State Health Care Coalition
Burn Surge Annex

Louisiana ESF8 Health & Medical Preparedness and Response Network Coalition

June 2022

Contents

Approval and Implementation

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Record of Distribution

Louisiana ESF8 and HPP Team is responsible for the distribution, tracking, and revision of this plan.

Date	Recipient	Platform
June 2022	LERN, DRCs, Burn SMEs, ESF8	Email

Record of Changes

Louisiana ESF8 maintains the HCC Burn Surge Annex as a living document intended to be annually reviewed and revised, with input from stakeholders.

Date	Description	Pages
MM/DD/YYYY	[Description of Change]	[Pages Effected]

Training, Exercise, and Engagement Activity

Louisiana ESF8 Network is committed to ongoing training, exercise, and engagement for the HCC Burn Surge Annex to validate public health and healthcare capabilities in the state of Louisiana.

Date	Activity Summary	Parties Involved	Entry Made by
April 2022	Final Working draft version sent	ADRCs, LERN, Burn SMEs	HPP/ESF8 - FA
June 2022	HCC Regional Exercises	ESF8 HCC leads and select members	HPP/ESF8 - FA

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INTRODUCTION

A burn surge or burn mass casualty incident (BMCI) is defined as an event where capacity and capability to care for patients becomes significantly overwhelmed. These event sizes may vary depending on where the incident occurs and the relative access to care and transportation resources. Burn care is specialized and must be provided timely by appropriately trained clinicians. In many cases, depending on the severity, the best outcomes are seen in patients who have access to follow-up, specialized care to make a full recovery. In Louisiana, only four hospitals have the capability to treat burn patients – however the capacity is finite. In extreme cases where a large surge is the result of an incident, the four burn facilities may become quickly overwhelmed. Depending on the severity of the incident and other variables – i.e., weather, access to transportation, combined injuries – it may not be feasible for burn units to accept burn patients right away. These events will require surge measures in non-burn facilities and will likely force coordinated response at every level in-state and beyond.

This plan is intended to be flexible and scalable to guide response to burn surge incidents at the most local level, through the regional healthcare coalition, and up to state level activation involving various stakeholders. It contains guidelines for consideration in the development of facility-level burn responses plans, including resources for training and augmentation, supplies and equipment, and special considerations. The plan is created in accordance with federal guidance and requirements for all healthcare coalitions (HCCs) in alignment with regional and state ESF8 Network Response Plans.

Purpose

This annex provides guidance to support a burn surge incident in which the quantity and acuity of burn patients exceed the capability of the state of Louisiana's healthcare coalitions. The annex identifies the subject matter experts, existing response procedures and specialized resources available within the HCCs and state that must be engaged during a mass burn event. The goal is to provide access to the highest standard of care possible for all victims of a burn event.

Scope

This plan applies to all participating healthcare coalitions, organizations and agencies contained within the geographical boundaries of Louisiana. Key stakeholders in this annex referenced are Federal, State, Regional and local ESF8 partners and supporting response partners. This plan specifically guides burn surge response protocols followed by all nine healthcare coalitions, outlining critical communications mechanisms and coordination strategies among partners for burn response. These key partners include the Louisiana Emergency Response Network (LERN), pre-hospital/EMS providers, the four designated burn hospitals in Louisiana and the Southern Region Burn Consortium (SRBC).

This annex builds upon several-well established protocols and operations plans for surging in Mass Casualty Incidents (MCIs), triaging and routing of patients, along with burn injury transfer-guidelines between burn centers.

Overview

Louisiana ESF8 Health & Medical Preparedness and Response Network

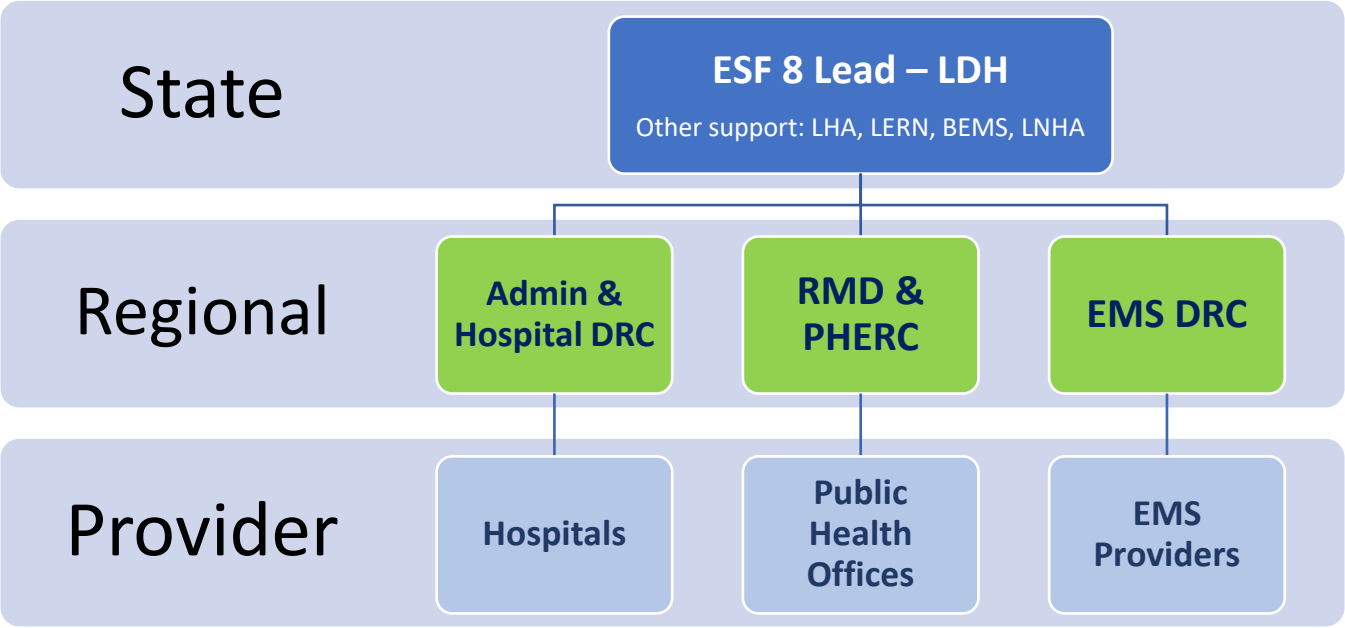
The Louisiana ESF8 Health & Medical Preparedness and Response Network Coalition prepares, plans, coordinates, and facilitates emergency support to public health and medical emergencies. This network is primarily anchored in emergency preparedness and response functions with the ability to incorporate other subject matter experts and industries as the event moves through different stages of response.

The Louisiana ESF8 Network is organized into nine regions that spans the 64 parishes. Each region is comprised of a continuum of resources ranging from designated Trauma hospitals, Tier 1 and Tier 2 hospitals, Primary Care, Federally Qualified Health Centers (FQHCs), Public Health Units, outpatient clinics, psychiatric facilities, rehabilitation and long-term facilities, and EMS services. Louisiana's hospitals provide various levels of care to meet immediate medical needs of citizens every day and during disasters. A classification system of hospitals was identified based on capabilities provided. Hospitals serve voluntarily as one of three levels: Designated Regional Hospitals (DRH), Tier 1 Hospitals, Tier 2 Hospitals. For more information about the ESF8 structure, reference the Louisiana ESF8 Network Coalition Plan.

Regional Healthcare Coalition

Each of the nine regions of Louisiana contains regional ESF8, health and medical response partners who work in coordination and collaboration with one another. These healthcare coalitions are led by designated regional coordinators (DRCs) assist with planning and response; ensuring objectives align with individual local providers as well as other health and medical industry partners.

Table 1. *ESF8 Network Structure*



Burn Surge Risk Assessment

While most hazards closely planned for in Louisiana are for higher likelihood scenarios, events perceived as low probability but yield high impacts with great potential to overwhelm the healthcare delivery systems should be examined. It is important to assess and note that some incidents may not directly be burn or fire related, however they have greater potential to present a burn surge incident through secondary threats or impacts stemming from the initial hazard. This plan is designed to account for the identified hazards in Table 1 and the historical incidents, outlined in Attachment 1.

The table below examines some of the top threats described within the state ESF8 network Hazards Vulnerability Analysis (HVA) findings and the Governor's Office of Homeland Security and Emergency Management's Threat and Hazard Identification and Risk Assessment (THIRA) results. The state's ESF8 platform was developed as a tool to allow healthcare partners to conduct a consistent assessment which can be analyzed geographically or by hazard. The results of the ESF8 HVA included input from Hospitals, EMS, Nursing Homes, and other healthcare provider types. The THIRA is conducted by regional and state emergency management officials and accounts for recent experiences and response capabilities during real events and/or high probability scenarios.

Table 2. *Burn Hazards & Threat Matrix*

Hazard/Threat	Impacts	Secondary threats	Considerations
Hurricanes Severe Thunderstorms Tornados	Critical Infrastructure - Power, water, and communications outages/interruptions, Obstructed access for mitigation or response	Fires/explosions – residential and industrial	• Unstable critical infrastructure and failures in power redundancies • Increased usage of generators and cleanup operations may result in fires, electrical injuries, and carbon monoxide poisoning (combined injuries and illnesses) • Access to water for fire suppression post-storm may be limited
Transport of hazardous materials: Railway, Waterway/Maritime, Highway	Accidents/collisions Spills/releases Uncontrolled burn	• Fire • Explosions • HAZMAT exposures	• Location and proximity factors come into play on how severe impacts will be • Higher trauma potential with hazardous materials exposures • Decontamination • May occur in remote or hard to access locations
Mass Casualty Incidents – *unintentional* - Auto accidents - Industrial or agricultural accidents - Structural Fires; multi-family dwellings and businesses	Road or bridge closures Spills/Releases Uncontrolled burn	• Fire • Wildfire • Explosions • Chemical/HAZMAT exposures, including radiologic	• Higher trauma or combined injuries potential • Field triage and treatment • Decontamination
Mass Casualty Incidents – *intentional/terrorism* - Bombings - Riots	Road closures/access obstructed to retrieve patients Heavy law enforcement	• Multiple explosions and fires • HAZMAT exposures, including radiologic	• Higher trauma or combined injuries potential • Field triage and treatment • Active crime scene

Assumptions

These general assumptions are designed to guide the planning and response for any mass burn casualty/burn surge incident response, though each assumption may not be fully applicable to every burn planning scenario.

- This is an annex to ESF8 Regional Healthcare Coalition and State Response plans, intended to outline the rapid movement of patients from the scene to acute care and/or burn hospitals.
- This Annex does not replace other local, or facility emergency operations plans or procedures, but builds upon the existing plans and their annexes.
- The Louisiana Emergency Response Network (LERN) in coordination with Burn Medical Directors and EMS providers at the scene will support patient routing in large scale MCI incidents.
- LERN and Burn Medical Directors will determine when resources and capacity are overwhelmed, prompting outreach to the Southern Region Burn Consortium and the American Burn Association (ABA) for additional bed availability.
- Emergency events resulting in burn patients often involve other injury or exposure types – i.e., trauma/combined injuries, invisible injuries such as respiratory burns or chemical exposures.
- Care of critical burns is resource intensive and requires specialized staff and clinical expertise.
- All hospitals providing emergency care may receive burn patients and should be able to provide initial assessment and stabilization.
- Tier 1 hospitals, including critical access hospitals with no burn capability may need to provide baseline care for less critical patients with burns when in-state resources – beds and transportation – are exceeded.
- In an effort to minimize hospital surge, allowing all hospitals to concentrate on critical burn injuries, EMS may be directed or allowed to treat and release patients for follow-up care.
- Telemedicine may be an alternative method for non-burn clinicians to observe and recommend treatment of less severely injured burn patients.
- Burn mass casualty incidents may be concurrent to other hazards that increase the risk of exposure to healthcare professionals, such as hazardous materials incidents.
- Access to burn specific medical materials to treat large number of burn patients may be requested by hospitals through healthcare coalition partners and other burn hospitals.
- Access to surplus burn medical supplies may be requested through the Southern Region Burn Consortium, the ABA, and the Strategic National Stockpile (SNS) however their availability once sourced may not be immediate.
- Considerations for crisis standards of care and alternate care sites and systems may be necessary depending on the size and scale of the burn event.

CONCEPT OF OPERATIONS

Activation and Notification

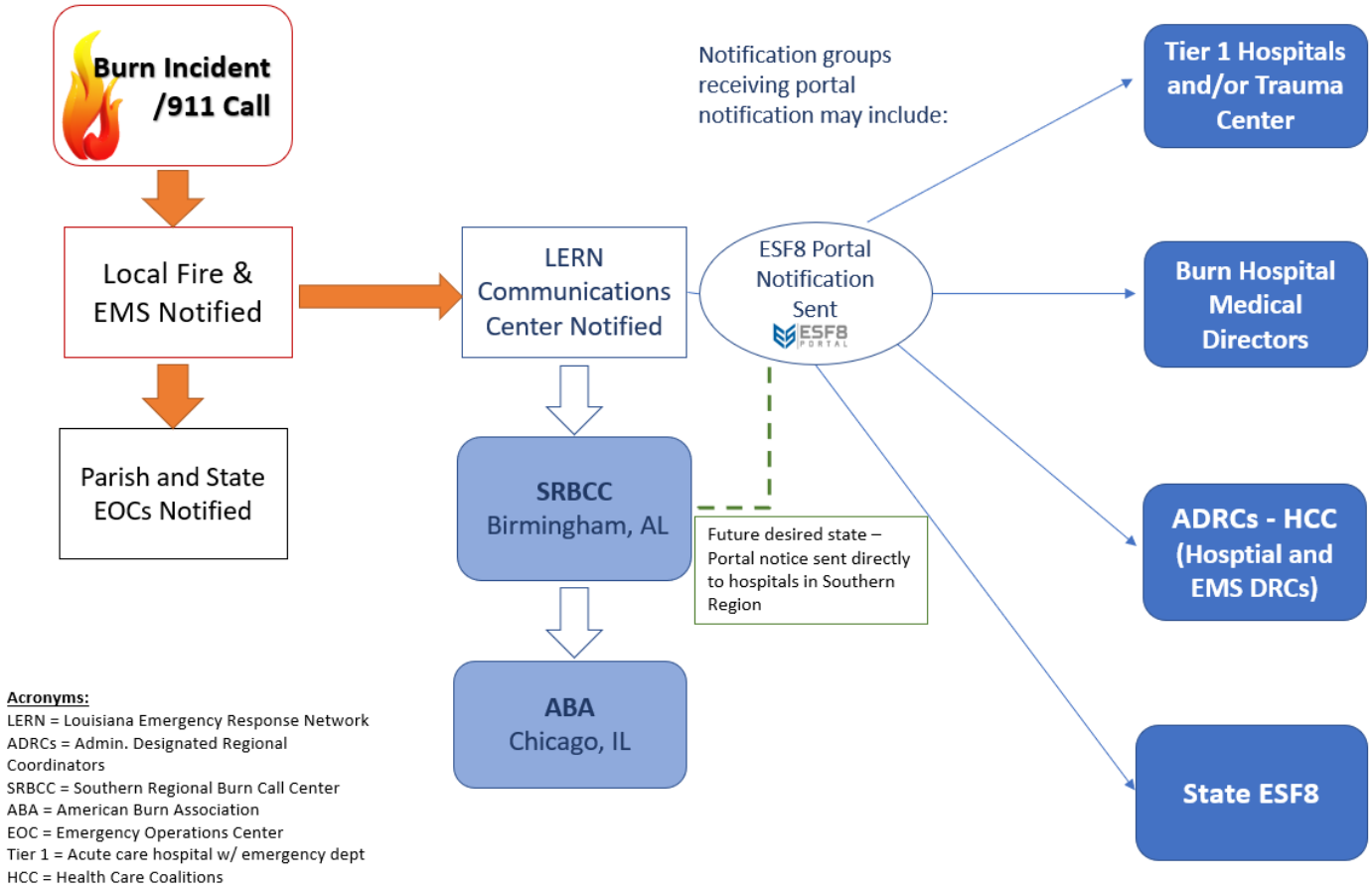
This plan may be activated during any event in which the number of patients with burn injuries requiring treatment and hospitalization exceeds the normal case load experienced by pre-hospital providers and burn hospitals. The types of incidents which may prompt the activation of this plan may vary, therefore the

triggers and notification mechanisms may differ. Each HCC maintains a regional preparedness and response plan that outlines additional notification methods and triggers for activation of response plans.

Burn Mass Casualty Incidents (BMCIs) – these incidents may involve trauma and burn injuries. LERN receives notification of BMCI events from EMS providers on scene and generates an initial notification through the ESF8 Portal Messaging application, see Table 3. This mass emergency notification system can be assigned to reach regional response partners and hospitals to stand-by for potentially receiving patients from the scene. The ESF8 portal has the capability to send automated texts, emails, and phone calls.

- BMCI event-size triggers for notification align with the existing protocols used by LERN for standard MCI levels – MCI levels 1-5
- During larger BMCIs, LERN may provide initial notification of the incident to put Southern Regional Coordination Center (SRCC) on stand-by. Reference the Southern Region BMCI Response Plan.
- Additional response information may be reported to LERN or local hospitals through radio or traditional phone communications.
- Updates from LERN will be shared broadly with HCC partners and hospitals through continued ESF8 portal messaging notifications.
- In the event of hazardous materials exposure, the early notification to hospitals is critical for the establishment of decontamination sites at hosptial EDs along with the proper donning of PPE and implementation of protective measures for healthcare workers.

Table 3. *Burn MCI (BMCI) Notification Process*



Smaller or secondary burn surge incidents – this type of surge incident may not be sudden but increases in burn incidents may be gradual over time. The triggers and notification process to activate the plan will be different for these types of incidents. Burn directors at the designated burn facilities may see trends in increasing cases and notify colleagues statewide of the increased incidents. LERN and DRCs may closely monitor the availability of burn beds during these incidents as capacity may become strained.

Coordination and Situational Awareness

Once notification of a BMCI has been distributed, hospitals may be requested to update bed availability and services in the ESF8 Portal, Resource Management application. In addition to general bed availability reporting, the specific fields of information, depicted in Attachment 1, may be updated to provide LERN and HCC partners visibility on capacities, capabilities, and services. The following ESF8 Portal Screens are critical to **initial patient placement and distribution** in burn incidents:

- LERN, Trauma screen
- LERN, Burn screen

Other ESF8 Portal screens may be useful for non-burn or less severe burn patient placement, along with patient tracking/reconciliation and ongoing response:

- Hospital ED screen
- LERN, MCI screen – ED status

In smaller-scale or slowly evolving events, hospitals may collaborate directly with each other per usual referral and transfer patterns. At the point in which in-state resources for bed types or transport types are exceeded, LERN may be contacted to reach out to the SRCC. Each region's HCC Preparedness and Response Plans outline the mechanisms for coordination and information sharing for situational awareness.

Roles and Responsibilities

Partner		Response Roles
Individual HCC members	Non-burn Hospitals	Tier 1 Hospitals • Manage, triage, and treat self-presenting burn patients from scene • Plan to treat burn patients for extended period should bed availability be limited or delays in placement inside/outside of state • Coordinate with LERN and/or Burn Centers to determine transfer needs • Activate facility emergency operations plan (EOP) and/or surge plan, making space for surging patients into ICU, medical surge units, operating rooms, etc. Tier 1, Trauma Hospitals (include all roles listed above) • Manage and treat combined injuries, trauma prioritized patients which may include burn patients needing stabilization before transfer to burn center Tier 2 Hospitals • Assist with surge to help off-load patients from acute care/Tier 1 hospitals • Provide transitional care for burn patients in long-term recovery and treatment – includes psychiatric, rehabilitation, long-term acute care, etc.
	EMS	• EMS providers have baseline training on burn care, including triage and initial treatment protocols

		• EMS providers understand ICS, scene management and notification protocols for MCI/BMCIs with LERN • EMS agencies in coordination with LERN, transport and distribute casualties per triage protocols to the appropriate facilities for care
	Parish Emergency Management (OEPs)	• Supports and maintains awareness of multi-agency response • Maintain situational awareness and supports ESF8/health and medical response function of local HCC members and providers • Understands and exercises burn plans of local industries and jurisdictional partners
Regional HCC Leads	ADRC/Hospital DRC	• Initiate and/or support mass notification to HCC members • Assist hospitals with updates to the ESF8 portal and patient tracking in the At-Risk Registry • Communicate and coordinate with DRC network inside and outside of the region to monitor the situation and identify available resources to support surge strategies • Help coordinate burn resource and supply needs between HCC members and systems
	EMS DRCs	• Ensure communication with jurisdictional and local providers, placing on stand-by • Assist with requests for surge units • Support LERN with coordination and communication as needed with on-scene incident command • Assist with coordinating patient tracking from scene to hospital(s) • Request support for surge at field treatment sites, including request for additional supplies and equipment
	GOHSEP Regional Coordinator(s)	• Coordinate resource requests with Parish OEPs as local capabilities are exceeded • Maintain situational awareness and share information with state EOC as needed
	LERN Tri-Regional Coordinators	• May support as a liaison with local incident command • Assist DRCs with confirming information from incident and coordination with LERN call center • Support DRCs and hospitals with initial patient tracking from scene to hospital
Primary Burn Response Partners	Louisiana Emergency Response Network (LERN)	• Coordinate directly with on-scene Incident Command during BMCIs • Manage mass notification during MCI/BMCIs including impacted regions, notification to burn medical directors, and burn hospital contacts • Request updates into ESF8 portal of burn bed availability and surge capacity • During MCI and BMCIs, optimize trauma and burn patient distribution • Assure appropriate clinical information is being captured and relayed to LERN coordination center and/or receiving hospital emergency department • Initiate communication with SRCC and request SRBC burn hospital bed availability
	Designated Burn Hospitals	• Provide real-time updates on burn bed availability into the ESF8 Portal, LERN Burn screen • Receive ongoing communications pertaining to a BMCI and make beds and resources available as quickly as possible to help receive burn patients • Burn hospitals furthest from event/scene may be called upon to provide technical assistance, telemedicine support or clinical guidance to non-burn facilities receiving patients or LERN to support the surge and triage process
State Respons	LDH/ESF8	• Maintain situational awareness and support notification to external ESF8 partners • Receive resource requests for surge supplies or transport units • Make formal request for support or resources from other state agency partners, external state support (EMAC) or federal support

	Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)	• Assist LDH/ESF8 with formal resource requests such as EMACs, CDC SNS supplies requests, or federal surge ambulances • In large scale disasters, support with State Declaration and request for Federal/Presidential Declarations
	Louisiana National Guard (LANG)	• LANG includes a specialized trained Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Enhanced Response Force Package (CERFP) that can respond as requested to events where patient decontamination, emergency medical services, and field triage and treatment may be warranted • The CERFP medical element may be requested through GOHSEP and The Adjutant General (TAG) to support response in the field or augment at a hospital
Interstate/Federal Partners	Southern Region Burn Communications Center (SRBCC)	• Conduct a bed census of the southern region's Burn Centers • Maintain situational awareness and notify southern region burn hospitals of event, requesting they remain on standby • Support and assist with regional efforts for patient triage and transfer • Southern Region MCI Plan
	ABA National Headquarters	• Depending on event size and scale, notify other national burn regions • Make request for updates of burn bed availability to share with SRBCs/SRCCs and LERN • Provide expertise to assist during federal response
	CDC, Strategic National Stockpile	• Receive requests for SNS resources to support burn response • Coordinate resource distribution with states and local entities through the State's ESF8 network
	ASPR/HHS	• Provide federal resources to local and state agencies per formal requests • Support state information collection and submission including essential elements of information (EEI) related to response for burn events and requests for resources from federal contracts or systems – including SNS, NDMS, FEMA ambulances, etc.

Operational Mission Areas

Logistics and Surge Strategies

Louisiana has four hospitals that have dedicated burn units. Attachment 2.

- Region 1, New Orleans – University Medical Center New Orleans *
- Region 2, Baton Rouge – Baton Rouge General Medical Center, Bluebonnet Campus
- Region 4, Lafayette – Our Lady of Lourdes Regional Medical Center
- Region 7, Shreveport – Ochsner LSU Health Shreveport **

*State designated Level 1 Trauma Center and ABA Verified Burn Center
**State designated Level 1 Trauma Center, designated Pediatric Trauma Center

Staff

The skills required to care for severely burned patients are extremely specialized and require close oversight and guidance from burn physicians. In planning for BMCIs, it is important for non-burn hospitals to provide education to frontline providers to assist with understanding clinical guidelines to care for burn patients. Emergency department staff and EMS personnel/pre-hospital providers may obtain baseline training for providing burn care. The following section outlines burn specific courses.

Training Resources

- Advanced Burn Life Support (ABLS) – geared towards frontline, ED clinicians and critical care paramedics
- EMS Burn Basics – available on-demand through the LERN learning management system. While designed for EMS personnel, it serves as an introductory course for ED staff as well.
- American Burn Association – *Guidelines for Care in Austere Conditions*
  - Just-in-time training materials: Patient Care Priorities for the First 24 hours in Burn Mass Casualty for Non-Burn Physicians
- Other materials and posters with triage and treatment algorithms developed from national standards – reference Attachments 4 and 6.
- LERN Destination Protocol(s) – reference Attachment 5.

Space

Burn centers within hospitals are often uniquely designed and equipped in a manner to help clinicians provide optimal levels of care and comfort to patients. In instances where burn beds are unavailable, traditional med surge or ICU beds may be the next best alternative. Access to proper equipment with clinician guidance or outpatient treatment may be all that is available or necessary to care for less severe burn cases. Telemedicine may be utilized to support care and treatment decisions in these cases. See Attachment 2 for the locations of Louisiana's Burn Hospitals.

Supplies

The Hospital Preparedness Program (HPP) Grant has funded special projects to source Burn Wound Care Push Packs that are placed in regions across the state. The intent of these push packs is to have them readily accessible to be deployed to the field by way of EMS or positioned within Tier 1, Trauma hospitals and other pre-determined facilities to help in the management of up to ten patients with mild to moderate burns. In a BMCI, these kits may serve to assist with keeping patients from inundating burn hospitals, allowing burn physicians and hospitals to prioritize care for the most critical and severely burned patients. Attachment 3 of this document shows the staging sites across the state for Burn Wound Care Push Packs.

Medical Care and Treatment

The primary goals for providing burn care to patients:

- Stop the burn process
- Identify and treat concomitant trauma or injuries that pose immediate risk to life
- Maintain airways, control body temperature and hydration
- Protect wounds to reduce risk of infection. See Burn Wound Care Push Pack Protocol Appendix – Just-in-Time Training materials included.
  - Apply silverlon dressing to affected burns
  - Utilize hydrogel
- Provide pain management
- Minimize unnecessary secondary transfers

Triage/Secondary Triage

The LERN Destination Protocols are developed from and consistent with the nationally recognized and recommended triage guidelines. For non-burn clinicians, the ABA Austere Guidelines for triage and treatment of burn injuries should be followed. See Attachments 5 and 6.

Patient Transport

Incident command on scene will determine and request all transport resources needed for event response, including both air and ground resources. If additional resources are needed, mutual aid may be requested.

LERN MCI Protocol and LERN Destination Protocol for Burns. See Attachment 5.

- Pt at ED → ED staff calls LERN
- Pt at Burn Center → Burn physician calls burn physician at another hospital

Critical care, ground ambulances will be the preferred transport mechanism when performing burn patient transfers from facilities. These transfers will be prioritized based on triaged need and resource availability.

Patient Tracking

Hospital and Administrative Designated Regional Coordinators may monitor and assist with reconciling patients dispersed into hospitals from a BMCI. Hospitals receiving patients from any MCI or healthcare facility evacuation should plan to use the state's *At Risk Registry* – patient tracking system

Hospitals can access these systems by the Louisiana Department of Health, Emergency Preparedness website or the Louisiana Hospital Association Research and Education Foundation, Emergency Preparedness website.

All HCC Preparedness and Response plans outline regional patient tracking protocols.

Special Considerations

Behavioral Health

Recovery from severe burn injuries and adjustments to life after is often a lengthy, emotionally strenuous and life altering process. During large scale burn incidents, the demand in a particular community to provide behavioral health support and psychological first aid to burn victims, family members and first responders may be in high-demand. Burn centers have case management teams who can organize resources for burn patients and their families. Other healthcare partners including behavioral health hospitals, out-patient mental health services, and state Office of Behavioral Health (OBH) programs may be leveraged to assist with meeting the demand of behavioral health needs during the long-term response and recovery from a mass burn event. Additional nationally recognized programs and mental health resources for burn recovery to assist with combating post-traumatic stress disorder (PTSD) can be found through the International Association of Firefighters Foundation (IAFF) website, http://understandingburncare.org.

Vulnerable Populations – Pediatrics

Four hospitals in the state have ability to accept pediatric burn patients from the scene of the incident. The LERN Pediatric Patient Protocol found in Attachment 5 may be used to assist with on scene triage and destination decisions for pediatric patient.

- Region 1, New Orleans – Children's Hospital of New Orleans
- Region 2, Baton Rouge General Bluebonnet

- Region 4, Lafayette – Our Lady of Lourdes Women's and Children's
- Region 7, Ochsner LSU Academic Medical Center of Shreveport

In some cases, pediatric patients may be moved to a pediatric unit of a non-burn hosptial, but a burn physician/surgeon will oversee burn care.

Crisis Standards of Care

Louisiana ESF8 Network maintains a living Crisis Standards of Care Guidelines document which outlines the unique considerations that hospital and healthcare providers must face during events that present a threat to availability of resources and rationing of care to save the greatest good. Attachment 4, is the nationally recognized burn survivability chart published by the ABA and taught in the ABLS curriculum.

Deactivation and Recovery

Response Deactivation

The health and medical deactivation to a BMCI timeline may not align with the overall event deactivation. Investigations into the underlying causes of a BMCI event may take months and years. The health and medical response comparatively will be shorter in duration but may last hours and even days throughout the entire patient tracking process, to include final patient destination reconciliation from initial destination transport. Ideally health and medical response partners will conduct individual response agency "hotwashes" and collective After-Action Reports (AAR) will be conducted to highlight response successes and areas of improvement from a State and regional ESF8 and HCC level response.

Burn Patient Recovery

Individual patient recovery may take years and is reliant upon entire regional systems of care within and across healthcare coalitions. Patients transported out-of-state for initial burn care will likely be linked with in-state burn centers for assistance with ongoing care and injury recovery. It is the expectation that burn case managers will be of assistance with arranging access to ongoing resources for burn survivors. The LDH maintains current lists of licensed providers who may be able to provide specialty services – rehabilitation, behavioral health support, etc. during the long-term recovery.

Responder Recovery

Psychological first aid for EMS and hospital frontline responders and first receivers may be conducted immediately at the end of a response period per entity emergency operations plans. However ongoing mental health support may be needed for these response personnel given the nature of the event and severity of injures that are treated. Local and regional behavioral health clinics may serve as external, outpatient support entities. Additionally, the LDH Office of Behavioral Health maintains staff through the *Louisiana Spirit* program who are quickly able to offer crisis intervention for response partners and communities. Additionally, the National Firefighters Association maintains a repository of resources on their affiliate website: National Organizations for Burn Recovery Resources - http://understandingburncare.org.

APPENDICES

Historical Louisiana Burn Incidents

Region	Event	Date	Location	Outcome
1	Railcar filled with butadiene spilled, ignited, exploded	1987	Gentilly neighborhood	A total of 19,000 residents were evacuated from their homes for 3 days as the fire burned. No one was killed in the incident, but many residents complained of respiratory ailments and other health problems.
1	Barge carrying 2.2 million lbs of liquid chlorine sank while being pushed in the MS River	1962	About 125 miles from New Orleans near Vidalia, LA	The Federal gov't studied the risk posed by this load of chlorine gas and the potential result of large number of casualties. Presidential Disaster Declaration (DR139) and barge eventually raised safely.
1	Shell Refinery fire	March 2018	Chalmette	Fire due to release of waste chemicals; no injuries. It was noted that this was a planned event but based on the planned shutdown liquid materials was able to escape into another refinery flares that handles gases.
1	Chalmette Refinery, Valero Meraux Fire	April 18, 2020	Chalmette	Causing release of sulphur dioxide, no injuries.
1	Fire at Valero Meraux Refinery in Chalmette	April 10, 2020	Chalmette	Fire at Valero Meraux Refinery due to blown pressure valve injuring only one employee with 300 other employees on site.
1	Valero Meraux Refinery explosion	Feb. 27, 2017	Chalmette	Compressor fire erupted in an area rarely frequented by workers. No one was hurt in connection with incident.
1	Fire at Domino Sugar Factory	August 28, 2020	Chalmette	Fire emitting black clouds of smoke, 130 employees on site with no injuries reported. Able to evacuate. Company employs approx. 400.
1	Air Products & Chemical Co. Toxic Release	2018	New Orleans	As of 2018, New Orleans Air Products and Chemical Co. Release Methanol with 7,948 onsite releases.
2	Explosion and Fire at Chemical Plant	Dec 24, 1989	Exxon Refinery Baton Rouge, LA East Baton Rouge Parish	2 Fatalities 4 additional worker injuries 15 hours of fire
2	Explosion and Fire at Chemical Plant	June 13, 2013	Williams Olefins chemical plant Geismar, LA Ascension Parish	2 Fatalities Multiple other workers transported to hospitals including 5 significant burns

				treated at Baton Rouge General Burn Center
2	Explosion and Fire at Chemical Plant	Nov 22, 2016	Exxon Refinery Baton Rouge, LA East Baton Rouge Parish	4 Critical Burns 2 other workers with minor injuries
2	Fire at Chemical Plant	Feb12, 2020	Exxon Refinery Baton Rouge, LA East Baton Rouge Parish	Major Fire No Injuries
2	Traffic Accident involving Overturned 18 Wheeler	Aug 31, 2020	I-10 East near Lobdell exit West Baton Rouge Parish	Hazmat incident due to flammable liquid being transported No Injuries
2	Chemical Spill at Industrial Facility	Jan 21, 2021	Quala Wash Facility Airline Hwy. Baton Rouge, LA East Baton Rouge Parish	500 Gallons of Maleic Anhydride spilled Evacuation and Shelter in Place orders
2	Fire (Arson) at Hospital	May 25, 2021	Fire at Baton Rouge General Medical Center Mid City (female poured gasoline in lobby and lit a fire) Baton Rouge, LA East Baton Rouge Parish	1 Injury (arsonist) Property damage
2	Hazardous Materials exposure at Chemical Plant	Oct 21, 2021	Honeywell Geismer, LA Ascension Parish	1 Fatality due to severe burns from failing valve gasket with leak of hydrofluoric acid
3	Natural Gas Plant Explosion	Oct 8, 2015	Williams Partners Terrebonne Parish Gibson, LA	3 fatalities 2 injuries Gas was not flowing while scheduled maintenance was underway, however fire burned for over 7 hours; no evacuation or SIP orders were in place
3	Refinery fire	Aug 11, 2016	Motiva's Convent Refinery St. James Parish Convent, LA	No fatalities and no injuries Refinery long the Mississippi River between BR and NO Site produces conventional petroleum products
4	Chemical Plant Explosion	June 14, 2011	MultiChem Iberia Parish New Iberia, LA	No fatalities or injuries Multiple explosions Site blends and stores chemicals for oilfield operations

				Evacuation order issued for 1-mile radius
4	Train Derailment with HazMat release	May 27, 2000	Union Pacific Railroad St. Landry Parish Eunice, LA	No fatalities or injuries 15 rail cars carrying chemicals exploded after derailing due to defective track 3,000 residents and businesses evacuated for nearly a week while fire was controlled
4	Train Derailment with Hazmat release	May 17, 2008	Burlington Northern Santa Fe Lafayette Parish Lafayette, LA	No fatalities 20 illnesses 3,000 residents in Lafayette evacuated 10,000 gallons of hydrochloric acid released, causing a toxic cloud over area
5	Plant Explosion	February 8, 2017	Packaging Corporation of America (PCA), Deridder, LA	3 fatalities 7 transported to hospitals. 2 helicopters and six ground ambulances deployed
5	Plant Explosion/Chlorine Leak	August 27, 2020	Westlake Chemical, Westlake, LA	5 hours after Hurricane Laura Citizens complained of chlorine related symptoms Shelter in place declared
5	Plan Explosion/	January 26, 2022	Westlake Chemical, Westlake, LA	7 injuries, 5-6 transported
6	Wildfires	2021	Rapides Parish HVA	Less than 1% chance in Alexandria, Ball, Boyce, Cheneyville, Forest Hill
7	Fire, Explosion and Hazmat at a Plant	Sept. 17, 1984	Dixie Cold Storage; Shreveport, LA in Caddo Parish	1-fire fighter fatality 6-fire fighters injured including 1 with burns over 70% of his body
7	Fire, Explosion at a Chemical Plant	March 26, 2007	Calumet Refinery; Shreveport, LA in Caddo Parish	0-fatalities 2-workers injured including 1 hospitalized with 2nd burns
7	Explosion at a munitions Plant	October 15, 2012	GOEX Black Powder Manufacturing Facility Minden, LA in Webster Parish	0-fatalities 0-injuries 125,000 pounds of smokeless black powder exploded; subsequent investigation identified 10 million pounds of improperly stored M6 propellent at the Camp Minden site. Parts of the town of Doyline were evacuated for seven days while large parts of Camp Minden were closed for several months.

8	Angus Chemical Explosion	1991	Sterlinton, LA	223 injured/exposed; $250 million in damages
8	Various Chemical Plant burns of individuals	Periodic	Region wide	Periodically, area chemical plants will have exposures to chemical and heat burns during routine business.
8	Drug lab mishaps (criminal)	Periodic	Region wide	Illegal chemical labs sometimes result in chemical exposures and burns.
8	Utility Worker Burns (electrical)	Periodic	Region wide	Hazards associated with utility work (primarily electrical) result in occasional electrical burns.
9	1-12 Fatal crash	May 26, 2018	Covington, LA	18-wheeler hauling avocados crashed into several vehicles then caught fire and spread to the other vehicles 4 fatalities, several others injured Traffic on eastbound I-12 shut down for about 10 hours

HPP Burn Push Pack Protocol

Overview

The Hospital Preparedness Program (HPP) Grant requires the development of Burn Surge Annex during the BP3, 2021-2022 grant year. Part of these planning efforts involve ensuring proper equipment is pre-staged in the field to support a burn mass casualty incident. Of the approximately 110, Tier 1 acute care hospitals in Louisiana, only 4 of these facilities have dedicated burn units. A key planning assumption is that burn beds will be limited in large scale incidents and routing burn patients to the necessary level of care may be delayed, therefore non-burn hospitals and EMS agencies will be leveraged to provide immediate care. As a result of this assumption, burn surge kits or "Push Packs" have been thoughtfully composed by Burn Subject Matter Expert clinicians to include critical supplies to assist in the field or non-burn hospital emergency departments (EDs) with caring for up to 10 patients with mild to moderate burns.

Distribution Methodology

These kits are strategically placed in the field, across the state with the intent to rapidly deploy to the scene or non-burn hosptial ED to care for patients who may be delayed in receiving care at dedicated burn centers. Staging (or host) sites have been prioritized based on proximity to burn centers, likelihood to receive trauma, response to MCIs and accessibility to be deployed.

Staging/Host Sites – **Attachment 3.**

Deployment

Burn Surge kits are considered state assets and can be requested for use by ESF8 partners and HCC members other than those entities hosting the kits

Burn kits may be deployed through various partners and methods depending upon the scenario.

> LERN Notification: In large scale, Burn Mass Casualty Incidents (BMCIs), LERN will be notified early in the response phase and will issue mass notification to partners. After initial notification and upon receiving additional details from the scene as triage occurs, the offer or request to deploy the burn kits may be made by EMS incident command on scene

or by a non-burn hospital emergency department. The LERN call center operates 24 hours and may be able to assist with coordination and deployment of kits through DRC network.

Burn Hospital: As burn hospitals/systems get overwhelmed or receive calls from a non-burn hospital for assistance, they may request and/or direct the deployment of a push pack to another facility or scene.

ESF8, Regional HCC leads - Administrative, Hospital or EMS Designated Regional Coordinators (DRCs): Any regional partners may receive notice of an incident involving or potentially involving burns in which they may request to preemptively push a pack to a facility or scene. Any Tier 1 hospital or EMS agency receiving a surge of burn patients may request a push pack be deployed for their use in response. The DRC may work with partner DRCs in neighboring regions to request a pack that is not housed within their respective region but may be in closer proximity to the site or in the event their regional pack is already in use.

Inventory Management

- Both Acadian Ambulance and the HPP grant program staff will share kit inventory management responsibilities per the HPP Grant policies and procedures.
    - Acadian Ambulance will use their routine inventory management system to track the expiration dates of clinical supplies in the kits and notify HPP program staff and host sites of upcoming supply expirations
    - HPP program office will maintain and verify annually the location of the kits including current point of contact at sites, signed agreements, utilization reports, and distribution of updated materials to accompany the kits.
- **Attachment 3** depicts layout and contents of kits.

Utilization and Replenishment

When kits are deployed for use in the field, the hosting entity will work to inventory the supplies used in the kit. Items may be replaced or replenished through the following mechanisms

- Resupplied from host entity inventory – primarily for low cost, standard consumables i.e. ace bandages, saline, etc
- Request for resupply through Acadian Ambulance or HPP grant program – for non-traditional consumables or supplies
- For expiring supplies
    - Request to rotate with Acadian Ambulance supply management
    - Request to rotate with closest HCC member hospital, EMS provider, or kit host site
    - Request to rotate with University Medical Center New Orleans – particularly for silverlon wound care dressing(s)

RESOURCES & ATTACHMENTS

Attachment 1: ESF8 Portal Burn Screen

ESF8 Portal: The state's system for emergency response and situational awareness of healthcare facilities.

Resource Management: The application housed within the ESF8 portal that supports real time reporting of bed availability, ED status, and hosptial critical services availability that assists with emergency routing of patients during trauma, MCIs and other time sensitive illness/injuries.

The **Burn Screen** within Resource Management was developed in 2022 to advance the state's readiness for response to burn surge events. The screen was developed utilizing consistent data criteria collected quarterly by ABA through the regional burn network.

LERN >
- Burn
- STEMI-STROKE
- Trauma

Bed Poll >

View Configuration

Reports >

LERN/Burn

Data Refreshed on: 07/01/2022 09:50 AM

Non Compliant | Compliant | Not Applicable | Click column header for description.

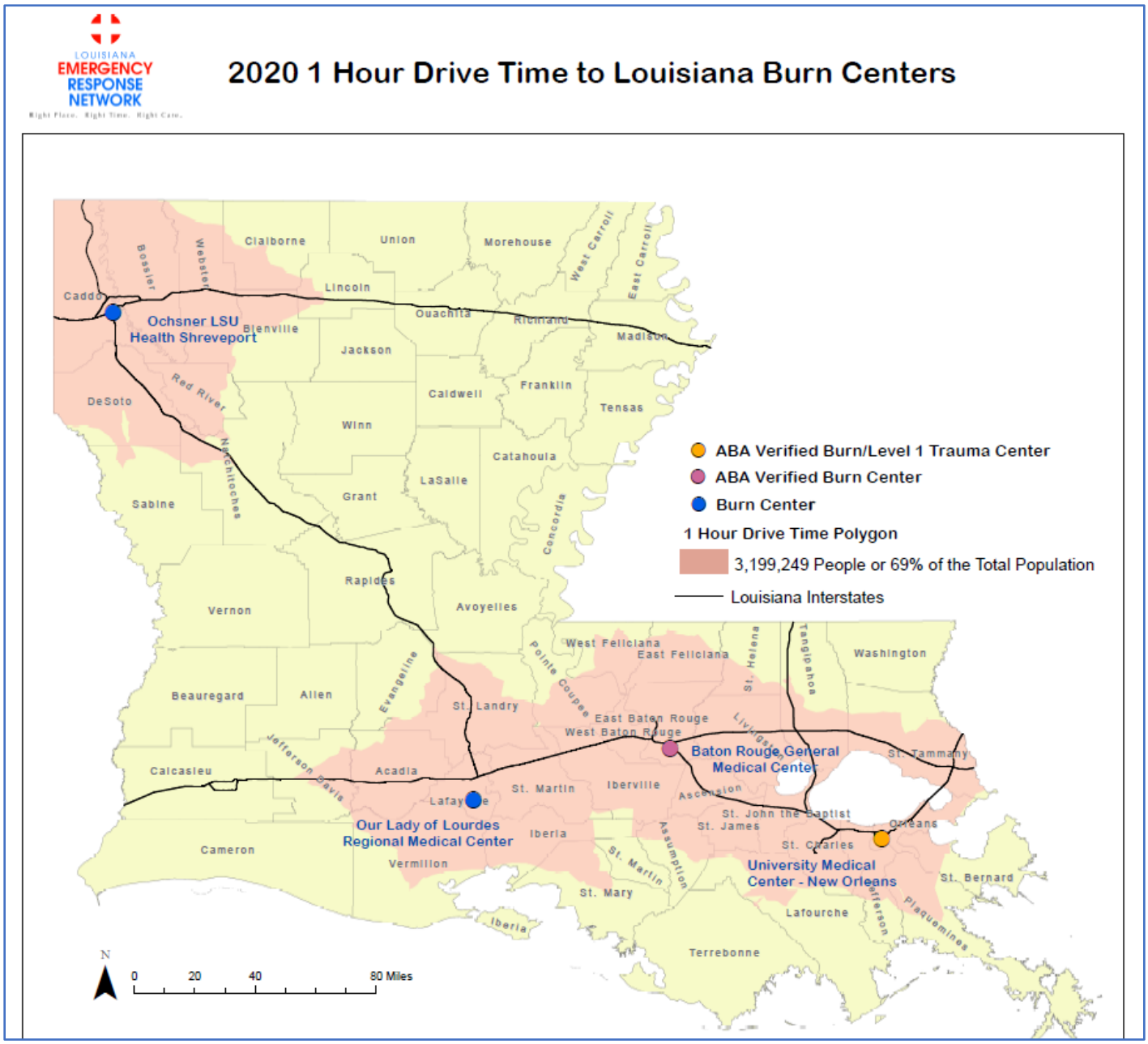
Region 1	Licensed Burn Beds	Max Licensed Burn Surge Intake	Available Combo Beds*	Available Adult Beds*	Available Pediatric Beds*	Define Pediatric Patients	Max Burn Surge Intake (Current)*	Burn Diversion*	Facility Comments
University Medical Center New Orleans (UMCNO) Last updated on: 06/30/2022 07:23 AM	20	16	0	2	0	14 Yrs. and under	7	No	

Region 2	Licensed Burn Beds	Max Licensed Burn Surge Intake	Available Combo Beds*	Available Adult Beds*	Available Pediatric Beds*	Define Pediatric Patients	Max Burn Surge Intake (Current)*	Burn Diversion*	Facility Comments
Baton Rouge General Bluebonnet Last updated on: 07/01/2022 06:41 AM	8	0	4	4	4	14 Yrs. and under	0	No	

Region 4	Licensed Burn Beds	Max Licensed Burn Surge Intake	Available Combo Beds*	Available Adult Beds*	Available Pediatric Beds*	Define Pediatric Patients	Max Burn Surge Intake (Current)*	Burn Diversion*	Facility Comments
Our Lady of Lourdes Regional Medical Center Inc. Last updated on: 06/29/2022 05:51 AM	6	9	2	6	2	14 Yrs. and under	6	No	

Region 7	Licensed Burn Beds	Max Licensed Burn Surge Intake	Available Combo Beds*	Available Adult Beds*	Available Pediatric Beds*	Define Pediatric Patients	Max Burn Surge Intake (Current)*	Burn Diversion*	Facility Comments
Ochsner LSU Health Shreveport - Academic Medical Center Last updated on: 06/28/2022 07:16 AM	17	13	2	4	3	17 Yrs. and under	4	Yes	

Attachment 2: Louisiana Burn Hospitals



Attachment 3: Louisiana Push Pack Contents & Host Sites

Products/Supplies		Materials
Consumables • Saline (exp) • Hydration Supplement/Liquid IV (exp) • Saline flush (exp) • Hydrogel (exp) • **Silverlon (exp, rotate w UMC)**	• Ace bandages • CAT (tourniquet) • Kerlix Non - Consumables • Scissors • Headlamps	• Contacts – Acadian, LERN & HPP • Contents layout (above)

Region	Hospital	EMS
1	• St. Bernard Parish Hospital	Acadian Air, NO
2	• OLOL	Acadian Air, BR
3	• Ochsner St. Charles	Acadian Air, Houma
4	• Ochsner Lafayette General	Acadian Air, Lafayette
5	• Lake Charles Memorial Hospital	R5 EMS DRC – Acadian Ambulance Sprint Truck
6	• Rapides Regional Medical Center • Christus St. Francis Cabrini • Bunkie General Hospital • LaSalle General Hospital	Acadian Air, Alexandria
7	• Minden Medical Center	Life Air Rescue, Shreveport
8	• St. Francis Medical Center	Pafford Air, Ruston
9	• North Oaks Medical Center • St. Tammany Parish Hosptial • Slidell Memorial Hospital	Acadian Air, Hammond

Attachment 4: ABA/ABLS Burn Survivability Chart

Age, in years	Percent TBSA burn size									
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	≥ 90
0-1.9										
2-4										
5-19	Outpatient			Delayed			Immediate			
20-29										
30-39										
40-49										
50-59										
60-69					Low survival, may opt for expectant management					
≥ 70										

Attachment 5: LERN Protocols

Call LERN Communication Center at 1-866-320-8293 for patients meeting the following criteria:

Burn Patient with Trauma? → YES → **Follow LERN Trauma Destination Protocol**

↓ NO

- Burn patient without patent airway
- Patient with facial / airway burns or anticipated airway compromise
- Burn patient with > 40 % BSA without IV or IO access

→ YES → **Transport to Closest ED**

↓ NO

2nd and 3rd degree burns involving:

- > 10% BSA
- Face, hands, feet, genitalia, perineum, or major joints
- Circumferential burns
- Electrical burns, including lightning injury
- Chemical burns

Or

- Inhalation injury
- All third degree burns

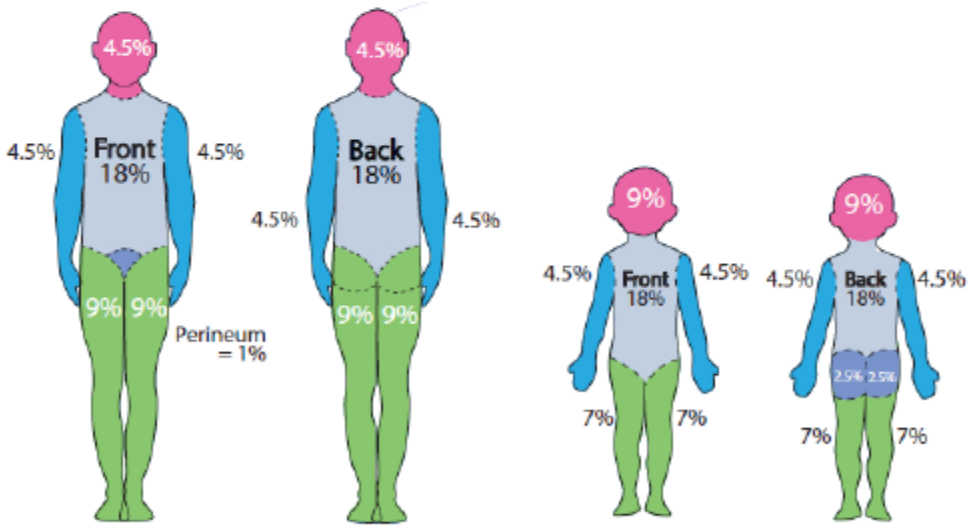
→ YES → **Transport to Closest Burn Center**
**If distance or patient condition impedes transport to burn center, consider transport to most appropriate resourced facility.*

↓ NO

Transport per Local EMS Protocols

LOUISIANA EMERGENCY RESPONSE NETWORK

Destination Protocol
BURN



- In the event of a burn disaster, each burn center should immediately contact LERN. LERN Call Center (LCC) will conduct a bed poll.
- In the event of a burn disaster and excess beyond capacity, the next geographically closest burn center should be alerted immediately by LERN.

PRE-HOSPITAL BURN CARE GUIDELINE

SCENE

- Assess safety of EMS
- Wear appropriate PPE
- Chemical Exposure: Brush off powder and irrigate with tepid water
  Consider type of chemical, ocular involvement, duration of contact, & SDS sheet

TRAUMA

Assess for traumatic injuries and manage per routine trauma care

AIRWAY

If stridor, respiratory distress, soot-tinged sputum, or suspected airway injury → Secure with definitive airway device

BREATHING

History suspicious for inhalation injury → Start 100% FiO_2 and monitor SpO_2

CIRCULATION

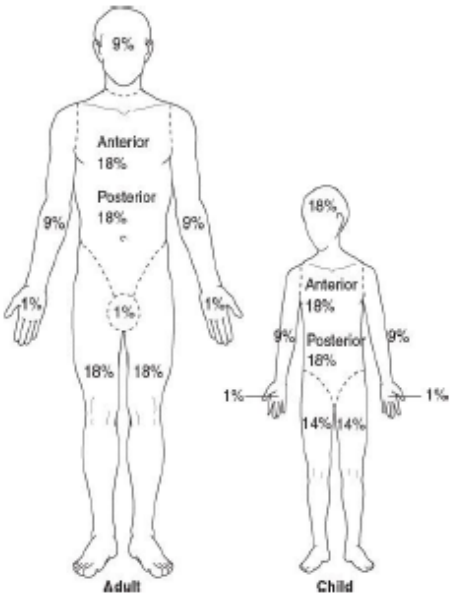
Access: Obtain IV access preferably through unburned skin, consider peripheral IV or IO
Resuscitation < 20% TBSA: LR* or NS @ 125cc/hr, and make NPO
Resuscitation ≥ 20% TBSA: 5 years or younger LR* or NS @ 125cc/hr
(*LR preferred*) 6-13 years LR* or NS @ 250cc/hr
14 years and older LR* or NS @ 500cc/hr
Circumferential or Electrical Burns: Check for distal pulse, elevate, consider urgent transfer

DISABILITY, DEFICIT, DEFORMITY

Assess for neurologic impairment and if impaired, consider associated injury, carbon monoxide poisoning, substance abuse, hypoxia, or pre-existing medical conditions.
*Pain Management: Follow your agency's Pain Management Protocols

EXPOSURE, EXAMINE, ENVIRONMENT

- Assess severity of burn injury by calculating burn size using diagram
- Include only 2nd or 3rd degree burns (blisters, bullae, sloughing skin, white/brown eschar)
- Remove rings, jewelry, contacts if no delay & warm patient with blanket
- Wounds can be dressed with DRY towels, washcloths or gauze
- Avoid ice packs or cooling burns and take precautions to prevent hypothermia



FOR PRE-HOSPITAL DESTINATION PLEASE CALL THE LERN COMMUNICATION CENTER:

1(866)320-8293

LOUISIANA EMERGENCY RESPONSE NETWORK
Right Place. Right Time. Right Care.

ED BURN CARE GUIDELINE

SAFETY

- Assess safety of hospital staff and wear appropriate PPE
- Chemical Exposure: Brush off powder and irrigate with tepid water. Consider type of chemical, ocular involvement, duration of contact, & SDS sheet availability

↓

AIRWAY

If stridor, respiratory distress, soot-tinged sputum, or suspected airway injury → secure with definitive airway device

↓

BREATHING

History suspicious for inhalation injury → Start 100% FiO_2 & consider ABG & Carboxyhemoglobin if no delay in transfer

↓

CIRCULATION

Access: Obtain IV access preferably through unburned skin, peripheral IV or IO in burn PRN

Resuscitation < 20% TBSA: < 14 years weight based IV fluids and make NPO
≥ 14 years 125 cc/hr and make NPO

Resuscitation ≥ 20% TBSA: 5 years or younger LR at 125 cc/hr (<30 kg consider D_5 ¼ or ½ NS MIVF)
6-13 years LR at 250 cc/hr
≥ 14 years LR at 500 cc/hr

Circumferential or Electrical Burn: Check for distal pulse, elevate, consider urgent transfer

Additionally: Place urinary catheter for ≥ 20% TBSA or Electrical and consider IV pain medication

↓

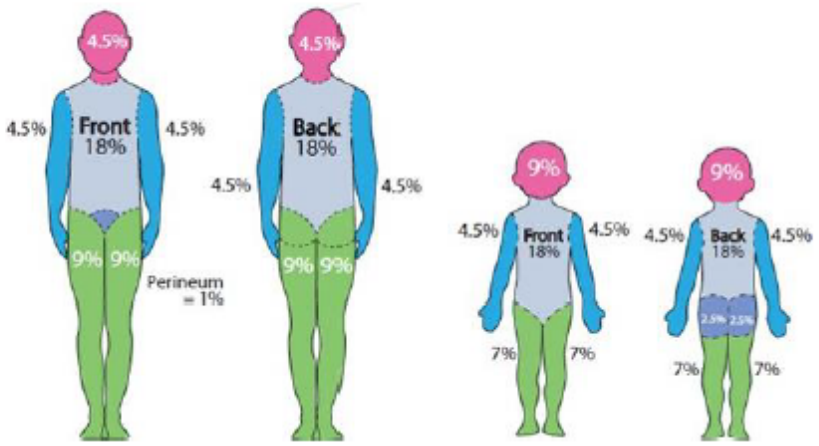
DISABILITY, DEFICIT, DEFORMITY

Assess for neurologic impairment and if impaired, consider associated injury, carbon monoxide poisoning, substance abuse, hypoxia, or pre-existing medical conditions

↓

EXPOSURE, EXAMINE, ENVIRONMENT

- Assess severity of burn injury by calculating burn size using diagram
- Include only 2nd and 3rd degree burns (blisters, bullae, sloughing skin, white/brown eschar)
- Remove rings, jewelry, contacts if no delay
- Wounds for transferred patients can be dressed with DRY towels, washcloths, or gauze
- Avoid ice packs or cooling the burn and take precautions to prevent hypothermia

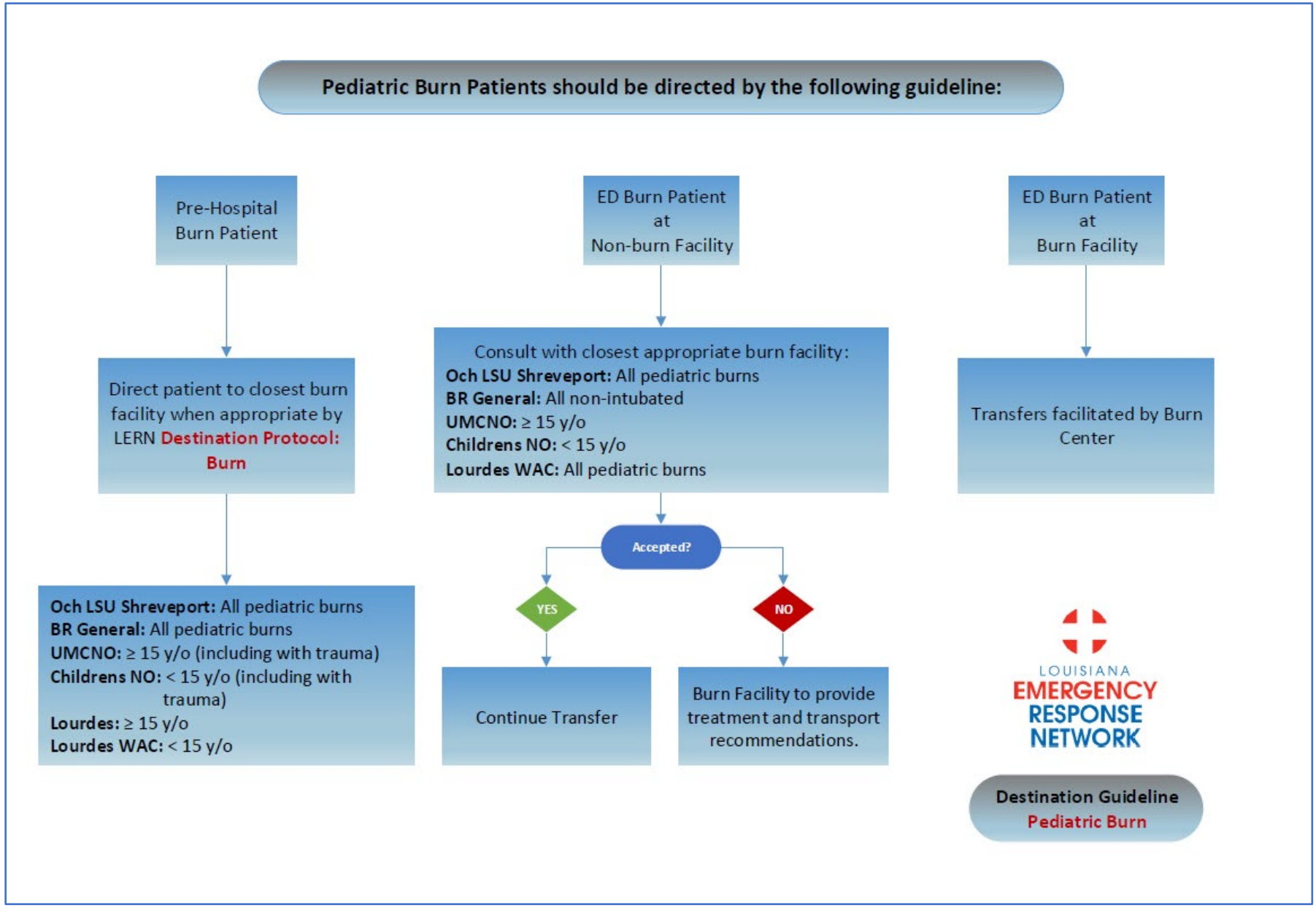


FOR ASSISTANCE WITH TRANSFERS, CALL THE LERN COMMUNICATION CENTER:

1-866-320-8293

LOUISIANA EMERGENCY RESPONSE NETWORK

Right Place. Right Time. Right Care.


Pediatric Burn Patients should be directed by the following guideline:
Pre-Hospital Burn Patient
Direct patient to closest burn facility when appropriate by LERN Destination Protocol: Burn
Och LSU Shreveport: All pediatric burns
BR General: All pediatric burns
UMCNO: ≥ 15 y/o (including with trauma)
Childrens NO: < 15 y/o (including with trauma)
Lourdes: ≥ 15 y/o
Lourdes WAC: < 15 y/o
ED Burn Patient at Non-burn Facility
Consult with closest appropriate burn facility:
Och LSU Shreveport: All pediatric burns
BR General: All non-intubated
UMCNO: ≥ 15 y/o
Childrens NO: < 15 y/o
Lourdes WAC: All pediatric burns
Accepted?
YES
NO
Continue Transfer
Burn Facility to provide treatment and transport recommendations.
ED Burn Patient at Burn Facility
Transfers facilitated by Burn Center
LOUISIANA EMERGENCY RESPONSE NETWORK
Destination Guideline
Pediatric Burn

Attachment 6: Burn Care for Thermal Burns >20% TBSA – Adults and Pediatrics

Care of adult thermal burns >20% TBSA

University Medical Center New Orleans
LCMC Health

Stop the burning process
- Remove all affected clothing, rings, and jewelry
- Cool with water for three to five minutes
- Do not be distracted by the burn; Assess for additional trauma as needed
- **Never use ice**

Airway and breathing
- Initiate 100% FIO2 by non-rebreathing face mask
- Manage airway if indicated
- Gastric Decompression of ET Intubated patients
- Quantitative Waveform Capnography –Primary Confirmation
- Chest X-ray, if permissible for secondary Confirmation
- Elevate head of bed 30°

Circulation
- Establish IV access–2 large bore IVs
  - IO access if unable to get IV
- Administer LR immediately, do not wait for TBSA calculation:
  - >14 years: 500 ml/hr
- Insert Foley Catheter for urine output monitoring
- Do not bolus (avoid "fluid creep")
- Monitor blood glucose levels for hypoglycemia
- Monitor heart rate as > 120bpm may be an early indication of hypovolemia

Disability and exposure
- Remove burned clothing, rings, watches, and jewelry
- Consider spinal precautions if history of blast injury or other significant trauma
- Keep patient warm and dry–blankets, turn up ambient room temperature, warmed IV fluids→monitor temperature
- Escharotomies–Consider expert burn consultation for circumferential burn injuries
- Be aware of non-accidental burn trauma – abuse/neglect

Indications for emergent airway
- Obtundation with absent airway reflexes (NO cough/NO gag)
- Hoarse voice or cry, stridor, drooling, difficulty speaking, respiratory distress, obvious swelling of oropharynx
- Consider for extensive TBSA burns (>40%)

Resuscitation guidelines
- Use Rule of Nines chart to determine TBSA–**do not** include 1st° burns
- Fluid resuscitation adult Lactated Ringer's
  - >14 years: 2 ml x kg x %TBSA
  - ½ total over first 8 hours
- For high voltage electrical Injuries
  - 4 ml x kg x % TBSA for second- and third-degree burns
  - **NOTE: half of the 24-hour ml total should be infused over the first eight hours**

UOP titration guidelines
Adult
- UOP < 0.5 ml/kg/hr ↑ fluids by 10% or 100 ml (whichever is greater)
- UOP Goal: 30-50ml/hr

Adult
High voltage electrical burn with evidence of myoglobinuria
- UOP GOAL: 75 –100 ml/hour until urine clears

Dressings
- Dress the burns with dry, sterile gauze or cover patient with dry sheet if the burns are extensive

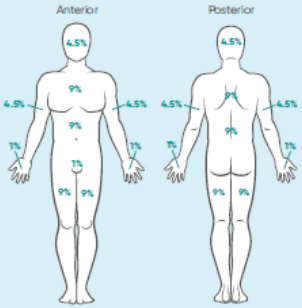
Pain
- Morphine OR fentanyl
  - IV morphine 0.1 mg/kg/dose (max 10 mg/dose)
  - IV fentanyl 1-2 mcg/kg/dose (max 200 mcg/dose)

TRANSFER ▬▶LERN Communication Center
1.866.320.8293

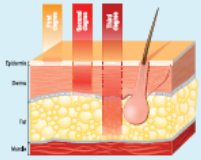
Care of adult thermal burns

Rule of Nines Burn Chart

Head/neck • Anterior side of head (face) • Posterior side of head	9% • 4.5% • 4.5%
Anterior chest	9%
Anterior abdomen	9%
Posterior superior back (back side of chest)	9%
Posterior inferior back (back side of abdomen)	9%
Total arm (1) • Anterior side of arm • Posterior side of arm • If both sides of both arms are burned	9% • 4.5% • 4.5% • 18% in total
Total hand (1) • Anterior side of hand • Posterior side of hand • If both sides of both hands are burned	2% • 1% • 1% • 4% in total
Groin	1%
Total leg (1) • Anterior side of leg • Posterior side of leg • If both sides of both legs are burned	18% • 9% • 9% • 36% in total



Burn depth	Characteristics	Causes	Images
1st degree burn	• Redness of skin • Pain • Absence of blisters	• Sunburn • Flash burns • Scalding burns	
2nd degree burn (partial thickness)	• Deep redness • Mottled skin • Extreme pain • Blisters	• Contact with hot liquids • Flash burns (intense light, electric current or heat) • Chemical burns	
3rd degree burn (full thickness)	• Dark and leathery • Dry • Charred appearance • Very little to no pain	• Fire • Electricity or lightning • Prolonged exposure to hot liquids/objects • Chemical burns	



Estimated fluid:
Lactated Ringer's* or Normal Saline (*LR preferred)

- Two large bore IVs if burn is >20%
- Fluid resuscitation adult
  - >14 years: 2 ml x kg x % TBSA
  - ½ total over first eight hours
- Lactated Ringer's
- For high voltage electrical Injuries
  - 4 ml x kg x % TBSA for second- and third-degree burns
  - **NOTE: half of the 24-hour ml total should be infused over the first eight hours**

Time of injury _____	Estimated fluid required _____mls
Time elapsed since burn _____	Total fluid since burn: _____mls

Use as a guide to estimate fluid requirements. Titrate fluid administration to achieve desired urine output.

- **30–50 ml/hr for flame burn**
- **75–100 ml/hr for electrical burn**

TBSA	% (2° & 3° only)
Head	
Right arm	
Left arm	
Chest	
Back	
Right Leg	
Left Leg	
Genitalia	
Total TBSA	

TRANSFER ▬▶LERN Communication Center
1.866.320.8293

For non-urgent matters or consultations
504.702.BURN or UMCburncenter@LCMChealth.org

Clinical Decision Flow Charts developed by University Medical Center New Orleans Burn Center. Most Louisiana Burn Hospitals have similar resources developed and/or published to their burn center websites to assist with arranging transfers.

Care of pediatric thermal burns >20% TBSA

University Medical Center New Orleans
LCMC Health

Stop the burning process

- Remove all affected clothing, rings, and jewelry
- Cool with water for three to five minutes
- Decontaminate patient
- Do not be distracted by the burn; Assess for additional trauma as needed as indicated
- **Never use ice**

Airway and breathing

- Initiate 100% FiO2 by non-rebreathing face mask
- Manage airway if indicated–use a cuffed endotracheal tube with Quantitative Waveform Capnography-Primary Confirmation
- Needle cricothyroidotomy may be sufficient in infant if ET unable to be placed
- Gastric Decompression of ET Intubated patients
- Chest X-ray, if permissible for secondary confirmation
- Elevate head of bed 30°

Circulation

- Establish IV access-two large bore IVs
  - Consider IO access ONLY if unable to get IV
- Administer LR immediately, do not wait for TBSA calculation:
  - <5 years: 125 ml/hr
  - 6-13 years: 250 ml/hr
  - >14 years: 500 ml/hr
- Insert Foley Catheter for urine output monitoring
- Do not bolus (avoid "fluid creep") except in hypotension

Disability and exposure

- Remove burned clothing, rings, watches, and jewelry
- Consider spinal precautions if history of blast injury or other significant trauma
- Keep patient warm and dry-blankets, turn up ambient room temperature, warmed IV fluids→monitor temperature
- Escharotomies – Consider expert burn consultation for circumferential burn injuries
- Be aware of non-accidental burn trauma–abuse/neglect
- Perform glucose checks and monitor for hypoglycemia
- Administer Tetanus shot

Indications for emergent airway

- Obtundation with absent airway reflexes (NO cough/NO gag)
- Hoarse voice or cry, stridor, drooling, difficulty speaking, respiratory distress, obvious swelling of oropharynx
- Consider for extensive TBSA burns (>40%)

Resuscitation guidelines

- Use the Rule of Nines chart or Rule of Palms to estimate TBSA–**do not** include 1st°
- Fluid Resuscitation Pediatric Lactated Ringer's
  - >14 years: 2 ml x kg x %TBSA
  - < 14 years: 3 ml x kg x %TBSA
- Maintenance fluid required for a child <30 kg for first 24 hours with D5LR in addition to resuscitation fluids

UOP titration guidelines

Patient < 30kg
- UOP < 1 ml/kg/hr ↑ fluids by 10%
- UOP > 1 ml/kg/hr ↓ fluids by 10%

Patient >30 kg up to age 17
- UOP < 0.5 ml/kg/hr ↑ fluids by 10%
- UOP > 0.5 ml/kg/hr ↓ fluids by 10%

Dressings

- Dress the burns with dry, sterile gauze or cover patient with dry sheet if the burns are extensive

Pain

- Morphine OR fentanyl
  - IV morphine 0.1 mg/kg/dose (max 10 mg/dose)
  - IV fentanyl 1-2 mcg/kg/dose (max 200 mcg/dose)

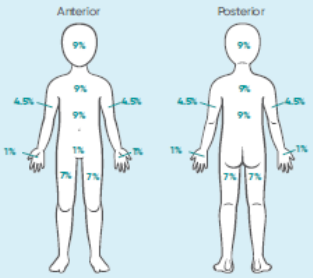
TRANSFER ▬▶LERN Communication Center
1.866.320.8293

For non-urgent matters or consultations
504.702.BURN or UMCburncenter@LCMChealth.org

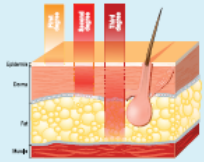
Care of pediatric thermal burns

≤ 14 years old

Rule of Nines Burn Chart	
Head/neck • Anterior side of head (face) • Posterior side of head	18% • 9% • 9%
Anterior chest	9%
Posterior superior back (back side of chest)	9%
Anterior abdomen	9%
Posterior inferior back (back side of abdomen)	9%
Total arm (1) • Anterior side of arm • Posterior side of arm • If both sides of both arms are burned	9% • 4.5% • 4.5% • 18% in total
Total hand (1) • Anterior side of hand • Posterior side of hand • If both sides of both hands are burned	2% • 1% • 1% • 4% in total
Groin	1%
Total leg (1) • Anterior side of leg • Posterior side of leg: • If both sides of both legs are burned	14% • 7% • 7% • 28% in total



Burn depth	Characteristics	Causes	Images
1st degree burn	• Redness of skin • Pain • Absence of blisters	• Sunburn • Flash burns • Scalding burns	
2nd degree burn (partial thickness)	• Deep redness • Mottled skin • Extreme pain • Blisters	• Contact with hot liquids • Flash burns (intense light, electric current or heat) • Chemical burns	
3rd degree burn (full thickness)	• Dark and leathery • Dry • Charred appearance • Very little to no pain	• Fire • Electricity or lightning • Prolonged exposure to hot liquids/objects • Chemical burns	



Estimated fluid: Lactated Ringer's* or Normal Saline (*LR preferred)	
• Two large bore IVs if burn is >20% • Fluid resuscitation adult • >14 years: 2 ml x kg x %TBSA • < 14 years: 3 ml x kg x %TBSA • ½ total over first eight hours	•Maintenance fluid required for a child <30 kg for first 24 hours with D5LR in addition to resuscitation fluids
Time of injury _____	Estimated fluid required _____mls
Time elapsed since burn _____	Total fluid since burn: _____mls

Use as a guide to estimate fluid requirements. Titrate fluid administration to achieve desired urine output.

Patient < 30kg
- UOP < 1 ml/kg/hr ↑ fluids by 10%
- UOP > 1 ml/kg/hr ↓ fluids by 10%

Patient >30 kg up to age 17
- UOP < 0.5 ml/kg/hr ↑ fluids by 10%
- UOP > 0.5 ml/kg/hr ↓ fluids by 10%

TBSA	% (2° & 3° only)
Head	
Right arm	
Left arm	
Chest	
Back	
Right Leg	
Left Leg	
Genitalia	
Total TBSA	

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For non-urgent matters or consultations
504.702.BURN or UMCburncenter@LCMChealth.org

Burn Surge Acronyms and Definitions

- **AAR** – After Action Report (Review)
- **ABA -** American Burn Association
- **ACS** – Alternate Care Site
- **ADRC** – Administrative Designated Regional Coordinator
- **ABLS** - Advanced Burn Life Support
- **ALS** - Advanced Life Support
- **ASPR** – Assistant Secretary for Preparedness and Response within DHHS
- **ATLS** - Advanced Trauma Life Support
- **At Risk Registry** – patient tracking system
- **BCP** – LDH Bureau of Community Preparedness
- **BEMS** – LDH Bureau of Emergency Medical Services
- **BMCI** - Burn Mass Casualty Incident
- **BSI** - Body Substance Isolation
- **CDC** – U.S. Centers for Disease Control and Prevention
- **CERC** – Crisis Emergency Risk Communication
- **CSoC** - Crisis Standards of Care
- **DRC** – Designated Regional Coordinator; representatives from Hospital(s) and EMS
- **DRH** – Designated Regional Hospitals. Larger acute care facilities with emergency room capabilities and many subspecialty services; provide additional capacity and resources in the initial emergency response of a mass casualty or event.
- **DHHS** (HHS) – U.S. Department of Health and Human Services
- **DMAT** - Disaster Medical Assistance Team
- **DoD** - Department of Defense
- **EDs** – Emergency Departments (i.e., emergency room)
- **EMAC** – Emergency Management Assistance Compact
- **EMS** – Emergency Medical Services
- **EMT** – Emergency Medical Technician
- **EOC** – Emergency Operations Center
- **EOP** – Emergency Operations Plan
- **ESF 8** – Emergency Support Function 8 (public health & medical)
- **ESF 8 Portal -** Resource Management application– MCI screens for Trauma / Burn
- **FQHCs** – Federally Qualified Health Centers
- **GOHSEP** – Governor's Office of Homeland Security and Emergency Preparedness
- **HAZMAT** - Hazardous Materials
- **HCC** – Health Care Coalition
- **HCF** – Health Care Facilities
- **HPP** – Hospital Preparedness Program under the office of ASPR

- **JIC** – Joint Information Center
- **LANG** – Louisiana National Guard
- **LDH** – Louisiana Department of Health
- **LHA** – Louisiana Hospital Association
- **LERN** – Louisiana Emergency Response Network
- **MCI** - Mass Casualty Incident
- **Major Burn** - more than 10% TBSA
- **Minor Burn** - less than 10% TBSA
- **NDMS** - National Disaster Medical System
- **NFPA** – National Fire Protection Association
- **OBH** – Office of Behavioral Health
- **OEP** – Parish Office of Emergency Preparedness
- **OPH** – Office of Public Health (within the Louisiana Department of Health)
- **PFA –** Psychological First Aid
- **PHERC** - LDH Office of Public Health – Public Health Emergency Response Coordinator
- **POC** - Point of Contact
- **PIO** – Public Information Officer
- **PPOs** - Private Physician Offices
- **PPE** – Personal Protective Equipment
- **PSAP** – Public Safety Answering Points (911)
- **REC** – DHHS Regional Emergency Coordinator
- **RMD** – Regional Medical Director
- **SHO** – State Health Officer
- **SitRep** – Situation Report
- **SME** – Subject Matter Experts
- **SNS** – Strategic National Stockpile
- **SRBC** - Southern Region Burn Consortium
- **SRCC** – Southern Region Coordination Center
- **SVI** – Social Vulnerability Annex
- **Tier 1 Hospitals** – Hospitals with emergency department capabilities 24/7
- **Tier 2 Hospitals** – Hospitals that do not provide emergency room capabilities and are more single service in nature such as psychiatric, rehabilitation, and/or long-term acute service.
- **TBSA** - percentage of total body surface area burnt
- **TOC** – Tactical Operations Center for Louisiana EMS Emergency Response
- **WMD** - Weapons of Mass Destruction

Burn Resources & References

Burn References		
National	Source	
Southern Region BMCI	ABA's Southern Region plan, https://ameriburn.org/wp-content/uploads/2018/03/southernregionmciplan.pdf	
Guidelines for Care in Austere Conditions	ABA Disaster Response, https://ameriburn.org/quality-care/disaster-response/	
Combating PTSD and Burn Recovery	IAFF, http://understandingburncare.org/	
Burn Topic Collection	ASPR TRACIE, https://asprtracie.hhs.gov/MasterSearch?qt=burns&limit=20&page=1	
HCC Burn Surge Annex Template	ASPR TRACIE, https://files.asprtracie.hhs.gov/documents/aspr-tracie-hcc-burn-surge-annex-template-final.pdf	
HCC Burn Surge Annex Template - Utah	Western Region Burn Consortium - accessed online, upon request	
Burn Triage Tables	ABA decision tables, https://www.semanticscholar.org/paper/Burn-care-in-disaster-and-other-austere-settings.-Jeng-Gibran/4f453298d29aa6863a8bd70947f180d6e5d22550	
State	Source	
ESF8 Network Coalition Response Plan	LDH and HPP – https://lha-foundation.org	
MCI Response Levels 1-5	LERN, MCI Levels and protocols, https://lern.la.gov/lern-disaster-response/past-events/mass-casualty-incident-mci-levels/	
Burn Patient Transfer Protocols (Adult and Peds)	LERN, Trauma Protocols, https://lern.la.gov/wp-content/uploads/LERN-Burn-Protocol-v10-1-1.pdf	
Burn Pre-Hospital and ED Care Guidelines	LERN EMS Guidelines, https://lern.la.gov/wp-content/uploads/Burn-Care-Guideline-Pre-hospital-V3-Web-Version-1.pdf LERN ED Guidelines, https://lern.la.gov/wp-content/uploads/ED-Burn-Care-Guideline-V3.pdf	
Baton Rouge General Burn Center	https://www.brgeneral.org/medical-services/burn/	
Ochsner LSU Health Shreveport Burn Center	https://www.ochsnerlsuhs.org/services-departments/burn-care	
Our Lady of Lourdes Burn Center	https://lourdesrmc.com/services/burn-center/	
University Medical Center New Orleans Burn Center	https://www.lcmchealth.org/university-medical-center-new-orleans/our-services/burn-center/	
Burn Resources – Clinical & Response		
Resource	Source	Weblink
ABA Austere Guidelines	ABA	https://ameriburn.org/quality-care/disaster-response/
Resources for the Optimal Care of Burn Patient	ACS Committee on Trauma	https://www.facs.org/media/yu0laoqz/resources-for-optimal-care.pdf

Pediatric Annex for Burn Surge	State of Michigan	http://www.michiganburn.org/images/content/PedAnnexVer5.pdf
Burn Triage and Treatment in a Radiation Emergency	REMM	https://www.remm.nlm.gov/burns.htm
Basic and Advanced Burn Surge Education – Video Modules	Minnesota Dept of Health	https://www.health.state.mn.us/communities/ep/surge/burn/video.html
96-Hour Care Guidelines for Pediatric Burns	Illinois Dept of Public Health	https://www.luriechildrens.org/globalassets/documents/emsc/disaster/state-plans/burncareguidelinesjune2017.pdf