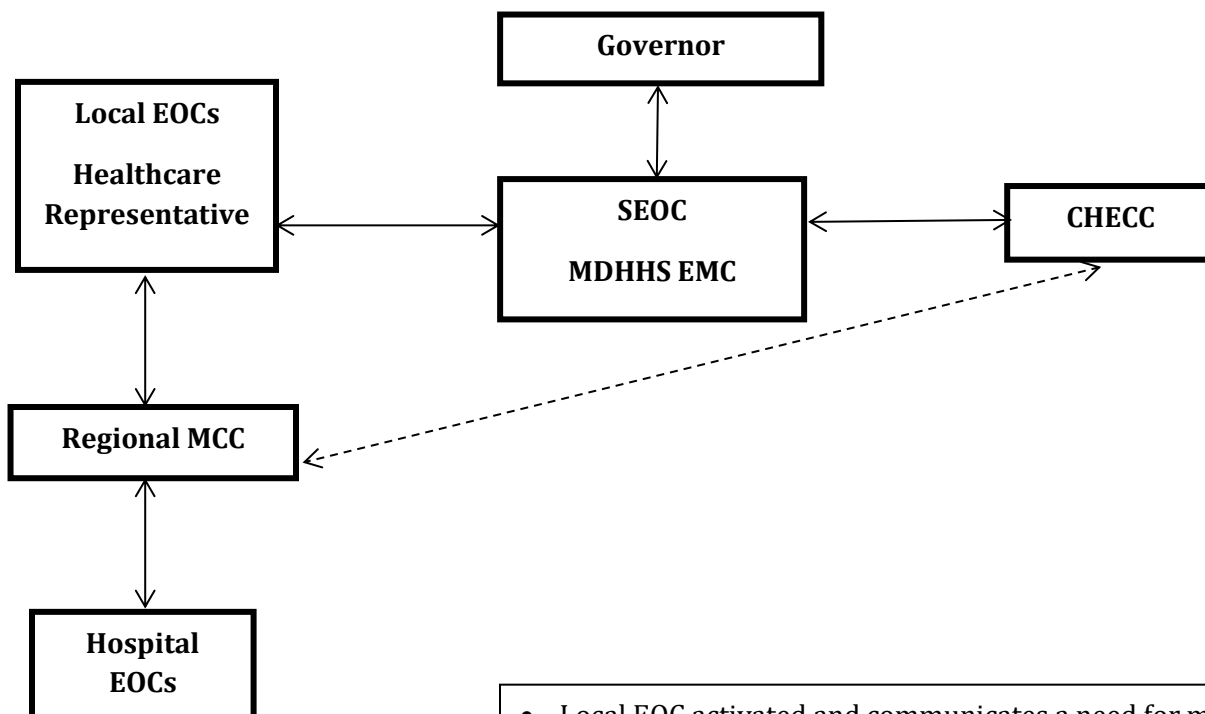
**HHS** – Health and Human Services

**SBCC** – State Burn Coordinating Center

**SEOC** – State Emergency Operations Center

## **Appendix D**

### **Medical Communications Pathway during Emergency Response**



- Local EOC activated and communicates a need for medical/public health resources to SEOC
- MDHHS EMC communicates needs to CHECC
- CHECC communicates with medical/public health subject matter experts to obtain information. Must include local public health department and Regional MCC
- The hospital EOC communicates status of the hospital resources to the regional MCC
- Regional MCC provides this information as requested to the local EOC healthcare representative

**CHECC** – Community Health Emergency Coordination Center

**EOC** – Emergency Operations Center

**EMC** – Emergency Management Coordinator

**MCC** – Medical Coordination Center

**MDHHS** – Michigan Department of Health and Human Services

**SEOC** – State Emergency Operations Center

## Appendix E

### Elements of Essential Information (EEI) Report

#### Burn Mass Casualty Incident Surge Plan

\*\*\* URGENT \*\*\*\*\* URGENT \*\*\*\*\* URGENT \*\*\*\*\* URGENT \*\*\*\*\*

Below is the information necessary to provide to the Communication Agency upon requesting assistance from the State Burn

Coordinating Center

FAX #:734-232-4892

Date: \_\_\_\_\_ Time of Call: \_\_\_\_\_ Deployed Agency Fax #: \_\_\_\_\_

Essential Elements of Information Report			
<b>1. Requesting Facility/Agency</b>  <i>Authorized Agencies:</i> <ul style="list-style-type: none"><li>• Hospitals Emergency Operations Center</li><li>• Representative from BETP</li><li>• Regional Healthcare Coalition Coordinator</li><li>• Regional Healthcare Coalition Medical Director</li></ul>		Name: _____  Title: _____  Facility/Agency: _____  Call Back #(s): _____  Resource(s) Requested: <ul style="list-style-type: none"><li><input type="checkbox"/> Burn Surge Supply Kit</li><li><input type="checkbox"/> Burn Surge Strike Team</li><li><input type="checkbox"/> Pediatric Surge Supply Kit</li></ul>	
<b>2. Physician / Officer in Charge of Medical Management at the Facility/Scene (If different from "1." above)</b>		Facility: _____  Name: _____  Position/Title: _____  Telephone #(s): _____	
<b>3. Location of Incident (If applicable)</b>		Jurisdiction Name: _____  Deployment Location: _____ Or Delivery Point: _____	
<b>4. Estimated Number of Casualties</b>	Pediatric	Infant	Adult
<b>5. Number Intubated</b>	Pediatric	Infant	Adult
<b>6. Types of Injuries</b>	Fire	Thermal	Chemical      Explosion
<b>7. Hot zone/Environmental Hazards</b>		No Yes (Description)   Decontaminated:    Yes      No	

## **Appendix F**

### **Burn Center Referral Criteria Mass Casualty Incident**

The criteria listed below should be viewed as providing guidance to medical staff in determining which patients should be considered for the cohort for transfer to a recognized burn center during a BMCI. *It should be noted that these criteria represent a departure from recommended considerations for situations which do not involve an BMCI.*

#### **BURN CENTER REFERRAL CRITERIA (Stage II/III Mass casualty)**

1. Partial thickness burns greater than 40% total body surface area (TBSA)
2. Circumferential full-thickness burns involving an extremity
3. Full thickness burns greater than 5% TBSA
4. High voltage (>1000 volt) electrical burns
5. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality

*Based on excerpted from Guidelines for the Operations of Burn Centers<sup>10</sup> (Appendix G).*

**Note Regarding Inhalation Injury:** It is expected during Stage III (and possibly stage II) incidents that Intensive Care Unit (ICU) bed capacity at burn centers and BSFs will be overwhelmed during the initial period. In the absence of cutaneous burns meeting referral criteria, casualties with only smoke inhalation can be managed at any ICU-equipped and ventilator capable medical facility.

<sup>10</sup> American College of Surgeons. (2014). Optimal care of the injured patient. (Chapter 14, pp 100-1). [Resources for Optimal Care 2014 v11 ashx.pdf \(ameriburn.org\)](#). Accessed July 3, 2023.

## **Appendix G**

### **American College of Surgeons Burn Unit Referral Criteria**

**Note: these criteria should be applied in situations where the incident does not result in a sufficient number of patients, based on either quantitative or qualitative measures, to be considered a BMCI.**

#### **BURN CENTER REFERRAL CRITERIA <sup>11</sup>**

1. Partial thickness burns greater than 10% 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 patients 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. Burns in children; children with burns should be transferred to a burn center to treat children. In the absence of a regional pediatric burn center, an adult burn center may serve as a second option for the management of pediatric burns.
10. Burn injury in patients who will require special social, emotional, or long-term rehabilitative intervention.

<sup>11</sup> American College of Surgeons. (2014). Optimal care of the injured patient. (Chapter 14, pp 101) ([Resources for optimal care 2014 v11 ashx.pdf \(ameriburn.org\)](#)). Accessed July 3, 2023

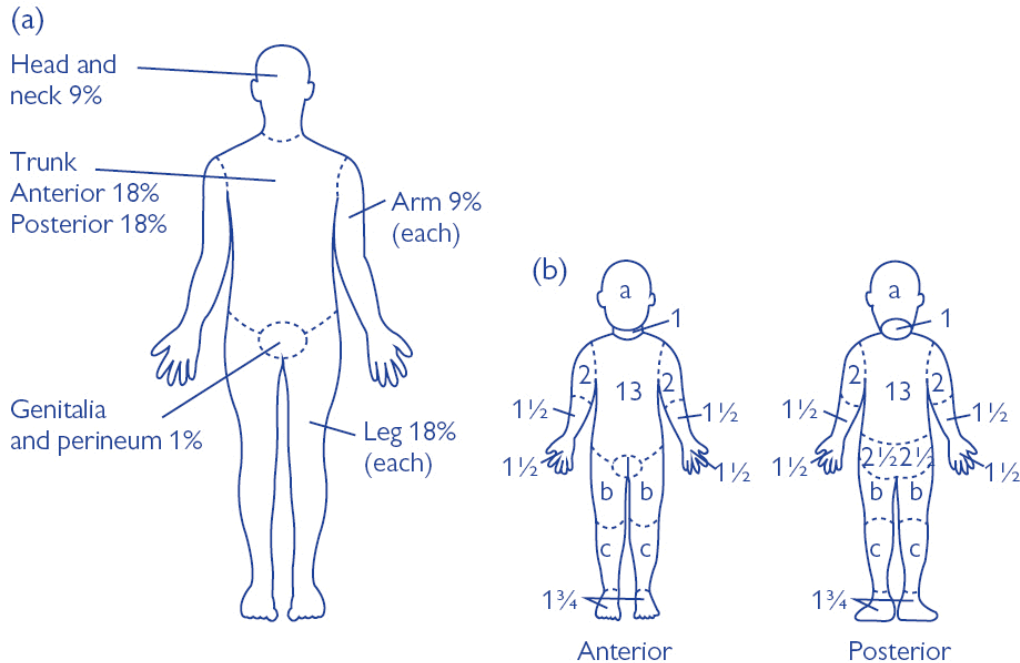


## Appendix H

### The Rule of Nines – Lund-Browder Charts

The Rule of Nines (*Panel A*) is often used to estimate the surface area of a burn in adults. However, this approach is less accurate in children. Lund-Browder charts (*Panel B*) use values for the legs and head that vary according to a patient's age.

**Chemical Burns: Hydrofluoric acid burns should be treated with calcium gluconate.**



Relative percentage of body surface area (% BSA) affected by growth

Body part	Age				
	0y	1y	5y	10y	15y
a = 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2
b = 1/2 of one thigh	2 3/4	3 1/4	4	4 1/4	2 1/2
c = 1/2 of one lower leg	2 1/2	2 1/2	2 3/4	3	3 1/4

### Rule of the Palm (Palm = 1%) (Palm of Patient's Hand)

1% =



## **Appendix I**

### **Burn Surge Facility Treatment Considerations: Responsibilities during a Burn Mass Casualty Incident**

#### **Provide Initial First Aid:**

- A. Stop the burning process.
- B. Use standard precautions.
- C. Remove clothing or jewelry.
- D. Cool any burns that are warm to touch with tepid water and then pat dry
- E. Rinse liberally with tepid water if chemicals are suspected according to protocols, then dry.
- F. Cover with clean DRY sheet or bedding to prevent hypothermia.

#### **Perform Primary Survey**

##### **A. Airway Maintenance with Cervical Spine Protection:**

1. Chin lift/jaw thrust with cervical spine precautions as needed.
2. Assess for signs of airway injury such as hypoxia, facial burns, carbonaceous sputum, stridor and nasal hair singeing.
3. Assess for history of a closed space fire.
4. Insert an oral pharyngeal airway or Endotracheal Tube (ETT) in the unconscious patient (intubate early).

##### **B. Breathing and Ventilation:**

1. Assess for appropriate rate and depth of respirations with adequate air exchange.
2. 100% (12-15 lpm) Fractured Inspired Oxygen (FiO<sub>2</sub>) non-rebreather face mask or endotracheal intubation until Arterial Blood Gas (ABG) result.
3. ABG with Carboxyhemoglobin (COHgb) level is required for suspected inhalation injury.
4. COHgb levels are decreased by ½ every 40 Minutes while on 100 % hi-flow FiO<sub>2</sub>. (COHgb level goal is <10 %).
5. Mechanical ventilation as needed.
6. If extensive facial burns or greater than 40% TBSA, intubation for airway protection prior to expected facial swelling is indicated.
7. Monitor pulse oximetry while checking COHgb level (as needed).  
(\*Note: CO displaces O<sub>2</sub> on the hemoglobin causing a false 100% pulse oximetry reading, until CO levels are normal).
8. Head of bed (HOB) elevated.

### **C. Circulation with Hemorrhage Control:**

1. Vital Signs
  - a. Heart rate
  - b. Blood pressure
  - c. Capillary refill
  - d. Temperature
  - e. Skin color of unburned skin
2. Cardiac monitoring as needed
  - a. May be needed if there is an electrical injury, concurrent trauma or cardiac issues
3. Oral resuscitation can be used in the following patients:
  - a. Patient is not intubated
  - b. Injury is not electrical
  - c. No other injuries
4. Heplock IV (as needed) if taking adequate fluids by mouth.
5. If patient is intubated:
  - a. Start maintenance fluids – large bore peripheral IV in non-burned, upper extremities
  - b. Place a soft feeding tube (preferably post-pyloric)
6. Initiate resuscitation fluids as soon as possible using ABA guidelines.
7. Pediatric patients with burns > 10% TBSA require resuscitative fluids and maintenance fluids.
8. Pediatric patients less than 10 kg require Dextrose 5% in Lactated Ringers (D5LR) at maintenance rate if not taking adequate by mouth (PO) or are intubated. Pediatric calculation for maintenance fluid formula:
  - a. For the first 10 kg of body weight: 4 mL per kg per hour
  - b. For the second 10 kg of body weight: 2 mL per kg per hour
  - c. For the remaining kg of body weight up to 30kg: 1mL per kg per hour
9. Labs on admission and then as dictated by medical condition
  - a. Arterial Blood Gas (ABG)
  - b. Carboxyhemoglobin (COHb) level, always add this to a blood gas
  - c. Electrolyte panel
  - d. Complete Blood Count (CBC)
  - e. Cardiac panel for electrical injuries.
  - f. Electrocardiogram (EKG) for electrical injury or cardiac history
  - g. Chest X-Ray if intubated, inhalation injury suspected or underlying pulmonary condition
  - h. Tetanus prophylaxis unless given in the last 5 years

**D. Disability:**

1. Neurologic checks every 4-8 hours and prn.
  - a. Goal is an alert and oriented patient.
  - b. If altered neurological status, consider the following:
    - i. Associated injury
    - ii. CO poisoning
    - iii. Substance abuse
    - iv. Hypoxia
    - v. Pre-existing medical condition
2. Determine level of consciousness. Consider using the “AVPU” method:
  - a. A- Alert
  - b. V- Responds to verbal stimuli
  - c. P- Responds to painful stimuli
  - d. U- Unresponsive

**E. Exposure:**

1. Remove all clothing and jewelry.
2. Initially place a clean, dry sheet over the wounds until a thorough cleaning is done.
3. Keep patient normothermic, especially during wound care. This may be accomplished by:
  - a. Keeping patient covered
  - b. Covering the patient’s head
  - c. Warming the room
  - d. Warming IV fluids

**Secondary Survey****A. History:**

1. Obtain circumstances of injury
2. Obtain medical history.
  - A – Allergies
  - M – Medications
  - P – Previous illness, past medical history
  - L – Last meal or fluid intake
  - E – Events/environment related to the injury

## **B. Complete Physical Examination:**

### **1. Head to toe exam**

- a. If eye involvement or facial burns, consult an Ophthalmologist

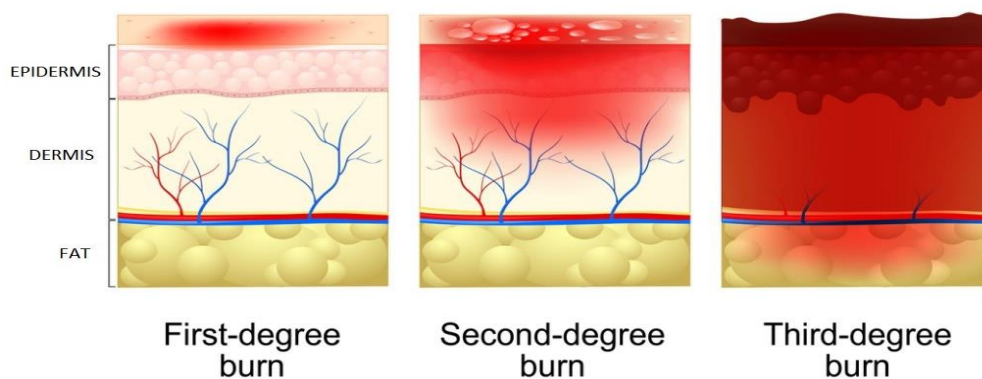
### **2. Determine extent/size of the burn by calculating the TBSA burn using one of the following methods:**

- a. Rule of Nines
- b. Lund- Browder chart
- c. Rule of the Palm (Palm = 1%)

### **3. Determine the depth of the burn**

- a. DO NOT include Superficial (1st degree) burns when calculating TBSA
- b. Superficial partial thickness (2nd degree)
  - i. Involves the epidermis and a thin layer of dermis
  - ii. Red, blistered, moist, blanches
- c. Deep partial thickness (2nd degree)
  - i. Involves the entire epidermis and variable portion of the dermis
  - ii. Red, blistered and edematous
- d. Full thickness (3rd degree)
  - i. Involves the destruction of the entire epidermis and dermis
  - ii. White, brown, dry, leathery with possible coagulated vessels

### **Degree of Burns**



### **Fourth-degree burns**

- Destruction of entire skin and subcutaneous fat with any underlying tendons

**C. Assess Need for Escharotomies:**

Monitor the following signs and symptoms in deep partial or full thickness, circumferential burn injuries which may indicate a circulation deficit requiring decompression by incision of burn wound:

1. Cyanosis of distal unburned skin on a limb
2. Unrelenting deep tissue pain
3. Progressive parathesis
4. Progressive decrease or absence of pulses
5. Inability to ventilate in patients with deep circumferential burns of the chest

**D. Comfort:**

1. Frequent pain/sedation assessment
  - a. Every hour
  - b. Before and after pain/sedation medications given
2. Use age-appropriate pain scales for pediatric patients
3. Give whatever pain medication is required and available (IV is the preferred route in TBSA >20%)
  - a. Narcotic/Analgesic IV/PO
  - b. Ativan/Versed IV/PO

**E. Wound Care:**

1. Assess and monitor the wound for:
  - a. Change in wound appearance
  - b. Change in size of wound
  - c. Signs or symptoms of infection
2. Wound care should include:
  - a. Washing the wounds with soap and warm tap water using a washcloth
  - b. Remove water by patting dry
3. Wound care related to the face and scalp should be performed every day and use the following:
  - a. Silver sulfadiazine (Silvadene) cream (scalp)
  - b. Bacitracin (face)
  - c. Scalp and facial hair should be shaved daily
4. All blisters should be debrided, except for the following:
  - a. Intact blisters on hands and feet. The exception would be if the blister is impeding range of motion to the joints
5. Ears are poorly vascularized and at risk for chondritis
  - a. Topical sulfamylon cream should be used; if unavailable, use Silvadene
  - b. Make sure to plug the ear canal due to the toxicity of sulfamylon to the auditory canal

- c. Avoid external pressure including pillows and constrictive dressings to ears and nose
- 6. For extensive and severe burns to the face:
  - a. Apply a thin layer of Silvadene cream, approximately a nickels thickness or enough to cover the wound, so that it doesn't dry out prior to the next dressing change. Cover with a fine mesh gauze dressing and finish the wrap with dry gauze dressing. The purpose of the gauze dressing is to keep the cream from rubbing off before the next dressing change
  - b. Avoid creams near the eyes.
- 7. For moderate facial burns:
  - a. Bacitracin or another antibiotic ointment without dressing can be used
- 8. If fingers and toes are burned:
  - a. Dress and wrap separately to promote range of motion and prevent webbing of the digits
- 9. Genitalia and perineal burns require:
  - a. A greasy gauze and/or lubricant between the labia and in the foreskin to prevent adhesions
  - b. A foley is never indicated to maintain patency
  - c. A foley should be used to monitor urine output in the severely injured patients
- 10. Elevate burned extremities above the level of the heart to minimize edema
- 11. If applying a Mepilex Transfer Ag\* dressing:
  - a. Remove the film barrier from the surface of the Mepilex Transfer Ag.
  - b. Place over wound bed. The piece should overlap the wound bed by at least 2 cm onto the surrounding intact skin. Apply the sticky side down. Do not stretch.
  - c. If necessary, secure with wrap of Kerlix or ACE bandage
  - d. Dressing does not need to be changed for 5-7 days
    - i. The overlying gauze can be changed as necessary
    - ii. If signs of infection appear, remove dressing to assess wound
  - e. Record the date of the application

\*Mepilex Transfer Ag can be used in the treatment of partial thickness burns, It is a soft and highly conformable anti-microbial foam dressing that absorbs exudates and maintains a moist wound environment. Mepilex Transfer Ag inactivates wound related pathogens within 30 minutes with sustained effect up to 7 days.

See <https://www.med.umich.edu/surgery/sbcc/> for just-in-time training on how to dress a burn using Mepilex Transfer Ag.

**F. Ongoing Resuscitation (as needed):**

1. Monitor urine output
  - a. Adjust fluids to keep urine output between the following:
    - i. Adults: 30-50 ml/hour
    - ii. Pediatrics: 1- 2 ml/kg/hour
2. Additional fluid needs can occur with:
  - a. Very deep burns
  - b. Inhalation injury
  - c. Associated injuries
  - d. Electrical injury
  - e. Delayed resuscitation
  - f. Prior dehydration
  - g. Alcohol or drug dependence
  - h. Small children
3. Children, the elderly and patients with preexisting cardiac disease are particularly sensitive to fluid management
4. If Myoglobin in the urine (burgundy color):
  - a. Maintain urine output of 100 ml/hour for adults and 4 mL/kg/hour for pediatrics
  - b. Place a foley
  - c. Increase fluid rate (Lactated Ringers) to achieve urine output as targeted in (a)
  - d. Diuretics are not indicated with myoglobinuria
  - e. Mannitol may be used as a last resort to maintain urine output.
  - f. Intravenous sodium bicarbonate may be administered to maintain an alkaline urine (pH > 6)
5. For circumferential burns to extremities:
  - a. Perform pulse checks every one-hour to determine need for emergent escharotomy.
  - b. Monitor by palpation or Doppler exam for:
    - i. Decreased sensation
    - ii. Severe deep tissue pain
    - iii. Diminished distal pulses
    - iv. Slowed capillary refill
    - v. After 24-48 hours, decrease frequency of pulse checks to every 2 hours if stable
    - vi. Elevate extremities above the level of the heart



**G. Nutrition:**

1. Obtain dry weight on admission
2. Dietary consult, as needed
3. Regular high calorie, high protein diet if able to take PO
4. If intubated, begin tube feeding at full strength increasing to goal rate.
  - a. Soft feeding tubes are preferred over hard nasogastric tube
  - b. Ensure stool softeners are ordered to prevent constipation due to pain medications

**H. Mobility:**

1. Physical Therapy/Occupational Therapy consult, as needed.
  - a. In a disaster, therapists may just splint patients in functional positions as needed
2. HOB elevated at all times, as allowed by spinal clearance
3. Ear burns:
  - a. No external pressure should be applied
  - b. No pillows or blankets under the head
4. Neck burns:
  - a. Maintain the head in a neutral position
  - b. No pillows or blankets under the head flexing the neck forward
5. Axilla burns:
  - a. Keep arms extended to decrease contractures
  - b. Elevate burned extremities above the level of the heart to decrease swelling
6. If legs are burned, apply ace wraps when OOB (Out of Bed)
  - a. Encourage active range of motion hourly, when awake
  - b. Wrapping should be distal to proximal
7. Encourage activities of daily living
  - a. Patient should have enough pain control to perform these activities.
8. Early mobility is encouraged as patient is able

**I. Infection Prevention and Control:**

1. Utilize universal precautions
2. If wounds are exposed:
  - a. Apply gown, mask, surgical hat and gloves to protect patient
3. No prophylactic systemic antibiotics are required for the burn injuries

**J. Psychosocial:**

1. Explain any procedures
2. Involve patient and family
3. Consider Social Worker consultation
4. Offer Spiritual Care

## Appendix J

### BMCI: FLUID RESUSCITATION

#### **I. Burn Resuscitation Protocol**

[www.michiganburn.org](http://www.michiganburn.org)

- A. Document patient's TBSA burn using Rule of Nines and Lund and Browder diagram. Include only partial and full-thickness burns.
- B. Obtain weight or close estimate.

#### **II. First 24 Hours Post Burn**

- A. TBSA < 20%
  - B. Maintenance inter-venous fluids (IVF) only until taking adequate oral intake.
  - C. TBSA > 20% and Weight > 30kg
    - 1. Calculate estimated fluid needs:
      - a. 2 cc of LR X kg of body weight X %TBSA burned:
        - i. administer half of calculated amount over the first 8 hours post burn
        - ii. administer half of calculated amount over next 16 hours
      - b. If urine output < ½ cc/kg/hour (goal is 30-50 cc/hour):
        - i. increase LR infusion by 1/3 of the hourly calculated fluid requirement
      - c. If urine output > 70 cc/hour:
        - i. dip urine to exclude glucosuria
        - ii. decrease LR infusion by 1/3 of the hourly calculated fluid requirement
  - D. TBSA > 20% and Weight < 30kg
    - 2. Calculate estimated fluid needs:
      - a. 3 cc of LR\*\* X kg of body weight X % TBSA burned
        - i. administer half of calculated amount over the first 8 hours post burn
        - ii. administer half of calculated amount over next 16 hours
      - b. In addition to burn fluid requirements, also infuse maintenance IVF (calculated total for 24 hours):
        - i. 100 cc X first 10 kg of body weight
        - ii. 50 cc X next 10 kg of body weight
        - iii. 20 cc X next 10 kg of body weight
      - c. If urine output < 1 cc/kg/hour:
        - i. increase LR infusion by 1/3 of the hourly calculated fluid requirement
      - d. If urine output >> 1 cc/kg/hour:
        - i. decrease LR infusion by 1/3 of the hourly calculated fluid requirement
- \*\*use D5LR if patient < 1 year old

- E. Place enteral feeding tube as soon as possible for all burns > 20% TBSA.
- F. Consider cardiac output monitoring device placement for intubated patients with TBSA > 30%, age > 50 years and/or inhalational injury.

### **III. Treatment of Low Urine Output**

- A. In adult patients with continued low urine output despite increased fluid rates:
  - 3. Place cardiac output monitoring device for monitoring
    - a. If central pressures normal to high with low urine output:
      - i. start low dose Dobutamine @ 5 mcg/kg/min
      - ii. titrate to effect
    - b. If central pressures are low with low urine output:
      - i. continue fluid resuscitation at increased rate

### **IV. After 24 Hours Post Burn**

Serum Na<sup>+</sup> and K<sup>+</sup> should be checked at least BID on the second burn day.

- A. Adjust type of fluid by the serum Na<sup>+</sup> level.
- B. After 24 hours of crystalloid, if fluid requirements high, consider 5% albumin infusion (discuss with Attending physician).
- C. Goal is to decrease IVF rate to one half of rate infused over the previous 16 hours.
  - 1. If patient >30 kg, urine output goal of ½ cc/kg/hour (maximum 50 cc/hour)
  - 2. If patient <30 kg, urine output goal of 1 cc/kg/hour

## Appendix K: Triage Decision Table

### Michigan BURN MASS CASUALTY

#### Predicted Survivability to Inform Triage<sup>11</sup>

<u>AGE</u>	<b>% Total Body Surface Area Burn + 10% for Inhalation Injury</b>									
	0 – 10%	11 – 20%	21 – 30%	31 – 40%	41 – 50%	51 – 60%	61 – 70%	71 – 80%	81 – 90%	91% +
<2	Higher	Higher	Higher	High	Medium	Medium	Medium	Low	Low	Lower
2 - 5	Outpatient	Higher	Higher	High	High	High	Medium	Medium	Low	Low
5 -19.9	Outpatient	Higher	Higher	High	High	High	Medium	Medium	Low	Low
20 - 29.9	Outpatient	Higher	Higher	High	High	Medium	Medium	Low	Low	Lower
30 - 39.9	Outpatient	Higher	Higher	High	Medium	Medium	Medium	Low	Lower	Lower
40 - 49.9	Outpatient	Higher	Higher	Medium	Medium	Medium	Low	Lower	Lower	Expectant
50 - 59.9	Outpatient	Higher	Higher	Medium	Medium	Low	Lower	Lower	Expectant	Expectant
60 - 69.9	Higher	Higher	Medium	Medium	Low	Lower	Lower	Expectant	Expectant	Expectant
70+	Higher	Medium	Medium	Low	Lower	Expectant	Expectant	Expectant	Expectant	Expectant

- Triage colors used to guide assessment and prioritization of patients.
- Significant associated trauma and/or co-existing medical conditions WILL worsen prognosis.
- Inhalation Injuries – consider admission for airway monitoring and respiratory support.

#### Definitions:

**Outpatient:** Survival and good outcome expected without requiring initial admission.

**Higher:** Survival with good outcome highly expected.

**High:** Survival and good outcome expected with limited/short term initial admission and resource allocation (LOS less than or equal to 14 days, one-two surgical procedures)

**Medium:** Survival and good outcome expected with aggressive care and comprehensive resource allocation, including initial admission (greater than/equal to 14 days), resuscitation and multiple surgeries.

**Low:** Survival and good outcome low even with long-term, aggressive treatment and resource allocation.

**Lower:** Survival and outcome poor even with unlimited resources.

**Expectant:** Survival less than 10% even with unlimited, aggressive treatment

## Appendix L

### Michigan Mass Casualty Burn Plan Resource Activation/Utilization Guidelines

**Probable = Prepare for Activation**

**Possible = It could happen**

**Red = Definite**

**Yellow = Probable**

**Green = Possible**

**White = Unlikely**

Agency / Entity	Burn Stage I (10-24 Casualties)	Burn Stage II (25-100 Casualties)	Burn Stage III (>100 Casualties)
<b>Burn Centers</b>			
Burn centers within incident region.	Utilization definite	Utilization definite	Utilization definite
Burn centers in neighboring MI regions	Utilization probable	Utilization definite	Utilization definite
Burn centers in distant MI regions	Utilization possible	Utilization probable	Utilization definite
Burn centers in neighboring states within 150 Miles	Utilization unlikely	Utilization probable	Utilization definite
Burn centers in neighboring states beyond 150 Miles	Utilization unlikely	Utilization possible	Utilization probable
Burn centers in non-FEMA V states	Utilization unlikely	Utilization unlikely	Utilization possible

<b>Agency / Entity</b>	<b>Burn Stage I (10-24 Casualties)</b>	<b>Burn Stage II (25-100 Casualties)</b>	<b>Burn Stage III (&gt;100 Casualties)</b>
<b>Burn Surge Facilities (BSF)</b>			
BSF in neighboring MI regions	Brief utilization possible	Utilization probable	Utilization definite
BSF in distant MI regions	Utilization unlikely	Utilization unlikely	Utilization possible
BSF (or equivalent) in neighboring states within 150 Miles	Brief utilization possible	Utilization probable	Utilization probable
BSF (or equivalent) in neighboring states beyond 150 Miles	Utilization unlikely	Utilization unlikely	Utilization possible
BSF (or equivalent) in non-FEMA 5 states	Utilization unlikely	Utilization unlikely	Utilization unlikely
<b>Community Hospitals</b>			
Hospitals within 25 Miles	Utilization definite	Utilization definite	Utilization definite
Hospitals within 25- 50 Miles	Utilization probable	Utilization probable	Utilization probable
Hospitals beyond 50 Miles	Utilization unlikely	Utilization unlikely	Utilization unlikely

Agency / Entity	Burn Stage I (10-24 Casualties)	Burn Stage II (25-100 Casualties)	Burn Stage III (>100 Casualties)
<b>Multi-Agency Coordination Entities</b>			
MI State Burn Coordination Center	Activation probable	Activation definite	Activation definite
SEOC	Activation possible	Activation definite	Activation definite
CHECC	Activation probable	Activation definite	Activation definite
Regional MCC serving incident	Activation definite	Activation definite	Activation definite
Neighboring MCC	Activation probable	Activation definite	Activation definite
Distant MCC	Activation possible	Activation possible	Activation probable
Local EOC serving incident	Activation definite	Activation definite	Activation definite
EOC in neighboring counties	Activation possible	Activation probable	Activation definite
EOC in distant counties	Activation unlikely	Activation possible	Activation possible



## Appendix M

### Michigan Burn Surge Facilities

<b>Region 1</b> *The University of Michigan Health - Sparrow 1215 E. Michigan Avenue Lansing, MI 48909 517-364-1000	*Henry Ford Jackson Hospital 205 N. East Avenue Jackson, MI 49201 517-788-4800
<b>Region 2N</b> *McLaren Oakland 50 N. Perry Street Pontiac, MI 48342 248-338-5000	*Corewell Health William Beaumont University Hospital – Royal Oak 3601 W. 13 Mile Road Royal Oak, MI 48073 248-898-5000
<b>Region 2S</b> *Henry Ford Hospital 2799 W. Grand Blvd #109 Detroit, MI 48202 313-916-2600	*Trinity Health Ann Arbor Hospital 5301 E. Huron River Drive PO Box 992 Ann Arbor, MI 48106 734-712-3456
<b>Region 3</b> *Ascension St. Mary's 800 S. Washington Avenue Saginaw, MI 48601-2524 989-907-8000	
<b>Region 5</b> *Ascension Borgess 1521 Gull Road Kalamazoo, MI 49048 269-226-7000	
<b>Region 6</b> *Trinity Health St. Mary's Hospital 200 Jefferson Street S.E. Grand Rapids, MI 49503 616-685-5000	*Trinity Health Muskegon Hospital 1500 E Sherman Blvd Muskegon, MI 231-672-3916
<b>Region 7</b> *Munson Medical Center 1105 Sixth Street Traverse City, MI 49684 231-935-5000	*McLaren Northern Michigan Regional Hospital 416 Connable Avenue Petoskey, MI 49770 800-248-6777
*MyMichigan Medical Center – Alpena 1501 W. Chisholm Street Alpena, MI 49707 989-356-7000	
<b>Region 8</b> *UP Health System - Marquette 580 W. College Avenue Marquette, MI 49855 906-228-9440	*UP Health System - Portage 500 Campus Drive Hancock, MI 49930 906-483-1000

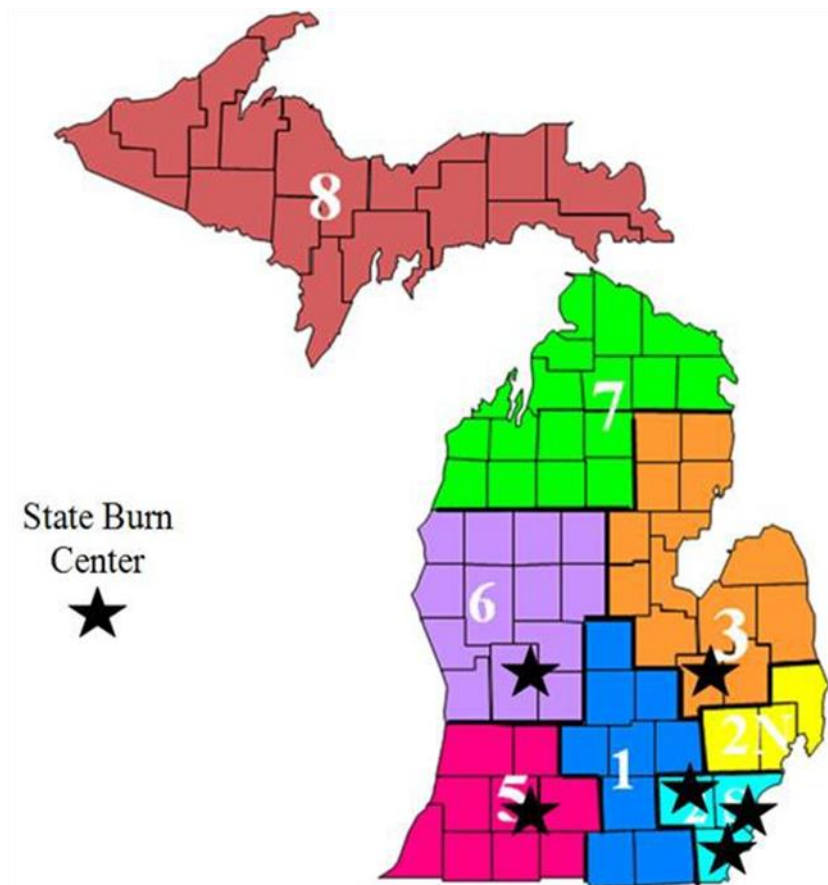
\*All BSFs have a Burn Supply Cache

## Appendix N

### Michigan Burn Centers

Facility Name	City	Region	Normal Capacity	Surge Capacity
University of Michigan Health Systems*	Ann Arbor	2S	Adult/Pediatric 16 beds	35 Flex
Children's Hospital of Michigan*	Detroit	2S	Pediatric 10 beds (2 –ICU, 8 Floor)	3 ICU 12 Floor
Detroit Receiving Hospital*	Detroit	2S	Adult 12 beds	12 ICU 18 Floor
Hurley Medical Center	Flint	3	Adult 15 beds	13 Flex
Bronson Methodist Hospital	Kalamazoo	5	Adult 8 beds	12 Flex
Corewell Health System	Grand Rapids	6	Adult/Pediatric 8 beds	12 Flex

\*ABA Verified Burn Centers



## **Appendix O**

### **American College of Surgeons Verified Michigan Trauma Centers**

*Last updated: 5/2/2023*

<b>REGION</b>	<b>VERIFIED INSTITUTION</b>	<b>CITY</b>	<b>LEVEL</b>
1	Henry Ford Jackson Hospital	Jackson	II
1	The University of Michigan-Sparrow Hospital	Lansing	I
2N	Henry Ford Macomb Hospital	Clinton Township	II
2N	McLaren Macomb Hospital	Mt Clemens	II
2N	McLaren Oakland Hospital	Pontiac	II
2N	Trinity Health Oakland Hospital	Pontiac	II
2N	Corewell Health Macomb Hospital	Farmington Hills	II
2N	Corewell Health Wm. Beaumont University Hospital	Royal Oak	I
2N	Corewell Health Wm. Beaumont University Hospital	Royal Oak	II (Ped)
2N	Corewell Health Troy	Troy	II
2N	Ascension Providence Hospital	Southfield	II
2S	C. S. Mott Children's Hospital	Ann Arbor	I (Ped)
2S	Trinity Health Ann Arbor Hospital	Ann Arbor	I
2S	University of Michigan Health System	Ann Arbor	I
2S	Children's Hospital of Michigan	Detroit	I (Ped)
2S	Detroit Receiving Hospital	Detroit	I
2S	Henry Ford Hospital	Detroit	I
2S	DMC Sinai-Grace Hospital	Detroit	II
2S	Ascension St. John Hospital	Detroit	II
2S	Ascension St. John Hospital	Detroit	II (Ped)
2S	Corewell Health Dearborn Hospital	Dearborn	II
2S	Corewell Health Trenton Hospital	Trenton	II
3	Hurley Medical Center	Flint	I
3	Hurley Medical Center	Flint	II (Ped)
3	Genesys Regional Medical Center	Grand Blanc	II
3	McLaren Lapeer Region	Lapeer	II
3	MyMichigan Medical Center	Midland	II
3	Covenant Healthcare	Saginaw	II
3	Covenant Healthcare	Saginaw	II (Ped)
3	Ascension St. Mary's	Saginaw	II
5	Ascension Borgess HOsital	Kalamazoo	II
5	Bronson Methodist Hospital	Kalamazoo	I
6	Trinity Health St. Mary's	Grand Rapids	II

6	Corewell Health Butterworth Hospital	Grand Rapids	I
6	Corewell Health – Helen DeVos Children’s	Grand Rapids	I (Ped)
6	Trinity Health Muskegon Hospital	Muskegon	II
7	Munson Medical Center	Traverse City	II
7	McLaren Northern Michigan	Petoskey	II
7	MyMichigan Medical Center – Alpena	Alpena	III
8	UP Health System – Marquette	Marquette	II
8	UP Health System – Portage	Hancock	III

**Appendix P**

**Initial Casualty Report Form**

<b>NAME:</b>		
<b>AGE:</b>	<b>GENDER:</b> Male        Female	
<b>DATE and TIME OF INJURY:</b>		
<b>INJURY MECHANISM:</b>		
<b>INHALATION INJURY EXPOSURE:</b>		
• Enclosed Space	Yes	No
• Toxic Chemical Exposure	Yes	No
• Facial Burns	Yes	No
• Intubation /Mechanical Ventilation	Yes	No
<b>Total Body Surface Area Burned:</b>		
• Partial Thickness %		
• Full Thickness %		
<b>Body regions burned:</b>		
• Circumferential torso burn	Yes	No
• Circumferential extremity burn	Yes	No
• Decreased peripheral perfusion	Yes	No
<b>Concurrent Trauma</b>	Yes	No
<b>Injuries:</b>		
<b>Co-Morbidities/Past Medical History:</b>		
<b>Wound Management (Dressings):</b>		
<b>Institutional Location (BSF, ICU/Floor):</b>		
<b>Contact Information:</b>		

## Appendix Q

### Follow-up Casualty Report Form

<b>NAME:</b>			
<b>AGE:</b>		<b>GENDER:</b> Male Female	
<b>DATE and TIME OF INJURY:</b>			
<b>DATE and TIME OF CURRENT REPORT:</b>			
<b>INJURY MECHANISM:</b>			
<b>Total Body Surface Area Burned:</b>			
• Partial Thickness %			
• Full Thickness %			
• Circumferential torso burn		Yes	No
• Circumferential extremity burn		Yes	No
• Decreased peripheral perfusion		Yes	No
<b>Date and Time of most recent wound evaluation:</b>			
<b>Current burn wound dressing/management</b>			
<b>Date and Time of last burn dressing change:</b>			
<b>Procedures performed? (Escharotomies, other emergent procedures)?</b>			
<b>RESUSCITATION RESPONSE:</b>			
<b>Total fluid volume received since initial injury:</b>			
<b>Total fluids over last 24 hours:</b>			
<b>Current fluid administration rate:</b>			
<b>Urine output over last 24 hours?</b>		<b>Last 4 hours?</b>	
<b>Current V/S: HR _____ B/P _____ RR _____ Temp C _____</b>			
<b>PULMONARY STATUS</b>			
<b>Current SaO2:</b>		<b>Current FiO2:</b>	
<b>Intubated:</b>		Yes	No
<b>Ventilator Settings:</b>			
<b>COMPLICATIONS:</b>			
<b>Number of Casualties at your Location?</b>			
<b>Priority for transfer among your current Burn casualties?</b>			
<b>Institutional Location (BSF, ICU/Floor):</b>			
<b>Contact Information:</b>			

## **Appendix R**

### **Burn Surge Facility Casualty Census Form**

Fax this form to the SBCC Fax # 734-232-4892

*(Please complete this form in addition to report form for each individual casualty)*

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Date of Mass Casualty Incident: \_\_\_\_\_

Facility: \_\_\_\_\_

Contact Information: \_\_\_\_\_

	Name	Age	TBSA	Intubated (Y/N)	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Continued on/from additional form? Y / N

Page: \_\_\_\_ of \_\_\_\_

## **Appendix S**

### **Information That Needs to Transfer with a Burn Patient**

- A. Information/face sheet with patient name/identifier
- B. Emergency Medical Treatment and Active Labor Act (EMTALA) paperwork (if applicable)
- C. Hospital documentation (copies of physician, nursing, ancillary staff)
- D. SBCC Report Form (copy)
  - 1. Initial casualty report form
  - 2. Follow-up casualty report form
- E. CD with radiologic imaging completed
- F. MI-Burn EMS Inter-facility Transfer Form



## Appendix T: EMS Transport Sheet

Sending Facility Name:					Phone #:				
Destination Facility Name:					Phone #:				
Patient Name/Identifier:					DOB:			M	F
Date:			Pick up time:			Drop off time:			
Calculated Fluid Needs:			Oxygen:			Medication:			
IV Fluids: 0.9%NS LR Other(Specify):									
Flow Rate ml/hr:			Location of IVs:						
Time	P	RR	B/P	SpO2	Medication/Procedure/Notes				Amt/Size
Vent Settings:					Airway Size:      Secured @				
					cm				
Time	Mode	Volume	Rate	PEEP	FiO2	ETCO2	Average Peak Pressure		
Pickup:									
Destination:									
Total Intake					Total Output				

**Notes:**

EMS Transporting Unit:	Paramedic Name:
Paramedic Signature:	Paramedic Cell Phone #:
Receiving RN/MD/DO/NP/PA Signature:	

**QUICK TIPS:**

- Completion of Worksheet – Refer to back of form
- Keep patient warm
- Transport needs of fluids/medications/Oxygen
- Monitor urine output. Patient has a foley?
- Hourly updates given to receiving hospital

## Worksheet for Transport

<b>Calculate Transport Time to Destination:</b> consider road conditions, obstacles, weather.	
<b>Calculate Amount of Fluid needed</b>	
<b>Calculate Oxygen needed</b>	
<b>Medications needed:</b>	
<b>Narcotics</b>	
<b>Sedation</b>	
<b>Paralytics</b>	

Michigan Burn Centers		
<b>University of Michigan Health Systems</b> <b><i>(State Burn Coordinating Center)</i></b>	Adult & Pediatric	734-936-9631
Children's Hospital of Michigan	Pediatric	313-745-5678
Detroit Receiving Hospital	Adult	313-745-3078
Hurley Medical Center	Adult & Pediatric	810-262-9188
Bronson Methodist Hospital	Adult	269-341-6022
Corewell Health System	Adult & Pediatric	616-391-9025

## **Appendix U**

### **Great Lakes Healthcare Partnership**

The Great Lakes Healthcare Partnership (GLHP) represents a coalition of healthcare preparedness planners from the HHS Region V jurisdictions of: The City of Chicago, Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin, who are responsible for the Hospital Preparedness Program under the Administration for Strategic Preparedness and Response (ASPR) within the federal Department of Human Services (DHHS). This group works together to develop a series of initiatives aimed at promoting multi-state and HHS V cooperation in planning for disasters requiring a healthcare response.

This BMCI Plan represents an acknowledgement by the GLHP membership, that a response to a major MCI situation, especially one involving the need for the provision of highly specialized burn related care, redefines the concept of local preparedness in a disaster environment. While there is little argument against the conceptual case for all disasters being “local”, the context of what “local” really means in today’s environment is being challenged and redefined.

In more general terms, disaster responses occur when the available resources of a locality are, or have the potential to be, overwhelmed. By definition, specialized medical care such as burn care, involves a finite capacity for delivery. Therefore, the availability and provisions for delivering that care can easily be jeopardized due to limited resources.

The GLHP gives the opportunity to draw from out-state resources when in-state resources have been exhausted.

#### **HSS Region V**



## **Appendix V**

### **Great Lakes Healthcare Partnership Resources**

*Last updated: 9/25/2020*

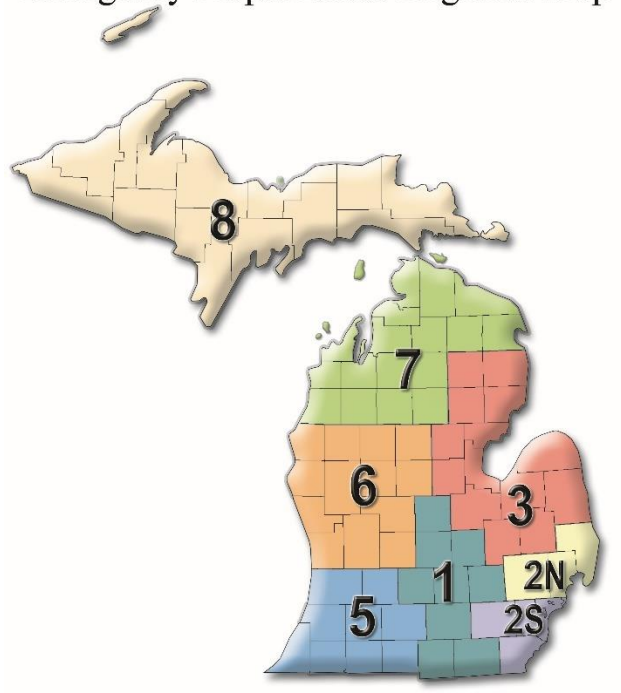
<b><u>IL</u></b>	Loyola University Medical Center Adult/Pediatrics	Maywood	10 ICU 11 Step Down
<b>Chicago</b> <b><u>IL</u></b>	Sumner L. Koch Burn Center Adult/Pediatrics	Chicago	6 ICU 12 Step Down
<b>Chicago</b> <b><u>IL</u></b>	University of Chicago Burn Center Adult/Pediatrics	Chicago	16 Beds
<b><u>IL</u></b>	Regional Burn Center Memorial Medical Center Adult	Springfield	10 Beds
<b><u>IN</u></b>	St. Joseph Medical Center Regional Burn Center	Fort Wayne	12 Beds
<b><u>IN</u></b>	Indiana University Medical Center Burn Center Eskenazi Memorial Hospital Adult	Indianapolis	15 Beds
<b><u>IN</u></b>	Riley Children's Hospital	Indianapolis	8 Beds
<b><u>MN</u></b>	Hennepin Healthcare Burn Center Adult/Pediatrics	Minneapolis	17 Beds
<b><u>MN</u></b>	Regions Hospital Burn Center Adult/Pediatrics	St. Paul	18 Beds
<b><u>MN</u></b>	Essentia Health – Duluth Burn Center	Duluth	15 Beds
<b><u>OH</u></b>	Premier Health (Miami Valley Hospital) Regional Adult Burn Unit	Dayton	10 Beds
<b><u>OH</u></b>	Ohio State University Hospital Adult Burn Center	Columbus	18 Beds
<b><u>OH</u></b>	Nationwide Children's Hospital	Columbus	14 Beds
<b><u>OH</u></b>	Children's Hospital Medical Center of Akron Pediatric/Adult	Akron	12 Beds
<b><u>OH</u></b>	The University of Cincinnati Medical Center Burn Center	Cincinnati	9 Beds
<b><u>OH</u></b>	Shriners Hospital for Children	Cincinnati	14 Beds
<b><u>OH</u></b>	MetroHealth Medical Center Adult/Pediatrics	Cleveland	14 Beds
<b><u>OH</u></b>	MercyHealth St. Vincent's Hospital Burn Center	Toledo	10 Beds

<b><u>WI</u></b>	UWHealth (University of Wisconsin Hospitals and Clinics) Adult/Pediatrics	Madison	15 beds
<b><u>WI</u></b>	Ascension Columbia St. Mary's Hospital Regional Burn Center	Milwaukee	12 Beds

## **Appendix W**

### **Regional Healthcare Coordinators**

#### Emergency Preparedness Regional Map

**Region 1:**

Matt Price  
Region 1 HCC Coordinator  
Office: 517-324-4404  
[d1rmrc-matt@sbcglobal.net](mailto:d1rmrc-matt@sbcglobal.net)

**Region 2N:**

Rick Drummer  
Region 2N HCC Coordinator  
Office: 248-759-4748  
[rdrummer@region2north.com](mailto:rdrummer@region2north.com)

**Region 2S:**

Amy Shehu  
Region 2S HCC Coordinator  
Office: 734-728-7674  
[ashehu@2south.org](mailto:ashehu@2south.org)

**Region 3:**

Rob Kelly  
Region 3 HCC Coordinator  
Office: 989-889-7458  
[robkelly@region3hcc.org](mailto:robkelly@region3hcc.org)

**Region 5:**

Chris Benson  
Region 5 HCC Coordinator  
Office: 269-337-4290  
[christina.benson@wmed.edu](mailto:christina.benson@wmed.edu)

**Region 6:**

Luke Aurner  
Region 6 HCC Coordinator  
Office: 231-728-1967  
[laurner@wmrmc.org](mailto:laurner@wmrmc.org)

**Region 7:**

Amanda Reed  
Region 7 HCC Coordinator  
Office: 989-731-4975  
[areed@wmrmc.org](mailto:areed@wmrmc.org)

**Region 8:**

Ed Unger  
Region 8 HCC Coordinator  
Office: 906-273-2125  
[ed.unger@r8hcc.org](mailto:ed.unger@r8hcc.org)

## **Appendix X**

### **Regional Medical Coordination Centers (MCC)**

Region 1 MCC:

(517) 546-9111

[D1rmrc@sbcglobal.net](mailto:D1rmrc@sbcglobal.net)

Region 2N MCC:

(248) 267-0535

[RMCC@region2north.com](mailto:RMCC@region2north.com)

Region 2S MCC:

(734) 727-7289

[email@2south.org](mailto:email@2south.org)

Region 3 MCC:

(989) 889-7458

[Region3HealthcareCoalition@saginawtuscolamca.com](mailto:Region3HealthcareCoalition@saginawtuscolamca.com)

Region 5 MCC:

(269) 337-2500

[communications@westmichiganaircare.onmicrosoft.com](mailto:communications@westmichiganaircare.onmicrosoft.com)

Region 6 MCC:

(855) 734-6622

[R6MCC@wmrmc.org](mailto:R6MCC@wmrmc.org)

Region 7 MCC:

(989) 732-5141

[R7RMCC@mir7hcc.com](mailto:R7RMCC@mir7hcc.com)

Region 8 MCC:

(906) 237-2125

[R8MCC@region8.org](mailto:R8MCC@region8.org)

## **Appendix Y**

### **Burn Surge Facility Training**

It is essential to the success of this plan that nurses and physicians staffing BSFs are trained in basic burn care. At a minimum, it is expected that each BSF will have at least 15 nurses and five physicians on staff that have successfully completed the ABLS Now On-line Course. This course covers essential fundamentals of emergency burn care and is felt to be an efficient and effective educational program.

BSFs should send, when available, the above noted personnel to an initial one day supported Burn Surge Facility Training. The cost for the actual training will be covered by federal preparedness funds through the State Burn Coordinating Center. The cost of travel, meals and overnight accommodations, where appropriate will be covered at the discretion of the Regional Healthcare Coalition in which the Hospital resides based on funding availability.

Other opportunities for training could include rotating BSF nurses through regional burn centers to gather actual clinical experience in dealing with severe burns. These activities can be coordinated by the respective regional HCC.



## **Appendix Z**

### **Roles, Responsibilities and Expectations of BSFs**

Identification of the Burn Surge Facilities (BSFs) allows for the development and education of the staff with the Healthcare Organization (HCO), which may not typically treat burn patients beyond initial stabilization and transport, to provide care for the initial 24-72 hours post incident.

#### **Roles and Responsibilities:**

- A. Regional BSFs should be responsible for the initial evaluation and stabilization of burn patients and preparation for transfer, if necessary, during the initial 72 hours.
- B. Regional BSFs should have 24-hour coverage with ABLIS-trained nurses and physicians or Advanced Care Practitioners
- C. Patients treated and discharged by Regional BSFs should be referred to a Burn Center for complications and any needed long-term follow-up.

#### **Expectations:**

- A. BSFs are preferably Level I or II trauma centers. Telemedicine capabilities are desirable.
- B. At a minimum BSFs should meet the general requirements of a Level III trauma center
- C. BSFs must have 24-hour nursing care for burn patients. Sufficient numbers of nurses and physicians should be ABLIS-trained such that an ABLIS-trained nurse or physician should (at a minimum) be able to lead the care provided to patients.
- D. Each BSF should have sufficient numbers of ABLIS-trained physicians to be available in-house during a burn MCI. A minimum of 15 nurses and 5 physicians or Advanced Care Practitioners should be maintained.
- E. BSFs will function as the initial triage/stabilization/resuscitation /transport staging center with support of the region's Medical Coordination Center (MCC) and the CHECC if a BMCI occurs.
- F. Initial stabilization:
  - 1. Assessment of airway, breathing and circulation
  - 2. Fluid resuscitation by burn protocols
  - 3. Pain management
  - 4. Wound care
- G. It is expected that the BSFs will need to care for some burn patients during the initial 3 days while burn centers triage care for all burn casualties.
- H. Critically burned pediatric patients will be the first transferred to a Burn Center.
- I. All BSFs in the state should be prepared to receive burn casualties as triaged by the SBCC (Appendix L) .
- J. All BSFs will perform a burn supply cache check, the first week of the month and send the appropriate form to the SBCC attention Sarah Parviz ([separviz@med.umich.edu](mailto:separviz@med.umich.edu)). See Appendix CC.

## **Appendix AA**

### **Exercising**

At least every two years, MDHHS BETP will plan to conduct a tabletop exercise incorporating a BMCI scenario. The SBCC will participate working with BETP to fill the designated role in the exercise. Each HCC will be expected to participate and may initiate additional exercises consistent with their respective regional exercise corrective action improvement plan. It is anticipated that regional participation should include the Regional Medical Director, Regional Healthcare Coordinator, Regional Epidemiologist, Michigan State Police Emergency Management and Homeland Security Division (EMHSD) District Coordinator and representatives from regional hospitals (especially burn centers and BSFs), EMS and local emergency management coordinators.

Additional functional and full-scale exercises will be considered as resources permit.

## **Appendix BB**

### **Supplies**

To determine supply caches, assumptions were made regarding the MCI patient population. Projections were calculated based on an average sized adult, with 60% of the MCI patient population sustaining a 30% TBSA burn injury. The total number of estimated patients is 30 patients per million populations (i.e., 60% of the federal benchmark 50 patients per million populations). The supplies per patient have been determined based on the number injured as well as the hospitals already having a surplus on hand.

Silver based long-acting dressing (Burn/3) – three 16 x 16-inch sheets per patient  
Silver sulfadiazine (Silvadene) Dressing - one jar per patient

Recommendations regarding the purchase and stockpiling of burn supplies for the treatment of burn patients in the mass casualty environment are predicated on:

- There will be limited availability of essential supplies and bed space in burn centers.
- There will be constraints on human resources.
- The need for short term care to be managed by medical staff not traditionally trained in specialized burn wound care.
- Adjusted standards of care will be provided during surge and crisis situations.

As a consequence, a conscious decision is being made to utilize supplies that will simplify patient care provided in a mass casualty environment, thus minimizing the staff training needed to care for burn injuries. This is especially critical in an environment where staff resources will already be stretched beyond capacity.

#### **Supply Staging**

Based on this model using a silver based long-acting dressing and silver sulfadiazine cream, MDHHS, BETP will need to maintain a stock of 132 cases (16 x 16 inch) of the silver based long-acting dressing and 474 jars of silver sulfadiazine (Silvadene) cream. In order to maintain a balance between ensuring that supplies will be readily available in case of an MCI and being able to rotate stock into normal use to avoid losses due to product expiration:

- 30% of the total stock will be deployed to regional BSFs
- 10% will be staged at Michigan Medicine Survival Flight
- 10% at Spectrum Health Aero Med
- 50% will be maintained through the SBCC

Once a year, the supplies stored at the regional BSFs, Survival Flight and Aero Med will be rotated through as coordinated by the SBCC. The use of this product rotation schedule is intended to

make the purchase of a silver based long-acting dressing and silver sulfadiazine cream, a one-time cost, by avoiding product loss due to expiration.

### **Burn Mass Casualty Incident Kits Located at the BSFs**

#### **Inventory and Stock Check**

- The supplies in the Burn Mass Casualty kits are intended only for use during a mass casualty event and not for day-to-day clinical operations.
- Mepilex Transfer Ag must be kept in the original boxes and packaging.
- A stock check is taken in the first week of every month and recorded on the Supply Checklist form (*Appendix CC*).
- Any anomalies in stock volume should be reported to the SBCC for resolution and replacement immediately.
- Receipt and Storage of Stock Orders.
- All deliveries must be acknowledged on the Stock Checklist.
- All stock received should be placed into the Burn Mass Casualty kit and managed as defined above.
- Good housekeeping principles must be applied to stock management so that items are kept in an orderly manner.
- BSFs that need to reorder supplies, during a BMCI, need to use *Appendix DD*.

#### **Product Recalls**

- The BETP and SBCC must be notified immediately (if they are not already aware) of product recalls. An assessment will be made of the criticality of the recall and appropriate action taken.
- For Stock Management purposes all recalled products are removed from all areas and disposed of or returned to the manufacturer as instructed. Document on the Stock Management Worksheet the disposition of this product as 'recalled product.'

### **Pediatric Supplies and Burn Surge Strike Teams**

There are five air ambulance services within the State of Michigan that have signed Memorandums of Understanding (MOU) with MDHHS to provide triage and stabilization support in case of a pediatric BMCI. Each of the air ambulance services has a supply bag or go-kit that is stocked with pediatric supplies such as IVs, Interosseous needles and driver, airway management including a Glidescope and other items. When activated for a pediatric BMCI, the go-kit is loaded on to the aircraft and taken to the BSF to provide pediatric supplies. Flight crews assist in the stabilization of the most critical patients and in coordination with the SBCC transfer the patients to the designated burn center.

Pediatric Burn Surge Strike Teams may be requested by the BSF, these team members would be transported by aircraft after the flight crew arrives to assist in triage and stabilization. The teams

could be made up of a senior burn nurse, pediatric critical care nurse or Emergency Medicine senior resident or fellow or senior pediatric surgical resident or fellow. Team members could stay at the BSFs to continue to assist in care of pediatric burn patients. These teams should be pre-identified for rapid deployment.

## Appendix CC

### State of Michigan Burn Mass Casualty Incident Supply Kit

Date		Checked by			
		Institution			
Item	Supplied by	Expiration Date	Quantity	Date Ordered	Date Received
Silvadene <ul style="list-style-type: none"> <li>2 boxes (12 jars)</li> </ul>	SBCC				
Mepilex Transfer Ag <ul style="list-style-type: none"> <li>5 cases (60 sheets)</li> </ul>	Mölnlycke				
Training CDs (10)	SBCC				
Printed Training Manual	SBCC				
Fluid cards (20)	SBCC				
Triage Charts <ul style="list-style-type: none"> <li>Laminated (1)</li> <li>Non-Lam. (10)</li> </ul>	SBCC				
MI Regions Map (1)	SBCC				
Jump Drive (1)	SBCC				
Kit Management Protocol paper	SBCC				
Mölnlycke Insert	SBCC				
Patient Management Worksheet (2)	SBCC				
Database Tutorial (1)	SBCC				
BSF Casualty Census Form (2)	SBCC				
Initial Burn Casualty Report Form (2)	SBCC				
Follow up Burn Casualty Report Form (2)	SBCC				
EMS Inter-facility Transfer Forms (15)	SBCC				

**Please complete the first week of each Month and return to:**

Sarah Parviz at [separviz@med.umich.edu](mailto:separviz@med.umich.edu)

**Appendix DD**  
**State Burn Coordinating Center**

**Supply Re-order Form**

Date \_\_\_\_\_

**Requisitioned by:**

Name: \_\_\_\_\_

Hospital or Facility: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City, State, Zip code: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

To re-order stock, please complete this sheet and return it to Sarah Parviz in the SBCC via fax (734-232-4892) or email (separviz@med.umich.edu).

Code/Ref No.	Description	Qty. Required	SBCC USE ONLY	
			Qty. Issued	Issued By

## Acronyms

Acronym	Description
ABA	American Burn Association
ABC	Airway, Breathing, Circulation
ABG	Arterial Blood Gas
ABLS	American Burn Life Support
ACS	American College of Surgeons
Ag	Silver
ASPR	Administration for Strategic Preparedness and Response
BEPESoC	Bureau of Emergency Preparedness, EMS and Systems of Care
BSF	Burn Surge Facility
CBC	Complete blood count
CHECC	Community Health Emergency Coordination Center
CO	Carbon monoxide
COHb	Carboxyhemoglobin
D5LR	Dextrose 5% in lactated ringers
DEPR	Division of Emergency Preparedness and Response
DHHS	Department of Health and Human Services
DMAT	Disaster Medical Assistance Team
EEI	Elements of Essential Information
EKG	Electrocardiogram
EM	Emergency Manager
EMHSD	Emergency Management and Homeland Security Division
EMS	Emergency Medical Services
EMTALA	Emergency Medical Treatment and Active Labor Act
EOC	Emergency Operations Center
ESF #8	Emergency Support Function #8: Public Health and Medical Services Annex
ETT	Endo-tracheal tube
FEMA	Federal Emergency Management Agency
FiO2	Fractured Inspired Oxygen
GLHP	Great Lakes Healthcare Partnership
HCC	Healthcare Coalition
HCO	Healthcare Organization
HHS	Health and Human Services
HPP	Hospital Preparedness Program
ICS	Incident Command System
ICU	Intensive Care Unit
IV	Intravenous
Kg	Kilogram
lpm	Liters per minute
LR	Lactated ringers
LZ	Landing Zone



<b>Acronym</b>	<b>Description</b>
<b>MACS</b>	Multi-Agency Coordination System
<b>MCA</b>	Medical Control Authority
<b>MCC</b>	Medical Coordination Center
<b>MCI</b>	Mass Casualty Incident
<b>MDHHS</b>	Michigan Department of Health and Human Services
<b>MIHAN</b>	Michigan Health Alert Network
<b>mL</b>	Milliliter
<b>MPSCS</b>	Michigan Public Safety Communication System
<b>MOU</b>	Memorandum of Understanding
<b>MSCC</b>	Medical Surge Capacity and Capability
<b>MSP</b>	Michigan State Police
<b>NDMS</b>	National Disaster Medical System
<b>NIMS</b>	National Incident Management System
<b>NPO</b>	Nothing by mouth
<b>O2</b>	Oxygen
<b>PAHPA</b>	Pandemic and All-Hazards Preparedness Act
<b>PAHPAIA</b>	Pandemic and All-Hazards Preparedness and Advancing Innovation Act of 2019
<b>PAHPRA</b>	Pandemic and All-Hazards Preparedness Reauthorization Act of 2013
<b>PHS</b>	Public Health Service
<b>PL</b>	Plain language
<b>PO</b>	By mouth
<b>SBCC</b>	State Burn Coordinating Center
<b>SEOC</b>	State Emergency Operating Center
<b>TBSA</b>	Total Body Surface Area

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