Trauma Systems Consultation
American College of Surgeons

Trauma System Consultation Report

State of Louisiana

Baton Rouge

March 25th-28th, 2024

An interdisciplinary working group prepared this document based on the consultation visit that took place March 25th-28th, in Baton Rouge, LA, and included the following members:

ACS Review Team Leader

Kristan Staudenmayer, MD, MS, FACS
Trauma Surgeon
Chair, ACS COT Trauma Systems Pillar
Trauma, Surgical Critical Care, and Acute Care Surgery
Gordon and Betty Moore Endowed Faculty Scholar
Associate Professor of Surgery
Stanford University
Palo Alto, CA

ACS Review Team

Brian Eastridge, MD FACS
Trauma Surgeon
Medical Director, Military Health System Strategic Partnership American College of Surgeons (MHSSPACS)
Professor, Department of Surgery
Division Chief, Trauma and Emergency General Surgery
Jocelyn and Joe Straus Endowed Chair in Trauma Research
University of Texas Health Science Center at San Antonio
San Antonio, TX

Jon Krohmer, MD FACEP FAEMS
Emergency Physician
EMS Physician
Former Director, NHTSA Office of EMS
Grandville, MI

Jorie Klein, MSN, MHA, BSN, RN
Trauma Program Manager
Director, EMS/ Trauma Systems Section
Texas Department of State Health Services
Austin, TX

Michael A Person, MD, MPH, FACS
Trauma Surgeon- Rural Specialty Reviewer
Associate Professor, Dept. of Surgery
Surgery Clerkship Director, University of South Dakota - Sanford School of Medicine
Chair - Trauma / Acute Care Surgery
Avera McKennan Hospital & University Health Center
Sioux Falls, SD

Richard Wisniewski, MAEL, CPM, NRP
EMS Director
Deputy Director of EMS, Kershaw County EMS
Chapin, SC

Amy Kempinski, MSN, RN, CEN, TCRN
Trauma Program Manager
Vice President, Pennsylvania Trauma Systems Foundation
York, PA

ACS Program Staff

Melanie Neal, MS
Specialty Reviewer; Trauma Quality Programs Staff
Assistant Director, Trauma Quality Programs, American College of Surgeons
Chicago, IL

Holly Michaels, MPH
Trauma Systems Programs Staff
Manager, Trauma Systems and Injury Prevention Programs, American College of Surgeons
Chicago, IL

Mackenzie Dafferner, MPH
Trauma Systems Programs Staff
Program Manager, Trauma Systems Programs, American College of Surgeons
Chicago, IL

Table of Contents

Executive Summary

Louisiana is the 31st largest state in the U.S. and the 24th most populous, with an estimated population of 4,657,757 people in 2020. The state covers 51,840 square miles, of which 15% is water, and is divided into 64 parishes. Of these parishes, 40 (or 64%) are rural. The median household income is $49,973, placing Louisiana 47th in the U.S. for income. The capital is Baton Rouge, and the largest city is New Orleans, with other major cities including Shreveport, Lafayette, and Lake Charles. Louisiana's trauma system is unique due to frequent natural disasters, most recently illustrated by the 2023 super-fog event that resulted in multiple vehicle-associated injuries.

The history of the Louisiana trauma system is marked by the establishment and development of the Louisiana Emergency Response Network (LERN). Created by the Louisiana Legislature in 2004, LERN was tasked with developing and maintaining a statewide trauma system. Managed by a board appointed by the governor, LERN acts as a separate agency. Initially, Louisiana had only two American College of Surgeons (ACS) verified trauma centers. Under LERN's guidance, the system has expanded to 14 ACS verified trauma centers, including both adult and pediatric centers across the state's nine regions. Due to its success with trauma, LERN has also added support for two other time-dependent conditions: stroke and STEMI.

In 2009, Louisiana underwent an ACS Trauma System Consultation (TSC), which recommended establishing LERN as the lead agency for the trauma system in statute. Currently, the LERN Board has sufficient legislative authority to establish a system for trauma care, which includes implementing rules and regulations, establishing a communication center, and collecting trauma data from all healthcare facilities. However, some sections of the statute have not been fully enacted or utilized to optimize LERN's legislative authority.

A unique benefit to Louisiana's trauma system is LERN's Communications Center (LCC), which plays a key role in matching patients to appropriate care facilities, particularly in rural settings and during interfacility transfers, although its use remains voluntary. EMS integration with LERN is limited unless a disaster is declared, at which point LERN assumes greater authority through the Tactical Operations Center (TOC).

The Louisiana trauma system boasts broad stakeholder representation at both state and regional levels, with engaged and active regional commissions addressing local issues and bringing them to the state level. Trauma centers are deeply involved, and the burn care system is particularly innovative. The LERN Communications Center stands out as a key strength, and the STOP THE BLEED® infrastructure and efforts are robust. Additionally, the system benefits from a strong TQIP collaborative and effective disaster responses.

However, the system faces significant challenges, including the lack of statutory authority to designate a compliance and enforcement agency, funding issues, poorly coordinated injury prevention at the state level, and a fragmented EMS system. The data system is fragmented, lacking comprehensive data collection from non-trauma centers and a formal data quality and analysis plan. Statewide trauma performance improvement efforts are also underdeveloped.

Themes highlight the ongoing effort to build a truly inclusive trauma system, including all phases of care from prehospital to rehabilitation. There are currently no formal plans to integrate Level IV trauma centers to address rural needs or to explore other mechanisms to address these needs. Existing statutory requirements are not fully leveraged, and while strong components have been developed, better integration and data analysis are needed. A well-defined, collaborative relationship between LERN, LDH, and BEMS should be developed. The trauma system is supported by a dedicated "coalition of the willing." However, barriers such as lack of funding and formal compliance mechanisms persist.

The future of Louisiana's trauma system looks promising, with plans to enhance stakeholder engagement and leverage innovative care models. By addressing funding challenges and improving data collection and analysis, the system aims to develop a more integrated and inclusive trauma network, ensuring comprehensive care from prehospital to rehabilitation phases. With a dedicated coalition of stakeholders and a focus on continuous improvement, Louisiana's trauma system is set to achieve greater efficiency and effectiveness in saving lives and improving patient outcomes.

Priority Recommendations

ETSE 1: Statutory Authority

- Seek legislative changes to LERN Statute La.R.S 40:2841 & La. R.S. 9:2798.5 to include the stated authority for LERN to have the ability to maintain and enforce compliance with LERN rules and regulations.

ETSE 2: Funding

- Obtain dedicated, sufficient funding to support the Louisiana Trauma System and all regulatory requirements of LERN.

ETSE 4: Trauma System Plan

- Develop, implement, and monitor an updated state trauma system plan according to regulations, including metrics for success.

ETSE 5.1: Prevention and Outreach

- Utilize trauma registry data, and other data resources, to define and guide critical priority areas for injury prevention initiatives.

ETSE 5.2: Emergency Medical Services

- Align the organizational structure to fully integrate all aspects of the EMS, trauma, and other time-sensitive emergency systems.

- Create a position of state EMS medical director to ensure clinical oversight of the entire EMS system.

ETSE 5.3: System Triage and Patient Flow

- Evaluate compliance, using validated data, with triage guidelines and appropriateness of trauma patient transports and transfers. (*This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

ETSE 5.4: Definitive Care Facilities

- Create a targeted system performance improvement initiative to address and reduce the trauma transfer denial rate of Level I and II trauma centers.

- Consider the designation of Level IV trauma centers to address challenges in rural areas and to augment trauma system inclusivity.

ETSE 5.6: System Integration

- Perform a needs assessment of the LCC regarding call volume and the current staffing model along with the ability for surge capacity.

ETSE 7: Trauma System Registry

- Expand data collection to include all injured patients in the state.

- Develop a comprehensive approach to data quality that involves systematic identification of issues through analytics and audits, strategies to address problems including education and structural solutions, and evaluation to ensure that issues are resolved.

ETSE 9: System-Wide Performance Improvement

- Develop, document, and implement a state trauma system performance improvement plan.

- Define the funding necessary to establish and maintain data for an effective trauma system performance improvement plan.

- Establish a culture of safety practice across the continuum, which encourages all levels of stakeholders to speak up about safety or practice concerns.

Essential Trauma System Element #1: Statutory Authority

Statutory authority to enable development and implementation of a trauma system should exist. A lead agency with sufficient authority to implement policy, maintain well-defined administrative rules, and allocate trauma system funds, should be established or identified. A multidisciplinary advisory group, consisting of stakeholders representing the full spectrum of trauma care, should guide the lead agency.

Purpose and Rationale

A trauma system is a public good with public and private sector partners. It integrates all-population injury care and prevention to achieve optimal outcomes by saving lives and restoring function in life for injured patients and communities. Statutory authority for the trauma system is provided through legislative action. Statute may define the sources of funding and mechanism of fund distribution to elements of the trauma system. A trauma system requires deliberate development and implementation to ensure optimal resources for care of the injured patient and readiness for mass casualties. State legislatures and municipalities determine requirements for components of trauma systems through statutes (i.e., laws) and administrative codes. Statutes and codes are implemented through public rulemaking by a lead agency designated by statute, typically within a Department of Health. On occasion, a legislative body may create and/or designate a not-for-profit foundation as the vehicle for trauma system oversight. Aggregated rules are the regulations that must be followed by the components of a trauma system. Regulations in the trauma system are subject to administrative judicial review and deliberation. The lead agency should regularly review trauma system statutes and regulations.

The legislature and chief governmental executive designate a lead agency to fulfill the functions described in statutes. Core functions of the lead agency should include implementation of prevention activities, coordination of EMS transport protocols, designation of trauma centers, data management and system-wide performance improvement, and provision to support patient data confidentiality and protection from discoverability. Lead agencies also implement trauma system related policies within the statutory framework. The lead agency should monitor aggregate care outcomes through a risk-adjusted, benchmarked registry program with validated data. Lead agency and trauma system component accountability is enhanced with transparency, such as an annual report on trauma system performance and public funding. The chief governmental executive or lead agency should have the authority to appoint a multidisciplinary advisory group of stakeholders, representing the full spectrum of trauma care, to conduct a gap assessment, anticipate emerging system needs, and share guidance with the lead agency.

Current Status

The Louisiana Emergency Response Network (LERN) and its board were initially established to govern the development of a statewide trauma system in 2004 legislation (La. R.S. 40:2841-2846). This legislation has been modified several times since then including in 2007, in 2010 following the 2009 ACS Trauma System Consultation, and most recently in 2022. These changes reflect thoughtful insight and identification of needs that were not addressed in the previous legislation. Included in the revisions were the requirement for ACS verification of trauma centers, the authority to write rules and regulations related to the trauma system, establishment of the state trauma registry, peer review protections, and the addition of essential members to the LERN Board. The general language affords the Department of Health the opportunity to designate Level I, II, and III trauma centers that have successfully achieved verification by the American College of Surgeons. Three pediatric trauma centers have been

designated in Louisiana. Because of this, and to ensure the ability for compliance and enforcement of rules, there should be explicit language adopted in the legislation to identify the ability for the state to designate pediatric Level I and II trauma centers in addition to the existing legislation for adult Level I, II, and III designation. The designation authority should also be changed from the Louisiana Department of Health (LDH) to the LERN Board for consistency in governance. A mechanism of notifying the LDH hospital licensing area of the change when a hospital achieves trauma center designation should be in place.

Level IV trauma centers have an integral role in an inclusive trauma system to ensure timely and appropriate care is being delivered to all trauma patients. There are significant benefits to including Level IV centers in the system, some of which will be discussed and addressed later in other sections of this report. To designate these centers, there needs to be sufficient legislative authority that allows for the designation of Level IV trauma centers and for the state to create and implement a designation process in cooperation with the Louisiana Hospital Association, the LERN Board, the Louisiana Rural Health Association, and other locally identified partners or stakeholders.

The LERN Board has sufficient legislative authority to establish a system for trauma care that includes implementing rules and regulations, establishing a communication center, and allowing for collection of trauma data from not only trauma centers, but all healthcare facilities. There are sections of the statute that have not been fully enacted or that LERN has not utilized to optimize their legislative authority.

One conflict created by the legislation is that while LERN has legislative authority to establish a system for trauma care that includes implementing rules and regulations, it is not empowered to enforce compliance with these rules and regulations. Without this capability, LERN has limited ability to ensure rules or regulations are followed. The lack of statutory authority for compliance and enforcement is a deficiency that could present challenges for the LERN Board. It is essential that the program can ensure compliance with all the prescribed standards, and act when necessary. It is also necessary to establish a robust enforcement and compliance plan including identification of penalties (including monetary) up to potential suspension or de-designation and the ability to require a corrective action plan. This should be outlined in either the statute or regulation and for transparency and consistency, monetary fine schedules that may already be established within the Department of Health should be included and applied to the trauma system. If these functions are not to reside in LERN as a lead agency, they could reside elsewhere. However, there would need to be sufficient mechanisms to ensure that LERN and the enforcing body were integrated, accountable to one another, and aligned in objectives.

LERN functions as an independent agency on most levels. All board members are nominated, appointed by the governor, and receive senate approval as outlined in § 2844(C) &(F). The 2007 legislation required the LERN Board to be a separate budget unit within the Louisiana Department of Health (LDH). This addition was helpful in obtaining a funding stream for the board but does not fully allow LERN to operate independently, thus creating some confusion regarding the full autonomy of LERN and how it integrates into other state agencies. Establishing a dedicated funding source for LERN independent of the state general fund is essential. It is also noted that the engagement between LERN and the state Bureau of EMS (BEMS) is informal and ad hoc. Neither agency works with the other regarding system

oversight, rules, and regulations. Further discussion about this relationship occurs in section 5.2 Emergency Medical Services.

The LERN Communication Center (LCC) is a significant asset to the program and clearly takes on many roles, not only in day-to-day operations, but also plays a pivotal role during disasters. Although not all agencies and facilities use this essential resource, the value added and the benefit to trauma patients has been clearly proven. The utilization by stakeholders has continued to increase, and there is an opportunity for LERN to play a greater role within EMS and hospital systems. As the volume increases, it is essential to continually evaluate the need for increased staff, equipment replacement, and any associated cost that will be required for growth. Metrics for staff and FTE requirements would be helpful in assessing the human resources needed to not only maintain but provide for the seemingly continued increase in calls and utilization. Failure to ensure these resources will negatively impact the perception and effectiveness of the LCC, create unnecessary delays in EMS routing and patient transfer, and ultimately have a potential negative impact on patient outcomes.

It is also a significant benefit to have four legislators established as LERN Board members. This allows for direct support in legislative efforts and the ability to have advocates exposed to the trauma system's needs. Active engagement in and understanding of all the components of a trauma system is essential.

The Bureau of EMS is noticeably absent in the LERN Board membership. While it is admirable that additional positions have been added to allow representation by field EMS clinicians, the presence of the regulatory aspect of EMS would be of significant benefit, especially when it comes to development of protocols and EMS requirements and coordination of the overall state EMS systems. This will become more critical as the state expands the capabilities of other systems of care components.

Recommendations

1.1. **Seek legislative changes to LERN Statute La.R.S 40:2841 & La. R.S. 9:2798.5 to include the stated authority for LERN to have the ability to maintain and enforce compliance with LERN rules and regulations.**

1.2. Establish a dedicated funding source for LERN independent of the state general fund.

1.3. Define specific trauma data elements to be submitted by all healthcare facilities, including those that are not designated trauma centers as directed in La. R.S. 40:2845 (6)(b)(ii).

1.4. Seek legislative change to allow LERN to designate or de-designate trauma centers.

1.5. Seek legislative authority for a state process for designation and de-designation of Pediatric Level I and II trauma centers.

1.6. Perform a comprehensive analysis of the need, function, and implementation of a designation program for all hospitals participating in the trauma system.

1.7. Perform a comprehensive analysis of the enabling legislation to ensure compliance with all legislatively required activities.

Essential Trauma System Element #2: Funding

The lead agency should establish a sustained funding mechanism for trauma system infrastructure. Funding should include physical and staffing resources for program administration and oversight, data collection, data storage, data analysis, quality improvement activities, education, and support for disaster response and military integration.

Purpose and Rationale

Trauma systems need sufficient funding to plan, implement, and evaluate a statewide or regional system of care. Public funding should support trauma system components including trauma system administration, system level registry functions, and participation in statewide or municipal trauma performance improvement activities. The trauma system is a foundation for mass casualty readiness and response, and funds should be allocated to trauma system elements for this purpose as well.

The lead agency should have sustained funding for trauma system infrastructure which should be established in statute or code. Funding might also come from sources external to the trauma system (e.g. traffic fines, offender court fees, vehicle title and driver license fees, grants, and general revenue), rather than from internal trauma system elements (e.g. trauma center fees for verification). Funding mechanisms should be transparent and well documented, including identified funding sources, determination of allocations, and anticipated uses. Funding allocation plans to support the trauma system may be linked to population density and injury rates within a specific geography or by facility and should be periodically reassessed to ensure system needs are met. Participation in system level quality improvement, and reporting of data and outcomes to the lead agency, may be required prior to fund distribution. Uses of funds may relate to trauma readiness costs, uncompensated care, and discretionary needs. Organizations receiving public funds should report annually on the use of those funds.

Funding is also required to sustain the trauma system oversight functions of the lead agency. The lead agency should have a program office that administers the trauma system with an appointed trauma system medical director, program manager and necessary support personnel. The primary objectives of the trauma program office are data management, system wide performance improvement, trauma center verification/designation, and facilitating integration of injury prevention, education, and advocacy.

Current Status

LERN receives funding from the Louisiana state budget from the General Revenue Account. In 2022, LERN's budget totaled $2,523,329. The LERN Board Executive Committee, with input from medical directors, defines the operational budget for LERN, which is then approved by the full LERN Board. The 2022 operational budget included LERN central office and regional staff salaries, medical leadership and support, professional services, and general operating expenses.

In 2023, the General Appropriations Bill, HB 1, of the 2023 Regular Session, Act 447, provided the majority of the funding allocation for LERN's Fiscal Year 2023 – 2024-$2,453,234. The Department of Health provided an additional $40,000 through interagency transfer. As LERN funds are allocated by the State General Revenue (GR), a specific dedicated funding stream to support the trauma system through LERN has not been identified. This creates a situation of

non-guaranteed funding from year to year. If the dedicated GR funds change or there is a change in leadership that does not support LERN, LERN may see a loss of funding.

LERN funds the TQIP Collaborative, provides $3k per trauma center for trauma injury prevention and education through educational contracts, and offers facilitation and coordination support of trauma center activities (e.g., trauma symposiums). The LERN Trauma Medical Director is also made available to centers for verification preparation and support.

Medicaid reimbursement has defined incentives for both trauma centers and academic medical centers. The direct payment system provides a uniform percentage increase for payments to qualified hospitals within specific tiered provider classes for Medicaid Managed Care contracted inpatients and outpatient services provided to Medicaid enrolled individuals. There are uncompensated care funds that flow from the state to hospitals identified as Disproportionate Share Hospitals.

Incentives for an inclusive trauma system are lacking. Currently there are no funds allocated for the cost of trauma center readiness or EMS readiness. There is a lack of incentives for facilities to complete the ACS verification and state designation process other than the increase in Medicaid reimbursement and meeting the Disproportionate Share Hospital criteria. Participation of non-designated hospitals and their sharing of data does not exist. EMS agency participation in LERN is growing but is not utilized in all regions.

Overall, funding is insufficient to meet the statutory obligations of the trauma system as listed below:

- State trauma registry (includes resources to manage the registry- registrar, data analyst)
- Development of a system wide performance improvement (PI) plan
- Injury Prevention activities
- Enforcement of rules and regulation
    - Compliance with registry
    - Compliance with trauma center verification standards
    - Implementation and monitoring of regional system plans that reflect current practice

The system has continued to develop and mature since the 2009 ACS consultation. However, LERN cannot meet the regulatory obligations of the current state rules due a lack of appropriate funding. There are continued opportunities for system development that LERN leadership is exploring, but without secured, dedicated funding these efforts will not move forward.

Recommendations

2.1. **Obtain dedicated, sufficient funding to support the Louisiana Trauma System and all regulatory requirements of LERN.**

2.2. Conduct a statewide study to determine current funding needed to sustain and advance the Louisiana Trauma System across the continuum of care. Identify the variance between the current funding and funding needed to fully implement all LERN regulatory requirements.

2.3. Evaluate existing funding to identify opportunities to develop and expand rural trauma capabilities.

2.4. Identify incentives for participation in the trauma system for:

- Trauma centers
- Non-designated hospitals
- EMS agencies
- Rehabilitation

2.5. Explore amending Medicaid regulations to incorporate uncompensated care funding for rehabilitation centers.

2.6. Include the outcomes and impact of the funding available in the LERN annual report.

Essential Trauma System Element #3: Multidisciplinary Advisory Group

A multidisciplinary advisory group, consisting of stakeholders representing the full spectrum of trauma care, should be established. The role of the advisory group should be to guide the lead agency regarding trauma system development and operations. Representation should be diverse, with respect to geography, population (rural/urban, adult/pediatric, burn), phases of care (prehospital and rehabilitative) and trauma center level designation.

Purpose and Rationale

A multidisciplinary advisory group that provides subject matter expertise to the lead agency is a critical component of the trauma system. A key responsibility of the multidisciplinary trauma advisory group is regular communication of the trauma system status to the lead agency related to the burden of injury within the trauma system and the impact of the trauma system on the community. Membership should include representatives from a broad constituency across the full spectrum of injury care including, but not limited to, the following: trauma center medical directors, trauma program managers, data registry personnel, pre-hospital professionals, and injury prevention advocates. The multidisciplinary advisory group should be diverse with respect to geography, population (rural/ urban/ adult/ pediatric, burn), and trauma center designation level. The group should also include representation from military treatment facilities to support military civilian integration. The multidisciplinary advisory group works with lead agency officials to:

- Develop and evaluate the trauma system plan.
- Inform and educate the public and legislators about the trauma system.
- Provide consultative assistance for enabling legislation.
- Assist with trauma system quality and performance improvement and research efforts.
- Implement injury prevention programs.
- Promote collaboration and system integration amongst trauma system stakeholders.
- Assist with emergency preparedness and disaster response planning.

As challenges are encountered with providing optimal care to injured patients within the system, the multidisciplinary advisory group responds by evaluating the issue and collaborating with the lead agency to develop action plans with measurable results. The multidisciplinary advisory group contributes to building coalitions through the cultivation and maintenance of relationships with key constituents involved in trauma system development, including healthcare professionals, trauma center administrators, pre-hospital professionals, health insurers and payers, trauma registry and data experts, consumers and advocates, policy makers, and members of the media.

Coalition Building and Community Support

The trauma system must engage its constituents to pursue a common goal. Coalition building is a continuous process of cultivating and maintaining relationships with constituents in a state or region through collaboration on injury control and trauma system development. Key constituents include health professionals, trauma center administrators, prehospital care professionals, health insurers and payers, data experts, patients, patient advocates, policy makers, public safety, local industry and business, and media representatives. The coalition serves an important support role for the following:

- Trauma system plan development and implementation
- Collaboration among all of the trauma system members
- Integration of system elements

- Advocacy for policy development such as authorizing legislation and regulations
- Development and sustainment of system resources
- Disaster preparedness

The coalition informs the multidisciplinary state and regional advisory groups to support trauma system planning and implementation efforts. Information sharing and education are important to reduce the incidence of injury in all populations and to demonstrate the value of an effective trauma system. Regular communication about the status of the trauma system, using system-derived data, helps these key partners to recognize opportunities for improvement. The trauma system's stakeholders also communicate with elected officials regarding the development and sustainability of the trauma system. Stakeholders inform and educate governmental leaders to make them effective partners in policy development to support trauma system improvement.

Current Status

The State of Louisiana has developed several forums for stakeholders and has a formalized process for membership in these forums. There are two levels at which stakeholders are engaged in the trauma system. The first is at the level of the state through participation in the LERN Board. The second is locally through participation in one of nine regional commissions. The LERN Board includes 29 individuals whose membership is defined in statute. Appointees to the Board must be approved by the Governor of Louisiana. The defined stakeholder group is broad in scope and selections are made to ensure geographic representation from across the state. Membership includes a range of medical specialties (trauma, rehabilitation, emergency medicine, neurology, cardiology, burns, pathology [coroner], and optometry), hospital representation, trauma center representation, EMS representation, and government officials (department of health, legislators). One unusual aspect of the LERN board membership is that there is an optometrist on the board. This specialty is usually not involved in the inpatient care for trauma, stroke, or STEMI. If there is a special need for ocular trauma expertise in the state, changing this role to an ophthalmologist may be more appropriate.

The multidisciplinary leadership structure of the LERN Board serves as a distinct strength. Another strength is having state legislators on the Board. This provides LERN a mechanism for both policy advice and sponsorship for legislation.

The regional commissions serve in an advisory capacity to the LERN Board. The make-up of the commissions is similarly broad. Membership seats on the regional commissions are established by LERN rules and regulations. In addition, each commission can request (and is often successful in requesting) additional representation to suit their needs. This process allows for tailoring of representation to local and regional needs. For example, Region 6 and 7 have established a military position on their regional commissions. However, there is the risk that the need for more stakeholders may go unrecognized as the process depends on recognition by existing regional commission members. For example, in one region there may be pediatric surgeons but in another perhaps not.

While there are strengths to Louisiana's current multi-stakeholder advisory groups, there are some weaknesses. Notably absent from the LERN board is representation from several key

stakeholder groups including trauma program managers, the Bureau of EMS, and the public. Some of the challenges faced by the state trauma system would benefit from representation by these groups. The state also recognizes that more should be done to address health care disparities. Representation from the public at both the state and regional levels would help define the scope of the challenges and solutions.

There are other groups that should be considered to improve broad input to the system. These groups might be incorporated through the existing board and commission system or through other mechanisms such as committees, coalitions, or advisory groups. Such key stakeholders include businesses, community organizations (e.g. faith-based groups, NGOs), payers, media, and law enforcement. A “broader tent” ensures that needs are being met and that solutions capture the full scope of those needs.

Louisiana has unique relationships to other organizations that should be better represented in the trauma system stakeholder group. In particular, the trauma system supports offshore oil efforts and other maritime activities in the Gulf of Mexico. There are also four military bases. Currently, two regions have military representation on the commission, but otherwise these two groups are not represented. These two stakeholders should also be added to the LERN Board and regional commissions where relevant regionally. The opportunity to partner with both the U.S. Coast Guard and other military branches at the state level would make the trauma system more resilient and able to leverage these resources in times of need.

One final opportunity for broader stakeholder inclusion is formalized representation from surrounding states, particularly as this affects patient flow, especially in the southeastern and northern portions of the state. There is no participation in the planning and operation by surrounding state trauma and EMS systems.

After establishing a broad stakeholder group, it is important that there are processes in place to ensure all stakeholder voices are heard. Currently, LERN has established formal processes for communication and overall, participants in the LERN Board and regional commission believe the system works well. The LERN board schedules regular meetings and connects with the commissions on important issues. They see the regional commissions as important to understanding regional issues. There seems to be effective bi-directional communication between the regional commissions and the LERN Board when matters are discussed. In general, the regional commissions feel that their voice is heard by LERN. The LERN Board distributes regional reports, newsletters, and emails to regional and hospital leaders. However, it is not clear how communications extend beyond regular board and commission members. There is likely an opportunity to expand communications to the broader stakeholder groups described above and to use multi-channel methods to achieve communication. For example, LERN could consider using web-based dashboards or portals or town halls. These channels should also create mechanisms for stakeholder input. An example of where this is particularly important for LERN as the lead agency is engaging with the public.

Louisiana has come a long way and has done an excellent job relative to others in formalizing a broad group of stakeholders. However, there are opportunities to improve the stakeholder groups’ composition and how the system functions to receive their input and disseminate information.

Recommendations

3.1. *Enact legislative change to modify positions on the LERN Board to broaden representation, including trauma program managers, EMS Bureau representatives, and representatives from the public.* (*This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

3.2. Add representation from the military, including the Coast Guard, to the LERN Board, given their unique and important potential roles in the trauma system.

3.3. Consider changing the statute from an optometrist to an ophthalmologist on the LERN Board.

3.4. *Formalize engagement of surrounding state representatives in the planning and operations of the trauma and emergency medical systems.* (*This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

3.5. Increase efforts to disseminate information to trauma system stakeholders by the LERN Board.

3.6. *Increase efforts by LERN, as the trauma lead agency, to engage the public, both for dissemination of information and for understanding the community's needs.* (*This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

3.7. Create a new mechanism (e.g. advisory groups, additional boards) or incorporate in current structures for the inclusion of other key stakeholders including businesses, community organizations (e.g. faith-based groups, NGOs), payers, media, and law enforcement.

Essential Trauma System Element #4: Trauma System Plan

An integrated trauma system plan should be created and implemented. This plan should be reviewed annually and updated every three years at a minimum, under the direction of the lead agency and the multidisciplinary advisory group.

Purpose and Rationale

Each trauma system, as defined in statute, should have a clearly articulated process to develop a trauma system plan. This strategic plan is used to guide trauma system development and functionality and should address all essential trauma system elements. It describes the system design with adopted standards of care for prehospital and hospital personnel. The plan should be built on an inventory of trauma system resources, identifying gaps in services or resources and the location of assets. A needs assessment should be developed to support the trauma system plan and updated periodically to assess population and system changes over time. The plan should consider trauma system resources, population demographics, and barriers to care access (e.g., rural, geography, resources). It is critical that the plan also identify specific populations (e.g., pediatric, geriatric, burn) within the trauma system and how the needs of each of these populations are addressed.

The plan should be developed by the lead agency with support from the multidisciplinary advisory group and any associated regional advisory committees. Based upon the system needs assessment, goals and objectives for each trauma system component should be developed with specific timelines for achievement. System stakeholders should regularly report to the lead agency to address barriers inhibiting system success and assure system and plan development. The plan should include references to regulatory standards, documents supporting trauma system development, and methods for data collection and analysis. The trauma system plan should include interfaces between the operational plans of supporting agencies and services, including EMS, injury prevention, public health, and emergency preparedness. The trauma system plan should be reviewed annually and updated periodically under the direction of the lead agency and the multidisciplinary advisory group.

Current Status

There is a current version of a trauma system plan developed by the LERN Executive Director and approved by the LERN Board. This plan is reviewed and updated annually by the Trauma Medical Director and Executive Director utilizing TQIP data to help establish some of the strategic priorities of the LERN Board and trauma system. These priorities are then shared with the regional coordinators to update and include in their regional plans. The regions have written disaster plans, but do not have written trauma system plans. Regional trauma system plans should be established that mirror the overall state plan, but also identify the unique regional needs with definitive plans to accomplish goals.

There is currently no process for regularly scheduled comprehensive reviews of the state trauma system plan which integrates all key stakeholders. These reviews should be held at least every three years and focus on engaging all pertinent stakeholders to include, but not limited to, EMS, trauma centers, rural/critical access hospitals, rehabilitation centers, the LCC, injury prevention, burn programs, and vulnerable population representatives. By engaging as

many stakeholders as possible in a comprehensive review, it is more likely that the needs of the trauma population have their unique needs met.

The current trauma system plan does not address regulatory standards, methods for collecting and analyzing data, management of special populations (e.g., pediatrics, geriatrics), or metrics for performance. To ensure success and measure growth, plans should include targets, metrics, and a timeline. These can always be adjusted as needed.

Updates to the plan and other trauma system information is sent out quarterly through newsletters and through a “CORE 4” regional update. These updates are distributed through the regions, but there is a potential deficiency in relaying information to stakeholders who do not attend the meetings.

There is little data or focus on vulnerable populations or knowledge regarding areas with healthcare disparities. There is currently no pediatric readiness program established in Louisiana, although one is underway. The LERN Executive director participates in this initiative, but it is led by the LA EMS For Children in the Bureau of Family Health. A pediatric readiness assessment is currently a standard requirement by the ACS Verification Program. Completion and implementation of this program is essential. Further coordination with the BEMS is also encouraged.

Recommendations

4.1. **Develop, implement, and monitor an updated and inclusive state trauma system plan according to regulations, including metrics for success.**

4.2. Perform a gap analysis to inform the trauma system plan revisions.

4.3. Ensure the trauma system plan does the following:
- Serves as a guidance document
- References existing rule and regulations
- Addresses operational interface for other agencies
- Clearly defines system goals and objectives

4.4. Implement a formal and comprehensive stakeholder review of the trauma system plan at an interval not to exceed three years.

4.5. Develop Regional Commission Trauma Plans, integrating LERN’s strategic goals and submit to LERN Board for review and approval.

4.6. Complete development of and implement the Pediatric Readiness ED and EMS recognition programs.

4.7. *Utilize the authority vested in the LERN Board to selectively, strategically, and sensitively impose minimum mandates and standards*. (*This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

Essential Trauma System Element #5 Continuum of Care

The trauma system should address the full continuum of injury from prevention and pre-hospital/interfacility emergency medical services, to acute hospital care (referring and accepting facility) through rehabilitation. The system should address all injured patients with special attention to pediatric, geriatric, and other vulnerable populations.

5.1 Prevention and Outreach

Purpose and Rationale

Trauma systems must develop prevention strategies that help control injury as part of an integrated, coordinated, and inclusive trauma system. The lead agency should take a central role in fostering collaboration and cooperation between stakeholders at the state, regional, and local level for injury control. In addition, the lead agency and providers throughout the system should work with public health authorities, business organizations, social services providers, community-based organizations, and the public to support, enact, and evaluate prevention programs. Prevention strategies should be evidence-informed and based on system epidemiologic data.

Prevention efforts may represent primary, secondary or tertiary prevention. Primary prevention efforts should be deployed across an entire population in order to decrease the overall risk of injury (e.g., civil engineering, window guards, smoke detectors). Secondary prevention efforts focus on a known population that is at risk and should be aimed at mitigating the effects of the traumatic incident (e.g., car seats, seat belts, helmets). Finally, tertiary prevention activities aim to lessen the impact of trauma on the individual and community (e.g., support for EMS and trauma systems, access to care, rehabilitation).

Efforts at prevention must be directed toward the intended audience at risk, well defined, and structured, with evaluation of their impact. Further, injury prevention efforts should be informed by and relevant to the local community. The implementation of injury control and prevention requires the same priority as other aspects of the trauma system, including adequate staffing, funding, and partnerships with community organizations. Many systems focus primarily on providing information and education directly to the general public (e.g., restraint use, not driving while intoxicated). A program that can be utilized is the STOP THE BLEED® (STB) program. STB provides a tool to partner with trauma systems and the community by empowering, informing, and educating the public to respond to a bleeding emergency. Education efforts should also be directed toward all continuum components, such as emergency medical services (EMS), acute hospital and rehabilitation personnel safety (e.g., securing the scene, infection control). Collaboration with public agencies, such as local departments of health, is essential to successful prevention program implementation. These partnerships can synergize and increase the efficiency of individual efforts. The formation of an injury control network with alliances across multiple healthcare, professional, and community organizations is beneficial. The prevention needs of children, elderly, and other vulnerable populations should be specifically addressed.

Activities that are essential to the development and implementation of injury control and prevention programs include:

- Engagement of the lead agency and key stakeholders in the development of the community health needs assessments and the community health improvement plans.
- Integration with public health injury control programs for injury surveillance, coordination of resources, and implementation of prevention programs.

- Preparation of annual reports by the lead agency, along with partner organizations, on the status of injury prevention and trauma care in the system.

Current Status

Trauma systems must develop prevention strategies that help control injury as part of an integrated, coordinated, and inclusive system. The Louisiana injury prevention (IP) efforts are shared by the LA Office of Public Health's (OPH) Bureau of Family Health (BFH), the LA Highway Safety Coalition, and LERN. Integration of LERN into the LA Strategic Highway Safety Plan (SHSP) includes a seat for the LERN Executive Director on the state advisory committees related to certain topic areas and regional level integration. The SHSP's design for Regional Safety Coalitions includes bidirectional participation between the Tri-Regional Coordinators and the Coalition Leaders.

The LA State Health Assessment Report and LA Injury Prevention Strategic Action Plan 2021-2025 are in place. LERN was not involved in these processes but intends to participate in the 2025 exercise. The Strategic Action Plan identified the burden of injury by categories including homicide, suicide, motor vehicle crashes, bullying, youth and teen dating violence, intimate partner violence, older adult falls, drowning, and child abuse and neglect. LERN supports advocacy efforts related to injury prevention, such as the motorcycle helmet law.

The pre-review questionnaire (PRQ) and stakeholder testimony identified multiple efforts to address injury prevention. Despite this robust cohort of partners, no statewide injury prevention coalition exists. Lack of integration of injury prevention leaders into trauma stakeholder groups contributes to compartmentalized expertise, siloed resources, fragmented efforts, and the absence of system-wide validated data collection.

LERN aggregates trauma data from the 14 verified trauma centers which is limited to patients meeting NTDS inclusion criteria. This excludes many other trauma related cohorts such as death on scene, trauma treated at non-verified centers, and injuries addressed at urgent care centers/private physician offices. This lack of inclusivity leads to skewed data and inaccurate data validation. The LERN annual report reflects trauma data limited to LCC participants only. Therefore, injury prevention initiatives cannot accurately reflect and address the critical priority issues in the state.

There is a LA Trauma Center Injury Prevention Group, which shares IP resources. This group, initiated by a trauma center, now includes the Tri-Regional Coordinators who then report to the LERN Board. The LERN Education Coordinator and Tri-Regional Coordinators allocate 10% of their FTE to IP and outreach activities. The LERN Education Coordinator serves as a spokesperson to the LERN Executive Director for IP requests, although this process is not formalized. There is a centralized repository of some injury prevention resources; however, this is not centrally located or accessible to members outside of LERN.

LERN funds education and prevention efforts up to $3,000 annually per verified trauma center, reimbursable upon request. This financial support is available for programs addressing injury

prevention, outreach, and trauma program education. The funding is allocated within the LERN budget, which is not a guaranteed funding source. The financial support is minimal given the expense accrued with trauma center required education alone.

The addition of several verified trauma centers increased injury prevention activities. With new verified pediatric trauma centers, pediatric-focused injury prevention efforts are present. Regional burn centers have developed and enhanced resources to include innovative “Stop the Burn” kits along with supplemental education. The Rural Trauma Team Development Course (RTTDC) has been provided to some rural hospitals, with anecdotal positive feedback. STOP THE BLEED® has been promulgated statewide, with LERN support to obtain training kits for every region. There is some outreach to community stakeholders, such as faith-based agencies and family physician offices; however, community integration should be enhanced.

There was no evidence of outcome data documenting performance improvement after the implementation of any listed injury prevention program. Evaluation efforts should start at program inception with a feasibility assessment and include intermediate and long-term outcomes. This data would help to determine the efficacy and impact of injury prevention programs on the population.

Most of the IP efforts are led by the Level I and II trauma centers, per requirement of ACS verification, and have minimal assistance from LERN above some logistics and faculty support. These injury prevention efforts, although laudable, are not prioritized based on LERN registry-driven data, indicating elderly falls as the highest mechanism of injury. There is a lack of prioritization of system-wide injury prevention efforts.

Recommendations

5.1.1. **Utilize trauma registry data, and other data resources, to define and guide critical priority areas for injury prevention initiatives.**

5.1.2. Establish a statewide injury prevention coalition. LERN should take the lead in promulgating these efforts.

5.1.3. Identify existing injury prevention resources in the Department of Health in order to align state-wide efforts.

5.1.4. Expand the LERN staffing capability and responsibility to enable LERN to serve as a robust resource for agencies and trauma centers within the state to inform, educate, and deliver injury prevention education.

5.1.5. Widely distribute accurate and inclusive injury prevention data to constituents.

5.1.6. Elevate efforts related to geriatric fall prevention, based on registry data.

5.1.7. Dedicate appropriate funding to support injury prevention; consider distinct categories for public vs provider (trauma clinician) educational activities.

5.1.8. Actively partner with community-based and national injury prevention efforts.

5.1.9. Establish a central clearinghouse of evidence-based injury prevention resources that are available for all partners with an injury prevention focus.

5.1.10. Collect outcome data documenting performance improvement after implementation of injury prevention programs.

5.2 Emergency Medical Services

Purpose and Rationale

Emergency Medical Services (EMS) is a critical component in the trauma system and is often the vital link between the injury event and definitive care. Thus, strong relationships between leadership within EMS, trauma centers, and lead agency trauma programs are necessary for optimal management of injured patients to reduce mortality and to produce best outcomes. EMS is a complex system that not only transports patients, but includes public access, communications, patient care by trained personnel, patient triage, data collection, and quality improvement activities.

There must be an EMS system medical director who has statutory authority to develop operational protocols, oversee clinical practice, and establish ongoing quality assessment to ensure optimal provision of prehospital care. The EMS system medical director should work closely with the regional trauma system leadership to ensure that care protocols and treatment goals are mutually aligned. The EMS system medical director should also have ongoing interaction with adult and pediatric stakeholders, including local EMS agency medical directors and the EMS for Children (EMSC) program. This will ensure that there is understanding of and compliance with trauma triage and destination protocols for trauma patients of all ages.

The lead agency should ensure that EMS is sufficiently resourced to meet the needs of the community served. To achieve this end, a resource and needs assessment and periodic reassessment evaluating the availability and geographic distribution of EMS personnel and physical resources are important. This ensures rapid and appropriate scene response, as well as availability of timely and appropriate interfacility transport services. This assessment should outline a detailed description of the distribution of ground ambulance and aeromedical locations across the region. EMS system assets should be positioned according to predictable geographic or temporal demands to optimize response efficiencies. Such positioning schemes require integrated prehospital data collection systems that track the location of occurrence and timeliness of responses over time. Interfacility transport services should be available in a timely fashion and staffed with EMS professionals who are appropriately trained (ideally in critical care), ensuring optimal patient care between facilities. Pre-identified transfer algorithms should be in place and readily accessible to transferring facilities to expedite patient transfer to higher levels of trauma care. Periodic assessment of dispatch and transport times provides insight into whether resources are consistent with population needs.

Each region should have objective criteria dictating the level of response (advanced life support [ALS] or basic life support [BLS]), mode of transport, and disposition of the patient based on mandatory system-wide prehospital triage criteria. The National Guideline for the Field Triage of Injured Patients, Appendix A, should be used as the framework for regional triage decisions. This ensures that trauma patients are transported to the most accessible and appropriate facility based on their injuries. These triage criteria should identify major trauma patients, including special populations such as pediatrics and geriatrics. A mechanism should be in place that allows for case-based QI review of trauma patients by prehospital and hospital providers. This allows bidirectional communication and continuing education. Ongoing review of triage and treatment decisions promotes continuing quality improvement of the triage process and prehospital care protocols. A more detailed discussion of prehospital (primary) triage criteria is provided in the System Triage and Patient Flow section.

Human Resources

Periodic EMS workforce assessments should be conducted to ensure adequate numbers and distribution of personnel. Addressing recruitment, retention, and engagement of qualified personnel should be a system priority. EMS system leaders must ensure that prehospital care professionals at all levels maintain competence in trauma care. This is best accomplished by requiring standards for credentialing and certification and specifying continuing educational requirements for all prehospital personnel involved in trauma care. The core curriculum for prehospital personnel (Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), paramedic, and all other levels of prehospital personnel) has an essential orientation to trauma care for all ages. However, trauma care knowledge, and skills need to be continuously updated, refined, and expanded through targeted trauma care training in collaboration with trauma system leadership (e.g. Prehospital Trauma Life Support®, International Trauma Life Support®, age-specific courses). Mechanisms for the periodic assessment of competence, educational needs, and trauma education availability within the system should be incorporated into the trauma system plan. Trauma patients are best served when EMS agencies (ground and air) and their training programs meet national standards and achieve national accreditation.

In some states, up to half of all EMS agencies are staffed by volunteers, typically in rural areas. These volunteer professionals are essential to the provision of immediate care and efficient transportation and may continue to augment care in the hospital setting. The trauma system should support these volunteer agencies in performing their vital role in the care of trauma patients. Such aid may be in the form of assistance with quality improvement activities, training, and clinical opportunities.

Due to the multidisciplinary nature of trauma care, educational conferences that include all levels of clinical professionals (e.g. prehospital personnel, nurses, and physicians) need to occur regularly. Communication with and respect for prehospital professionals is important, particularly in rural areas where exposure to major trauma patients might be relatively rare.

Integration of EMS Within the Trauma System

In addition to its critical role in the prehospital treatment and transportation of injured patients, EMS must also be engaged in assessment and integration functions within the trauma system, as well as in connection with public health and other public safety agencies. EMS agencies have a critical role in ensuring that communication systems are available and have sufficient redundancy so that trauma system stakeholders will be able to access the EMS/trauma system and dispatch appropriate medical resources. This should be functional both at the single patient level and in response to mass casualty incidents (MCIs). Enhanced 9-1-1 services and a central EMS/trauma communication system ensure field-to-facility bidirectional communication, interfacility transfer dialogue, and an all-hazards approach among system participants. EMS should utilize all technological advances available to provide care to trauma patients, such as ultrasound, telemedicine, and wireless communications capabilities. Innovations such as automatic crash notification systems hold great promise for quickly identifying trauma-producing events, thereby reducing delays in discovery and decreasing prehospital response intervals.

EMS data define geographic and demographic characteristics of injuries and thus should assist trauma systems with the identification of injury prevention program needs. EMS serves a critical role in the development and implementation of all-hazards response plans. This integration should be included in the state and regional trauma plan and overseen by the lead agency. EMS leadership should participate in all aspects of trauma system design, evaluation, and operation, including policy development, public education, and strategic planning.

Current Status

The LA EMS system is composed of many dedicated prehospital and hospital resources which have been working together for several years. Responsibility for the state's EMS system is somewhat disparate. LERN has been given statutory responsibility for oversight and coordination, over time, of the state's system for three time-sensitive patient conditions: trauma, STEMI, and stroke. Additionally, LERN has assumed responsibility for disaster, MCI, and ESF8 activities. LERN serves in these leadership roles and is given the authority for those areas of the state's system, however it generally lacks the ability to ensure compliance with system guidance or requirements. LERN has established a level of trust and cooperation from the prehospital and hospital communities, is well received and respected, and helps to support and facilitate the "coalition of the willing".

The State Bureau of EMS (BEMS) has limited responsibilities to include EMS education and testing, licensure, and compliance of those requirements. BEMS is largely a licensure and disciplinary body and has no current role in statewide protocol development or implementation. Louisiana is a National Registry of Emergency Medical Technicians (NREMT) state, which facilitates its education and licensure processes. It is also an EMS Compact state, which supports workforce surge needs in times of daily operation, stress, and disasters. Due to this division of activities, Louisiana lacks a functional lead state agency for the overall state EMS system. The interaction and daily engagement between LERN and BEMS are limited and ad hoc. Although they appear to work together collaboratively as needed, there is no formal relationship between the two and neither is involved in the development or review of the other's rules and regulations. This has the potential to cause confusion and lack of coordination among all system stakeholders. LERN became aware of the need for additional EMS representation on its board which resulted in the addition of EMS clinicians and associations to the board, for which it should be complimented. However, lack of BEMS direct representation and engagement with LERN limits appropriate state level EMS participation and coordination in each other's activities.

LERN has established state medical director positions for trauma, STEMI, and stroke that are filled by physicians who well represent their specific clinical disciplines. However, the BEMS does not have an established state EMS medical director to ensure clinical oversight of the entire state EMS system. This position would allow more functional collaboration between the Bureau and LERN. A state EMS medical director position has been considered in the past but apparent opposition from stakeholder groups prevented implementation. This reflects a lack of understanding by stakeholder groups on the importance and the advantages of a well-trained EMS physician as the state EMS medical director in facilitating and ensuring quality clinical care, helping to coordinate implementation of state EMS programs, and serving as liaison with other health care disciplines. Louisiana is one of the few states in the country without the resource of a state EMS medical director.

The previous consultation recommended that all EMS activities be combined into a single lead EMS agency. This consultation panel supports and reinforces that recommendation. There are various options for the state to address this issue. One option might be establishing a new state entity such as the Office of EMS and Time-Sensitive Conditions, which would include trauma. As the BEMS is an established Bureau within the LA Department of Health and LERN's

responsibilities for trauma, STEMI, and stroke all fall within an overall EMS systems structure, another option could be moving LERN formally under the DPH structure within BEMS, allowing the BEMS to serve as a true state EMS lead agency. If combination into one entity is not achievable and LERN is to remain independent, there would need to be substantially increased mechanisms to ensure regular engagement between LERN and BEMS to ensure more robust coordination of these separate entities.

LERN maintains several activities key to the trauma system which could also be valuable to the overall EMS system. The LERN communications center (LCC) functions to help facilitate destination decision making for patients meeting field trauma triage criteria. Field clinicians from throughout the state, except for New Orleans and Shreveport area EMS, contact LCC with patient clinical condition, and the LCC identifies an appropriate destination based on current facility capabilities. This decision making is supported by the hospital capabilities dashboard updated by the state's trauma facilities. This resource ensures appropriate trauma patient destination and can help prevent trauma center or hospital overload in times of stress or MCI; it also serves as the ESF8 resource during disasters. The LCC would be valuable to the entire state EMS system for destination decision-making for other clinical areas. A valuable expansion of the LCC would include incorporation of EMS resources inventory into the database to provide an immediate picture of available EMS resources throughout the state. Prehospital agencies testified during the consultation that access to this hospital resources dashboard by the EMS agencies would also be helpful for non-trauma patient destination decisions.

LERN maintains a registry for the state using the LCC data which contains general information for trauma patients meeting field triage criteria, with the exception of New Orleans and Shreveport EMS. A drawback of this registry is that the overall system is unable to identify trauma patients who should have been reported to LCC but are not (under triage). Regular registry reports are provided by LERN to the regional commissions, which use that information for regional decision making. LERN also maintains the state EMS database with 48 out of the 50 EMS agencies which maintain an ePCR voluntarily contributing data. Appropriate data is then shared with the National EMS Information System (NEMSIS). Attempts should be made to obtain data from the agencies not currently contributing, including those with and without ePCR. LERN hopes to implement NEMSIS v3.5 in the fall 2024, which will further facilitate state EMS data collection and analysis activities. State level EMS data is not routinely shared with BEMS.

Each EMS agency is required to have an EMS medical director. Clinical protocol development and approval generally occurs at the local and regional levels with input from local EMS medical directors and appropriate physician consultants. Regulations reference protocol approval by regional medical societies, but that system seems to have been replaced by medical directors and consultants. There have been discussions in the past about state clinical protocols, which received significant opposition from stakeholders. The advantage of state clinical guidelines is that they establish a consistent clinical care floor for the state. Mechanisms can be implemented to continue to allow for local enhancements to maintain local autonomy and flexibility. Consideration should again be given to establishing uniform state protocol guidelines. These would aid in assurance of consistent clinical care, provide oversight for local and regional modifications, and allow the state opportunities for assessment and process improvement.

As with the rest of the country, the LA EMS workforce has been significantly stressed in recent years. Most agencies in the state are wrestling with staff recruitment and retention. This is due to EMS clinicians both leaving the field and moving to practice in other clinical environments. This stress affects not only the individual EMS clinician but agencies as well. Testimony was provided indicating one parish is at risk of losing its only EMS agency. Agencies have appropriately implemented staffing modifications, such as ALS crew configuration of an ALS and BLS clinician rather than two ALS clinicians. A formal workforce assessment has not been done in LA in recent years. Strong consideration should be given by the state to conduct an assessment to identify the specific points of stress and how to address those issues. The BEMS should consider collaborating with the Louisiana Ambulance Alliance to create and execute that survey to evaluate the current workforce status, including both personnel and agency issues.

One of the stressors to the EMS workforce is emergency department wall times, which is time that EMS crews must wait in the ED to transfer clinical patient responsibilities to ED staff. This varies around the state from 30 minutes to several hours. Although this delay does not typically occur for major trauma patients, this is an issue which delays getting EMS crews back in service and limits available EMS resources. Understanding that EDs are crowded and stressed, walls times are an issue which hospitals must work to address, as the hospital is legally responsible for the patient from the time the EMS crew arrives at the hospital (on hospital property). The state should work with the hospital association to identify ways to eliminate EMS wall time delays.

The EMS for Children program resides in the Bureau of Family Health within the Office of Public Health (OPH). The program is developing a pediatrics readiness program for both prehospital and hospital environments, which will enhance pediatric capabilities throughout the state. As this program operates exclusively to improve pediatric care in emergency settings, consideration should be made to moving the program under the umbrella of the BEMS.

EMS is considered an essential element for the emergency preparedness system in Louisiana; however, this does not meet the essential service needs of daily EMS system operations. The community often views it as an essential daily service, with expectations on availability and service level similar to that of law enforcement and fire services. EMS continues to face struggles such as ambulance and personnel shortages. Although having EMS as an essential service does not guarantee funding, stronger legislative wording may unlock additional revenue streams to support EMS.

Recommendations

5.2.1. **Align the organizational structure to fully integrate all aspects of the EMS, trauma, and other time-sensitive emergency systems.**

5.2.2. **Create a position of state EMS medical director to ensure clinical oversight of the entire EMS system.**

5.2.3. Evaluate the current roles and responsibilities of the leadership entities in the oversight of the EMS system.

5.2.4. Improve the interaction and engagement between LERN and BEMS as system partners.

5.2.5. *Develop and implement standard baseline state EMS clinical guidelines. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

5.2.6. Add EMS resource inventory to the ESF-8 portal to monitor available EMS resources in the case of a zero-notice event.

5.2.7. Expand accessibility to the LERN ESF8 dashboard to include EMS agencies.

5.2.8. *Conduct an EMS workforce and agency assessment. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

5.2.9. Eliminate EMS wall times through collaboration with the hospital association.

5.2.10. Consider moving the EMSC program from under Family Health to BEMS.

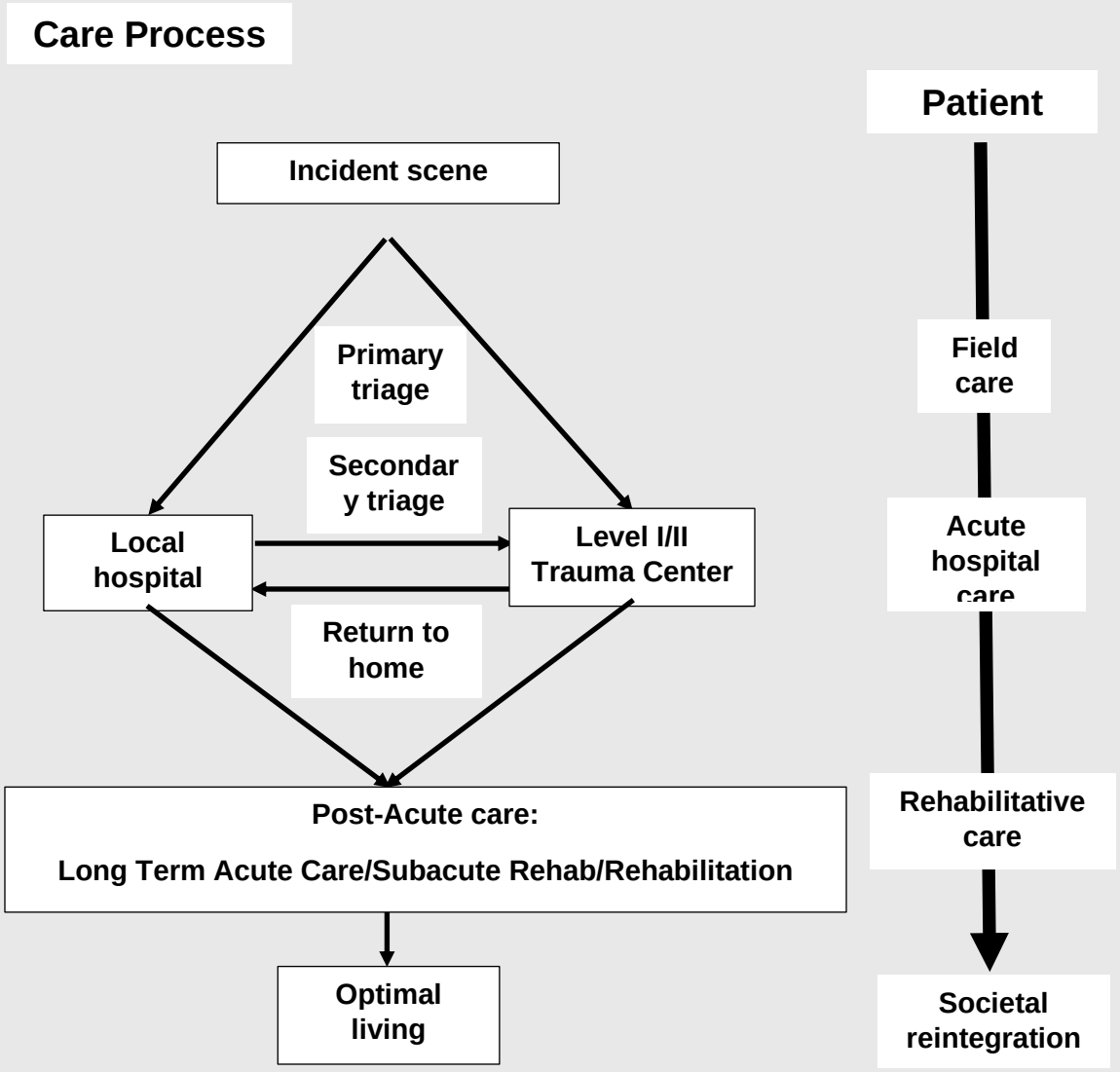
5.2.11. Consider legislation to strengthen EMS as an essential state and local service.

5.3 System Triage and Patient Flow

Purpose and Rationale

One of the fundamental aims of a trauma system is seamless and timely patient care that is needs-based and appropriately transitions injured patients through the entire continuum of care including prehospital, acute care, rehabilitation, and return home. Although on the surface this objective seems relatively straightforward, individual patient characteristics, geography, and transportation systems often present significant challenges. The most critically injured trauma patient is often easy to identify at the scene (e.g., presence of coma or hypotension). However, in some circumstances, the patients requiring the resources of a Level I or II center may not be immediately apparent to prehospital professionals. Primary or field triage criteria aid professionals in identifying patients at greatest risk for adverse outcomes and who might benefit from the resources of a designated trauma center. Even if the need is identified, regional geography or limited transport services might not allow for direct transport to the most appropriate facility.

This diagram shows the care process and patient movement through the trauma system.



Primary triage of a patient from the field to a center capable of providing definitive care is an initial goal of the trauma system. However, there are circumstances (e.g., airway management, rural environments, inclement weather) when triaging a patient to a closer facility for stabilization and transfer is the best option for accessing definitive care. Patients sustaining severe injuries in rural environments might need immediate assessment and stabilization before a long-distance transport to a trauma center. In addition, evaluation of the patient might bring to light severe injuries for which needed care exceeds the resources of the initial receiving facility. Some patients might have specific needs that can be addressed at relatively few centers within a region (e.g., pediatric trauma, burns, severe traumatic brain injury, spinal cord injury, ocular trauma, and extremity reimplantation). Finally, temporary resource limitations might necessitate the transfer of patients between acute care facilities. Prehospital trauma triage protocols should be consistent with national guidelines.

Secondary triage at the initial receiving facility has several advantages, especially in systems with a large rural or suburban component. The ability to assess patients at non-designated or Level III to V centers provides an opportunity to focus on the transfer of the most severely injured patients to Level I or II facilities, thus preserving limited resources for patients most in need. It also provides patients with lesser injuries the possibility of being cared for within their community.

The decision to transfer a trauma patient should be based on objective, prospectively agreed-on criteria. Established transfer criteria and transfer agreements expedite the transfer process and minimize the potential for delays in care. Delays in transfer may increase mortality, complications, and length of stay. A system with excessive trauma transfers might stress the resources of the regional trauma facility and transport agencies, particularly in in smaller communities. Conversely, inappropriate retention of patients at centers without adequate facilities or expertise to appropriately take care of the patient might increase the risk of adverse outcomes. Given the importance of appropriate interfacility transfers, timeliness of the decision to transfer, the time to transfer, and the rates of over and under triage should be evaluated regularly. Bidirectional corrective actions should be instituted when events are identified. Data derived from tracking and monitoring the timeliness of access to a level of trauma care commensurate with injury type and severity should be used to help define optimal system configuration. It is critically important that injury related data be collected from all acute care facilities where injured patients are evaluated and not only from designated trauma centers.

A central communication coordinating base (e.g., transfer center) with real-time access to information on system resources greatly facilitates the transfer process. This communication base should identify a receiving center, facilitate dialogue between the transferring and receiving facilities, and coordinate interfacility transport.

Once acute needs have been met, patients often benefit from rehabilitation to maximize function and limit disability. Some patients, such as those with limb loss, loss of sight, paralysis, or significant head injury, benefit from specialized rehabilitation. Ideally, patients requiring rehabilitation should be identified early in their acute hospital phase so arrangements for an appropriate facility and transfer planning can occur before the patient is ready for discharge from an acute care hospital.

In order to optimize trauma system efficiency, efforts should be made to return patients back to their local community once the acute phase of trauma care is complete. Returning patients opens the limited resources available to care for the acute severely injured patients at Level I and II trauma centers. In addition, it brings patients back into their social networks for reintegration into their communities.

Current Status

The state trauma system is coordinated by LERN, a single entity given authority for oversight of three time-sensitive clinical conditions: trauma, STEMI, and stroke. As such, LERN serves as the leading trauma entity for the state. Although the lead agency for these systems, LERN does not have the authority to ensure compliance with system guidelines or standards. Comments were made multiple times during the stakeholder sessions stating the system works well as the "coalition of the willing". The stakeholders are to be congratulated on the cooperation and commitment that exists within this "coalition". However, there are times when the oversight agency must have the authority to assure compliance. Further structure and oversight capabilities might be helpful.

Level I, II, and III centers are required to be verified by the ACS COT. Although the trauma centers are distributed throughout the state, one region is currently without a trauma center. Non-trauma hospitals are not reviewed or otherwise designated and are not contributing data to the state trauma system registry. Further discussion about non-trauma hospitals and consideration for Level IV center designation will occur in the Definitive Care section of this report.

The entire state is covered by 911 PSAP services. Approximately 12% of the state is covered by NG911. The state is encouraged to continue integration of NG911 programs throughout the state to afford callers and call takers the additional capabilities offered by NG911 programs.

Prehospital field trauma triage guidelines have been established, accepted, and implemented in the state. Those guidelines were recently updated to comply with the most recent ACS COT National Guidelines for the Field Triage of Injured Patients. They also include accommodation for field medic discretion. LERN operates the communications center (LCC), which facilitates and coordinates trauma center destination decisions. Once a patient meeting field triage criteria is identified by EMS clinicians, LCC is contacted by the EMS agency with patient information and an appropriate destination is determined. Most EMS agencies within the state, except for NOLA and Shreveport EMS, utilize the LCC for trauma patients. The trauma center resources are catalogued in the ESF8 portal, which is generally updated by the hospitals at a minimum daily. LCC then communicates patient information to the receiving facility; field clinicians also have a direct communication ability with the receiving facility, if warranted. Testimony indicated that the use of this system has decreased state secondary transfer rates by 6-fold over recent years. The LCC also facilitates interfacility transfer destination determinations for trauma patients from initial to specialty facilities based on its ESF8 dashboard resources inventory by making initial transfer contact with potential receiving trauma centers. This has taken some workload burden off the sending facilities (e.g., not making multiple calls to find a receiving facility) but has placed volume stress on LCC staff, at times, as these activities can be time-consuming. Direct clinical discussions between sending and receiving clinicians occur once the receiving facility has been determined.

The LERN registry reports, based on patient information communicated with the LCC, are provided to the regional commissions, which are responsible for evaluation of their trauma patient populations and addressing local and regional issues. Because entries into the LERN registry are dependent on EMS evaluation and reporting and there is no reporting into LERN

from non-participating hospitals, the true volume of trauma patients in the state is not easily identified. This limits the system's ability to determine potential under triage issues. There also does not appear to be a mechanism or process for evaluation of compliance with the triage guidelines. Additionally, there appear to be no mechanisms for following and analyzing patients throughout the continuum of care.

Air ambulance programs are available throughout the state. These programs respond primarily to field and scene calls but are also utilized for interfacility transports. This appears appropriate given the distances traveled and geography of the state. Air ambulance requests and activation are based on local agency guidelines. There are no standardized state activation criteria for air ambulance utilization. Conversations with stakeholders indicated conflicting information on the appropriateness of air ambulance utilization with some indicating general support for air ambulance use and others expressing concern about their appropriate use.

The state EMSC medical director indicated that a pilot telehealth program to allow for general emergency physician consultation with pediatric specialists is being developed within a specific health care system. The burn community has also established an operational consultation program for burn patients. These might be models for consideration for other disciplines, for example subspecialty consultation before transfer decision making, if appropriate.

Interest and receptiveness were expressed by rural critical access hospitals in having patients repatriated to their facilities following the acute care phase of the patients' care. Impediments to repatriation include financial limitations by most insurers and lack of repatriation agreements.

Recommendations

5.3.1. ***Evaluate compliance, using validated data, with triage guidelines and appropriateness of trauma patient transports and transfers. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)***

5.3.2. Evaluate the integration and appropriate utilization of air ambulances.

5.3.3. Facilitate expansion of NG911 statewide.

5.3.4. Explore telehealth utility for subspecialty consultation as part of transfer decision making.

5.3.5. Identify mechanisms to facilitate patient repatriation following the acute care phase of their care.

5.4 Definitive Care Facilities

Purpose and Rationale

The goal of the inclusive trauma system is one where patient needs are matched to available resources and capabilities. Inclusive trauma systems include all health care facilities, where each hospital contributes to the best of its ability to meet patient needs. Thus, as the core of a regional trauma system, acute care facilities operating within an inclusive trauma system may provide definitive care to the entire spectrum of patients with traumatic injuries or deliver initial stabilizing care before transferring to a facility better matched for higher patient acuity. Acute care facilities should be well integrated into the continuum of care, including prevention and rehabilitation, and operate as part of a network of trauma-receiving hospitals. All acute care facilities, both designated and non-designated, should participate in the essential activities of a trauma system, including performance improvement, data submission to state or regional registries, representation on regional trauma advisory committees, and readiness through mutual operational agreements to address interfacility transfer, educational support, and outreach. The roles of all definitive care facilities, including non-designated hospitals, designated trauma centers, and specialty hospitals (e.g., pediatric and burn) should be clearly outlined in the state or regional trauma plan and monitored by the lead agency. Facilities providing the highest level of trauma care are expected to provide leadership in education, outreach, patient care, and research and to participate in the design, development, evaluation, and operation of the trauma system. The system should have a funding source for expected leadership activities by facilities providing trauma care.

In an inclusive system, patients should be triaged to the appropriate facility based on their needs and facility resources. Patients with the least severe injuries might be cared for at facilities within their community, whereas the most severe injuries should be triaged to a Level I or II trauma center. In rural and frontier systems, smaller facilities must be ready to resuscitate and initiate treatment of major injuries and have a system in place for the most efficient and safest transfer to a higher level of care.

Trauma receiving facilities providing definitive care to patients with other than minor injuries must be specifically designated by the state or regional lead agency and equipped and qualified to do so at a level commensurate with injury severity. To assess and ensure that injury type and severity are matched to the qualifications of the facilities and personnel providing definitive care, the lead agency should have a process in place to review and verify the qualifications of a particular facility according to a specific set of resource and quality standards. This criteria-based process for review and verification should be consistent with national standards and be conducted on a periodic cycle as determined by the lead agency. When verified/designated centers do not meet set standards, there should be a process for remediation. This should include corrective action plans, probation, and ultimately accountability through suspension, revocation, or de-designation.

Designation by the lead agency should be restricted to facilities meeting criteria or statewide resource and quality standards and based on patient care needs in the regional trauma system. There should be a well-defined regulatory relationship between the lead agency, designated trauma facilities, and non-designated acute care facilities in the form of a contract, guidelines, or memorandum of understanding. This legally binding document should define the relationships, roles, and responsibilities between the lead agency and the medical leadership from each acute care facility.

Human Resources

The ability to deliver high-quality trauma care is highly dependent on the availability of skilled human resources. Therefore, it is critical to assess the availability and educational needs of clinical professionals on a periodic basis. Because availability, particularly of subspecialty resources, is often limited, some means of addressing recruitment, retention, and engagement of qualified personnel should be a priority. Periodic workforce assessments should be conducted. Maintenance of competence should be ensured by requiring standards for credentialing and certification. Mechanisms for the periodic assessment of ancillary and subspecialty competence, educational needs, and availability within the system for all designated facilities should be incorporated into the trauma system plan. The lead trauma centers should consider teleconferencing and telemedicine to assist smaller facilities in providing education on regionally identified needs. In addition, lead trauma centers within the region should assist in meeting educational needs by sponsoring multidisciplinary annual educational events. These activities foster teamwork and cooperation in a functional, inclusive system.

Integration of Designated Trauma Facilities within the Trauma System

Designated trauma facilities must be well integrated into all other facets of an organized system of trauma care, including public health systems and injury surveillance, prevention, EMS and prehospital care, disaster preparedness, rehabilitation, and system performance improvement. This integration should be supported by the state and/or regional trauma plan and facilitated by the lead agency.

Each designated acute care facility should participate, through its trauma program leadership, in all aspects of trauma system design, evaluation, and operation. This participation should include policy and legislative development, strategic planning, and education of legislators and the public. In addition, the trauma program and subspecialty leaders should provide direction and oversight for the development, implementation, and monitoring of integrated care protocols used throughout the system. The highest-level trauma facilities should provide leadership of the regional trauma committees through their trauma program medical leadership. These medical leaders can assist the lead agency and help ensure that opportunities to improve the quality of care within the system are recognized and corrected. Educational outreach by these higher-level centers should be used as appropriate to help achieve this goal.

Current Status

Louisiana has a population of almost 4.7 million served by 116 acute care hospitals, 14 of which are ACS verified and state designated trauma centers. The current number of 14 ACS-verified level trauma centers represents a substantive increase from the period of the 2009 ACS Trauma System Consultation when there were only two centers. These centers are distributed across nine geographic regions centered in higher population density metropolitan areas within the state. There is definable strength that arises in the passion and commitment of the LERN Board and the “coalition of the willing” to drive system improvement.

Currently, the Louisiana Trauma System functions as a non-integrated patchwork quilt of individual hospitals and regions which inconsistently coordinate efforts across the continuum from local to regional to state levels. There are several reasons for the fragmentation. Trauma centers and trauma regions seem to largely function independently with little evidence of cooperation as a learning trauma system. In addition, there are few mechanisms in place to incentivize participation in the system or to disincentivize substandard performance. As such, there are several opportunities for improvement to fulfill the vision of a true inclusive trauma system. There should be a well-defined regulatory relationship between the lead agency,

designated trauma facilities, and non-designated acute care facilities in the form of a contract, guidelines, or memorandum of understanding that guides patient triage and transfer. Currently, such a relationship does not exist. There are few regulatory mechanisms in place to ensure accountability as it relates to trauma care performance.

Several barriers of access to care exist across the state, including general capacity issues, ICU capacity, and surgical specialty care availability. Consistent limitations in these areas may put some trauma centers at risk for degradation of trauma designation level if not remediated. Information received by the review team indicates that hospitals in Louisiana, including trauma centers, face significant pressure from overcapacity and insufficient funding, highlighted by frequent transfer declination rates, and extended EMS "wall times." Hospital and trauma center capacity limitations seem to be ubiquitous across the state. In general, patients transported to the trauma center by EMS that meet established high acuity criteria are cared for in an expeditious manner. Lower acuity patients transported by EMS often have delays in care associated with extended “wall times”, not inconsistently exceeding 60 minutes.

Trauma transfers represent another significant challenge to the trauma system. LERN works collaboratively with the 14 trauma centers to decrease the first-call denial rate. However, the median denial rate is 12.5%. In 2023, for the 10,584 pre-hospital patient transfers directed by the LCC, there was only a 5% rate of secondary transfer. In contrast, for the 1,921 patients in which the LCC was not engaged in the transfer process, there was a 55% secondary transfer rate. Despite trauma center placement in a majority (8 of 9) Louisiana regions, there has been a significant rate of interregional transfer needed to provide definitive care to injured patients in the state. The need for interregional transfer is manifest mainly secondary to trauma center capacity and/or lack of surgical subspecialist availability at the declining trauma centers. At a couple of trauma centers, the trauma transfer denial rate is unacceptably high. Though this issue has been identified as a significant problem by the trauma system, no effective remediation strategy has been implemented. A targeted system performance improvement initiative to address and reduce the trauma transfer denial rate of trauma centers should be created. In addition, LERN should collaborate with the LDH to utilize the state’s regulatory authority to enforce ACS COT verification and LA state designation standards for trauma diversion. This trauma transfer issue is exacerbated by the uneven distribution of patient transfer load across the system, with three regions bearing a disproportionate burden of injury transfers. Capacity challenges are further exacerbated across the trauma system by limited post-acute care beds producing a choke point for patient flow.

The Louisiana system aspires to be an inclusive trauma system. However, rural and non-designated centers receive little support or guidance to participate in the system. Many rural EDs are staffed by non-emergency medicine trained physicians and advanced practice providers with no significant background to treat trauma and there has been limited training available to them to support this capability. While LERN does facilitate education in rural areas including TNCC, ENPC, RTTDC, and PHTLS, the perception of the rural stakeholders, as vocalized during the stakeholder meetings, is that there is an appreciable need for increased training and resources to support trauma care in their communities. The RTTDC educational outreach was universally regarded as a positive influence in rural communities, but this effort should be expanded to cover a greater breadth of the rural communities and be performed iteratively as there tends to be significant staff turnover in many of these facilities. The system

should explore alternative methods to facilitate necessary trauma treatment in rural hospitals, such as utilizing telehealth services and expedited air ambulance operations.

To have an inclusive trauma system, non-designated facilities and lower-level trauma centers must be engaged in the trauma system, at a minimum, in collecting and reporting on data on injured patients seen at their facilities in order for the system to understand the true burden of injury and make system enhancements. One way to formalize this is through Level IV designation. LERN should consider exploring Level IV designation for its rural and non-designated hospitals participating in injury care across the state. This evolution would be an advantage to the system in several ways. The formal acknowledgement and support would facilitate empowerment of acute care facilities that care for injured patients in these areas. Furthermore, integration into the trauma system plan would ensure injured patients receive appropriate care and transport consistent with the goals of the system. If not interested in formally creating a Level IV system, the lead agency should work with non-designated centers receiving trauma patients to ensure policies and practice are in place to care for injured patients, that data is captured on these patients, and that the quality of care is monitored.

Collectively, there are several significant opportunities to improve in the context of definitive care facilities as the state aspires to achieve its goal of creating an inclusive trauma system.

Recommendations

5.4.1. **Create a targeted system performance improvement initiative to address and reduce the trauma transfer denial rate of Level I and II trauma centers.**

5.4.2. **Consider the designation of Level IV trauma centers to address challenges in rural areas and to augment trauma system inclusivity.**

5.4.3. Utilize the regulatory capacity to enforce American College of Surgeons Committee on Trauma verification and Louisiana state designation standards for trauma diversion.

5.4.4. Conduct a focused needs assessment of trauma care in rural Louisiana communities to develop trauma system accommodations which optimize care locally and improve access to definitive trauma care when needed.

5.4.5. Explore alternative methods to facilitate necessary trauma treatment in rural hospitals, such as utilizing telehealth services and expedited air ambulance operations.

5.4.6. Review and update formal agreements between LERN, designated trauma centers, and non-designated acute care facilities regarding the interfacility transfer of injured patients.

5.4.7. Load-balance trauma transfers across the trauma system to improve overall system capacity.

5.4.8. Expand trauma system outreach, including trauma care education, support, and resources for non-designated hospitals participating in injury care across the system.

5.4.9. Establish incentives and disincentives for hospitals to actively participate in the system. These should include regulatory and financial mechanisms.

5.4.10. Monitor surge capacity on a real time basis.

5.5 Rehabilitation

Purpose and Rationale

An integral component of the trauma system includes rehabilitation services provided across a spectrum of injury care, including acute care, inpatient rehabilitation, and community-based services. The goals of these services are to provide coordinated care for trauma patients through rehabilitative programs that enhance recovery and speed of return to the highest level of function while reducing disability. Rehabilitative interventions require an integrated knowledge of both medical and ancillary support services, particularly in the context of social determinants of health and their relationship to functional outcomes for trauma survivors. Post-acute and community-based rehabilitation services also should focus on the management of chronic conditions related to the injuries sustained, optimizing long term function, and supporting secondary prevention.

The rehabilitation process should begin in the acute care facility as soon as possible, ideally within the first 24 hours, and should integrate discharge planning and wrap around services to alleviate barriers to rehabilitation access. Inpatient rehabilitation providers should be an active part of acute trauma care management. These professionals are integral to determining each patient's next level of care and functional needs and offering prognostic input about long term functional needs and services. Rehabilitation programs should utilize best practices supported by published guidelines and recommendations for the provision of high-quality rehabilitation care. Trauma systems should include subspecialty rehabilitation services for care involving patients with SCI, TBI, and burns. Additionally, the trauma system should conduct a rehabilitation needs assessment (including specialized programs for SCI, TBI, and children) to identify the number of beds needed for rehabilitation in the geographic region and to ensure that appropriately trained staff are available at centers to meet the needs. Rehabilitation specialists should be integrated into the multidisciplinary advisory committee to ensure that rehabilitation issues are integrated into the trauma system plan. The trauma system should demonstrate strong linkages and transfer agreements between designated trauma centers and rehabilitation facilities located in its geographic region (in or out of state). Plans for repatriation of patients, especially when rehabilitation centers are across state lines, should be part of rehabilitation system planning. Feedback on functional outcomes after rehabilitation should be made available to the trauma centers.

Current Status

In Louisiana, there are 56 rehabilitation centers and 1,331 beds. There is one pediatric rehabilitation center that has 10 beds. Many rehabilitation centers are located within acute care hospitals. It is overall felt that the quality of care at these facilities is good. However, the number of centers and capacity has not changed since the 2009 trauma system review, even though it was recognized that more services were needed at that time. It is recognized that access to inpatient rehabilitation remains an important issue for the state.

Access to rehabilitation is limited by two problems. The first is the number of rehabilitation beds, which is felt to be lower than what is necessary to meet current demand. However, there has not been a needs-based assessment to define the magnitude of the deficit. Doing so could help inform additional resource and funding needs. The second is delays in access to rehabilitation due to insurance status and/or clearance. These limitations result in a constraint of rehabilitation use and clinical care of patients. As a result, patients who are candidates for rehabilitation may

never be transferred to an inpatient rehabilitation facility and instead may be discharged to other facilities or to home. The scope of this outcome is not known but it is felt to be pervasive throughout the state and significant in magnitude. The lack of access to rehabilitation also leads to prolonged hospitalizations, which complicates capacity issues. These same issues were present in the 2009 trauma system review and are seen nationwide. Comprehensive data will help to more completely evaluate these issues.

There are also issues when it comes to access to rehabilitation across state lines. Currently, Louisiana does not work with neighboring states in the form of resource sharing, repatriation, or other system agreements that might facilitate additional access to rehabilitation resources.

Currently, the scope of the problem is largely unexplored. The state would benefit from conducting a needs assessment for rehabilitation access. This would likely involve a combination of existing data and new data collection to get the best estimates. For example, it would be important to know which patients were deemed rehabilitation candidates but did not make it to an inpatient rehabilitation facility. Estimates of need can then be used to measure the magnitude of the deficit of beds and dollars needed.

Information derived from a needs assessment can be used to advocate for dollars that support rehabilitation access (e.g., explore mechanisms to access disproportionate share funds). The state can also work with private and government payers to streamline approvals or allow for access to rehabilitation while in the process of ongoing clearance for insurance coverage. There could also be efforts made to revise legislation to direct some of the monies slated for unfunded care towards rehabilitation.

With a strengthened system, developing transfer agreements between rehabilitation centers and trauma hospitals can help streamline transfer processes and minimize disruptions in care.

Recommendations

5.5.1. Perform a needs-based assessment for inpatient rehabilitation.

5.5.2. *Build the infrastructure and processes to ensure adequate rehabilitation resources exist to meet patient needs. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

5.5.3. *Identify potential financial and other incentives for rehabilitation services to be developed to provide care for trauma patients.*
   a. *Consider legislation to allow for rehabilitation services to access disproportionate share funds as one potential incentive. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

5.5.4. *Establish interfacility agreements for hospitals to transfer patients to rehabilitation centers providing specialized care for spinal cord injury (SCI) and traumatic brain injury (TBI) rehabilitation. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

5.5.5. Advocate for and work with insurers and government payers to streamline eligibility evaluation and pay for uncompensated care to improve access to rehabilitation care for injured patients.

5.6 System Integration

Purpose and Rationale

For the system to function optimally, trauma care must be integrated into the larger public health framework. A trauma system should have a plan, overseen by the lead agency, that specifies how the various components work together to achieve the intended goals and discusses how integration and cooperation from the time of injury through ultimate repatriation will be achieved. The system must also work to identify and eliminate health care disparities. Using this public health approach, the trauma system should aim to reduce the burden of injury in a state or region. In addition, this approach enables the trauma system to address primary, secondary, and tertiary injury prevention by mobilizing community partnerships.

Trauma system integration is essential for the daily care of injured people. Coordinated activity among emergency medical services, definitive care institutions, and rehabilitation centers ensures optimal care of the injured patient. This care, however, must be augmented by other essential services and partners, including mental health providers, social services, child protection, public safety, and disaster response and recovery. The system needs to be on alert for disparities, bias, and lesser outcomes of vulnerable populations. Collaboration with the public health community provides access to epidemiologic data that can be used for system assessment, development of public policy, and informing and educating the community.

Each element of the trauma system, through its leadership, should participate in trauma system design, evaluation, and operation. This participation should include policy and legislative development, public education, and strategic planning. In addition, trauma and subspecialty leaders should provide direction and oversight to the development, implementation, and monitoring of integrated protocols for patient care used throughout the system (e.g., TBI guidelines used by prehospital professionals and non-designated transferring centers). This should also include region-specific primary and secondary triage protocols. Trauma leadership, through regional trauma committees, can assist the lead agency and help ensure that system deficiencies in the quality of care, relative to national standards, are recognized and corrected.

The increasing level of threats to our society, such as mass violence, terrorist attacks, infectious diseases, and natural disasters, underscore the importance of trauma system integration. The trauma system is a significant state or regional resource for the response to mass casualty incidents. It has been demonstrated that communities supported by developed regional trauma systems are more organized and better able to respond to these events. The impact of disasters and mass casualty incidents (MCIs) on the functioning of trauma centers, EMS, and public health systems within an affected region or state must be considered in the joint planning for optimal use of all resources to enable a coordinated response through recovery.

Current Status

The Louisiana Emergency Response Network (LERN) was established by the Louisiana Legislature in 2004 and is charged with developing and maintaining the statewide trauma system. Prior to 2004, only two ACS verified trauma centers were present in the state. Through leadership of LERN, the trauma system has continued to develop and mature with the strategic goal of having at least one ACS verified/state designated trauma center located in each of the state's nine Emergency Preparedness Regions. Currently, there are 11 Adult ACS Verified

Trauma Centers; 3 Level I, 4 Level II, 4 Level III, and 3 Level II pediatric centers. Region 3 is the only area without a designated trauma center. All trauma centers must be verified by the ACS in order to participate in the trauma system. Neither the Louisiana Department of Health (LDH) or LERN have a mechanism regarding the participation of lower volume or smaller facilities caring for injured patients. Louisiana does not have an independent designation program for incorporating smaller facilities such as Level IV or V trauma centers, like numerous other states across the country. LERN's leadership is widely viewed as an asset to the Louisiana Trauma System and its promulgation. The Trauma Medical Director provides opportunities for focused case reviews along with assisting in maintaining and development of trauma center verification.

The process for verification outlined in the PRQ states that designation occurs when a center is ACS verified as a trauma center. While this process is clear and straightforward, the review team was made aware of additional mechanisms by which trauma center designation is regulated. These mechanisms are not included in official policy or documentation. Specifically, LERN does influence which hospitals decide to undergo the verification process. While LERN input and expertise is critically necessary for any designation process, the unofficial nature of the process was perceived by some stakeholders to be non-transparent and was seen as potentially creating barriers for verification. Designation processes should be clear to all stakeholders, and these processes should be documented and transparent. Formalizing LERN's role would also ensure that LERN has a standardized role in determining need. Overall, creating a process to formalize LERN input could create a more durable process and reduce variability.

LERN has limited resources or expertise for robust data collection, management, or meaningful analysis; however, LERN is a content expert in the care of the injured patient. The LDH has robust resources available to support data management and interpretation but is limited by the expertise needed to develop actionable and meaningful programs for betterment of the injured patient. The lack of a clear and resilient working relationship between LERN and LDH, in the non-disaster setting, is not the optimal operational alignment necessary to support injury care for the population of Louisiana.

LERN developed a communications center (LCC) initially designed for the optimal movement of the trauma patient but has since expanded to encompass both stroke and STEMI care. The LCC's primary function is to match the patient's needs to the most appropriate care facility. Although utilizing the LCC is not mandatory, its use is primarily seen in the rural prehospital setting by EMS and statewide interfacility hospital transfers. The users of the LCC express overall satisfaction, and LERN boasts a significant reduction in double-transfers of injured patients. Although numerous performance metrics are collected, the LCC does not routinely report on internal metrics, such as missed calls, call wait times, numbers of calls needed, and time to obtain a definitive transfer plan. The current call volume and staffing model, along with the ability to accommodate for surge capacity, should be recognized as significant concerns for the system. The success surrounding the LCC is generally acknowledged; however, it is reliant upon the "coalition of the willing" as participation is not mandatory; therefore, a confirmation bias regarding its success might exist.

Emergency medical services (EMS) activities can be coordinated through LERN; however, unless a disaster has been initiated by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), participation is voluntary. In the setting of a disaster

declaration, ESF-8 grants the authority and function of the Tactical Operations Center (TOC) to LERN/LCC for EMS movement. EMS integration with LERN is not robust and is focused on EMS representation to the LERN Board. There does appear to be a good working relationship with the EMS clinicians using the LCC.

There are several Designated Regional Coordinators (DRC) in each region, although the principal leaders in this area are the hospital and EMS DRCs. These individuals are the primary contacts in MCI/disasters between the regions and the LDH. The DRCs otherwise are focused on oversight and coordination with the Tri-regional (LERN) coordinators in educating and advocating on behalf of the LDH/LERN for the care of the trauma, acute stroke, and STEMI patient. Anecdotally, DRCs appear to be leaders and well respected in their respective regions, although no objective data was produced for this review verifying educational or advocacy efforts.

LERN provides some facilitation of and financial support for education within the trauma system. In particular, LERN has made an impressive, large, focused effort on the implementation of the ACS STOP THE BLEED® program, including the purchase of teaching equipment and kits. LERN does provide a small amount of money to each trauma facility for potential educational use. LERN also provides training in TNCC and ENPC. While LERN does provide educational support, the perception of some stakeholders, particularly at non-designated centers, is that not all stakeholders are being reached. This suggests that a needs assessment of educational needs may be able to guide future educational development.

Louisiana has significant issues surrounding disparities in health care, with an emphasis on an extremely high uninsured population and the overall poor health of its constituents. There is currently no process by the state trauma system to identify or address disparities in health care such as health insurance coverage, access, and quality of available care regarding the trauma patient. The trauma system has not adequately evaluated or addressed social determinants of health (SDOH) including cultural, social, economic, political, commercial, and environmental factors and the concomitant impact on injured patient outcomes.

The optimal trauma system must be integrated into the larger context of the community under the framework of public health. LERN has incorporated stakeholder roles with a broad range of expertise into the governing board but has failed to leverage this knowledge and expertise to capitalize upon these relationships. The trauma system has not actively engaged in partnerships with critical stakeholders such as the public, business community, community partners (such as faith-based organizations), payers, legislators, media, medical examiners, and law enforcement. There is also a lack of integration with national organizations such as the American Trauma Society (ATS), Trauma Survivors Network (TSN), Mothers Against Drunk Driving (MADD), and the American Association of Retired People (AARP). An inclusive, mature trauma system must develop robust community relationships and trust to support the wellbeing of the injured patient and advancement of the trauma system.

Recommendations

5.6.1. **Perform a needs assessment of the LCC regarding call volume and the current staffing model along with the ability for surge capacity.**

5.6.2. Perform an assessment of health care disparities and social determinants of health for injured patients to develop interventions.

5.6.3. Organize an inclusive statewide/regional trauma case review process, led by regional trauma facilities with participation from all entities entrusted with the care of the injured patient.

5.6.4. Develop a formal collaboration between LERN and LDH regarding the expertise and resources for data availability, collection, and interpretation.

5.6.5. Enhance and disseminate quarterly reports regarding LCC's internal metrics, to include missed calls, call wait times, dropped calls, numbers of calls needed, and time to obtain a definitive transfer plan.

5.6.6. Develop and disseminate quarterly reports regarding the activities of the DRCs (LDH) and Tri-regional coordinators (LERN) educational and advocacy activities throughout the regions.

5.6.7. Perform a needs assessment of educational needs throughout the trauma system.

Essential Trauma System Element #6: Needs Based Designation

The lead agency should develop and administer a trauma center designation process, which is based upon population needs.

Purpose and Rationale

Regional trauma system implementation has been shown to improve mortality and reduce complications. The number, level, and location of trauma centers are critical elements of trauma system function and disaster response. The importance of controlling the allocation of trauma centers, as well as the need for a process to designate trauma centers based upon regional population need, has been recognized as an essential component of trauma system design since the 1980's.

The designation of trauma centers is the responsibility of the lead agency, with input from the multidisciplinary advisory group. The lead agency must have a strong mandate, clear statutory authority, and the political will to execute this responsibility. In determining number, level, and location of trauma centers, the lead agency must be guided by the local needs of the region for which it provides oversight. The applicability of specific metrics and benchmarks for establishment of need will vary depending on the unique attributes of the region. Furthermore, the needs of patients must be optimized, and it is the professional obligation of health care professionals, facilities, and political leaders to work together to ensure that patient's needs come first. Assessment determinations should be transparent and derived through a broad-based, locally driven consensus process that is balanced, fair, and equitable.

Utilizing the inclusive trauma system model, the number and location of trauma centers by level of designation and integration of non-designated facilities must be periodically assessed by the lead agency with respect to patient care needs and timely access to definitive trauma care. There should be a process in place, with the appropriate statutory authority, for identifying the appropriate number and/or level of trauma centers based on these periodic assessments. The trauma system plan should address means for improving the participation of both designated and non-designated acute care facilities to improve access to injury care within the trauma system.

Current Status

The State of Louisiana has not done a contemporary trauma system needs analysis. Developing and implementing a periodic needs-based designation process for trauma centers is critical for aligning the needs of injured patients with available resources. Since the 2009 Louisiana State Trauma System Consultation (TSC) by the American College of Surgeons, there has been dramatic proliferation in the number of ACS-verified/state designated trauma centers in the state, increasing from 2 to 14, substantively enhancing access to care for trauma patients. Currently, 90% of the population of Louisiana lives within a 60-minute ground transport time of a designated trauma center. Non-designated rural hospitals are not officially incorporated into the system, thereby limiting the development of an inclusive trauma system for the state of Louisiana.

Though tremendous progress has been made since the inception of LERN and the previously noted ACS TSC visit, there still exists significant opportunities for improvement in the trauma system. Past analyses have utilized the ACS Needs Based Assessment of Trauma Systems (NBATS) Version 1 Tool, which had several inherent limitations. Factors such as population

density and available EMS resources are not adequately reflected by the tool and could impact the effective service area of a trauma center.

Though LERN has state level data, it has not been effectively harnessed by the system to thoroughly understand the dynamics of patient care and patient flow within the trauma system. The rates of under and over triage for trauma are not well-characterized. EMS agencies report that the handoff of higher acuity trauma patients at the trauma centers is expeditious. In contrast, they report significant “wall times” with lower acuity trauma patients, thus affecting service and response capabilities. Trauma center capacity issues across the state were ubiquitous. Associated with these issues were trauma transfer denials which were noted to be common across the system. Efforts to ameliorate these system deficiencies have not been effective. Evaluating the impact of cross-state patient flow has not been evaluated to account for the influx of injured patients from proximate states, particularly Mississippi, into Louisiana’s trauma hospitals. Systematically utilizing the available data would be invaluable in quantifying the needs across the trauma system by identifying gaps in coverage which could subsequently be aligned with the process of needs-based designation.

Recommendations

6.1. Conduct a periodic needs assessment of the trauma system, based upon population and injury care capabilities, to determine the number, level, and geographic distribution of designated trauma centers needed by the trauma system.

6.2. Develop memorandums of understanding with adjacent states to guide patient triage, transfer, and repatriation of injured patients crossing state lines.

Essential Trauma System Element #7: Trauma System Registry

The lead agency should have the authority to establish and maintain a trauma system registry to collect, validate, and analyze injury surveillance data. Data collection should include the full continuum of care from point of injury through rehabilitation. These data should include all care facilities that treat injured patients. These data should be integrated with other data collection systems (i.e., vital records, medical examiner, law enforcement, and rehabilitation). Data definitions and patient inclusion criteria should be standardized to a national standard. Data sharing should be inclusive of system stakeholders to support quality improvement, research efforts, and legislative outreach pertaining to trauma.

Purpose and Rationale

There should be sufficient legal authority to establish a lead trauma system agency that can collect, validate, analyze, and distribute data. This legislative mandate should provide for collaboration, coordination, and integration with other entities engaged in providing care or surveillance activities related to the care of the injured patient. The lead agency should be authorized in statute to develop rules for the collection, analysis, use, and distribution of data within the system.

The lead agency should establish and maintain oversight of a single, system-wide trauma registry that collates and links hospital-level data with other data collection systems into one accessible data set to assess trauma system quality and outcomes. These data should guide planning, development, and maintenance of the trauma system during all phases of care. This system-wide trauma registry should meet national data collection standards and utilize current technology. Data collection should encompass the full continuum of care from point of injury to transport, hospitalization, rehabilitation, and return to community. Data collection should focus on identifying individual patients and linking patient-level data across the continuum of care among all relevant databases. Quality system information and data to support trauma system metrics should be provided by all those involved in a patient's care (pre-hospital, critical access facilities, transferring hospitals, trauma centers, rehabilitation, skilled nursing facilities, and therapy services).

The lead agency should define those responsible for contributing data and outline submission requirements such as demographics, mechanism of injury, diagnoses, treatment, and long-term outcomes. The lead agency should facilitate and foster integration of data collection systems with the addition of administrative discharge data, vital statistics data (government records), death certificates, medical examiner records, law enforcement, and financial data to add additional perspectives. Data collection processes designed by the lead agency should address the accuracy, timeliness, standardization, quality, validation, confidentiality, and completeness of the submitted data. An optimal information reporting process includes standardized reporting tools that allow for the assessment of historical and/or system changes and a dynamic reporting tool that permits the ability to tailor specific "views" of the information.

Research drives development of the trauma system, defines evidence based best practices, and provides a foundation for system growth and improvement. Trauma research should be facilitated and encouraged through processes designed to make data available to investigators. The lead agency should have a protocol to address requests for research data and have a method for evaluating these requests in a timely manner. While most lead agencies will not have the resources to maintain a self-contained board to meet federal human subjects research standards, they should develop relationships with Institutional Review Boards that can provide this service. Grants or contracts through the lead agency or constituencies may provide funds to support research activities.

Current Status

The LERN Board has the authority to establish and maintain a statewide trauma registry to collect and analyze data on the incidence, severity, and causes of trauma. The Board also promulgates rules and regulations according to the Administrative Procedure Act to (i) define specific data elements required to be furnished to the registry by every healthcare facility certified by the department as a trauma center; (ii) define trauma data elements that all other healthcare facilities shall be required to furnish to the registry; and (iii) establish a process for submission, analysis, and reporting of registry data. It is noted that required reporting to the state trauma registry is contingent on LERN providing adequate financial support through the Louisiana Emergency Response Network Fund to cover administrative costs.

LERN funds a web-based state trauma registry supplied by Image Trend®, which allows hospitals to upload data at no cost. However, all hospitals use ESO software for their trauma registries at their own cost and are required to transmit data to the LERN trauma registry. The trauma centers voluntarily participate in the state TQIP Collaborative, which is financially supported by LERN. LERN is responsible for the EMS registry, also supplied by Image Trend®.

The state registry uses National Trauma Data Standard (NTDS) patient inclusion criteria and data elements. Healthcare facilities, that are not certified trauma centers, do not submit data on their injured patients to the state registry. Therefore, data is not collected on all injured patients in the state, and data collected through the LERN Communication Center registry may not be included in the state trauma registry because the LCC captures data from community hospitals that do not submit data to the state trauma registry. This fragmented registry approach leads to gaps in data inclusiveness. Customized data elements may be approved at the discretion of the LERN Trauma Medical Director (TMD) and Executive Director. The current customized data fields focus on transferring and receiving hospital identification. Opportunity exists to expand custom data elements to meet performance improvement metric evaluation capabilities.

The total staffing allocation for the LERN trauma registry is 15% of an FTE (5% Administrative Director and 10% Data Manager). Current staffing is not adequate to support a comprehensive data quality plan and use of data for trauma system performance improvement. The LERN Data Manager does not have coding knowledge, accessibility to the trauma center software functionality, or sufficient resources to support the trauma centers.

There is not a comprehensive, formal data quality plan to systematically identify data quality issues, provide feedback and resources to address issues, educate registrars, and follow up to ensure improvement. When errors or missing data are discovered, typically based on completeness and not accuracy, LERN staff reach out directly to the hospital. There is no formal data quality approach or plan for the registry. LERN has sponsored AIS 15 and basic registry training to hospitals. Training is not planned based on data quality issues.

The state has a strong TQIP Collaborative with agreement among the participants to share TQIP results. The registrar stakeholder group is part of the TQIP Collaborative. The Collaborative also provides feedback to the state on data quality issues.

LERN does not collect and analyze registry data needed to track system performance, patient outcomes, and address statewide specific issues. They do not provide regular descriptive, risk adjusted, or risk stratified reports back to centers based on the state registry. Data are not used

to support state-wide performance improvement, quality improvement initiatives, epidemiological analysis, or thorough research. Focus has been on TQIP patients though the TQIP Collaborative, but there is no analysis of patients that do not meet those inclusion criteria. Registry data are linked with MVC data, but not with other state datasets.

Following basic best practices for the registry will help to address challenges and establish the state registry as a reliable foundation for epidemiologic analysis, research, and performance improvement. The recommendations below call for best practices in data collection, validation and quality, appropriate staffing, training, and reporting.

Recommendations

7.1. **Expand data collection to include all injured patients in the state.**

7.2. **Develop a comprehensive approach to data quality that involves systematic identification of issues through analytics and audits, strategies to address problems including education and structural solutions, and evaluation to ensure that issues are resolved.**

7.3. Provide timely resources and training to registrars to address updates and changes in the registry and data quality issues attributed to registrar error.

7.4. Expand LERN personnel to support registry coordination, injury coding education, a comprehensive data quality plan, and use of data for trauma system performance improvement.

7.5. Provide reports, inclusive of all injured patients submitted to LERN, with descriptive information and risk adjusted/stratified analysis.

7.6. Create a stakeholder group to explore options to decrease the burden of submitting data to multiple registries.

Essential Trauma System Element #8: Injury Epidemiology

The lead agency should have systems and processes in place to regularly track and report on injury frequency, rates, and patterns across the entire jurisdictional population. Analysis and reporting should be based on multiple pertinent data sources (e.g., vital statistics, hospital discharge data, EMS, ED data, and trauma registries), including information obtained through surveillance activities. Data from these sources should be synthesized to provide a comprehensive description of injury and analyzed to identify trends and patterns to inform system development, injury prevention, and performance improvement efforts.

Purpose and Rationale

Trauma leaders and public health officials should collaboratively use injury surveillance data and outcome measures to describe and monitor injury events and emerging injury trends in their jurisdictions. This information will enable trauma system leaders to identify emerging threats that call for a reassessment of priorities and/or reallocation of resources. In addition, the data should be used to assist in ongoing planning, implementation, and evaluation of public health interventions and programs, to include disaster response. The trauma system, in conjunction with the system's epidemiologist, should complete a periodic trauma risk assessment and gap analysis using all available data to establish policy and develop an injury prevention and control plan.

Reducing injury related morbidity and mortality is the measure of success of a trauma system. Data from the system-wide registry and other sources must support injury epidemiology efforts with a focus on the frequency, rates, and injury pattern events in a population. Injury pattern refers to the occurrence of injury-related events by time, place, and personal characteristics, including demographic factors, pre-existing conditions, behavioral influences (e.g., protective device use), and environmental exposures. This provides a relatively simple form of risk-factor assessment. System data should be used to identify the burden of injury across specific population groups (e.g., children, elderly, races, and ethnicities) to ensure that specific needs or risk factors are identified. The lead agency should distribute this epidemiologic information to the public and government at least annually and upon reasonable request.

Current Status

The Louisiana Trauma System has access to several robust data sources which can be used for injury epidemiology. These sources include the ACS Trauma Quality Improvement Program (TQIP), data collected from the LCC, the Louisiana trauma registry, and the EMS state data registry. Data from Louisiana Vital Statistics and the Center for Analytics & Research in Transportation Safety (CARTS) are also available but often underutilized. Information regarding the injured patient is not collected from non-designated trauma centers.

Data are variably used by the trauma system. The most used data are derived from the ACS TQIP reports. This information is reviewed by representatives (TMD, TPM, and registrar) of each designated trauma center in the TQIP Collaborative during a semi-annual meeting convened to focus on quality improvement. The deliverable of the meeting is the development of best practices and injury prevention strategies which are obtained via robust review, discussion, and collaboration amongst the centers. Unfortunately, the end results of these collaborative meetings are not distributed in a downstream manner to non-trauma designated hospitals.

Data obtained through the LCC does not capture the movement of all patients throughout the state, as the utilization of LERN is not mandatory. It is unclear what proportion of trauma patients this comprises, as there are populous regions, primarily the New Orleans and Shreveport area, which do not utilize the LCC. Therefore, the data likely underrepresents the actual number of traumas within the state likely with inaccurate assessment of geographic variability. This data is reported quarterly along with public distribution annually including transfers, utilization, and denials. The significant majority of hospitals utilize the LCC for interfacility transfers, which has led to valuable information regarding the identification of some trauma centers' inability to accept patents in transfer.

Louisiana mandates that all trauma centers participate in the state trauma registry with quarterly submissions. This data repository only includes the information submitted by the 14 state designated trauma facilities, leading to a large gap in valuable information for all other injured patients treated outside of the trauma center. LERN develops an annual report from these data summarizing the information from the registry; however, this distributed information is not benchmarked or trended.

While these data sources exist for analysis, they are not fully leveraged to deliver actionable insights. No collaboration with LDH for data collection or analysis exists identifying a missed opportunity for collaboration to explore epidemiologic questions. There have been some preliminary efforts to use injury epidemiology to guide activities. For example, LERN discovered geriatric falls are a problem informing fall prevention programs. However, LERN has not used injury epidemiology data to guide trauma system activities. Further, Louisiana has a heterogeneous population encompassing a large land mass. LERN has not specifically addressed trauma-related data to support the state's diversity in the context of social determinants of health.

The 2009 System Consultation recommended collaborating with public health officials to assess and report on the status of injury, which has not yet been accomplished. This effort would allow both entities to gather and interpret information regarding the injured patient in a meaningful way, allowing for optimizing resources. LERN can discern relevant areas of interest and concern regarding the injured patient while partnering with the LDH to supplement with data and resources. The LDH can contribute with numerous trauma relevant data resources already being collected and monitored, such as the Louisiana Violent Death Reporting System (L-VDRS). A partnership could foster the use of currently underutilized resources, such as state epidemiologists, allowing for a broader distribution of information by both the LDH and LERN platforms.

Overall, there has been insufficient efforts to assemble data sources and to analyze epidemiologic data to drive improvement in injury prevention and care of the injured patient. It is not evident that LERN or the LDH utilize data to guide system wide activities using a strategic approach to injury prevention efforts, education, and advocacy for the trauma patient.

Recommendations

8.1. Utilize injury epidemiology data for injury prevention, education, and advocacy.

8.2. Develop a partnership between the LDH and LERN to expand the available data sources and assist in the interpretation and dissemination of information.

8.3. Integrate the social determinants of health into reporting as it pertains to the injured patient.

8.4. Apply the knowledge gained from the analysis of the LA TQIP Collaborative across non-designated trauma centers.

Essential Trauma System Element #9: System-Wide Performance Improvement

The lead agency should establish a system-wide trauma performance improvement (PI) process to evaluate all aspects of the trauma system. The plan should define audit filters to monitor and track specific processes and outcomes, such as access to care, availability of services, and effectiveness of injury prevention initiatives. In addition, the plan should define a process for tracking of the audit filters, addressing performance gaps, and determining loop closure.

Purpose and Rationale

The trauma lead agency has responsibility for instituting and analyzing the structure, processes, and outcomes to evaluate the performance of all aspects of the trauma system. Appropriate data should be collected to identify opportunities for PI in the system and to develop action plans with measurable outcomes. These data should be used to monitor PI efforts and effectiveness of corrective action within the system at all levels of care. Dedicated regional staff and resources should be available to ensure time-sensitive reporting of information to stakeholders.

The lead agency should design trauma system performance indicators with meaningful accountability-based incentives focused on achieving defined quality goals. These will act to ensure the support of key constituents in the health care community and the general population. The trauma lead agency should promote ongoing dialogue with key stakeholders, ensuring that any initiatives remain aligned with system needs. Success is enhanced when all system participants consistently comply with the guidelines and can evaluate performance in a confidential manner.

The lead agency should use data to generate reports and conduct analyses regularly. These reports should use data that compare cohort outcomes (e.g., adult/pediatric, varying trauma center levels, urban/rural) using risk adjusted benchmarking. An optimal information reporting process should include standardized reporting tools that allow for the assessment of system changes over time. This dynamic reporting tool should permit stakeholders to tailor data analysis and focus on vulnerable or frequently encountered cohorts (groups based on age, injury patterns, or outcomes). The lead agency should provide regularly generated reports that support trauma system operations by evaluating trauma system performance and processes of care.

Current Status

The Louisiana trauma system has components of performance improvement (PI) that monitor specific aspects of care. This is evident in the LERN 2022-2024 Strategic Priorities. These priorities include the revision of transfer guidelines, establishing standards for the first call transfer process, supporting the Rural Trauma Team Development Course, addressing the availability of hand surgeons, and the development of clinical practice management guidelines. LERN does not fully engage their level of authority outlined by §2845 that requires LERN to standardize and review performance indicators that evaluate the quality of services. LERN does not appear to have the physical or human resources to fulfill this regulatory requirement.

The LERN Trauma Medical Director (TMD) completes a case review every other Tuesday. These cases may be referred by stakeholders or may be a selected case from the LCC transfer denial population. The TMD's leadership and expertise in these case reviews assist the

stakeholders' understanding of the processes of trauma performance improvement. The LERN Trauma Medical Director is to be commended for his leadership and oversight in monitoring these elements of the system.

The Louisiana TQIP Collaborative is an element of the system performance improvement process. It is inclusive and includes the LERN TMD and Executive Director and trauma center medical directors, program managers, performance improvement coordinators, and trauma registrars. The collaborative utilizes identified data from each facility to review outcomes. The collaborative focuses on sharing outcomes and practices of the high performing centers and identifying solutions to assist those facilities that have identified opportunities for improvement. Recent efforts have focused on hip fracture management.

The LERN Communication Center reviews the following audit filters.

Length of call	Triaged correctly
Timely answer	Routed correctly
Professional language	Script followed
Introduced self	Standard operating procedure followed

The LERN Operations and System Audit Filters from the Trauma System Plan include:

LCC not called by EMS	Hospital delay accepting transfer
LCC called by EMS after transport	Hospital delay sending transfer
LCC delay in routing	Inaccurate / incomplete EMS report
Hospital refused patient	MCI
EST-8 LERN screen inaccurate	Over triage
LCC route inappropriate	Under triage
Inquiry / no issue	Transfer delay
LERN negative	System PI / Concern
Patient request overrode protocol	Report variance
EMS refused LERN direction	

Although multiple activities regarding system performance improvement are in place, a formal written trauma system performance improvement plan is not available. A written system PI plan has the opportunity to integrate multidisciplinary stakeholders of all levels into a formalized mechanism that evaluates and monitors the system phases of trauma care provided from the prehospital setting to the trauma center through to discharge to create a continuous learning environment. Additionally, the regions do not have regional performance improvement plans or identified trauma system elements for monitoring that are integrated into an overall performance improvement plan. The absence of a written trauma PI plan leads to lack of promulgating a system culture of safety. The culture of safety engages stakeholders at all levels to speak up if safety or practice concerns are identified.

The Trauma System Plan includes the various elements of performance improvement activities, but they are not consolidated into a written PI plan. LERN leans on the trauma centers and EMS agencies, and their regulatory requirements, to perform trauma reviews specific to their entity without the element of system integration or system outcomes and system performance. This

leaves a void in the system review processes and the opportunity to identify system improvements.

Current system performance improvement efforts are dependent on the number of trauma facilities and EMS agencies participating in LERN and the number of EMS agencies submitting data to NEMSIS. Other performance improvement initiatives include monitoring transfers out of the region, first call transfer acceptance, secondary transfers, transfer denials, and transfers discharged from the emergency department.

Trauma center and EMS data are not used to evaluate current trends and causes of morbidity and mortality. This is a missed opportunity to utilize data available for system reviews. In the stakeholder meeting, the TMD stated there were opportunities for stakeholders to participate in the discussion of defining system performance improvement initiatives and reviewing outcomes, but neither the PRQ nor the trauma system plan identified how this occurs.

The PI efforts focusing on inter-facility transfers only includes hospitals that utilize the call center. This is an identified system opportunity to become more inclusive in the review process. Performance initiatives to evaluate system elements of trauma patient movement need further development integrating the various disciplines that provide care. Structured reports regarding transfer denials are shared, but it is unclear how LERN tracks these reports and if the sharing of information creates a decrease in the number of denials.

System monitoring and evaluation of over and under triage are not in place. Challenges with interfacility transfer and high wall times suggest the state is at risk of under triage. Metrics to review outcomes for blunt verses penetrating injuries and pediatric and geriatric trauma patients are not documented, except in the TQIP collaborative. Overall, there are multiple aspects of system performance improvement being monitored but there are opportunities to enhance the outcome-driven metrics and develop a data-driven system PI plan.

Recommendations

9.1. **Develop, document, and implement a state trauma system performance improvement plan.**

9.2. **Define the funding necessary to establish and maintain data for an effective trauma system performance improvement plan.**

9.3. **Establish a culture of safety practice across the continuum, which encourages all levels of stakeholders to speak up about safety or practice concerns.**

9.4. Comply with rule §2845 that requires LERN to standardize and review performance indicators that evaluate the quality of services.

9.5. Define and acquire the physical and human resources required to maintain a concurrent, effective system performance improvement process.

9.6. Establish definitions and common terminology that support a trauma system performance improvement plan to ensure data reliability and integrity.

9.7. Organize training programs to assist the trauma centers, non-trauma centers, and EMS clinicians to develop necessary skills and an understanding of the specific steps related to a successful trauma performance improvement plan.

9.8. Disseminate the developed trauma system performance improvement plan to all stakeholders, including an education and implementation plan.

9.9. Develop a performance matrix for the regional commissions and LERN to evaluate regional trauma system care and integrate these elements into the system performance improvement plan.

9.10. Develop regional and LERN trauma system performance dashboards using aggregate data developed by a consensus of the stakeholders and LERN leadership.

9.11. Standardize a structured feedback process from receiving trauma centers to the transferring centers and EMS transport agencies to share identified opportunities for improvement.

9.12. Integrate outcome data with system performance such that compliance with policies can be linked to patient outcomes. For example, consider:

- LCC outcome data
- Prehospital outcome data
- Trauma center outcome data
- Access and barriers to rehabilitation
- Financial outcomes (ex. length of stay, ICU LOS, ventilator days and associated costs)
- Injury prevention outcomes
- Disaster response outcomes

9.13. Develop performance improvement criteria to evaluate elements of trauma patient movement within the system to identify opportunities for improvement. These may include:

- EMS response delays
- Lengthy wall-times
- Transfer delays (including from rural hospitals)
- Trauma center diversion times
- Over and under triage in EMS as well as hospitals
- Transfers discharged from the emergency department

9.14. Identify the cause and effect of any diversion in the trauma system.

9.15. Explore causes of mortality with identified opportunities for improvement within the system.

Essential Trauma System Element #10: Confidentiality and Discoverability

The lead agency should establish a process to ensure confidentiality and provide statutory protection from discoverability to support trauma system performance improvement and research efforts.

Purpose and Rationale

A designated process, with dedicated staff having expertise to protect data confidentiality, should be constructed to maintain privacy and security of any data under trauma system control. Because protected health information, personal identity information, or unique identifiers may be collected, the process must ensure that patient confidentiality is respected and is consistent with state and federal law. Policy should outline how data are requested. Data requests should be reviewed with efforts to ensure compliance with privacy safeguards that prevent improper use or disclosure. Access to information must be limited to only necessary personnel for authorized purposes. Given the sensitivity of this data, the system should also determine when formal patient authorization is required for the release of registry information. There should be a mechanism for feedback to the system regarding the final utilization of the data provided and confirmation of final data disposition.

Trauma system data should be protected in statute from discoverability and used to support trauma system performance improvement and research efforts at the regional, state, and national levels. The lead agency should establish a process with explicit safeguards to ensure confidentiality throughout the performance review process. Statutory provisions should foster system development that permits data sharing, collaboration, coordination, and integration with other agencies and entities engaged in prevention, patient care, and surveillance activities related to care of the injured patient. The lead agency should encourage bi-directional flow of information across the continuum from prevention to pre-hospital and return to the community.

Current Status

Peer review activities at all levels are broadly protected in legislation through La. R.S. 40:2845.1 Public Records Exception and La. Rev. Stat. Ann. §13:3715.3 Peer review committee records; confidentiality. LERN is not currently performing system peer review at any level.

Louisiana currently uses ImageTrend as their state trauma registry provider. Since this is an online platform, many of the data security measures are managed and implemented by ImageTrend and appear to be sufficient given the information shared on the pre-review questionnaire. Access to data from LERN and the state registry also appears to have appropriate controls that can be managed by LERN and utilizes Multi-Factor Authentication (MFA) when accessing the backend of the production environment. All employees receive mandatory security awareness training upon hire and at least annually thereafter.

LERN manages data requests and has an established process and application form to evaluate and approve such requests. IRB approval is necessary for any comprehensive research requesting protected health information. LERN has the ability to review these research projects prior to its release of data.

Recommendations

10.1. Utilize the existing peer review protections to implement and execute performance improvement activities at each level (local, regional, state).

Essential Trauma System Element #11: Disaster Preparedness

A comprehensive emergency disaster preparedness and response plan should be established and reviewed annually. This plan should integrate all components of the trauma system and coordinate with all existing response entities including local, state, federal and particularly military partners. There should be a developed and operational network of Regional Medical Operations Centers (RMOCs) as a major component of the disaster preparedness plan. The plan should be exercised at least semiannually. One of these exercises should be operationally based (not tabletop) and test all components of the system.

Purpose and Rationale

The lead agency, in collaboration with trauma system leaders, needs to be actively involved in disaster preparedness for the local, regional, or national area of responsibility. These system leaders should be the subject matter experts in disaster preparedness to ensure that trauma system resources are optimally integrated across the continuum of the emergency response. A mass casualty incident (MCI) is defined by numbers of casualties that overwhelm available hospital and system resources. Contingent upon the size of the MCI, a plan for activation of a larger emergency response with support provided by region, state, and national assets may be required. In an MCI, acute care facilities (sometimes including one or more trauma centers) within an affected community must be willing to adjust their daily operations to manage the MCI. This plan should be practiced to ensure effective communication between centers and public resources. An assessment of the trauma systems response to simulated incidents or tabletop drills must be conducted and documented on a regular basis to determine the trauma system's ability to respond. Resource assessment of the system should be coupled with a system specific hazard vulnerability analysis to identify gaps requiring remediation.

Complex disasters may mimic the austere environment and logistical challenges faced in military deployments; thus, military resources for evacuation, triage and treatment of the affected population should be incorporated into regional disaster plans if available. Planning and integration of the trauma systems with civilian agencies (public health, law enforcement, EMS and emergency management) and military partners are important because of the extensive impact disasters have on the trauma system and the need for the trauma system to provide care to the local populace. Cooperative relationships between these agencies support the provision of assets that enable a more rapid and organized disaster response on every level.

As a major component of the disaster preparedness plan, there should be a developed, integrated, and functional network of Regional Medical Operations Centers (RMOC). The goal of the RMOC is to strengthen regional care delivery through enhanced resource coordination. The RMOC model is designed to facilitate the most appropriate level of care for as many patients as possible, while simultaneously maintaining patient safety and keeping as many patients as possible within local facilities capable of providing high quality care. The RMOC enables the entirety of a region's healthcare system during any mass casualty or large public health event to "load balance" patient care needs across healthcare facilities and healthcare systems prior to any individual facility transitioning to a crisis standard of care. In addition, it provides a communication link to other RMOCs to lead or participate in a broader coordinated multi-regional, state, or national effort. This includes multi-state response and nationwide network integration.

Current Status

Louisiana has extensive experience in disaster management. There have been significant modifications and improvements to the system starting after 2005, and those changes were just being initiated during the 2009 consultation visit. The state is divided into 9 homeland security and emergency preparedness regions with each of the state's 64 parishes also having an emergency management program.

Louisiana has an Emergency Operations Plan (EOP) which is operationalized by the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and was recently updated in 2022. The plan includes guidance for preparedness response for a full range of natural, technological, and human caused all-hazards events. LDH and LERN are represented in the EOP under the Emergency Support Function 8 (ESF-8). These roles are further expounded upon in the Louisiana ESF-8 Health and Medical Preparedness and Response Network Coalition document, which recently underwent revision in 2023. LERN is part of the Louisiana ESF-8 advisory board.

Leadership for each region is provided through the designated regional coordinators (DRC). There are multiple DRCs for each region that serve as industry-based liaisons to both health and non-health organizations. The two primary DRCs include those of EMS and hospitals, which are fully funded positions through LDH. DRCs lead the regional process for planning, training, and development, along with process improvement for the regional emergency response plan. The DRCs work very closely with LERN and the LCC for both non-related and related MCI/disaster functions. The role of the DRC is well received throughout the regions, LERN/LCC, and the LDH.

Regional medical operations centers (RMOC) should be a major component of the emergency preparedness plan. LDH and LERN have implemented the ESF-8 Portal, the At-Risk registry, and the LCC Tactical Operation Center (TOC) along with utilization of the DRCs for bed and resource availability, patient tracking, and movement. The LDH does rely heavily on the DRCs for coordination and resource management in an MCI/disaster. The interaction of all activities should be coordinated in a more clearly defined RMOC structure based on the nine regions. DRCs should play a major role in the RMOC operations, and this would lead to a more well-defined operational command structure. An established regional RMOC structure would also allow for clear and direct communication with ESF-8 and GOHSEP leadership at the state level.

LDH grants authority and responsibility for prehospital and interfacility patient movement to LERN in an MCI/disaster through the mechanism of the TOC. The LCC functions in a similar capacity, optimizing transfers for mainly rural and sub-urban prehospital EMS and statewide interfacility transfers. Staffing and surge capacity of the LCC is a potential concern for daily operations; a large-scale MCI/disaster could overwhelm the TOC.

Louisiana has conducted routine and frequent table-top and live action MCI/disaster training scenarios throughout the state. LERN has participated in these exercises through the LCC role as the TOC. There are robust after-actions reports generated from these activities. Unfortunately, these are not widely dispersed or utilized as an educational tool for all areas of the trauma system. A missed opportunity exists for LERN to lead in educational efforts surrounding MCI and disaster preparedness by facilitating courses emphasizing this topic, such as the ACS Disaster Management and Emergency Preparedness Course (DMEP), the National

Disaster Life Support Foundation's Disaster Life Support portfolio of classes (BDLS, CDLS, and ADLS), and FEMA incident command training courses (such as ICS 200, ICS-300, and ICS 400).

The LDH has developed several mechanisms to manage and optimize health care resources during an MCI/disaster event. The ESF-8 Portal is a web-based platform used by hospitals for the real-time evaluation by GOHSEP for assessment of resources. It is operationalized by the LDH and is a gateway to a portal of applications which are used to gather information on facilities along with other resources which can be utilized during an MCI/disaster event.

The At-Risk registry is also utilized during ESF-8 activation by hospitals to securely track patients throughout transfers and to assist with reunification. There seems to be general satisfaction with both the ESF-8 portal and the At-Risk registry from stakeholders with an emphasis on the end-users. A potential concern is the timeliness and compliance of hospitals' participation in both applications.

LERN facilitated the development of a robust statewide burn management system. The burn system can surge during an MCI/disaster and has developed burn injury management kits strategically located throughout the state for immediate deployment as needed. LERN has not facilitated a similar program regarding the extremities of age, despite having three ACS verified pediatric trauma centers and a large elderly rural population.

There is military and civilian integration in preparing for enacting MCI and disaster events. The Louisiana National Guard is utilized throughout the GOHSEP EOP and is involved in state planning and exercises. Other military collaborations are noted including the U.S. Coast Guard, Barksdale Airforce Base, Fort Johnson, and Naval Air Station - Joint Reserve Base, New Orleans.

Recommendations

11.1. Develop a mechanism to widely distribute and educate all stakeholders about learned opportunities for improvement along with best practices from both training and after-action reports from MCI/disaster events.

11.2. Evaluate the current structure and capabilities of the RMOC.

11.3. Provide educational materials and courses for further skill development surrounding MCI/disaster preparedness and management.

11.4. *Ensure LCC has the capacity and resources to "surge up" in the event of a disaster. (This was also a recommendation in the 2009 Louisiana State Trauma System Consultation.)*

11.5. Enhance the involvement in extremes of age care (pediatrics and geriatrics) in both planning and operations of an MCI/disaster.

Essential Trauma System Element #12: Military Integration

The trauma system should actively support integration and cooperation with military personnel, medical treatment facilities, and transport capabilities. This should include patient care, education, data collection, performance improvement, research, training, disaster response, and clinical readiness.

Purpose and Rationale

Integration of military trauma and emergency care resources into the local, regional, and national trauma system is an essential component of a trauma system plan to optimize patient outcomes and support the National Security Strategy. Through military-civilian collaboration at the local, regional, and national levels, a trauma system plan should work towards achieving zero preventable death and disability from injury both for our citizens at home and for our service members who are injured in defense of the nation.

When military and federal medical resources exist within the geographic area of the trauma system, public policy should authorize the lead agency to include military representation. A regional military trauma representative should be a member of the multidisciplinary advisory group. The military trauma resources should be fully integrated into the Department of Defense (DoD) Joint Trauma System just as the civilian regional trauma system should be linked to the national strategic trauma and emergency care system leadership. Military treatment facilities capable of achieving trauma center verification and designation and geographically located to support population need, should be supported to fully integrate and be operationalized within the state, regional and the DoD Joint trauma systems.

Military-civilian collaboration should include both individual and trauma team clinical readiness programs. There should be provisions for credentialing and privileging of medical personnel between military and civilian centers to optimize the education and training benefit for both civilian and military personnel. Standing agreements that enable military trauma teams to provide patient care in civilian trauma centers within regional trauma systems should be established and maintained to ensure clinical readiness. Level I and II trauma centers should engage in military-civilian partnerships for ongoing readiness training of military trauma teams.

A regional trauma system that functions daily is foundational for a successful response to crisis. The regional trauma system should be able to provide an appropriately scaled response to any disaster or mass casualty scenario. In the situation of a mass casualty scenario that overwhelms local and regional resources, the fully integrated military and civilian trauma and emergency care system can be efficiently and effectively mobilized. Integrated military-civilian trauma system resources should be leveraged to care for military casualties that overflow the capacity of regional military treatment facilities. There should be a comprehensive plan with annual drills to leverage the full spectrum of military, federal (Veterans Affairs facilities), and non-federal partners (via the National Disaster Management System).

Achieving the goals of an integrated national trauma system requires better integration between civilian and military trauma system elements, which should be supported with funding. The lead agency should have situational awareness of civilian-military trauma partnership agreements within its jurisdiction.

Current Status

There are three military bases in Louisiana, including Barksdale Air Force Base, Fort Johnson and Naval Air Station Joint Reserve Base, New Orleans. LERN has worked with Ft. Johnson to promote evacuation of patients being transported by military rotor wing when necessary. In

addition, LERN has participated in mass casualty drills with Barksdale and Ft Johnson to practice the movement of patients to regional hospitals and has also conducted training with the fire department and EMS staff at Ft Johnson to cover triage, transport, and potential transfer of injured patients. The LCC coordinates support for Fort Johnson, specifically for night air drops. Though the military is inconsistently incorporated into state and regional disaster exercises, Regions 6 and 7 are actively engaged with the military for all MCI drills and planning meetings.

The LA Emergency Operations Plan (EOP) identifies the roles and responsibilities of military assets during times of state declared disaster. FEMA and DOD are part of the EOP and provide surge capability when local and state capacity has been saturated and federal assets are available. Military medical teams may be embedded into a hospital (private or public) under the FEMA Mission Assignment process. The FEMA Mission Assignment process is tied to certain pre-requisite conditions, including 1) federal disaster declaration is activated, 2) funding is appropriated to the project by FEMA, and 3) availability and rostering of the needed medical skillsets to successfully support the mission. During the COVID19 response and multiple storms of 2020 and 2021, ESF8 requested assistance for Louisiana hospitals. The DOD provided military teams to specific hospitals under an MOU arrangement. The military can engage in disaster support under ESF8 and ESF 16 (Military Support to Civilian Authorities) functions of the EOP. The state provides for portability of licensure for EMS clinicians and nurses. Under certain disaster contingencies, the Governor may issue a state proclamation broadening emergency provisions which may suspend licensure laws to practice in Louisiana as exceptions to medical board rules. There appears to be limited engagement in the state with the National Disaster Medical System (NDMS).

There is no language within the Louisiana Trauma System Plan to support the development of a relationship between the military and civilian medical systems in non-disaster conditions. Similarly, there is no provision for military membership on the LERN Board. An enhanced relationship between the civilian and military systems, including incorporating a military representative into the LERN Board, would prove beneficial in order to capitalize upon an expanded shared work force and an increased breadth of expertise, particularly in supporting disaster and mass casualty events.

Military civilian partnerships in trauma care are sparsely utilized within the state. There was an application made by the Level I center in New Orleans to seek Mission Zero funding, but the center was unsuccessful due to the DOD priority assigned to initial applications with preexisting military-civilian training programs. Level I / II trauma centers within the state should actively seek future military civilian partnership agreements with the Department of Defense. Successful award of these contracts would not only augment the trauma teams within Louisiana trauma centers but would also provide realistic and relevant injury care training and readiness for military trauma teams.

Recommendations

12.1. Integrate Department of Defense Military Health System and Homeland Security (US Coast Guard) capabilities into Louisiana Trauma System development and function.

12.2. Consider incorporating a military representative onto the Louisiana Emergency Response Network (LERN) Board.

12.3. Engage active participation of the military in disaster/MCI drills.

12.4. Develop military civilian partnership opportunities with the Department of Defense Military Health System to augment trauma teams and support military training and readiness.

12.5. Proliferate the National Disaster Medical System plan with partner institutions in the State of Louisiana.

Appendix A: Acronyms

AARP	American Association of Retired People
ACS	American College of Surgeons
AIS	Abbreviated Injury Scale
ATS	American Trauma Society
BEMS	Bureau of Emergency Medical Services
BFH	Bureau of Family Health
CARTS	Center for Analytics & Research in Transportation Safety
COT	Committee on Trauma
DMEP	Disaster Management and Emergency Preparedness Course
DOD	Department of Defense
DRC	Designated Regional Coordinator
ED	Emergency Department
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
EOP	Emergency Operations Plan
ePCR	Electronic Patient Care Record
ESF8	Emergency Support Function 8
FEMA	Federal Emergency Management Agency
FTE	Full Time Equivalent
GOHSEP	Governor's Office of Homeland Security and Emergency Preparedness
GR	General Revenue
ICU	Intensive Care Unit
IP	Injury Prevention
IRB	Institutional Review Board
LCC	LERN Communications Center
LDH	Louisiana Department of Health
LERN	Louisiana Emergency Response Network
L-VDRS	Louisiana Violent Death Reporting System
MADD	Mothers Against Drunk Driving
MCI	Mass Casualty Incident
MFA	Multi-Factor Authentication
NBATS	Needs Based Assessment of Trauma Systems
NDMS	National Disaster Medical System
NEMSIS	National EMS Information System
NG911	Next Generation 911

NOLA	New Orleans, Louisiana
NREMT	National Registry of Emergency Medical Technicians
NTDS	National Trauma Data Standard
OPH	Office of Public Health
PHTLS	Prehospital Trauma Life Support
PI	Performance Improvement
PRQ	Pre-Review Questionnaire
PSAP	Public Safety Answering Point
RMOC	Regional Medical Operations Center
RTTDC	Rural Trauma Team Development Course
SDOH	Social Determinants of Health
SHSP	Strategic Highway Safety Plan
STEMI	ST-Segment Myocardial Infarction
TMD	Trauma Medical Director
TOC	Tactical Operations Center
TPM	Trauma Program Manager
TMD	Trauma Medical Director
TQIP	Trauma Quality Improvement Program
TSC	Trauma System Consultation
TSN	Trauma Survivors Network

Appendix B: Methodology

The Louisiana Emergency Response Network (LERN) requested this consultative review of the Louisiana State Trauma System, which was conducted under the auspices of the Trauma Systems Consultation (TSC) Program of the American College of Surgeons (ACS) Committee on Trauma (COT). The multidisciplinary TSC Review Team consisted of three ACS staff and seven nationally recognized trauma experts, including: three trauma surgeons, an emergency medicine physician, a state emergency medical services director, and two nurses with state trauma system management experience. Biographical information about the 10 ACS TSC Review Team Members is provided in Appendix C.

The primary objective of the ACS TSC for the Louisiana Trauma System was to guide and promote a sustainable effort in the development of an inclusive and integrated system of care in the state. The format of this TSC Report correlates with the Essential Trauma System Elements outlined in the ACS *Trauma Systems Consultation Guide: Essential Elements, Framework, and Assessment for State and Regional Trauma Systems*. Prior to the Site Visit, the TSC Review Team studied the ACS Pre-Review Questionnaire (PRQ) and additional supporting documents, submitted by the State. Other information publicly available on government and official websites was also assessed.

The ACS TSC Review Team convened for a site visit from March 25th-28th, 2024 in Baton Rouge, LA. The four-day site visit consisted of a stakeholder plenary session during which the ACS TSC Review Team engaged with a broad range of representatives from the Louisiana Trauma System, with the opportunity for more informal discussions to take place in between. The ACS TSC Review Team sequestered in private team meetings for more detailed review and discussion of the trauma system data, to establish consensus on essential elements regarding the trauma system, develop recommendations for system improvement, and to prepare the TSC Report.

The conceptual framework of the *Trauma Systems Consultation Guide* is the Essential Trauma System Elements. Since the 1980s, experts in the field of trauma system development have sought to define the necessary and essential components of a working trauma system. The functional elements of highly effective trauma systems were outlined in two documents published by HRSA, the Model Trauma Care System Plan in 1992 and Model Trauma Systems Planning and Evaluation in 2006. Using these sources as well as data gained from over 45 trauma system consultations performed by the Trauma Systems Evaluation and Planning Committee of the ACS COT, a draft set of essential elements was developed in 2018 by a multidisciplinary workgroup led by the ACS COT. These essential trauma system elements were subsequently refined through input from provider organizations from across the spectrum of injury care.

The Trauma System Consultation (TSC) Report for the Louisiana Trauma System presents the same Purpose and Rationale as those within the *Trauma Systems Consultation Guide* for each of the Essential Trauma System Elements.

Appendix C: ACS TSC Review Team Biographies

Kristan Staudenmayer, MD, MS, FACS
Role: Trauma Surgeon
(Team Lead)

Dr. Kristan Staudenmayer received her medical degree at the University of Texas at Southwestern Medical School in 1999 and completed her residency in General Surgery at Parkland Hospital in 2006. During her post-graduate training, she conducted NIH T32-funded research at Harborview Hospital evaluating the effects of innate immunity on trauma. She obtained further training in Trauma and Surgical Critical at San Francisco General Hospital, completing her training in 2008. She was subsequently double-boarded in General Surgery and Surgical Critical Care. Dr. Staudenmayer joined Stanford in 2008. She has developed a robust research program and active clinical practice. Her clinical and research interests have contributed to Stanford's multi-disciplinary approach to the management of surgical trauma. Dr. Staudenmayer's clinical focus is on trauma, emergency general surgery, and surgical critical care, and her research interests encompass trauma systems of care and vulnerable patient populations such as the elderly. Her efforts have been noteworthy and recognized in her 2013 K08 grant from the National Institute on Aging to study trauma in the elderly population. In 2016, Dr. Staudenmayer was honored by becoming the inaugural Gordon and Betty Moore Endowed Faculty Scholar, which helps to support her ongoing research efforts. Additional research accomplishments include being a co-principal investigator on an NIH CTSA award evaluating trauma systems. Dr. Staudenmayer has published over 80 articles and book chapters and has served on the editorial review board of several academic journals. She contributes nationally towards the academic mission by serving on committees for both the American Association for the Surgery of Trauma and the Eastern Association for the Surgery of Trauma. Dr. Staudenmayer was promoted to Associate Professor of Surgery in 2016, and continues her research, policy, and advocacy work to improve the care and outcomes for patients with traumatic injuries and critical surgical illnesses. Dr. Staudenmayer is the current chair of the American College of Surgeon (ACS) Committee on Trauma (COT) Trauma Systems Pillar.

Brian Eastridge, MD, FACS
Role: Trauma Surgeon

Dr. Brian Eastridge received his BS in biochemistry from Virginia Tech in 1985 and his MD from the University of Maryland School of Medicine in 1989. He entered the US Army Reserve as a second lieutenant Medical Service Corps officer in 1988. Dr. Eastridge did his residency in general surgery at the University of Maryland Medical System and then pursued fellowship training in surgical critical care at the University of Texas Southwestern Medical Center in Dallas, TX. During his tenure on the academic faculty at UTSW, Dr. Eastridge was deployed three times in support of combat operations Operation Enduring Freedom and Operation Iraqi Freedom as a U.S Army Reserve surgeon in 2002, 2003, and 2004. During his deployment in 2004, he was appointed as the first Joint Theater Trauma System Director.
Dr. Eastridge matriculated to active duty U.S Army in 2005 and served as Trauma Medical Director for the Brooke Army Medical Center, Surgical Critical Care Program Director for SAUSHEC, Director of the Joint Trauma System (U.S. Army Institute of Surgical Research of the U.S. Army's Medical Research and Material Command (MRMC), and Trauma Consultant to

the US Army Surgeon General. During his active duty service, he was deployed two more times to combat in Southwest Asia during which time he lead the development and implementation of the military trauma system. During his career, Dr. Eastridge has published extensively in the peer reviewed literature and edited three books focused upon improving the military trauma system and improving combat casualty care outcomes for our Wounded Warriors. Dr. Eastridge left active service and returned to the active US Army Reserves in late 2012 and is currently the DCCS of the 228th Combat Support Hospital. His military awards and decorations include the Combat Medical Badge, Combat Action Badge, Legion of Merit, Bronze Star Medal, Defense Meritorious Service Medal, and the Joint Service Commendation Medal. He is a member of Order of Military Medical Merit. For his military service, he has been awarded the American Association for the Surgery of Trauma Honorary Medal for Combat Surgical Care in 2004 and the US Army Medical Research and Materiel Command Combat Casualty Care Program Award for Excellence in 2011.

Currently, he is Professor of Surgery at the University of Texas Health Science Center and was appointed as the Trauma Medical Director of the University Health System in San Antonio, TX. He holds the Jocelyn and Joe Straus Endowed Chair in Trauma Research. His current research interests are focused on trauma system development, including development of the regional trauma system performance improvement initiatives, predictive modeling of injury outcomes, and improved pre-hospital resuscitation strategies for casualties. Dr. Eastridge also serves as an active member on the American College of Surgeons Committee on Trauma and is the past Chair of the Trauma Systems Pillar. In 2023, Dr. Eastridge was appointed Medical Director for the Military Health System Strategic Partnership American College of Surgeons (MHSSPACS).

Jorie Klein, MSN, MHA, BSN, RN
Role: Trauma Program Manager

Jorie Klein, MSN, MHA, BSN, RN, is the Director of the Texas Department of State Health Services EMS / Trauma Systems Section. In this capacity she is responsible for the oversight of 1,365 EMS agencies which include approximately 600 first responder organizations. In addition, she is responsible for the facility designation process which currently includes 305 trauma centers, 130 stroke facilities, as well as approximately 227 neonatal and 222 maternal centers. She has oversight of the contracts and funding distribution specific to her section. Prior to this role, Ms. Klein was the senior director of nursing for the Parkland trauma program, emergency department, and UCEC. She is a past member of the Governor's EMS, Trauma Advisory Council's Trauma System Committee. In addition, Ms. Klein was on the Board of the North Central Texas Trauma Advisory Council. Ms. Klein is a past chair of the Board of the Texas EMS, Trauma and Acute Care Foundation, and a past president of the Society of Trauma Nurses (STN). She is a current member of the STN Trauma Outcomes Performance Improvement Committee. She is a past Board member for the Trauma Center Association of American. She is currently an appointed trauma program liaison member to the American College of Surgeons Committee on Trauma's Performance Improvement and Patient Safety Committee. In addition, she is an instructor for the Disaster Management Emergency Preparedness Course sponsored by the American College of Surgeons, and the TOPIC Course sponsored by the Society of Trauma Nurses. She is the course director for the Advancing Leadership in Trauma Centers Course sponsored by the American College of Surgeons.

Jon Krohmer, MD, FACEP, FAEMS
Role: Emergency Physician

Jon R. Krohmer, M.D., FACEP, FAEMS has recently retired as the Director of the NHTSA Office of EMS in the Department of Transportation and as the EMS Medical Director for the Caroline County (MD) Department of Emergency Services. He also served as the NHTSA Acting Associate Administrator for Research and Program Development from October 2018 to January 2020. Previously, he was the principal deputy assistant secretary for DHS Office of Health Affairs and DHS deputy chief medical officer. He began serving in that position as a member of the Senior Executive Service (SES) with DHS in September 2006 and served as the acting assistant secretary for health affairs and chief medical officer from August 2008 to August 2009. Dr. Krohmer was an attending physician and director of emergency medical services (EMS), emergency medicine residency and Department of Emergency Medicine at the Spectrum Health Butterworth Campus in Grand Rapids, MI, associate professor of emergency medicine at the College of Human Medicine at Michigan State University and EMS medical director of Kent County Emergency Medical Services and was the medical director for the West Michigan Metropolitan Medical Response System and the Region 6 Consortium. Dr. Krohmer received his undergraduate degree at Ferris State College, School of Pharmacy in Big Rapids, Mich., and is a graduate of the University of Michigan Medical School in Ann Arbor, Mich. He completed his emergency medicine residency and EMS Fellowship at Wright State University in Dayton, Ohio. He is board certified in emergency medicine and emergency medical services.

Richard Wisniewski, MAEL, CPM, NRP
Role: EMS Director

Richard Wisniewski is currently the Deputy Director for Kershaw EMS. Hewas the South Carolina State EMS Director from November 2020 to February of 2023. Prior to that, he was the State Trauma Program Manager (5/2013-11/2020). During his tenure as State TPM, he hosted an ACS System Consultation and successfully utilized the final report to advance the trauma care system in South Carolina.

Mr. Wisniewski has also served two terms as a NASEMSO liaison to the ACS for the EMS committee and the Systems Committee. He was a part of two work groups to help revise the System Consultation guide ("White book").

Michael Person, MD, MPH, FACS
Role: Trauma Surgeon- Rural Specialty Reviewer

Dr. Michael Person received his medical degree at the University of South Dakota Sanford School of Medicine in 2004 and completed residency in general surgery at Iowa Methodist Medical Center in 2009. Dr. Person joined the Surgical Institute of South Dakota in 2009. He is an Associate Professor of Surgery, along with Surgery Clerkship Director at the University of South Dakota, Sanford School of Medicine. Dr. Person has been a part of the American College of Surgeons Committee on Trauma (ACS COT) since 2013, currently is the State COT chair of South Dakota and the chair of the Rural Committee. While part of the ACS COT, he has been involved the Rural Trauma Team Development Course (RTTDC) including the course planning committee, part of the authoring team for the current edition and directing over 60

courses. He is also a member of the ACS Advisory Council for Rural Surgery. Dr. Person is the Chair of the Trauma and Acute Care Surgery at Avera McKennan Hospital and University Health Center. He has also worked alongside the South Dakota Department of Health on multiple projects, mostly focusing on rural trauma including South Dakota State Trauma Treatment Manual for rural facilities and the utilization of telehealth in the rural setting.

Amy Kempinski, MSN, RN, CEN, TCRN
Role: Trauma Program Manager

Amy Kempinski, MSN, RN, CEN, TCRN serves as the Vice President for the Pennsylvania Trauma Systems Foundation. She is a consultant and site surveyor for trauma systems across the United States and has spent thirty plus years of nursing in the trauma spectrum including roles of the Trauma Program Manager at WellSpan Health ~ York Hospital a Level I Trauma Center, Nurse Manager of Trauma/Neuro ICU, Emergency Department Manager/Educator, and an Orthopedics Clinical Operations Manager. Amy is a past President for the Society of Trauma Nurses (STN) and previously served the organization as Secretary and Director-at-Large. Mrs. Kempinski is also an associate member of the Eastern Association for the Surgery of Trauma (EAST) and the American Association for the Surgery of Trauma (AAST). Additionally, Amy is a contributing author and faculty for the STN TOPIC course, STN OPTIMAL course, a peer-review editor for the Journal of Trauma Nursing and serves the BCEN Exam Content Review Committee for the TCRN examination. Amy has several publications to her credit, including topics such as Trauma Accreditation, Crew Resource Management, Leadership, and Injury Prevention.

Melanie Neal, MS
Role: ACS Staff Team/ Specialty Reviewer

Ms. Melanie Neal has been with the American College of Surgeons for over 20 years, and is Assistant Director, Trauma Quality Programs. In this position, she provides strategic direction and high-level management for Verification, TQIP, Trauma Systems, Injury Prevention, and PIPS. Ms. Neal has a Master's degree in Social Science Research Methods.

Holly Michaels, MPH
Role: ACS Staff Team

Ms. Holly Michaels joined the American College of Surgeons (ACS) in January 2007 and has served in several key areas of the Trauma Quality Programs during her tenure at the ACS. As the Program Administrator for the Trauma Systems Consultation Program, Ms. Michaels managed over 30 state and regional system reviews, bringing together multidisciplinary teams of industry experts to assess, evaluate, and recommend strategic improvements for state and regional trauma systems. Following several years facilitating the growth and development of this program, she transitioned into a Program Manager role, leading the development of new programs including piloting the Level III Trauma Quality Improvement Program (TQIP) and expanding the TQIP Collaborative Program. In her current role, Ms. Michaels manages the Trauma Systems and Injury Prevention Programs.

Having received her Bachelor of Arts in English from the University of South Florida in 2001, Ms. Michaels began her career in public health at the non-profit organization, 2-1-1 Tampa Bay Cares, providing the Clearwater, FL community with access to critical resources, such as health and social services. In August 2014, Ms. Michaels earned a Master of Public Health from the University of Illinois at Chicago.

Mackenzie Dafferner, MPH
Role: ACS Staff Team

Ms. Dafferner joined the American College of Surgeons (ACS) as the Program Manager of Trauma Systems Programs in September 2021. In this role, Ms. Dafferner provides administrative support to the COT subcommittees within the Trauma Systems Pillar and is the point of contact for the Trauma Systems Evaluation and Planning Committee. She also serves as the program manager for the Trauma Systems Consultation Program and other Trauma Systems and Quality initiatives.

Having received her Bachelor of Science in Health Sciences from Northeastern University, Ms. Dafferner began her career in healthcare as an EMT-B in Boston, MA. Prior to joining the ACS, Ms. Dafferner worked as a clinical research specialist at the Regenstrief Institute in Indianapolis, supporting clinical research interventions focused on longevity and Alzheimer's disease. In August 2021, Ms. Dafferner earned a Master of Public Health from Loyola University Chicago.

Appendix D: Consultation Participant List

Name	Employer/Company	Job Title
Michael Sutherland, MD, MBA, FACS	LERN	LERN Trauma Medical Director
Paige Hargrove	LERN	LERN Executive Director
Justin Schleis, MPA	LERN	LERN Data Manager
Chris Hector, NRP	LERN	LERN Administrative Director
Deborah Spann MSN, RN-BC, CEN, FAEN	LERN	Statewide Education Coordinator
Yvette Legendre, RN	LERN	LERN Regional Coordinator
Reed Douglas, RN	LERN	LERN Regional Coordinator
Ana DePuy, MSN, CEN	LERN	LERN Regional Coordinator
Cassandra Woods, MBA	LERN	LERN Finance Manager
Arun Adhikari, PhD	Department of Health	Business Intellgence Manager, LDH Bureau of Health Informatics
Jeffrey Elder, MD	UMC New Orleans	LERN Region 1 Commission Chair
Blake Miller, NRP	Acadian Ambulance	LERN Region 4 Commission Chair
William (Billy) Vincent, NRP	Acadian Ambulance	LERN Region 4 Commission Vice-Chair
Marquinn Duke, MD	North Oaks Medical Center	LERN Region 9 Commission Chair, Trauma Medical Director, North Oaks
Jason Allemand	LERN	Communications Center Supervisor
Dan C. Godbee, MD, FACEP, NREMT-P	Baton Rouge EMS	LERN Board Member, Medical Director Baton Rouge EMS
Granville A. Morse III, M.D.	Jefferson Parish and Ochsner Health System	LERN Board Member, Board Vice -Chair Deputy Coroner, Jefferson Parish - Medical Director Hospital Service Lines/Ochsner Health
Jeffrey Carter, MD	University Medical Center New Orleans	LERN Board Member, Burn Medical Director UMC New Orleans
John Jones, MD	Baton Rouge General Medical Center	LERN Board Member - Board Chair ED Medical Director Baton Rouge General

John P. Hunt, MD, MPH, FACS	LSUHSC - New Orleans	LERN Board Member, Executive Committee Member Trauma Medical Director UMC New Orleans
Karen O. Wyble, DNP, MSN, MHA, MBA, RN	Ochsner Lafayette General Health System	LERN Board Member, Board Treasurer, Executive Committee Member VP Regional Community Affairs, Ochsner Lafayette General
Keith Van Meter, MD	LSU Health New Orleans School of Medicine	LERN Board Member, Chief, Section of Emergency Medicine
Monica S. Nijoka, MHA, BSN, RN	Nurse Consultant	LERN Board Member
Patrick Smith, MD	St. Francis Medical Center	LERN Board Member, Trauma Medical Director
Richard M. Zweifler, MD	Ochsner Health System	LERN Board Member, Chair of Neurology
Robert K. White, MD	LSU Healths Sciences Center Shreveport	LERN Board Member, Chairman Surgery Department
Tara Simpson	Office of Behavioral Health	LERN Board Member
Tomas H. Jacome, MD	Our Lady of the Lake Regional Medical Center	LERN Board Member, Trauma Medical Director
Deiadra J. Garrett, MD	Our Lady of Lourdes Regional Medical Center	LERN Board Member, Immediate Past Board Chair, Pediatric Surgeon
Drew Maranto	Louisiana Department of Health	Chief of Staff, Louisiana Department of Health
Rosanne Prats, MHA, ScD	Department of Health	LDH Executive Director Emergency Preparedness & Response
Carol Walker	Department of Health	Associate Director, Emergency Preparedness
Frances Braud	LouIsiana Hospital Association	Hospital Pregaredness Manager Project Manager
Vence Beches, MPA	LERN	LERN Disaster Preparedness Manager
Gina Lagarde, MD	Office of Public Health - Region 9	Region 9 Medical Director, LERN Region 9 Commission Member
Jovan Bernard	Office of Public Health - Region 1	Region 1 ADRC, LERN Region 1 Commission Member

Alyson Hughes	Office of Public Health - Region 2	Region 2 ADRC, LERN Region 2 Commission Vice-Chair
Kim Beetz	Office of Public Health - Region 3	Region 3 ADRC, LERN Region 3 Commission Member
Danielle Maples	Office of Public Health - Rgion 4	Region 4 ADRC, Region 4 Commission Member
Knox Andress, RN	Office of Public Health - Region 7	Region 7 ADRC, Region 7 Commission Member
Monique St. Romain	University Medical Center New Orleans	Region 1 LERN Commission Member PI Coordinator, UMC New Orleans
Danielle Martrain, RN	Our Lady of the Lake RMC	Trauma Program Manager
James Wood, MD	Our Lady of the Lake Children's Hospital	Trauma Medical Director, OLOL Children's Hospital
Alita Lanoux, RN	Our Lady of the Lake Children's Hospital	Trauma Program Manager, OLOL Children's Hospital
Ali Heard, RN	Ochsner Lafayette General	Region 4 LERN Commission Member, Trauma Program Manager, Ochsner Lafayette General
Renee Delahoussaye, MBA, BNS, RN	Ochsner Lafayette General	VP Regional Chief Nursing Officer
Shawn Moreau, RN	Rapides Regional Medical Center	Trauma Program Manager
Navdeep Samra, MD	LSU Health Sciences Center Shreveport	Trauma Medical Director
Dawn McKeown, RN, MSN	Ochsner LSU Health Shreveport	Trauma Program Manager
Sylvia Justus, RN	St. Francis Medical Center	Trauma Program Manager, St. Francis Medical Center
Jo Ann Alley, MD	LSU Health Monroe	Region 8 Commission Member Trauma Medical Director, Ochsner LSU Health Monroe
Jamin Rankin, RN	LSU Health Monroe	Trauma Program Manager, Ochsner LSU Health Monroe
Katie Cook, RN, BSN, CEN, TCRN	Lakeview Regional Medical Center	Region 9 Commission Member Trauma Program Manager, Lakeview Regional Medical Center

Mark Jones, MD	St. Tammany Health System	Trauma Medical Director, St. Tammany Health System
Bethany Monistaire, RN	St. Tammany Health System	Trauma Program Manager, St. Tammany Health System
Bridget Gardner, RN	University Medical Center New Orleans	Injury Prevention Coodinator, UMC New Orleans
Kristen Sanderson, MPH	LDH - Bureau of Family Health	Violence & Injury Prevention Manager
Kayla Hart	Injury Prevention	Injury Prevention, Children's Hospital New Orleans
Coletta Barrett RN, FACHE		Former LERN Board Chair
Samantha Baker	LSUHSC-New Orleans	Trauma Fellow
Allison Smith	LSUHSC-New Orleans	Trauma Surgeon
Katie Sheets, BSN, RN		Nurse Consultant
David Yu, MD	Children's Hospital New Orleans	Trauma Medical Director Chief, Section of Pediatric Surgery
Kelsie Helmstetter, RN	Children's Hospital New Orleans	Trauma Program Manager
Toni Gross, MD, MPH, FAAP	Chair EMS for Children	Emergency Medicine Physician, ED Medical Director Children's Hospital New Orleans
Will Freeman, MD, MMM	Rural Emergency Medicine Physician	Region 2 Commission Member, Former LERN Board Chair, Emergency Medicine Physician
David Toups, MD	St. Tammany Parish Health System	Region 9 Commission member ED Medical Director - St. Tammany Health System
Kenneth Adamson	West Calcasieu Cameron Hospital	ED Director, West Calcasieu Cameron Hospital
Julie Nevers	St. Tammany Parish Health System	Director of Clinical Integration
Blake Kramer	Franklin Medical Center	CEO, Franklin Medical Center
David Rupf, RN	Beauregard Memorial Hospital	Beauregard Memorial Hospital
Jamie Perkins, RN	Beauregard Memorial Hospital	Beauregard Memorial Hospital
Mary Ellen Pratt	St. James Parish Hospital	CEO, St. James Parish Hospital

Bradley Goodson	Ochsner Medical Center	CEO, Ochsner Medical Center
George Fuhrman, MD	Ochsner Medical Center	Ochsner Medical Center Chair, Department of Surgery
Susan Bailey, MSEM, NRP	Louisiana Department of Health	Director, Louisiana Bureau of EMS
Bryant Boyd, MD	Bossier City Fire Department	Medical Director, Bosier City Fire Department
Curry Landry	Rural Ambulance Alliance	CEO, Louisiana Ambulance Alliance
Amy Cloyd, RN	Louisiana Hospital Association	Vice President of Quality Improvement & Member Services
Flip Roberts, MD	Louisiana Hospital Association	Medical Director & Vice President of Clinical Affairs Louisiana Hospital Association
Nicole Coarsey	Office of Public Health	Healthcare Access Division Manager, Office of Rural Health
Shaun Kemmerly, MD	Our Lady of the Lake Children's	CMO, Our Lady of the Lake Children's
Thomas Gullatt, MD	St. Francis Medical Center	CEO, St. Francis Medical Center