MDH Burn Surge Plan

EMERGENCY PREPAREDNESS AND RESPONSE

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Minnesota Department of Health
CENTER FOR EMERGENCY PREPAREDNESS AND RESPONSE

MDH Burn Surge Plan

Minnesota Department of Health
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MDH Burn Surge site (http://www.health.state.mn.us/oep/healthcare/burn)

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Purpose Statement

The purpose of the Statewide Burn Surge Plan (BSP) is to provide a collective framework for response to a mass casualty burn disaster. A burn disaster is defined by the American Burn Association (ABA) as any incident where capacity and capability is insufficient, patient care may be compromised, patient care is possible, and may require an individual Burn Center, state, regional, or federal disaster response.

There are two Burn Centers in Minnesota, Hennepin County Medical Center (HCMC) in Minneapolis and Regions Hospital in St. Paul. Both are ABA verified Burn Centers receiving intra and inter-state burn patient referrals and serve as partners of the ABA Midwest Region. These Burn Centers will assume the lead role in a mass casualty burn incident with engagement of additional levels of resources as the need arises.

The BSP incorporates a 3-phased approach to best assign resources appropriate to the scope and magnitude of the incident. In a circumstance in which the number of burn patients and the severity of their injuries exceeds or is expected to exceed the Minnesota Burn Center resources, Minnesota's Level One and Level Two Trauma Centers along with Minnesota Burn Surge Facilities will be requested by the two Minnesota Burn Center Medical Directors to provide additional capacity and capability until burn care can be provided with conventional burn care resources (Phases of a Burn Disaster-Appendix A). Figure 1 provides an overview of the BSP activation and implementation processes.

The BSP includes recommendations for the stabilization and initial management of burn patients for 72 hours or more when immediate transfer to a burn center is not feasible. This content is intended to support care for these patients as the triage and coordination of patient transfer is addressed.

Additional Minnesota burn surge resources are available at MDH website (http://www.health.state.mn.us/oep/healthcare/burn/)

Burn Surge Planning Assumptions

1. All acute care hospitals should be capable of providing initial triage and resuscitation for burn patients.
2. Following initial resuscitation, there is a period of 48 hours or more before definitive burn management is required. The major focus during this time period is supportive care for the patient and determining which patients will most benefit from care at a dedicated Burn Center.

3. Burn Surge Facilities (BSF) will provide 'overflow' care for burn patients when Burn Centers are overwhelmed and options are being considered.
4. Participation by hospitals in the Burn Surge Plan is voluntary and based on available capacity.
5. Minnesota Burn Centers can surge of up 50 burn victims of varying acuities. Anything over that would require transfer of patients to out-of-state burn centers with available capacity.
6. Burn Surge Facilities should plan to provide care to a burn patient for up to 72 hours if unable to immediately transfer to a Burn Center.
7. Minnesota Burn Centers have surge plans to create additional bed capacity by converting existing and available intensive care unit (ICU) beds to burn patient care beds. Some existing non-burn ICU patients may also be transferred to Level I or Level II hospitals for ongoing care to make room for burn victims.
8. An event that triggers the activation of the Minnesota Burn Surge Plan will happen with little or no warning requiring the immediate re-allocation of hospital resources in the area where the initial event has occurred.
9. All local hospitals will follow normal organizational protocols when faced with burn victims. When local resources are overwhelmed (which could be 1+ burn victims), the hospital should call a Minnesota Burn Center and request their assistance. The Burn Center (HCMC or Regions Hospital) will coordinate burn capacity. The local hospital should activate its usual hospital coalition and other plans to support patient treatment, transfer, and tracking.
10. National burn bed capacity is limited and coordination of patient transfers (destination and logistics) will take days to achieve when out-of-state capacity is required.
11. Federal resources from the Strategic National Stockpile or its Managed Inventory assets to support state Burn Centers and other hospitals will take at least 12 hours to arrive, once the Governor has made this request and the request has been approved by the federal government.

Minnesota MCI Burn Surge Response At- A-Glance

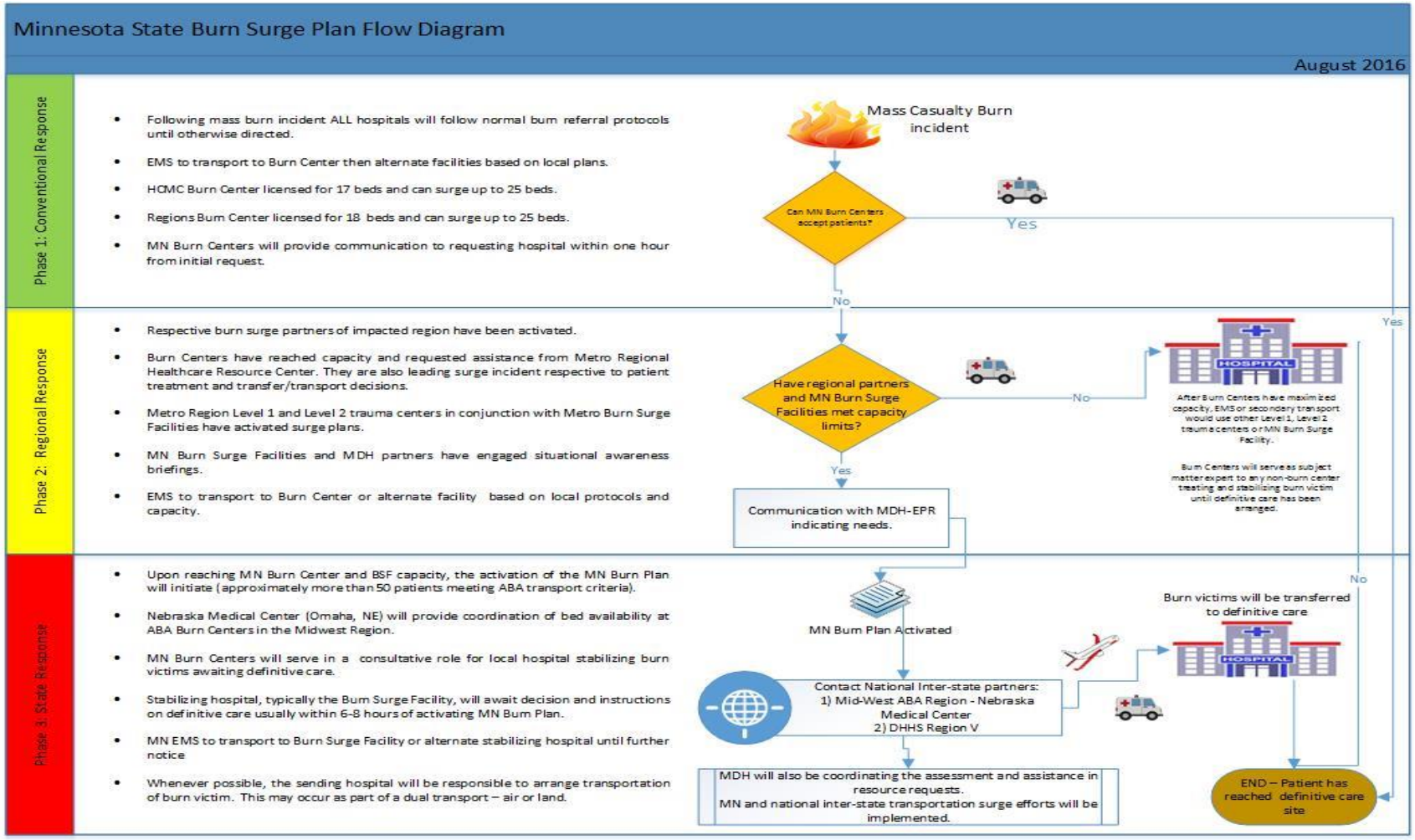

Figure 1: Minnesota Burn Surge Response Flow

Concept of Operations

Minnesota currently has two America Burn Association (ABA) verified Burn Centers, Hennepin County Medical Center (HCMC) in Minneapolis and Regions Hospital in St. Paul. Both are located within the Metro region and are responsible to serve in a leadership capacity as it relates to burn surge coordination, communication and patient care treatment during a statewide burn surge incident.

ABA verified Burn Centers	**Beds**	**Contact Information**
Hennepin County Medical Center	17	1-800-424-4262 or 612-873-4262
Regions Hospital	18	1-800-922-2876

Table 1: ABA Verified Burn Center Contact Information

Each of the eight Minnesota Health Care Coalitions have regional burn surge plans in place to address coordination between their neighboring Burn Surge Facilities, Minnesota Burn Centers and Minnesota Department of Health – Emergency Preparedness and Response (MDH-EPR). All Burn Surge Facilities will have the capacity and capability to initially treat and stabilize burn patients for up to 72 hours.

The Minnesota state burn response will incorporate a three phased approach (reference Figure 2):

1. Conventional Response
2. Regional Response
3. State Response

Figure 2: The 3-phased approach during a large scale burn incident.

Phase 1: Conventional Response

NO Burn Plan Activation

Assumptions:

Local Hospitals: All hospitals providing emergency services should be equipped to initially treat and stabilize burn victims for up to 6 hours. All hospitals have differing capacities and capabilities of treating and stabilizing burn victims. (Example: 1-15 burn victims of varying acuities based on hospital size and role). Hospitals are to follow normal organizational referral protocols and ABA transfer criteria with respect to burn victims.

Regional Health Care Coalitions: All eight regional coalitions have established minimum expectations (via Regional Medical Surge - Burn Plans) of capacity of hospitals to care for burn victims seeking initial treatment and/or stabilization.

Burn Centers: Burn centers will continue to admit patients per normal operating protocols until capacity has been met.

NOTE: In some cases, EMS protocols include direct EMS transport of burn patient from scene to a Minnesota *Burn Center. In other cases, protocols may include EMS transport to local hospital for initial treatment and stabilization and a secondary transport to a* Minnesota *Burn Center.*

Escalation:

Once the Minnesota Burn Centers have exceeded their current capacity and normal operations, and have activated surge plans (within the hospital and across the region), the incident is escalated to Phase 2.

Phase 2: Regional Response

Metro Burn Plan Activation

Scope: This phase is focused on having Minnesota Burn Centers and Metro regional partners serve as incident response leaders. Minnesota Burn Centers will serve as main points of contact regarding treatment and definitive care. Metro regional partners will serve, as needed, in burn care response for regional coordination and communication. If the event occurs in greater Minnesota, regional coalition activities can support information exchange, transportation, and tracking.

Assumptions:

Upon the activation of Phase 2, the following is assumed:

- Local hospitals have burn patients to be transferred to a burn center that meet ABA transfer criteria.
- Minnesota Burn Centers have reached maximum capacity (up to 50 total burn patients) and cannot immediately accommodate all transfers.
- Minnesota Burn Centers will coordinate burn patient movement and care during the incident.
- Minnesota Burn Centers have activated their internal surge plans.
- Metro Regional Health Care Resource Center (RHRC) will be notified of surge plan activation and will take lead in coordinating an initial conference call (per their Metro Communications Plan) involving Burn Centers, RHPCs, Burn Surge Facilities and MDH-EPR to provide initial situational awareness updates and discuss next steps.

Partner Roles and Responsibilities:

- The Burn Centers will be responsible for tasks as outlined in the Minnesota Verified Burn Center Facilities Roles and Responsibilities – Appendix B.
- Minnesota Burn Surge Facilities (BSF) will serve in a supporting capacity to Minnesota Burn Centers as outlined in their surge plans and the Metro Region Burn Plan. Minnesota currently has 13 BSFs that serve as a supporting resource for our Minnesota Burn Centers. The BSFs will serve as a regional point of contact and referral point when a burn patient is unable to be transferred to a definitive care hospital in a timely manner. They will be expected to have both medical and staffing resources to initially treat and sustain, at minimum, one burn patient for up to 72 hours.
    - Minnesota Level 1 and Level 2 trauma hospitals will serve in a supporting capacity to Minnesota Burn Centers as outlined in their surge plans and regional Burn Surge Plans.

  - Other facilities close to the Burn Centers may take burn and non-burn patient transfers to support surge capacity.
- State partners will serve in a supporting capacity or higher depending on the severity of the incident.
  - MDH-EPR will:
    - Serve in a supportive role during a regional response and remain actively engaged in communications.
    - Serve as a leader during statewide response.
    - Monitor and support the Regional Health Care Coalitions during the activation period of the Burn Surge Plan.
  - Emergency Medical Services Regulatory Board (EMSRB) is responsible for coordinating EMS transport resources when requested by a local jurisdiction and is involved in the overall communication process based on the level of impact to the EMS local transport resources and the level of state activation.
- Inter-state partners:
  - The American Burn Association (ABA) is comprised of five regional jurisdictions to assist during a regional burn disaster response. Minnesota, a partner of the Midwest Region, has been actively engaged in national inter-state regional planning. Participating states in the Midwest Region include: Iowa, Illinois, Kansas, Minnesota, Missouri, North Dakota, Nebraska, South Dakota and Wisconsin.
    - The Nebraska Medical Center (Omaha, NE) currently serves as the lead Midwest regional point of contact. Nebraska Medical Center will be responsible to serve as a 24/7 point of contact for inter-state coordination, bed availability request, resource request, and overall support during a Midwest regional mass casualty burn incident.
  - Great Lakes Health Care Preparedness Partnership - Department of Health and Human Services Region V (GLHP – DHHS Region V) represents a coalition of health care preparedness planners from the FEMA Region V jurisdictions of: The City of Chicago and State of Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin. The GLHP Burn Disaster Plan has a framework based upon a multi-state and inter-regional response approach. The Great Lakes Health Care Preparedness Partnership provides an opportunity to draw from out-of-state resources when in-state resources have been exhausted.

Response Operations:

- Minnesota Burn Centers:
  - Will be actively coordinating with the Metro RHRC during the event.
  - Medical Directors, or their designees, will determine the most appropriate facility for burn patients based on their injuries and treatment requirements.
- The Metro:

  - RHRC will assist with activities such as off-loading current patients from the Minnesota Burn Centers to available appropriate facilities, activating additional clinical staff, requesting resources across state partners, etc.
  - RHRC will help create patient lists and facilitate transportation and tracking of patients once destinations have been identified by the Burn Center Medical Directors (or clinician designees).
  - Metro Regional Burn Surge Plan will be activated at the discretion of the Metro regional stakeholders.
- Minnesota BSFs will:
  - Maintain situational awareness (via MNTrac and alternate modes of communications), provide updated bed census and remain "on standby" in the instance of needing to respond (e.g. accept off-loaded patients, fulfill any resource requests, etc…)
- Communication, coordination and overall leadership will be a unified effort between Metro RHRC, Minnesota Burn Centers, impacted region(s), and other stakeholders as deemed appropriate.

Telemedicine options: Telephone/telemedicine expertise will need to be made available to facilities caring for burn patients beyond 6 hours. If volume requires, a hotline may be set up and/or burn unit personnel from other centers may be engaged to provide advice and support to the Burn Surge Facilities or others caring for burn patients for a prolonged period.

Communications Pathways:

- Minnesota Burn Centers are responsible for communicating with:
  - Metro RHRC
  - Impacted local hospital and/or Burn Surge Facility (BSF)
  - MDH-EPR
- MDH-EPR (in conjunction with Minnesota Burn Centers) will provide situational awareness to Midwest ABA Regional POC and Great Lakes Health Care Preparedness Partnership - Department of Health and Human Services Region V (GLHP – DHHS Region V) for a national inter-state response.
- Metro RHRC will be responsible for communicating with:
  - Burn Surge Group in MNTrac (includes: BSF, RHPCs and MDH-EPR key partners)
  - Regional Coalition Partners

*NOTE: The Metro RHRC **may** be asked by* Minnesota *Burn Centers to take lead on disseminating communications to statewide partners.*

This structure outlines the communication and coordination of entities involved. It is important to remember that each entity has a specific role and expectation outline during a mass burn incident. However, communications will be coordinated from Minnesota Burn Centers and Metro RHRC.

Alerting/Notifications:

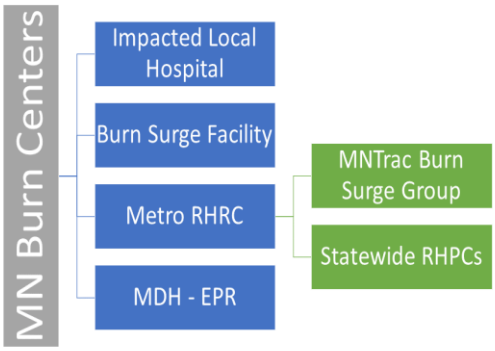

Figure 3: Communication Flow

- Burn incident communication (including but not limited to situational awareness, communication of definitive care, transport details, etc.) is disseminated to respective regional response partners.
- MNTrac will serve as the main communication platform in providing situational updates and instant communication between all impacted stakeholders. Features to be utilized include but are not limited to:
  - Alert Manager: Alerts will be created, updated and published to "Burn Surge Group" and other partners as appropriate.
  - Coordination Center: A coordination center will be opened and established to provide an instant communication platform.
  - Bed Tracking: A request for updated bed count will be disseminated for the use of potential off-loading by Burn Centers for surging purposes.
  - *If applicable,* Resource Requests will be utilized.

Escalation:

Phase 3 – Minnesota State Response, is activated when:

- Regional resources and medical surge plans are insufficient.
- Minnesota Burn Centers can no longer accept burn victims and there is an immediate need to access additional resources from our Midwest ABA regional partners as the patients cannot be safely cared for with the resources available.

Phase 3: Minnesota State Response

Minnesota **State Burn Plan Activated and National Inter-State partner plans Activated as needed**

Scope: This phase is focused on activation of national inter-state partners in assisting with Minnesota state burn response.

Assumptions:

- Burn patient capacity is insufficient to provide safe patient care to all victims at Minnesota Burn Centers or Minnesota Burn Surge Facilities
  - Minnesota Burn Centers have reached capacity in treating burn patients (e.g. More than 50 patients have met the ABA burn transfer criteria and Burn Surge Facilities cannot appropriately care for the victims). *NOTE: It is also important to be mindful of the fact that the level of patient acuity is largely the determining factor in available resources for* Minnesota *Burn Centers.*
  - Minnesota BSFs have reached capacity and/or cannot provide the needed capabilities for the types of patients they have received.
- Number of burn patients exceeds available resources and expertise available in Minnesota.

Response Operations:

This phase is activated by the Metro Regional Health Preparedness Coordinators at the direction of the Minnesota Burn Centers.

Throughout this phase, two key questions will be addressed to determine level of involvement needed by national inter-state partners (communication to both Midwest ABA regional partners and GLHP – DHHS Region V):

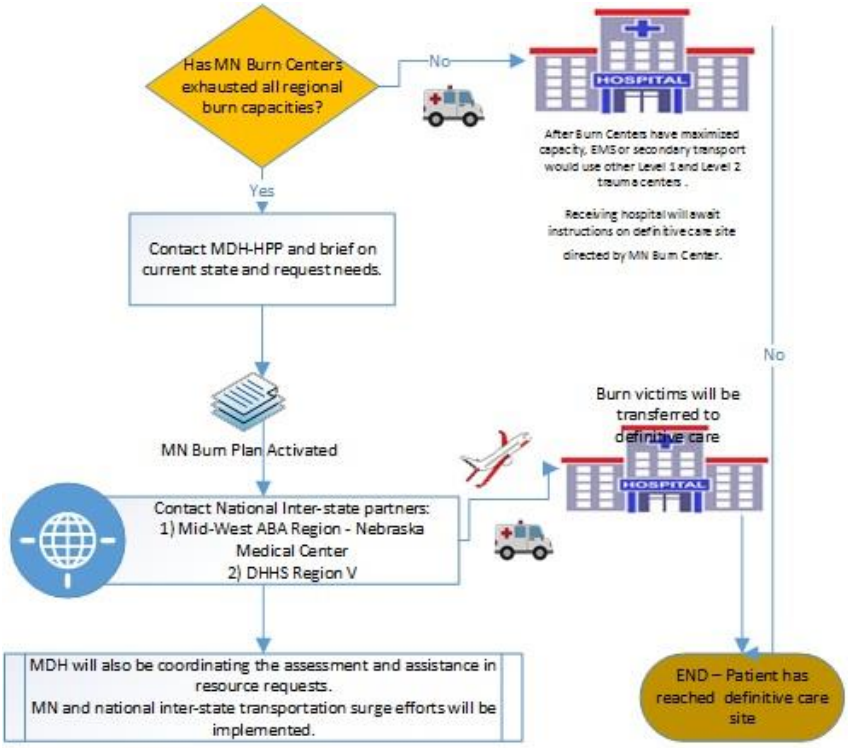

Figure 4 Response Operations Flow

1. Do we require definitive burn care assistance from national inter-state Burn Centers?
2. Do our responding local hospitals need additional clinical resources, specialized staff, transportation assistance or clinical guidance for stabilization purposes?

Minnesota Burn Centers:

- Medical Directors or their designees will determine the most appropriate facility for burn patients based on their injuries and treatment requirements.
- Will be actively consulting with BSF regarding patient stabilization and medical guidance.
- Will be actively communicating with Nebraska Medical Center and respective BSF in determining final destination for patients awaiting transport.

The Metro:

- RHRC will help create patient lists and facilitate transportation and tracking of patients once destinations have been identified by the Burn Center Medical Directors (or clinician designees).
- Will continue implementation of Metro Regional Burn Surge Plan until response has stabilized.

Minnesota BSFs:

- Will maintain situational awareness (via MNTrac and alternate modes of communications), provide updated bed census and remain "on standby" in the instance of needing to respond (e.g. accept off-loaded patients, fulfill any resource requests, etc…).
- Will continue implementation of burn surge plans and work collaboratively with respective regional partners until response has stabilized.
- Will be in constant communication with Minnesota Burn Centers or assigned designee in receiving medical consultation for burn treatment.

MDH-EPR:

- Will work collaboratively with Metro RHRC partners in consolidating and centralizing communication efforts.
- Will be in constant communications with inter-state partners that have been activated.

Communication Pathways:

Minnesota Burn Centers are responsible to push communications to:

- Metro RHRC
- Impacted local hospital and/or Burn Surge Facility (BSF)
- MDH-EPR, and
- Midwest ABA regional POC

Metro RHRC may be tasked to push communications to:

- Impacted local hospital and/or Burn Surge Facility (BSF)
- Midwest ABA regional POC

MDH-EPR will engage in communications with Midwest ABA Regional POC for a national inter-state response.

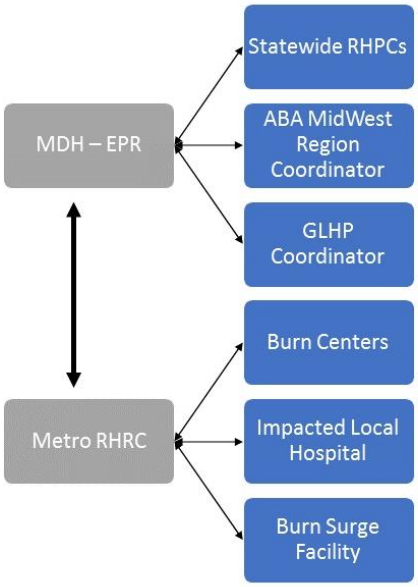

Figure 5: Phase 3 Communication Flow

Alerting/Notifications:

(Please note that communication processes will have already been activated during Phase 2. The scope of this communication is to inform stakeholders of statewide burn plan activation and next steps.)

- The Metro RHRC will disseminate a MNTrac alert to provide situational awareness.
    - Audience would include, but not limited to:
        - RHPCs
        - MDH-EPR
        - Minnesota Burn Surge Facilities
        - MNTrac Role: "Metro Burn Surge Group"
- Sources of information to be included, but not limited to:
    - Incident details
    - Minnesota Burn Center capacity
    - Activation of additional plans/resources
    - Point of contact information
- The Metro RHRC will push out meeting call-in information for initial debrief on current state of response.
    - Audience would include, but not limited to:
        - MDH-EPR
        - Minnesota Burn Surge Facilities
        - MNTrac Role: "Metro Burn Surge Group"
        - Impacted hospital and respective RHPCs
        - Midwest ABA Region Coordinator
    - Based on scenario, call may include:
        - GLHP Project Manager
        - Homeland Security Emergency Management (HSEM) Director
        - Emergency Medical Services Regulatory Board (EMSRB) Director

Emergency Medical Services (EMS) Transportation:

This section is not meant to supersede any existing EMS communication protocols/guidelines. It will serve as a guide to assist in pointing to existing EMS communication structure in the system.

Assumption:

The sending hospital will be responsible to coordinate transport of patient to the receiving facility unless otherwise directed.

Partner Roles and Responsibilities:

The first three phases of burn care include response, rescue, and resuscitation, all of which are initiated by first responders and EMS providers. Ongoing care, support and patient transfer extend to community or regional hospitals or first receiving hospitals. These frontline organizations should have a system and plan in place to adjust operations, manage the initial influx of burn patients, and be capable of providing initial care and treatment to the burn-injured patients, as directed by their medical directors or medical advisers.

Phases 1 and 2:

- EMS will maintain normal communications directly with their hospital or dispatch points of contact.
- EMS Regional Systems may be involved during these phases to assist with communication and coordination efforts in collaboration with EMSRB.
- EMSRB is responsible for coordinating EMS transport resources when requested by a local jurisdiction and involved in the overall communication process based on level of impact to the EMS local transport resources and the level of state activation.
- 24/7 – 365 requests from local jurisdictions, hospitals or EMS services for EMS transport resource assistance can be made through the Minnesota Duty Officer by calling 1-800-422-0709. The Duty Officer will notify on-call EMSRB personnel with the specifics of the request and the EMSRB statewide response plan will be initiated to coordinate the requested EMS resources.

Phase 3:

- EMSRB will collaborate and partner with EMS Regional Systems to be fully engaged in EMS discussions including, but not limited to: patient transport and resource availability (staff, appropriate and needed medical equipment, type and level of ground and air

patient transport resources, response/travel times to jurisdiction, staging locations, etc.).

- Air transport may also be coordinated by the receiving hospital for rotor-wing and fixed wing transport within Minnesota.
- Inter-state transport arrangements will run through the appropriate request process: (1) Notification to State Duty Officer, (2) EMSRB contacted, (3) air transport arranged through usual channels, mutual aid agreements or by receiving Burn Center.

Response Operations:

- All EMS requests for patient transports should follow normal operating procedures:
  - local (includes mutual aid agreements with neighboring EMS providers)
  - regional (includes reaching beyond day-to-day mutual aid agreements)
  - state (assistance with regional and statewide EMS resources by contacting the State Duty Officer)
- For reimbursement purposes (if declared as state emergency), it is important to remember to have all state requests run initially through your local emergency manager.
- National inter-state transports:
  - The inter-state sending hospital will optimally be responsible to arrange transport for definitive care.
  - If inter-state transport services are requested to augment transportation services within Minnesota borders, ensure the EMSRB is made aware and included in the integral components of this response.

Air and Ground Transport Resources:

Air Service	Rotor Wing	Fixed Wing	Instrument Flying Rules (IFR) Rotor Capability	Dispatch	Bases	Hospital System
Avera Careflight	X	X	X	1-800-592-1889	SD	Avera
Life Link III	X	X		1-800-323-1377	MN, WI	Hospital Consortium
Mayo One	X	X	X	1-800-237-6822	MN, WI	Mayo Clinic
MedLink AIR	X		X	1-800-527-1200	WI	Gunderson Health System
Mercy Air Med	X			1-877-463-7291	IA	Mercy North Iowa
Ministry Spirit Air	X		X	1-888-411-1362	WI	Ministry Health Care
North Memorial Air Care	X		X	1-800-247-0229	MN, WI	North Memorial Medical Center
NorthStar Criticair	X			1-800-223-1596	MN, ND, SD	Trinity Health
Sanford Air Med	X	X	X	1-844-424-7633	MN, ND, SD	Sanford Health
Valley Med Flight	X	X		1-800-828-0168	MN, ND, MI	Independent

Table 2: Transport Resources Contact List

Appendix A: Phases of a Burn Disaster

There are three very distinct phases of time during a burn disaster: immediate, intermediate, and extended.

Immediate- *Relates to* Minnesota *Burn Surge Plan Phase 1: Local Response*

- Starts with the period directly after the disaster. After a "no notice" occurrence e.g. an explosion, oil train derailment collisions, apartment complex fire. The early period may extend up to six hours.

Intermediate- *Relates to* Minnesota *Burn Surge Plan Phase 2: Regional Response*

- Begins early into the management of the surge of patients either at the burn center, or other hospitals depending on the size and scope of the disaster. Generally this begins after the first six hours and may extend up to 120 hours post- disaster (6-120 hours).

Extended- *Relates to* Minnesota *Burn Surge Plan Phase 3: State Response*

- 120 hours after the disaster.

Holmes et al. (2011) identified that many burn patients, who meet criteria for transfer to a burn center are never treated at a burn center; however, the ABA Referral Criteria (2006) indicates a burn-injured patient should be seen by a burn surgeon at a burn center in the first 24 hours after the disaster. This may not be possible in a multiple casualty burn surge situation. Depending on the injuries, a burn patient may be able to be cared for very effectively at a trauma center – for example, inhalational injuries or limited burns that a plastic surgeon is comfortable managing. Clinical review of the burn patient information is thus critical to appropriate triage and transfer.

Surge Equilibrium

As the multiple burn casualty situation unfolds, a balance is achieved when sufficient staff, space, and supplies are now in use to manage the ongoing patient needs. This equilibrium is accomplished when sufficient numbers of patients have been transferred, discharged, or died leading to the numbers of patients with ongoing needs now being met on a steady and predictable basis by the staff, space, and supplies/equipment at the scene.

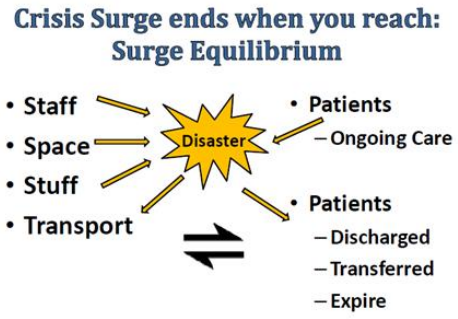

Figure 6: Surge Equilibrium

Transportation resources will be an important resource used to decompress the burn surge response, by transferring some of the more acutely injured or ill to other facilities. Achieving surge equilibrium is generally the trigger that moves the level of disaster to out of crisis surge capacity back to either a contingency or conventional surge capacity.

Appendix B: Minnesota Verified Burn Centers Facilities

Hennepin County Medical Center (HCMC) in Minneapolis and Regions Hospital in St. Paul operate the two ABA verified Burn Centers and receive intra and inter-state burn patient referrals.

Location	Beds	Contact Information
ABA verified Burn Centers		
Hennepin County Medical Center	17	1-800-424-4262 or 612-873-4262
Regions Hospital	18	1-800-922-2876

Table 3: ABA Verified Burn Center Contact Information

NOTE: Additional nurses and personnel with burn injury training are available at the two Burn Centers if needed during a surge event.

Roles and Responsibilities:

Treatment:

- Daily operations 18 beds
- Surge up to 25 beds for each hospital

Resources:

- Maintain adequate supplies to provide care for up to 25 severely burned victims from a mass burn event.
- Coordinate the procurement of critical burn surgery supplies, such as silver-impregnated dressings from vendor or Federal sources and wound care products, and maintain a database of supply sources and contacts.

Planning:

- Be actively engaged in planning sessions with both regional and state partners as it relates to a burn scenario response.
- Have up to date hospital burn surge plans.
- Be actively engaged in planning efforts with ABA Midwest Regional partners.

Education/Training:

- Serve as subject matter experts to develop and inform training protocols for personnel at designated BSFs and all Minnesota hospital partners as it relates to burn surge.
- Assist with providing training to acute care hospitals and Burn Surge Facilities on burn patient management.

Response:

- Act as a liaison with coordinating burn centers from other states including the GLHP and ABA Midwest Region, on an ongoing basis, in support of inter-state planning activities.
- Serve as a co-leader in communications:
  - Regional communications as outlined in Metro Regional Burn Plan
  - Statewide communications as outlined in MDH Burn Surge Plan
- Transportation – follow normal protocols and/or reference Metro Regional Burn Plan
- Treatment
  - Develop and maintain a process for recording burn casualty reports associated with a mass casualty incident in which they are activated
  - Maintain documentation for potential reimbursement if state of emergency declaration is made

Appendix C: Minnesota Burn Surge Facilities

Scope: Minnesota currently has 13 Burn Surge Facilities (BSF) that serve as a supporting resource for our Minnesota Burn Centers. The BSFs will serve as a regional point of contact and referral when a burn patient is unable to be transferred to a definitive care hospital in a timely manner. All BSFs have varying levels of capacity for treating and stabilizing burn victims. As a BSF, these facilities will be expected to have both medical and staffing resources to initially treat and sustain, at minimum, one burn patient for up to 72 hours.

Purpose: Although burn patients should be transferred to the appropriate burn care facility as soon as possible, the extent of the incident may exceed capacity or impede the ability of Minnesota Burn Centers to receive additional patients immediately. When the Minnesota Burn Centers are unable to immediately accept a burn victim, local hospitals should work towards transferring patient(s) to a Burn Surge Facility or the most accessible highest trauma level hospital.

Minnesota Burn Surge Facilities:

Burn Surge Facility	Contact Information	Region
Mayo Clinic Hospital - Rochester	Admission and Transfer Center 507-255-2910	Facility will serve as point of referral for both SE and SC regions.
Sanford – Worthington	Switchboard operator: 507-372-2941 ask for Administrative Supervisor	Facility will serve as point of referral for SW region.
St. Cloud Hospital	Admission and Transfer Line: 888-387-2862 or the main line 320-251-2700	Facility will serve as point of referral for both Central and West Central regions.
Altru - Grand Forks Sanford – Fargo Essentia Health - Fargo	Altru One-Call 1-855-425-8781 Sanford Fargo One Call: 1-877-647-1225 701-364-2255 or 844-865-2255	Facility will serve as point of referral for both NW and WC regions.
Essentia Health – Duluth	218-786-2815	Facility will serve as point of referral for NE region.
Abbott Northwestern Children’s Hospitals & Clinics Mercy Hospital	Patient Placement 612-863-4099 763-236-7137	Facility will serve as point of referral for Metro region.

Burn Surge Facility	Contact Information	Region
North Memorial United Hospital UMMC – M Health		

Table 4: Minnesota Burn Surge Facility Contact Information

Roles and Responsibilities of Burn Surge Facilities

Response Expectations:

- Serve as regional point of contact during burn surge response.
- As needed, communicate and coordinate with Minnesota or out of state Burn Centers regarding definitive care responding to incident (as directed by Minnesota Burn Centers).
- Communicate with Minnesota Burn Centers or alternate subject matter experts regarding patient specific treatment recommendations.
- Serve as part of the MNTrac role of "Metro Burn Surge" to ensure continuity of communication during a burn surge incident. This group is comprised of the following partners (including, but not limited to: Minnesota Burn Centers, Minnesota Burn Surge Facilities, Regional Health Care Preparedness Coordinators and MDH-EPR points of contact)

Treatment/Stabilization Expectations:

- Have minimum burn supplies (Appendix E) as part of their hospital inventory.
- Meet Burn Patient Care Priorities:
  - Triage, resuscitation (often mechanical ventilation), wound care
  - Prevent organ damage
  - Prevent infection
  - Manage pain
- Share patient information from their facility/area with Burn Centers and State to help inform triage/transport priority.

Education:

- Recommendation to have at least one provider be ABLS certified or of equivalent certification.
- Assure all emergency department (ED) providers have education on acute burn treatment.
- Assure inpatient providers have access to just-in-time educational resources and subject matter experts.
- Advocate, communicate and disseminate Minnesota state burn educational curriculum MDH Burn Surge site (http://www.health.state.mn.us/oep/health care/burn)

BSF will not generally be expected to deliver definitive burn care.

General time lines and expectations:

Burn Surge Facility –Hours 4 – 8

- Stabilized admitted burn casualty
- Continue resuscitation
- Collate ID information
- Log patient information to register admissions
- Report patients presence and condition to designated regional patient coordination point
- Photograph; send or upload
- Wound Care
- Consult Burn Coordination Center Resource clinical staff for advice as needed

Burn Surge Facility – Hours 8 – 24

- Continue Resuscitation
- Monitor patient response
- Treat complications of resuscitation
- Establish nutritional support
- Consult Burn Coordination Center Resource clinical staff for advice as needed

Burn Surge Facility – Day 2 – 4

- Supportive care: fluids, analgesia, nutrition
- Report patient response to resuscitation to designated regional patient coordination point
- Transfer patient to burn center if possible
- Consult Burn Coordination Center Resource clinical staff for advice as needed

Burn Surge Facility Day 4 – 7

- Coordinate transfer of walking wounded burn care to burn centers, maintain at burn surge facility or discharge to home and local clinic with treatment supplies

Appendix D: Burn Care Supply Planning Recommendations

(Recommendations from Burn Center Clinical Staff at Regions Hospital and HCMC)

Patient Care Strategies for Scarce Resource Situations, including burn supply recommendations are available online at MDH Crisis Standards of Care website (http://www.health.state.mn.us/oep/health care/crisis/index.html) .

Supply level planning ***considerations*** by facility type are:

- **Burn centers:** Each Burn Center to plan for 25 major burn patients + 100 outpatients (15 of 50 require mechanical ventilation)
- **Trauma Level I or II and** Minnesota **Burn Surge facilities:** Plan for 10 major burn patients + 50 outpatients
- **Trauma Level III or IV facilities:** Plan for 5 major burn patients (initial resuscitation and stabilization) + 25 outpatients

Facilities stocking materials for burn care should consider their role and the resources in their community, and specific items determined by the institution based upon usual stock, vendors, cost, and protocols. Sterile sheets or gauze are appropriate for initial management of the burn patient. In a burn disaster, later dressings emphasize bacitracin/petrolatum impregnated gauze rather than silver-impregnated dressings (expensive to stockpile) unless silver-based dressings are easily and readily available. Consider stocking, or having plans to obtain supplies sufficient for 48-72 hours, particularly when the items may take time to obtain from vendors. Establishing a "Burn Cart" may be a helpful approach to organizing and maintaining supplies and materials needed for a specific hospitals burn surge capability and capacity

Outpatient - Recommended supplies associated with burn patient care support for 24-72 hours **per in-patient:**

Quantity	Item
5	8 cm x18 cm (3 x 7 inch) sheets petroleum-impregnated gauze (e.g., Adaptic)
4	10 cm (4 inch) rolls of stretchable roller gauze (e.g., Kerlix); variety of sizes suggested
2	120g (4oz) tube bacitracin
30	Tablets of ibuprofen 800 mg and stock liquid form for pediatric use

Quantity	Item
50	Opioid analgesic tablets (50 tablets for 5 day supply if 1-2 tablets every 4 to 6 hours); also stock pediatric alternatives

Table 4: Outpatient supplies recommendations

Note: Assume half of all patients will require tetanus boosters, and assess and plan for up to 72 hours of pharmacy re-supply.

Inpatient: Recommended supplies associated with burn patient care support for 24-72 hours **per in-patient:**

Quantity	**Item**
15	8 cm x 18 cm (3 x 7 inch) sheets petroleum gauze (about 50 % of total body surface area (TBSA) normal body mass is average for major burn patient)
2	Bacitracin 120 g (4 oz) tubes (or 1 lb. jar for 2 victims)
10	Rolls of 10 cm (4 inch) stretchable roller gauze, such as Kerlix
2	5 cm (2 inch) rolls stretchable roller gauze (e.g., Kerlix) for fingers/toes/small area wrapping - can also substitute 4 inch and cut in half
250	Mg or Morphine (or equivalent) 10 mg/hour x 24 hours Massive doses of opioid analgesia and anxiolytics may be required by burn patients (including any patients that are only receiving palliative care)
1	Tetanus booster per 2 patients
14	Liters of IV Fluid - for example from Parkland formula 4mL/kg x 50% BSA = 14 liters of Fluid. Lactated Ringers preferred, but saline is acceptable – may contributed to acidosis
1	Central line (including 20% pediatric sizes)

Table 5: Inpatient supplies recommendations

Appendix E: American Burn Association Midwest Regional Point of Contact

The American Burn Association (ABA) is comprised of five regional jurisdictions to assist during a regional burn disaster response. Minnesota, a partner of the Midwest Region, has been actively engaged in national inter-state regional planning. Participating states in the Midwest Region include: Iowa, Illinois, Kansas, Minnesota, Missouri, North Dakota, Nebraska, South Dakota and Wisconsin.

The Nebraska Medical Center (Omaha, NE) currently serves as the lead Midwest regional inter-state response. Nebraska Medical Center will be responsible to serve as a 24/7 point of contact for inter-state coordination, bed availability request, resource request, and overall support during a Midwest regional mass casualty burn incident.

During Phase 3 of the Minnesota State Burn Plan, the Minnesota Burn Centers will work collectively with MDH-EPR in contacting:

Nebraska Medical Center (Omaha, NE) 1-800-995-2876 or 402-552-2876

Upon request from the referring Burn Center, Nebraska Medical Center will:

- Conduct a bed availability of Midwest Region Burn Centers.
- Support and assist regional efforts for patient triage and transfer.

Upon notification, the Midwest Region will:

- Activate external disaster plans.
- Initiate centers' burn disaster plans.
- Coordinate transfer location of patients.

Upon activation of ABA Midwest regional partners, MDH-EPR will also inform the Great Lakes Health Partnership (GLHP) - DHHS Region V resources:

- The ABA has established a Midwest Region Burn Mass Casualty Incident (BMCI) Resource Guide (https://c.ymcdn.com/sites/ameriburn.site-ym.com/resource/collection/C66B12D1-C4B9-466F-9EFC-A3050F4FB151/Midwest_Region_BMCI_Response_Resource_Guide.pdf) to assist in the coordination of burn patient transfers within the region upon request of the ABA Burn Center Director. The Midwest Regional Burn Plan (insert hyperlink when available)
- ABA Burn Care Facilities in Minnesota:
    - ***VERIFIED***: Hennepin County Medical Center (HCMC) in Minneapolis and Regions Hospital in St. Paul operate the two ABA verified Burn Centers in Minnesota and receive

intra and inter-state burn patient referrals. **Additional nurses and personnel with burn injury training are available at the two Burn Centers if needed during a surge event.*

Location	Beds	Contact Information
ABA verified Burn Centers		
Hennepin County Medical Center	17	1-800-424-4262 or 612-873-4262
Regions Hospital	18	1-800-922-2876

Table 6: ABA Verified Burn Center Contact Information

- ***NON-VERIFIED*** ABA Listed: Essentia Health in Duluth, Minnesota also maintains and operates a 4-bed burn care unit.

ABA listed Burn Center: not verified		
Essentia Hospital Duluth	4	218-786-4000

Table 7: ABA Non-Verified Burn Center Contact Information

- Listing of inter-state Burn Centers (Reference Appendix F)

Appendix F: Interstate Burn Unit Resources:

Midwest Region ABA Verified Burn Centers:

Iowa, Illinois, Wisconsin, Missouri, Kansas, Nebraska, South Dakota and North Dakota

Hospital	City	Referral Person	Phone Number	Number of Beds	Estimated Time/ Distance
IOWA					
University of Iowa Burn Treatment Center	Iowa City	Barbara Latenser	319-356-2496	16	4hr 52min / 303 miles
ILLINOIS					
Loyola University Medical Center	Maywood	Kathy Supple	708-216-3988	10 ICU + 11 Step-down beds for burn victims	6hr 27 min / 403 miles
Cook County Hospital Sumner L. Koch Burn Center	Chicago	Dr. Marella Hanumadass Dr. Gary An	24 hr on-call pager: 312-760-0789 Dr. An's pager: 312-740-4230	6 ICU + 12 Step down	6 hr 35 min / 408 miles
University of Chicago Burn Center -- Electrical Trauma Center	Chicago	Mary Jo Meyer Ann O'Connor	773-702-6736	8 bed ICU for burn victims	6hr 46min / 415 miles

Hospital	City	Referral Person	Phone Number	Number of Beds	Estimated Time/ Distance
Memorial Medical Center Regional Burn Center	Springfield	Dr. Brandon Wilhelmi	217-788-3325	10	8hr 20 min / 523 miles
MISSOURI					
University of MO Hospital (Peak Memorial Burn Center)	Columbia	Dr. Terry Boyd	573-882-8157	16	7 hr 48 min / 488 miles
Children's Mercy Hospital	Kansas City	Dr. Ronald Sharp	816-234-3574	13	6 hr 40 min / 438 miles
The Burn Center at St. John's	Springfield	Dr. Kenneth Larson	417-888-7250	9	9 hr 19 min / 604 miles
Barnes Jewish Hospital Washington University	St Louis	Dr. Timothy Buchman	314-362-9347	24	8 hr 48 min / 558 miles
St. John's Mercy Medical Center	St. Louis	Dr. Smock	314- 569-6440	15	8 hr 35 min / 548 miles
NEBRASKA					
St. Elizabeth Community Health Center	Lincoln	Pam Wiebelhaus	800-877-BURN 402-219-7679	16	6hr 44 min / 429 miles
Children's Hospital Inc.	Columbus	Jonathan Groner	614-722-3900	8	12 hr 19 min / 766 miles

Hospital	City	Referral Person	Phone Number	Number of Beds	Estimated Time/ Distance
Ohio State University Medical Center	Columbus	Dr. Sid Miller	614-293-5000	19	12 hr 18min / 765 miles
WISCONSIN					
University of Wisconsin Hospitals and Clinics	Madison	Access Center or Nicholas Meyer	608-236-3260 608-263-1378	7	4hr 29min / 271 miles
UW Milwaukee Hospital-doesn't exist, St Mary's has a Burn Unit	Milwaukee	MaryKay Henze	412-291-1163	12	5hr 27min / 338 miles

Table 8: Midwest Region Verified Burn Center Contact Information

Great Lakes Health Partnership (GLHP) - DHHS Region V:

NOTE: GLHP overlaps between the Midwest Region and Eastern Great Lakes ABA Regions

State	City	# Beds
City of Chicago		
University of Chicago Burn Center	Chicago	16
John S. Jr. Stroger Hospital Sumner L. Koch Burn Center	Chicago	18
ILLINOIS		
Loyola University Medical Center	Maywood	21
INDIANA		
St. Joseph's Burn Center	Fort Wayne	12
Richard M. Fairbanks Burn Center	Indianapolis	15

Indiana University	Indianapolis	6
MICHIGAN		
University of Michigan Health Systems	Ann Arbor	16
Detroit Receiving Hospital Burn Center	Detroit	12
Children's Hospital of Michigan	Detroit	10
MINNESOTA		
Hennepin County Medical Center	Minneapolis	17
Regions Hospital Burn Center	St. Paul	18
OHIO		
Children's Hospital Medical Center of Akron	Akron	12
The University Hospital Burn Center	Cincinnati	9
Shiners Hospitals for Children	Cincinnati	14
MetroHealth Medical Center	Cleveland	14
Nationwide Children's Hospital	Columbus	14
Ohio State University Wexner Medical Center	Columbus	18
WISCONSIN		
University of Wisconsin Hospitals & Clinics	Madison	15

Table 9: GLHP Burn Center Contact Information

Appendix G: Burn Hospital Surge Capacity and Response Planning

The American Burn Association (2005) has defined surge capacity as "the ability to manage a surge of 50% above the self-reported capacity of a Burn Center. Crisis surge capacity implies the practice of care outside the traditional standard of care.

Hick et al. (2009) differentiated surge capacity based on the use of three metrics- Space, Staff, Stuff, and Special (in this case burn). Kearns et al. (2014) further differentiated the surge capacity levels.

Surge Capacity Level	Surge Capacity (Hick et al.)	Burn Surge Capacity (Kearns et al.)
Conventional	The spaces, staff, and supplies used are consistent with daily practices in the institution. These spaces and practices are used during a mass casualty incident that triggers activation	Relies on the spaces, staff, and supplies in a given emergency department providing care during a MCI, which triggers a facility EOP, and may require staff to manage some burn-injured patients up to six hours with existing staff and existing SPE. Standard of care is maintained.
Contingency	The spaces, staff, and supplies used are not consistent with daily practices but maintain or have minimal impact on usual patient care practices. These spaces or practices may be used temporarily during a major mass casualty incident or on a more sustained basis during a disaster (when the demands of the incident exceed community resources).	Relies on the spaces, both in the emergency department and designated areas in the facility. Relies on staff who have appropriate credentials but do not routinely manage patients with injuries of this nature. Relies on SPE that may be marginally sufficient from on hand stock or available through a rapid deployment from a state/regional disaster medical team for a period of 6-24 hours. Standard of care is maintained but could be only marginally sufficient.
Crisis	Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the	Relies on alternative care sites such as rapidly deployed tents in the parking area or adjacent building.

Surge Capacity Level	Surge Capacity (Hick et al.)	Burn Surge Capacity (Kearns et al.)
	setting of a catastrophic disaster (provide the best possible care to patients, given the circumstances and resources available).	Relies heavily on staff, mutual aid personnel, and volunteers who may or may not have the credentials to manage patients with injuries of this nature. Relies on SPE from on-hand stock, rapidly deployed stock from state, regional, or federal resources, and still may not meet the needs for a period of 24-120 hours (depending upon the event, it could extend beyond 120 hours). Some care during this period will be provided outside the typical standard of care. * For crisis surge capacity, a time-limited altered standard-of-care policy should be developed for care during this period and reviewed by the hospital ethics committee.

Table 10: Surge Capacity

Appendix H: Burn Center Referral Criteria[1]

A burn center may treat adults, children, or both. Burn injuries that should be referred to a burn center under normal circumstances include the following:

1. Partial-thickness burns of greater than 10% of the total body surface area
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's condition may be stabilized initially in a trauma center before transfer to a burn center. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
9. Burned children in hospitals without qualified personnel or equipment for the care of children
10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention.
11. During a disaster, some of these patients may be managed at non-burn facilities with consultation from burn unit personnel depending on the severity of the injury and the capabilities of the hospital.

[1] Source: *American College of Surgeons: Resources for Optimal Care of the Injured Patient, 2014* (https://www.facs.org/~/media/files/quality%20programs/trauma/vrc%20resources/resources%20for%20optimal%20care%202014%20v11.ashx)