



Minnesota Burn Surge Plan

EMERGENCY PREPAREDNESS AND RESPONSE

Updated: June 2019

Formatting update 11/18/2022

Minnesota Burn Surge Plan

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Letter from Minnesota Department of Health Commissioner

To Whom It May Concern:

Medical Surge planning is a priority for health care coalitions and the health care system in Minnesota. This requires building both capacity—the ability to manage a sudden influx of patients—and capability—the ability to manage patients requiring very specialized medical care.

Medical treatment for burns is specialized and verified by the American Burn Association (ABA). Minnesota has two ABA verified Burn Centers, both located within the Twin Cities metropolitan statistical area, with 35 licensed burn beds combined. Minnesota is at risk for a burn surge event due to the oil and refinery industries and at risk for quickly overwhelming the limited burn resources within our state.

All hospitals should be prepared to receive, stabilize, and manage burn patients. In line with this, Minnesota has developed educational materials and training located on the Burn Surge Website at: <https://www.health.state.mn.us/communities/ep/surge/burn/index.html>. We have also established 13 Burn Surge Facilities to assist the ABA verified Burn Centers during a mass casualty burn incident that results in a surge of patients. The Minnesota Burn Surge Plan provides a structure for how the Minnesota ABA verified Burn Centers will work with partners including the Burn Surge Facilities, EMS, health care coalitions, and the Minnesota Department of Health to respond to such an event. This plan is the culmination of collaboration with all aforementioned partners and will be exercised and updated as needed.

The major sections of the plan include:

- Risks and resources within Minnesota, the ABA Midwest Region, and HHS Region V,
- An approach to response that traverses the Conventional, Contingency and Crisis equilibrium of response, and
- Burn Care Supply planning recommendations.

If you have any questions or concerns regarding the Framework, please contact Cheryl Petersen-Kroeber, the Director for the Emergency Preparedness and Response, at (651) 201-5700 or Cheryl.Petersen-Kroeber@state.mn.us.

Sincerely,

Jan Malcolm (signature kept on file)
Commissioner of Health
P.O. Box 64975
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Purpose

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

The Plan incorporates the principles of conventional, contingency, and crisis care to best assign resources appropriate to the scope and magnitude of the incident. When the number of burn victims and the severity of their injuries exceeds or is expected to exceed the Minnesota Burn Center resources, other facilities will be requested to surge to provide additional capacity and capability until burn care can be provided with conventional burn care resources.

This Plan also includes recommendations for the stabilization and initial management of burn victims for 72 hours when immediate transfer to an ABA verified burn center is not feasible. This content is intended to support care for these victims as the triage and coordination of patient transfer is addressed. It will supplement the ABA’s national preparedness efforts.

Scope

This Plan is applicable to the following intra-state partners: ABA verified burn centers, Minnesota Burn Surge Facilities (BSFs), Minnesota Health Care Coalitions (HCCs), Minnesota Emergency Medical Services (EMS), the EMS Regulatory Board (EMSRB), and Minnesota Department of Health, Emergency Preparedness and Response (MDH-EPR). This plan also addresses inter-state partners such as the ABA Midwest Region and the Great Lakes Healthcare Partnership (GLHP). Additionally, it takes into account national best practices and lessons learned while leveraging Minnesota specific strengths and weaknesses when face with a burn surge incident.

Planning Assumptions

- 1) An incident triggering the activation of the Minnesota Burn Surge Plan will happen with little or no warning.
- 2) All acute care hospitals are capable of providing initial triage and resuscitation for burn victims.
- 3) Initially, all local hospitals will follow normal organizational protocols when faced with burn victims.
- 4) In patient care, after initial fluid 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.

- 5) Minnesota Burn Centers can surge for a total capacity of 52 burn patients¹ of varying acuities.² Anything over 52 total burn patients³ would require Burn Surge Facility (BSF) involvement and/or transfer of patients to out-of-state burn centers with available capacity.
- 6) Burn Surge Facilities have the capability to initially treat and stabilize, at minimum, one burn patient for up to 72 hours if unable to immediately transfer to a Burn Center.
- 7) National burn bed capacity is limited and coordination of patient transfers (destination and logistics) may take days to achieve when out-of-state capacity is required.
- 8) 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.
- 9) EMS protocols include both direct EMS transport of burn patient(s) from the scene to a Minnesota Burn Center or EMS transport to local hospital for initial treatment and stabilization.
- 10) Each of the eight Minnesota HCCs have regional burn surge annexes to their HCC All-Hazard Response plans in place to address coordination between their neighboring BSFs, Minnesota Burn Centers and MDH-EPR.

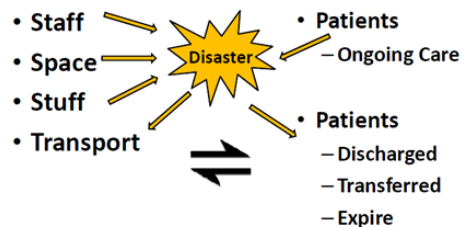
Background

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 enough 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.

Transportation resources are important resources 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 out of crisis surge capacity back to either a contingency or conventional surge capacity.

Crisis Surge ends when you reach: Surge Equilibrium



Surge Equilibrium, Kearns, R.

¹ HCMC can surge up to 25 burn beds, Regions Hospital up to 27 burn beds as of April 2019.

² 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.

³ Burn centers on average operate at 90% capacity, therefore a victim count of less than 52 could easily push Minnesota into surge operations where BSFs would be utilized.

Risk

Oil Transport and Refineries

Due to its unique location between the oilfields of Canada and North Dakota, Minnesota is a major player in the United States (U.S.) oil supply system. Approximately thirty percent of all crude oil imports for the U.S. travels through Minnesota. In 2017 alone, Minnesota produced or imported more than five billion gallons of petroleum products for its own residents. Two-thirds of the 1.2 million barrels of crude oil produced by North Dakota's Bakken oil field are transported by rail, the majority passing through Minnesota, including major metropolitan areas. In addition, Minnesota has two petroleum refineries, extensive pipelines, and twenty-five petroleum storage terminals that are accessed by truck and rail. Both oil refineries are located within the Twin Cities Metropolitan Statistical Area (MSA); the Flint Hills refinery with a capacity of 290,000 barrels per day and the St. Paul Park refinery with a capacity of 98,515 per day.⁴

Terrorism

In recent years, reports from the U.S. Department of Homeland Security indicate 26% of the approximately 250 individuals who have traveled abroad to join terrorist organizations have come from Minnesota. These reports *do not* indicate Minnesota is at higher risk for these individuals to perform terrorist attacks in Minnesota.^{5, 6}

Minnesota is home to high profile potential targets and events. In addition to the oil industry, there is the Mall of America in the Twin Cities MSA, and the number one ranked hospital in the nation in Rochester. Additionally, in recent years the Twin Cities MSA has been host to the National Football League (NFL) Super Bowl, the National Collegiate Athletic Association (NCAA) Final Four, and the Republican National Convention.

Scarce Resources

According to the ABA, there are 70 verified Burn Centers within the United States.⁷ Additionally, the American Hospital Association reports a total of 6,210 U.S. hospitals,⁸ resulting in a ratio of 1 ABA verified Burn Center to approximately every 89 hospitals. Because burn care is so specialized and requires expertise, typically, these hospitals operate near capacity. Therefore, a surge of patients requiring burn care can easily overwhelm a state.

⁴ House Research Department. *Minnesota's Petroleum Infrastructure: Pipelines, Refineries, Terminals*, Updated October 2018. Accessed June 3, 2019 at <https://www.house.leg.state.mn.us/hrd/pubs/petinfra.pdf>

⁵ Seduski, D. *ISIL's Recruitment of Foreign Fighters in the Twin Cities*, Accessed June 4, 2019 at <https://www.hsdl.org/c/isils-recruitment-of-foreign-fighters-in-the-twin-cities/>

⁶ <https://www.cnn.com/videos/justice/2015/04/20/bts-minnesota-terror-arrests-isis.cnn>

⁷ American Burn Association. *Verified Burn Centers*, Accessed May 7, 2019 at <http://ameriburn.org/quality-care/verification/verified-burn-centers/>

⁸ American Hospital Association. *Fast Facts on U.S. Hospitals, 2019*, Accessed May 7, 2019 at <https://www.aha.org/statistics/fast-facts-us-hospitals>

Minnesota burn surge resources are available at the [MDH Burn Surge website \(https://www.health.state.mn.us/communities/ep/surge/burn/index.html\)](https://www.health.state.mn.us/communities/ep/surge/burn/index.html). [Patient Care Strategies for Scarce Resource Situations](https://www.health.state.mn.us/communities/ep/surge/crisis/index.html), including burn supply and triage recommendations are also available at [MDH Crisis Standards of Care website \(https://www.health.state.mn.us/communities/ep/surge/crisis/index.html\)](https://www.health.state.mn.us/communities/ep/surge/crisis/index.html).

Minnesota ABA Verified Burn Centers Facilities

There are two ABA verified Burn Centers in Minnesota, Hennepin County Medical Center (HCMC) in Minneapolis and Regions Hospital in St. Paul. Both Burn Centers are members of the Metro Health and Medical Preparedness Coalition and receive intra- and inter-state burn patient referrals. They will serve in leadership capacities as it relates to burn surge coordination, communication and patient treatment during a Minnesota burn surge incident.

Regions Hospital serves as the coordination center of the ABA Midwest Region. They are the 24/7 point of contact for inter-state coordination, bed availability requests, resource requests, and overall support during an ABA Midwest regional mass casualty burn incident. Participating states in the ABA Midwest Region include: Iowa, Illinois, Kansas, Minnesota, Missouri, North Dakota, Nebraska, South Dakota, and Wisconsin. The ABA has established a [Midwest Region Burn Mass Casualty Incident \(BMCI\) Response Plan](#) to assist in the coordination of burn patient transfers within the region upon request of the ABA Burn Center Director.

Table 1: ABA Verified Burn Center Contact Information

ABA Verified Burn Centers	Licensed Beds	Surge Beds	Total Surge Capacity	Contact Information
Hennepin County Medical Center	17	8	25	1-800-424-4262 or 612-873-4262
Regions Hospital	18	9	27	1-800-922-2876 (BURN)

Resources

- Maintain adequate supplies to provide care for severely burned victims from a mass burn event up to total surge capacity as indicated below.
- If asked, assist BSFs in the procurement of critical burn surge supplies, such as silver-impregnated dressings and wound care products, and maintain a database of supply sources and contacts.

Planning

- Actively engage in planning sessions with coalition, state, and regional (ABA) partners as it relates to a burn surge response.
- Maintain up-to-date hospital burn surge plans.

Education/Training

- Provide subject matter expertise to MDH in development and update of training protocols.
- Assist with providing training to acute care hospitals and Burn Surge Facilities on burn patient management when requested. Cost of training is at the discretion of the requesting facility and Burn Centers.

Minnesota Burn Surge Facilities

Minnesota currently has 13 BSFs serving as supporting resources for the Minnesota Burn Centers, when a burn patient is unable to be transferred to a definitive care hospital in a timely manner. The role of a BSF is voluntary and all BSFs have varying levels of capacity for treating and stabilizing burn victims. These facilities are expected to have both medical and staffing resources to initially treat and sustain, at minimum, one burn patient for up to 72 hours. BSFs will not generally be expected to deliver definitive burn care.

Table 2: Minnesota Burn Surge Facilities

Region	Adult Trauma Level	Peds Trauma Level	Burn Surge Facility	Contact Information
Northeast	I	II	Essentia Health, St. Mary's Medical Center—Duluth	Stat Doc: 218-786-7777 Burn ICU: 218-786-2815
North Dakota	II	N/A	Altru—Grand Forks	Altru One-Call: 1-855-425-8781
North Dakota	I	II	Sanford Fargo Medical Center	Sanford Fargo One Call: 1-877-647-1225
North Dakota	II	N/A	Essentia Health—Fargo	701-364-2255 or 844-865-2255
Central	II	N/A	Centracare-St. Cloud Hospital	Admission and Transfer Line: 888-387-2862
Metro	III	N/A	Allina-Abbott Northwestern⁹	Patient Placement: 612-863-4099
Metro	N/A	I	Children's of Minnesota, Minneapolis	Physician Access: 866-755-2121
Metro	II	N/A	Allina-Mercy Hospital	Patient Placement: 763-236-7799
Metro	I	II	North Memorial Health Hospital	Administrative Manager (24/7): 763-581-4304

⁹ Attached to Children's of Minnesota-Minneapolis, Trauma Level I

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Region	Adult Trauma Level	Peds Trauma Level	Burn Surge Facility	Contact Information
Metro	III	N/A	Allina-United Hospital¹⁰	Patient Placement: 651-241-8155
Metro	II	III	UMMC—M Health	Patient Placement: 612-672-7575
Southeast	I	I	Mayo Clinic Hospital—St. Marys Rochester	Admission and Transfer Center: 507-255-2910
Southwest	III	N/A	Sanford – Worthington	Operator: 507-372-2941 ask for Administrative Supervisor

Resources

- Maintain adequate supplies to initially treat and sustain at least one burn patient for up to 72 hours from a burn surge incident (see below).
- Utilize the Adult and Pediatric just-in-time response resources located on the MDH website, as needed.

Planning

- Actively engage in planning sessions with both regional and state partners as it relates to a burn surge response.
- Maintain up-to-date hospital surge plans.

Education/Training

- To the greatest extent possible have at least one provider be ABLS certified or of equivalent certification.
- Train all emergency department (ED) providers and nursing staff on acute burn treatment including, but not limited to: burn depth, determining total body surface area, triage, fluid resuscitation protocols, and order sets.¹¹
- Disseminate Basic and Advanced Burn Surge Education materials to staff.
- Provide inpatient providers and nursing staff access to BSF just-in-time response resources including adult and pediatric order sets and fluid resuscitation protocol.
- Provide inpatient providers the ability to connect subject matter experts at Burn Centers.

¹⁰ Attached to Children’s of Minnesota-St. Paul, Trauma Level IV

¹¹ All resources can be found on the Minnesota Department of Health’s Burn Surge website: <https://www.health.state.mn.us/communities/ep/surge/burn/index.html>

Burn Care Supply Planning Recommendations

Recommendations from Burn Center Clinical Staff at HCMC and Regions Hospital.

Patient Care Strategies for Scarce Resource Situations, including burn supply recommendations, are available online at MDH Crisis Standards of Care website.

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. Establishing and maintaining “Burn Cart” may be a helpful approach to organizing and maintaining supplies and materials needed for a specific hospital’s burn surge capability and capacity.

Hospital Outpatient

Outpatient clinics and urgent care centers may also cache appropriate supplies for their location and patient population. Assume half of all patients will require tetanus boosters and assess and plan for up to 72 hours of pharmacy re-supply. Supply level planning considerations by facility type are:

Center Type	ABA Burn Center	Burn Surge Facilities (Level I and Level II Trauma Centers)	Burn Surge Facilities (Level III & Level IV Trauma Centers)
Number of Outpatients	100	50	25

Table B-1: Outpatient Recommended Supplies per Patient for 24-72 Hours

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	120 gm (4oz) tube bacitracin
30	Tablets of ibuprofen 800 mg and stock liquid form for pediatric use
50	Opioid analgesic tablets (50 tablets for 5 day supply if 1-2 tablets every 4 to 6 hours); also stock pediatric alternatives

Hospital Inpatient

Assess and plan for up to 72 hours of pharmacy re-supply. Supply level planning considerations by facility type are:

Center Type	ABA Burn Center	Burn Surge Facilities (Level I and Level II Trauma Centers)	Burn Surge Facilities (Level III & Level IV Trauma Centers)
Number of Inpatients	50	10	5

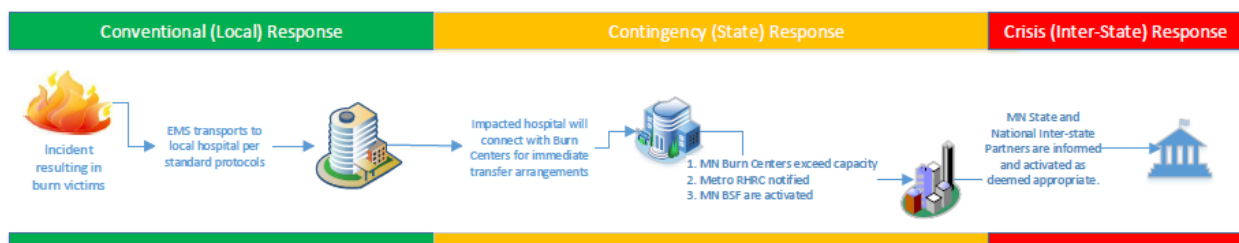
Table B-2: Inpatient Recommended Supplies per Patient for 24-72 Hours

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 of Morphine (or equivalent); 10 mg/hour x 24 hours per patient 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 $4\text{mL/kg} \times 50\% \text{BSA} = 14$ liters of Fluid. Lactated Ringers preferred, but saline is acceptable – may contributed to acidosis (See <u>Nurse Driven Fluid Resuscitation Protocol</u>)
1	Central line (including 20% pediatric sizes)

Concept of Operations

The Minnesota state burn response incorporates the principles of conventional, contingency, and crisis care:

Figure 1: The Continuum of Response



Conventional (Local) Response

Indicator

- An incident occurs resulting in burn victims.

Response Operations

All entities will follow their normal local response operations.

- **EMS:**
 - 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 a local hospital for initial treatment and stabilization and secondary transport to a Minnesota Burn Center.
- **Local Hospitals:**
 - All hospitals providing emergency services should be equipped to initially treat and stabilize burn victims for up to 6 hours. When local resources are overwhelmed (which could be 1+ burn victims), the hospital should call a Minnesota Burn Center and request their assistance. Hospitals are to follow normal organizational referral protocols and American College of Surgeons (ACS) transfer criteria with respect to burn victims (See Appendix E). The local hospital should activate its usual hospital coalition and other plans to support patient treatment, transfer, and tracking.
- **Regional Health Care Coalitions:**
 - All eight regional coalitions have documented their regional response operations in their Burn Surge Annex to the HCC All-Hazards Preparedness and Response Plan.
- **Burn Centers:**
 - The Burn Center notified (HCMC or Regions Hospital) will coordinate burn capacity. Burn Centers will continue to admit patients per normal operating protocols until capacity has been met.

Contingency (State) Response

Trigger

- The Minnesota Burn Centers have:
 - 1) Exceeded their current capacity and normal operations, and
 - 2) Activated their internal surge plans.

Action

- The Minnesota Burn Centers jointly decide to notify the Metro Coalition’s Regional Hospital Resource Center (RHRC) and have them activate the Minnesota Burn Surge Plan.

Activation

- 1) Minnesota Burn Centers notify Metro Coalition RHRC at **(612) 873-9911** to activate the Minnesota BSFs and other relevant partners.
- 2) Metro Coalition RHRC on-call will send a MNTrac regional alert to all users identified by the role of *Burn Surge*.¹² The alert will include notification of:
 - Incident details as known
 - BSF activation
 And requesting they:
 - Update immediate bed capacity and bed surge capacity via MNTrac
 - Join a conference call with all response partners in the near future for situational awareness and action

Alerting/Notifications

- MNTrac will serve as the main communication platform in providing situational updates and instant communication between all impacted stakeholders. Features to be used include but are not limited to:
 - *Alert Manager*: Alerts will be created, updated, and published to “Burn Surge” Role and other partners as appropriate.
 - *Command 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 surge purposes.
 - *Resource Requests*, if applicable.
 - *Patient Tracking*, if applicable.

¹² See Appendix F for more information on to how to receive this alert.

Response Operations

- **Metro Health and Medical Preparedness Coalition Regional Hospital Resource Center (RHRC):**
 - Will activate the Minnesota Burn Plan using pre-established procedures.
 - Will assist with activities such as off-loading current patients from the Burn Centers to available appropriate facilities and requesting resources across state partners.
 - May assist in patient tracking of victims once destinations have been identified by the Burn Centers' Medical Directors (or clinician designees).
- **EMS:**
 - Will enact MOU/MOAs as necessary and continue to transport patients per protocols.
- **Local Hospital(s):**
 - Continue to treat burn patients for up to 6 hours.
 - Will coordinate transfer of patients to appropriate BSF or Burn Center.
- **Minnesota Burn Centers:**
 - Either HCMC or Regions; whichever is contacted first and is leading the response, will actively coordinate 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.
 - ABA program coordinator¹³ will request bed availability in the ABA Midwest Region.
- **Minnesota BSFs:**
 - Will maintain situational awareness and remain on "standby" until requested to respond (e.g. accept off-loaded patients, fulfill any resource requests, etc.)
 - Those in closer proximity to the incident may be required to respond earlier than those located farther away.
 - Will provide updated immediate bed capacity and bed surge capacity.
 - Will activate internal surge plans in preparation to:
 - Rapidly discharge patients if appropriate and/or
 - Admit and treat patients according to their reported capacity.
- **Regional Health Care Coalitions:**
 - Will continue to respond according to their regional response operations in their Burn Surge Annex to the HCC All-Hazards Preparedness and Response Plan.
- **MDH-EPR:**
 - Will maintain situational awareness and share situational awareness with the GLHP as 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.

¹³ The ABA Midwest Region Point of Contact is Regions Hospital in Minnesota. A Regions Hospital staff member is the point of contact.

Crisis (Inter-State) Response

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

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

Trigger

There is either an immediate need or future need (in the next 72 hours) to send burn victims directly to Burn Centers outside of Minnesota because:

- 1) The Minnesota Burn Centers have:
 - Exceeded their surge capacity and resources and cannot safely admit another burn victim.
 and
- 2) The Minnesota Burn Surge Facilities have:
 - Exceeded their burn surge capacity, and/or
 - Determined their resources are insufficient to meet the need.

Action

- Regions Hospital (the ABA Midwest Region coordinating center) will notify the ABA Midwest region and MDH-EPR will notify GLHP partners of the need to transfer patients outside of Minnesota over the next 72 hours so they can receive definitive care.

Response Operations

- **Metro Health and Medical Preparedness Coalition RHRC:**
 - Will help create patient lists and facilitate transportation and tracking of patients once destinations have been identified.
- **EMS**
 - Will continue to transport patients to appropriate BSF or Burn Center.
 - Will request EMS assets (e.g. ambulance strike teams) from the EMSRB as needed.
- **Local Hospital(s)**
 - Will continue to stabilize patients and coordinate transfer of patients to appropriate BSF or Burn Center.
- **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 actively consult with BSF regarding medical guidance.
 - Will actively consult with the ABA Midwest partners to determine final destination for patients awaiting definitive care transport.

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- Will communicate movement of patients out of state to MDH-EPR.
- **Minnesota BSFs:**
 - Will maintain situational awareness with all partners and will be in communication with Minnesota Burn Centers or assigned designee in receiving medical consultation for burn treatment.
 - Will continue to treat burn victims and work collaboratively with respective regional partners until a Burn Center is ready to accept the patients for definitive care.
 - Will share patient information from their facility with Burn Centers and MDH-EPR to help inform triage/transport priority.
 - Will prepare the patients for transport to definitive care location.
- **Regional Health Care Coalitions:**
 - Will continue to respond according to their regional response operations in their Burn Surge Annex to the HCC All-Hazards Preparedness and Response Plan.
- **MDH-EPR:**
 - Will work collaboratively with Metro RHRC partners in consolidating and centralizing communication efforts.
 - Will notify GLHP partners of intentions to transfer patients out of state.
 - Will provide situational awareness to other state agencies as appropriate, (e.g. EMSRB Director, Homeland Security Emergency Management (HSEM) Director).

Response Roles and Responsibilities

A successful burn surge response requires statewide cooperation. This requires a clear delineation of roles for each partner during the burn surge response.

Table 4: Roles and Responsibilities in Each Phase of Response

Agency	Roles and Responsibilities	Roles and Responsibilities	Roles and Responsibilities
	Conventional	Contingency	Crisis
EMS	<ul style="list-style-type: none"> Transport burn victims per normal protocols Enact MOUs/MOAs as needed 	<ul style="list-style-type: none"> Enact MOUs/MOAs as needed Engage in communication with other response partners 	<ul style="list-style-type: none"> Notify EMSRB for need of Minnesota AST resources if applicable Engage in communication with other response partners
Local Hospital(s)	<ul style="list-style-type: none"> Maintain minimum stock of burn supplies Stabilize and treat burn victims for up to 6 hours Follow normal organizational referral protocols 	<ul style="list-style-type: none"> Activate internal surge plans Stabilize and triage burn victims and prepare them for transport to multiple facilities Continue to treat patients for up to 6 hours Engage in communication with other response partners 	<ul style="list-style-type: none"> Internal surge plans activated Stabilize burn victims and prepare them for transport to multiple facilities Continue to treat patients for up to 6 hours Be prepared for possible transport delays Engage in communication with other response partners
Burn Centers (HCMC, Regions)	<ul style="list-style-type: none"> Admit patients per normal operating protocols until capacity is met Notify the RHRC of movement to Contingency Response if appropriate 	<ul style="list-style-type: none"> Activate internal surge plans Actively coordinate with the Metro RHRC, BSFs, and MRCC patient placement Act as the response lead in coordination with the Metro RHRC Provide medical guidance to BSF staff Notify the ABA Midwest Region of potential future need(s) 	<ul style="list-style-type: none"> Medical teams will determine the most appropriate facility for burn patients Request ABA Midwest or GLHP regions Burn Centers to accept victims Actively consult with BSF(s) regarding patient stabilization and medical guidance Develop and maintain a process for recording burn casualty reports associated with an MCI

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Agency	Roles and Responsibilities	Roles and Responsibilities	Roles and Responsibilities
			<ul style="list-style-type: none"> ▪ Maintain documentation for potential reimbursement if state of emergency declaration is made
<p>Burn Surge Facilities</p>	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ Acknowledge activation by RHRC ▪ Activate internal surge plans ▪ Prepare to accept burn victims based on pre-established MCI numbers ▪ Have both medical supplies and staffing resources to initially treat and sustain burn patient(s) for up to 72 hours ▪ Engage in communication with other response partners ▪ Consult with Burn Center medical staff regarding patient care 	<ul style="list-style-type: none"> ▪ Continue to provide care to burn victims ▪ Prepare victims for intra- or inter-state transport to Burn Centers ▪ Continue to engage in communication with all response partners ▪ Maintain documentation for potential reimbursement if state of emergency declaration is made
<p>Regional Health Care Coalitions</p>	<ul style="list-style-type: none"> ▪ Support affected hospital as requested 	<ul style="list-style-type: none"> ▪ Activate regional coalition plans as appropriate ▪ Promote information exchange, transportation and patient tracking as required 	<ul style="list-style-type: none"> ▪ Continue to promote information exchange, transportation and patient tracking as required
<p>Regional Hospital Resource Center of the Metro Health and Medical Preparedness Coalition</p>	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ Activate the Minnesota Burn Plan at the request of the Burn Centers, thus notifying Burn Surge Facilities, EMS partners, and MDH-EPR. ▪ Act as the response lead in coordination with the Burn Centers ▪ Coordinate communications among all response partners, 	<ul style="list-style-type: none"> ▪ Support patient offloading from BSFs and Burn Centers to other Trauma Level I or II facilities, as appropriate¹⁴ ▪ Will help create patient lists and facilitate transportation and tracking of patients once destinations have been identified.

¹⁴ For example, a BSF may transfer trauma patients to a Trauma Level I or II to create space for more burn patients if needed.

MINNESOTA BURN SURGE PLAN

Agency	Roles and Responsibilities	Roles and Responsibilities	Roles and Responsibilities
		including Burn Centers, BSFs, EMS, and MDH-EPR as required <ul style="list-style-type: none"> ▪ Support information exchange and patient tracking as required 	
MDH-EPR	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ Serve in a supportive role to health care coalitions ▪ Remain actively engaged in communications ▪ Send a situational awareness alert to GLHP partners, as appropriate 	<ul style="list-style-type: none"> ▪ Upon request, notify the GLHP of the need to find definitive care for burn victims ▪ Coordinate with Metro RHRC and Burn Centers patient placement with interstate partners
EMSRB	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ Coordinate EMS transport resources as requested ▪ Engage in communication with other response partners 	<ul style="list-style-type: none"> ▪ Coordinate EMS transport resources as requested ▪ Possible activation of Minnesota ASTs ▪ Possible waiver of staffing for ambulances ▪ Engage in communication with other response partners
ABA Midwest Region	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ On alert for incident expansion ▪ Notify other ABA verified Burn Centers and gather capacity and capability data to accept patients over the course of 72-96 hours if needed ▪ Assist in patient triage as needed 	<ul style="list-style-type: none"> ▪ Members will activate facility level burn surge plans ▪ Provide overall support including inter-state coordination, bed availability request, and resource request
Great Lakes Health Care Partnership (GLHP)	<ul style="list-style-type: none"> ▪ No action required 	<ul style="list-style-type: none"> ▪ Acknowledge situation when notified 	<ul style="list-style-type: none"> ▪ Provide overall support including inter-state coordination, bed availability, and fulfill resource requests as appropriate

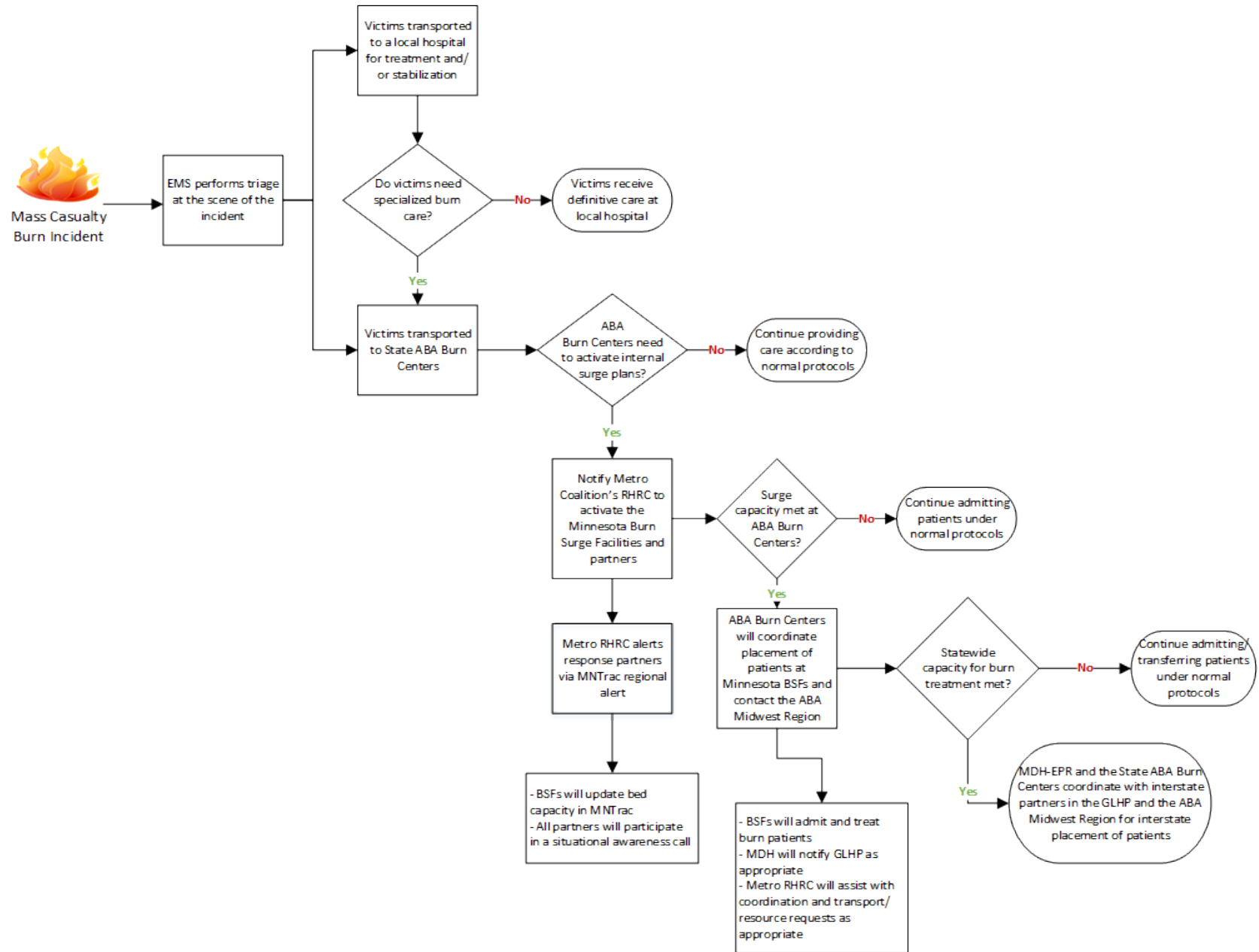
Plan Maintenance and Review

This plan was developed through a collaborative effort of Minnesota's two ABA verified burn centers, the 13 BSFs, and regional HCCs.

This Plan will be maintained and distributed by MDH-EPR and posted on the [MDH Burn Surge website](#). Review of the Plan will be, at minimum, annually; or after an exercise or activation as warranted. The review process will incorporate lessons learned from an activation and any new planning developments. Necessary subject matter experts will be consulted if needed.

Supporting partners are responsible for maintaining and reviewing their own internal plans. This includes the ABA Burn Centers, BSFs, HCCs, and other response partners. Additionally, each partner is responsible for having appropriate staff select the Burn Surge role in MNTrac and opt into the appropriate alert level (See Appendix F for more information).

Appendix A: Minnesota Burn Surge Response At-a-Glance



Appendix B: Emergency Medical Services 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.

Conventional or Contingency Response:

- 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.

Crisis Response:

- 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 Transport Resources

Table B-1: Air Transport Resource Contact List

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

Appendix C: Interstate Burn Unit Resources

ABA Midwest Region Verified Burn Centers

<i>State</i>	<i>City</i>	<i>Hospital</i>	<i>No. of Beds</i>
Iowa	Iowa City	University of Iowa	16
Missouri	Columbia	University of Missouri, Peak Memorial Burn Center	16
Missouri	Kansas City	Children's Mercy Hospital	13
Missouri	Springfield	The Burn Center at St. John's	9
Missouri	St. Louis	Barnes Jewish Hospital, Washington University	24
Missouri	St. Louis	St. John's Mercy Medical Center	15
Nebraska	Lincoln	St. Elizabeth Community Health Center	16
Nebraska	Columbus	Children's Hospital Inc.	8

Burn Centers Located in Both

<i>State</i>	<i>City</i>	<i>Hospital</i>	<i>No. of Beds</i>
Illinois	Maywood	Loyola University Medical Center	10
Illinois	Chicago	Cook County Hospital	18
Illinois	Chicago	University of Chicago	16
Illinois	Springfield	Memorial Medical Center	10
Wisconsin	Madison	University of Wisconsin Hospitals & Clinics	7

Great Lakes Health Care Partnership Burn Centers

<i>State</i>	<i>City</i>	<i>Hospital</i>	<i>No. of Beds</i>
Indiana	Fort Wayne	St. Joseph Hospital	12
Indiana	Indianapolis	Eskenazi Health, Richard M. Fairbanks Burn Center	15
Indiana	Indianapolis	Riley Hospital for Children at Indiana University	6
Michigan	Ann Arbor	University of Michigan Health Systems	16
Michigan	Detroit	Detroit Receiving Hospital Burn Center	12
Michigan	Detroit	Children's Hospital of Michigan	10
Ohio	Akron	Children's Hospital Medical Center of Akron	12
Ohio	Cincinnati	The University Hospital Burn Center	9
Ohio	Cincinnati	Shriners Hospitals for Children	14
Ohio	Cleveland	MetroHealth Medical Center	14
Ohio	Columbus	Nationwide Children's Hospital	14
Ohio	Columbus	The Ohio State University Wexner Medical Center	19

Appendix D: Burn Hospital Surge Capacity and Response Planning

The ABA (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 four 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	<p>The spaces, staff, and supplies used are consistent with daily practices in the institution.</p> <p>These spaces and practices are used during a mass casualty incident that triggers activation</p>	<p>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 supplies, pharmaceuticals, and equipment.</p> <p>Standard of care is maintained.</p>
Contingency	<p>The spaces, staff, and supplies used are not consistent with daily practices but maintain or have minimal impact on usual patient care practices.</p> <p>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).</p>	<p>Relies on the spaces, both in the emergency department and designated areas in the facility.</p> <p>Relies on staff who have appropriate credentials but do not routinely manage patients with injuries of this nature.</p> <p>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.</p> <p>Standard of care is maintained but could be only marginally sufficient.</p>
Crisis	<p>Adaptive spaces, staff, and supplies are not consistent with usual standards of care but provide sufficiency of care in the setting of a catastrophic disaster (provide the best possible care to patients, given the circumstances and resources available).</p>	<p>Relies on alternative care sites such as rapidly deployed tents in the parking area or adjacent building.</p> <p>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.</p> <p>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).</p> <p>Some care during this period will be provided outside the typical standard of care.</p> <p>* 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.</p>

Appendix E: Burn Center Referral Criteria¹⁵

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 greater than 10% Total Body Surface Area (TBSA).
2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
3. Third-degree burns in any age group.
4. Electrical burns, including lightning injury.
5. Chemical burns.
6. Inhalation injury.
7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
8. Any 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.

¹⁵ American College of Surgeons: Resources for Optimal Care of the Injured Patient, 2014, pp 101.
(<https://www.facs.org/~media/files/quality%20programs/trauma/vrc%20resources/resources%20for%20optimal%20care.ashx>)

Appendix F: MNTrac for Burn Surge Guide

MNTrac is a database-driven web application intended as a statewide solution. This system has been designed specifically to track bed, pharmaceutical and resource availability from all designated facilities within the state as well as providing for allocation of these resources to support surge capacity needs. Hospital bed diversion status, emergency event planning, emergency chat, and alert notifications are supported in real time. Information is aggregated from all facilities and can be transported to other systems and agencies to improve communications and share pertinent information.

If you do not have a MNTrac account, please contact your Regional Health Care Preparedness Coordinator (RHPC).

After having an account, **you must select appropriate roles and opt in to receive alerts.** Please have appropriate staff do this and ensure staff members update their profiles *at least annually*.

How to Select a Role

1. Log into MNTrac using your username and password.
2. In the top right hand corner select your Name. This will open your user profile.
3. There are five sections of your user profile: Demographics, Permissions, Options/Notifications, Trainings, and History.
4. Select Permissions and then Edit Permissions.
5. Under Selected Roles choose **“Burn Surge.”** You can select more than one role by holding down the Control key on your computer.
6. Hit Save.

How to Opt-In to Receive Alerts

1. Log into MNTrac using your username and password.
2. In the top right hand corner select your Name. This will open your user profile.
3. There are five sections of your user profile: Demographics, Permissions, Options/Notifications, Trainings, and History.
4. Select Demographics.
5. Enter/Update email, phone and/or pager. Hit Save.
6. Select Options/Notifications.
7. Select Alert Settings.
8. Opt in to select **“Regional Alert”** by any or all methods (email, text, pager).
9. Hit Save.

Appendix G: Abbreviations and Acronyms

Abbreviation/Acronym	Definition
ABA	American Burn Association
ACS	American College of Surgeons
AST	Ambulance Strike Team
BMCI	Burn Mass Casualty Incident
BSFs	Burn Surge Facilities
ED	Emergency Department
EMS	Emergency Medical Services
EMSRB	Emergency Medical Services Regulatory Board
EPR	Emergency Preparedness and Response
GLHP	Great Lakes Healthcare Partnership
HCC	Health Care Coalition
HCMC	Hennepin County Medical Center
HSEM	Department of Homeland Security and Emergency Management
MCI	Mass Casualty Incident
MDH	Minnesota Department of Health
MNTrac	Minnesota system for Tracking Resources, Alerts, and Communications
RHPC	Regional Health Care Preparedness Coordinator
RHRC	Regional Hospital Resource Center
TBSA	Total Body Surface Area