Trauma Systems Consultation
American College of Surgeons

Trauma System Consultation Report

State of Iowa

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An interdisciplinary working group prepared this document based on the consultation visit that took place September 22-25, 2025, in Des Moines, Iowa, and included the following members:

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Executive Summary

Iowa's burden of injury mirrors national trends, with injury representing the leading cause of death among individuals aged 1 to 44 years and translates into a significant loss of productivity and economic strain statewide. Data from 2023 highlight unintentional injuries as one of the leading causes of death in Iowa, with substantial years of potential life lost due to preventable injury. Iowa is a predominantly rural state of 3.2 million residents spread across 99 counties and more than 55,000 square miles, with population centers concentrated in Des Moines, Cedar Rapids, Davenport, Sioux City, and Iowa City. The state's predominantly rural landscape, combined with a smaller number of urban trauma centers, shapes the allocation of trauma resources and complicates timely patient transfers to definitive care facilities. Iowa's geography, weather, and industry create inherent trauma care challenges. These factors, coupled with a heavy reliance on volunteer EMS agencies, shape the demand for a coordinated trauma system capable of efficiently managing complex patient flow across the state.

The Iowa Trauma System has evolved through a series of deliberate legislative and administrative actions. In 1994, the State published its first comprehensive trauma system plan, which outlined steps toward establishing coordinated statewide trauma care. The following year, in 1995, the Iowa Trauma Care System Development Act was enacted, designating the Iowa Department of Public Health, now known as the Iowa Department of Health and Human Services, as the lead agency. Between 1997 and 2001, the state implemented a trauma center verification process based on the American College of Surgeons Committee on Trauma's Resources for Optimal Care of the Injured Patient. A 2015 American College of Surgeons (ACS) Trauma System Consultation (TSC) led to maturation of the trauma system, including the formation of the Trauma System Advisory Council (TSAC) in 2016. TSAC initially comprised 20 members but was reduced to seven in 2019. In 2024, TSAC was eliminated by legislative action, and its responsibilities were transferred to the Bureau of Emergency and Trauma Services (BEMTS). Today, Iowa maintains an inclusive trauma system, with all acute care hospitals participating and ACS verification in place for Level I and II centers.

Since the time of the initial 2015 ACS TSC visit, the Iowa Trauma System has made measurable progress, including the establishment of a more inclusive trauma system that engages all hospitals statewide. Leadership has demonstrated enthusiasm and dedication, and stakeholder participation through TSAC and BEMTS has fostered stronger engagement. The verification process has matured, and data collection practices have improved. However, several challenges identified in 2015 remain only partially addressed. The trauma system's ability to leverage its data is constrained by the absence of a comprehensive data quality plan and limited analytics capacity. Systemwide performance improvement (PI) remains fragmented, with incomplete transfer data and no systemwide PI program to guide action. The state has not established regional trauma advisory councils, leaving regional variation unaddressed and limiting coordinated approaches to patient flow, load balancing, and collaboration with neighboring states. EMS workforce shortages, driven by reliance on volunteers, has declined rural transport capability placing further strain on timely access to care. Additionally, the trauma system plan has not been updated to comprehensively address all Essential Trauma System Elements (ETSEs).

Iowa's trauma system possesses notable strengths that provide a strong foundation for future development. It is characterized by inclusive participation, with all acute care hospitals verified

within the system and ACS verification achieved for higher-level centers. Leadership within the trauma system is highly engaged, and stakeholders across hospitals and EMS demonstrate commitment to the system's mission. This collective dedication, often described as a "coalition of the willing," ensures continued momentum despite limited resources. Active stakeholder participation in TSAC meetings and a shared understanding of the system's strengths and weaknesses have supported incremental improvement.

Despite clear progress, Iowa's trauma system faces persistent challenges that hinder optimal function. State legislation removing TSAC from administrative code has weakened formal governance and stakeholder representation. The absence of sustained funding remains a critical issue, highlighted by the fact that the lead agency, trauma registry, and verification program are understaffed and under-resourced. System-wide performance improvement efforts are limited by the lack of a data quality plan, incomplete transfer data, and an absence of a comprehensive performance improvement strategy by which to drive system evolution. Additionally, Iowa lacks a statewide mechanism to coordinate patient flow and has no regional trauma advisory councils to promote collaboration and share best practices. EMS agencies face ongoing staffing and funding pressures, while coordination between injury prevention, outreach, and trauma care activities remains insufficient.

Several key themes emerged from the consultation, reflecting both the strengths and vulnerabilities of Iowa's trauma system. The system is inclusive but under-resourced, relying heavily on the dedication of individuals rather than established institutional processes. While the foundation of the trauma system is solid, progress is constrained by limited funding, data integration, and governance gaps. Effective use of data for continuous performance improvement remains a critical unmet need.

Iowa is well positioned for forward progress in trauma system development. The trauma system has strong leadership, widespread stakeholder engagement, and a deeply rooted culture of collaboration. Iowa's future progress will depend upon codifying authority, securing sustainable funding, data integration and use to improve the system, and enhancing multidisciplinary collaboration across all levels of care. Meaningful progress will require persistent leadership, innovation, and commitment from every stakeholder within the system. With these steps, Iowa can build a more integrated and robust trauma system, one that ensures timely access to high-quality injury care for all Iowans and strengthens the state's readiness and resilience.

Priority Recommendations

ETSE #1: Statutory Authority

- Codify into administrative rule the scope, function, rules of governance, and membership structure for the Trauma System Advisory Council.

ETSE #2: Funding

- Complete a system-wide trauma system financial needs assessment to determine the cost of:
  - EMS and trauma facility readiness
  - EMS and trauma facility uncompensated care expenses
  - BEMTS costs for trauma system to include additional FTE support to optimize operations
  - Define operational funding needed to support regional system development
  - Define operational funding to maximize the utilization and integration of data from the available EMS, trauma, and other data bases.

- Secure sources of sustainable funding. Potential funding options include:
  - Traffic violations, such as speeding, DWI/DUI/OWI
  - Vehicle burglary
  - 911 surcharges
  - Medicaid billing support

ETSE #3: Multidisciplinary Advisory Group

- Clarify the roles and relationships of TSAC, the System Evaluation and Quality Improvement Committee (SEQIC), Bureau of Emergency Medical and Trauma Services (BEMTS), and proposed regional trauma councils for data review, benchmarking, and system performance improvement to promote trauma system development.

ETSE #4: Trauma System Plan

- Conduct a comprehensive needs assessment to establish baseline data, identify gaps in access and outcomes, and guide resource allocation for future trauma system planning.

- Revise the trauma system plan at a defined interval with metrics to ensure inclusion of all twelve Essential Trauma System Elements.

5.1 Prevention and Outreach

- Utilize the BEMTS trauma registry report to prioritize the injury prevention initiatives and to monitor the contributing factors and effectiveness of the injury prevention programs.

5.2 Emergency Medical Services

- Assure EMS and trauma system priorities regarding operations, clinical outcomes, advocacy, and resources are aligned.

5.3 System Triage and Patient Flow

- Establish Regional Medical Operations Coordination Centers (RMOCCs) to monitor and facilitate injured patients receiving the appropriate care at the right facility and in the right time frame during daily operations and scalable to disaster response.

5.4 Definitive Care Facilities

- Establish both consequences and incentives to ensure trauma centers meet required standards.

5.5 Rehabilitation

- *Complete a comprehensive resource needs assessment and gap analysis of state rehabilitation services to meet the needs of trauma patients.* (*This was also a recommendation in the 2015 Iowa Trauma System Consultation.)*

5.6 System Integration

- Utilize Regional Trauma Advisory Councils (RTACs) within the system structure to enhance operational value, coordinate trauma system development, and integrate local resources including non-traditional partners (law enforcement, behavioral health, payers, military, public health).

ETSE #7: Trauma System Registry

- Engage trauma system expertise to oversee the registry and guide the systematic use of data for trauma system development.

- Create a comprehensive data quality plan that addresses the following:
  - Timely completion
  - Systematic identification of issues through analytics and audits, problem resolution, and registrar training
  - Loop closure on data quality issues

ETSE #9: System-Wide Performance Improvement

- Develop, implement, and monitor a system-wide trauma performance improvement plan which reflects contemporary indicators and processes across the continuum of care.

ETSE #11: Disaster Preparedness

- Complete a comprehensive assessment of the state trauma system's emergency preparedness and its integration in state emergency planning.

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

In 1995, legislation passed titled the Iowa Trauma Care System Development Act, which designated the Iowa Department of Public Health (now referred to as the Iowa Department of Health and Human Services) as the lead agency to create trauma center standards, categorize and verify hospitals to those standards, develop a trauma registry reporting system, and establish a trauma system advisory council to provide representation and expertise necessary for developing the system. Implementation of categorization and verification began in 1997 with a fully operational system in 2001, with all hospitals being verified trauma centers. In 2017, Chapter 641.134 (Trauma Care Facility Categorization and Verification) was amended to adopt the Resources for Optimal Care of the Injured Patient (2014), utilize only the American College of Surgeons Committee on Trauma (ACS COT) for verification of Level I and II facilities, replace the terms "resource," "regional," "area" and "community" with "level I, II, III, and IV" facilities,

respectively, and provide that the Department may conduct chart reviews that are not subject to discovery by subpoena or admissible evidence and that all information and documents are confidential.

Chapter 641.138 was adapted in 2016, to provide directive for the Trauma System Advisory Council (TSAC). This legislation placed the Trauma System Evaluation Quality Improvement Committee as a subcommittee of the TSAC as well as defined the TSAC purpose and duties, membership, confidentiality requirements, and direction to serve in an advisory role.

2017 was a formable year for the Iowa Trauma System and BEMTS with the amendment of numerous pieces of legislation that were adopted addressing trauma registry and educational requirements aligning with national guidelines. In 2023, an Executive Order was issued that placed a moratorium on administrative rulemaking and instituted a comprehensive review of all existing administrative rules. The reported goal of the moratorium is for state agencies to examine their existing administrative rules and eliminate redundancy. The Bureau of Emergency Medical and Trauma Services (BEMTS) worked with advisory councils and conducted a comprehensive review of administrative rules. These rules were finalized in June 2025.

In 2025, Senate File 2385 was approved and amended Chapter 147A to eliminate TSAC and to place the responsibilities of TSAC under direction of Iowa Department of Health and Human Services. BEMTS, in accordance with TSAC members, developed bylaws to maintain the objectives and activities of the council and to provide assurance and continued engagement of the trauma system stakeholders. While the TSAC has an appearance of functionality, it should be noted that sustainability is not protected by codification as being essential to the trauma system governance. The existing ad-hoc structure of the TSAC may lack structure and mechanisms to address broader concerns throughout all regions of the trauma system. The establishment of Regional Trauma Councils (RTC), led by higher level centers, would promote regional dialog and action within the regions. In trauma systems across the nation, RTCs are commonly advisory to a state trauma system advisory council and often serve as a standing subcommittee of the council

The trauma program within BEMTS consists of four core staff positions: Bureau Chief (0.45 FTE), Trauma Program Director (1.0 FTE), Trauma System Coordinator (1.0 FTE) and Epidemiologist (0.5 FTE). Throughout the consultation process it was evident that Iowa trauma program staff, while few in numbers remains dedicated and focused. The Iowa trauma program relies on formal and informal networks across multiple stakeholder groups within the state to advance the mission of the trauma system. This fragmentation leads to reliance on larger trauma centers to pick up the workload and often be viewed as the drivers of the trauma system in Iowa. Stakeholders shared that larger trauma centers might function as regional resource centers for the surrounding trauma facilities. A structured regional approach, including RTCs, could empower stakeholders and address nuanced regional issues, regional performance improvement, and regional trauma system analysis.

Further, it was not clear or conveyed, during the consultation process, as to the level of trauma program engagement and support within state government other than within the BEMTS. This is evident by the abrupt passage of legislation to rescind the Trauma System Advisory Council. TSACs are a valuable and productive means for stakeholder engagement, system development and management across a vast statewide trauma system.

Recommendations

1.1. **Codify into administrative rule the scope, function, rules of governance, and membership structure for the Trauma System Advisory Council.**

1.2. Establish regional trauma councils aligned with key trauma facilities and EMS providers that are empowered to address regional needs for the populations, geographic constraints, and system development to include regional system performance improvement, and regional trauma system analysis.

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

The 2024 Bureau of Emergency Medial and Trauma Services (BEMTS) budget totaled $744,613, funded through a CDC Preventative Health and Human Services Block Grant. The 2025 budget allocates $135,795 to support operational elements of the trauma registry data system, stroke registry, trauma verification reviews, and education for EMS and trauma stakeholders. In addition, the current budget funds 5.3 FTEs within BEMTS, including a bureau chief, trauma program director, trauma system coordinator, epidemiologist, and two EMS field coordinators. Budget development is supported by a fiscal planner from BEMTS and a budget analyst from the HHS Finance Administration.

There is a small budget defined each year for stakeholder education. Educational initiatives include trauma program manager technical assistance, participation in the Automotive Medicine Abbreviated Injury Scaling Course (AAAM), the American Trauma Society's (ATS) Trauma Program Managers Courses, and a biennial state Trauma and Preparedness Conference. The

program also purchases the manuals for the Rural Trauma Team Development Course. The state provides the ImageTrend registry for the trauma facilities.

Despite these allocations, the limited BEMTS budget constrains several critical functions. The hospital trauma verification process is currently delayed, and there is no designated expert oversight for the trauma registry to ensure effective data management and validation. System-wide performance improvement reviews are minimal, and there is little evidence of process-driven actions or measurable outcomes. The budget does not support the provision of trauma facility technical assistance or sufficient personnel to maintain an effective system-wide performance improvement process. Additionally, financial limitations restrict the Bureau's ability to explore or implement innovations in EMS and trauma system development aimed at improving care and performance outcomes.

The reliance on grant funding also presents significant risks. If the grant funding decreases or is not awarded in future years, the department will need alternative funding mechanisms to maintain operations. In addition, there are very limited financial incentives for EMS agencies or trauma facilities to participate in the system. While the State mandates that all facilities achieve trauma verification to ensure inclusivity, no funding accompanies this requirement. Financial support to offset uncompensated care costs incurred by EMS and trauma centers is unavailable, and Medicaid reimbursement remains insufficient.

At present, there are no active initiatives to secure stable state funding through the legislative process, nor is there evidence of a coordinated multidisciplinary advocacy strategy to advance the trauma system's fiscal and operational needs. The Trauma System Advisory Council (TSAC) reviews the budget when presented; however, its involvement in financial planning and advocacy remains limited.

The 2023 trauma registry report documented 28,098 facility trauma registry submissions and 44,005 EMS trauma-related incidents, an increase from 26,768 facility submissions and 43,392 EMS incidents in 2022. This continued growth in trauma case volume underscores the need for a budget that adequately supports the demands for trauma system services.

BEMTS should undertake a comprehensive trauma system financial needs assessment encompassing all critical components of the trauma system. This assessment should include all functions of the trauma system such as a concurrent trauma verifications process, EMS availability, registry oversight, injury prevention efforts, system integration, system-wide performance improvement, disaster management, and military integration. It should also account for EMS and trauma center readiness costs, uncompensated care, workforce and physician resource needs, and necessary funding to foster system innovation and alignment with emerging best practices.

To ensure sustainability, the State should establish a multidisciplinary trauma system advocacy group tasked with identifying and pursuing diverse funding mechanisms. This group should include EMS and trauma professionals, payers, injury prevention specialists, hospital leaders, pediatric and geriatric care experts, rehabilitation leaders, representatives from entertainment and community organizations, and members of the public.

The BEMTS has been insightful and has expressed interest in developing the return on investment (ROI) for trauma system development in the state of Iowa. Investment in a trauma

system is not merely a fiscal concept, it is a prime driver of measurable returns. Adequate and sustained funding ensures the infrastructure, workforce, and data systems necessary to deliver timely, coordinated trauma care. In essence, funding creates the capacity to deliver care, and that capacity generates a return on investment (ROI) which can be expressed in both human and economic terms. This aligns with the experiences of states and regions that have made consistent investments in trauma systems and demonstrate higher survival rates, lower preventable death rates, and net positive economic impacts. ROI is incumbent upon a solid foundation of relevant data.

From a fiscal perspective, trauma systems can effectively express the economic impact in several metrics.

- Cost of life saved per quality adjusted life year (QALY) which can be modeled from system performance improvements analyses.
- Avoided costs: Reduction in long-term disability, rehab, and re-admissions compared to non-system or historical benchmarks.
- Length of stay (LOS): Reduction in ICU and hospital LOS with standardized trauma system protocols.
- Avoided duplication: Cost savings from regional trauma system coordination (shared resources, reduced unnecessary transfers, minimization duplicate imaging).
- Productivity preserved: Economic impact of patients defined by decreased years of productive life lost (YPLL) or return to workforce earlier.

Human factor impact on ROI can similarly be expressed with discrete measurable metrics.

- Clinical outcomes (mortality reduction, morbidity reduction, decreased preventable mortality rate)
- Trauma system access / performance (time to definitive care, transfer efficiency, trauma triage optimization)
- Process and quality (benchmarking, performance improvement)
- Public health (Injury prevention impact on reduction in targeted preventable injury mechanisms
- Preparedness (system readiness value, time to mobilization of trauma surge capacity, participation in statewide disaster exercises)

The return on investment in trauma systems can be demonstrated through improved survival, reduced disability, and measurable economic savings. Adequate funding builds the capacity that saves both lives and resources, providing a strong foundation for a resilient, data-driven, and sustainable trauma care system in Iowa.

Recommendations

2.1. **Complete a system-wide trauma system financial needs assessment to determine the cost of:**

a. **EMS and trauma facility readiness**

b. **EMS and trauma facility uncompensated care cost**

c. **BEMTS costs for trauma system to include additional FTE support to optimize operations**
d. Cost of regional trauma system development
e. Cost of data integration and maximizing the EMS, trauma and other data bases to produce meaningful data that can be acted

2.2. **Secure sources of sustainable funding. Potential funding options include:**
a. **Traffic violations, such as speeding, DWI/DUI/OUI**
b. **Vehicle burglary**
c. **911 surcharges**
d. **Medicaid billing support**

2.3. Engage multidisciplinary stakeholders to advocate for trauma system funding.

2.4. Explore funding opportunities to advance practice innovation for continued evolution of trauma care.

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 Trauma System Advisory Council (TSAC) serves as the multidisciplinary advisory group guiding trauma system development and oversight in Iowa. Historically established in statute under Iowa Code §147A.24, TSAC was rescinded during a statewide "red tape review" in 2024. Although it no longer holds statutory authority, the council continues to function as an ad hoc advisory body under the Bureau of Emergency Medical and Trauma Services (BEMTS) within the Iowa Department of Health and Human Services.

The TSAC has a structured framework with broad representation and meaningful input. Seven core voting members currently serve, with planned expansion to nine in FY2025 and eleven in FY2026 to preserve staggered terms. Appointed voting membership includes rural and urban trauma program managers, a rehabilitation specialist, an emergency medicine physician, a trauma surgeon, a hospital administrator, and an EMS leader. Active subcommittees include Verification, System Development, Triage and Transport, Data Management, and the System Evaluation and Quality Improvement Committee (SEQIC). The System Development Subcommittee created the 2022–2027 Trauma Plan and is tackling issues like EMS shortages, rural hospital challenges, and telemedicine. The SEQIC is conceptualizing a plan to benchmark trauma system performance and develop a trauma system performance improvement plan. Subcommittees dedicated to system planning and evaluation reflect national models that emphasize continuous quality improvement.

Iowa benefits from a trauma advisory body that is open, inclusive, and broadly representative. Meetings are public and open to participation from state system stakeholders from across the breadth of the trauma system including injury prevention, EMS, hospitals, academia, and professional organizations. Each quarterly meeting draws more than 100 participants across Iowa's 99 counties, facilitated by virtual access that has markedly improved rural engagement. These virtual meetings eliminate travel barriers, fostering more broad participation from rural facilities and stakeholders. Engagement is further sustained through newsletters, bulletins, and biennial conferences. The value of the TSAC is engendered by the sense of community and supported by a foundational understanding of trauma system needs.

The council's main responsibility is to advise the BEMTS on issues and strategies to achieve optimal trauma care delivery throughout the state. This goal is effected by strategies including the following: assisting the department in the development and implementation of an Iowa trauma care plan; development of criteria for the categorization and verification of all hospitals and emergency care facilities according to their trauma care capabilities; developing standards for medical direction, triage and transfer protocols, trauma care, and trauma registries; and implementation of a systemwide trauma performance improvement program.

Areas of opportunities for growth in multidisciplinary stakeholder engagement exist. A small formal voting body (7–11 members) risks underrepresentation of the broad stakeholder base, despite large public attendance. There are no regional trauma system councils to attend to nuanced regional issues and coordinate regional system development. Absent regional trauma councils, the differential trauma care needs of Iowans around the state are poorly understood. Stakeholder groups such as payers, law enforcement, and behavioral health are not part of the process, thus limiting optimal system integration. In addition, there is no mechanism to promote public and legislative awareness and support of the Iowa trauma system through coordinated communication strategies, leveraging data-driven reports. Reliance on federal block grants for trauma and EMS programming creates sustainability concerns for TSAC activities and the trauma system in Iowa. Furthermore, while subcommittees exist, there is not yet a robust system-wide performance improvement framework to drive the evolution of the system. As a consequence, identified trauma system challenges (e.g., transfer delays) lack consistent system-level action plans.

The loss of statutory authority leaves TSAC vulnerable to dissolution under future political or administrative leadership. National best practice guidance identifies the importance of a legislatively authorized, diverse advisory body with clear responsibilities for system planning and quality oversight. Many states sustain advisory groups in statute to ensure continuity and political legitimacy.

Strengthening the position of the Iowa TSAC will ensure consistent system leadership, preserve broad stakeholder input, and provide a durable mechanism for trauma system planning and evaluation for the future of the Iowa trauma system. Furthermore, a subordinate regional trauma system structure, coupled with focused TSAC subcommittee work and a data driven performance improvement process, will position Iowa to sustain trauma system gains and address emerging challenges in trauma system development.

Recommendations

3.1. **Clarify the roles and relationships of TSAC, the System Evaluation and Quality Improvement Committee (SEQIC), BEMTS, and proposed regional trauma councils for data review, benchmarking, and system performance improvement to promote trauma system development.**

3.2. Advocate for reinstatement of the TSAC to ensure statutory authority, continuity across administrations, and a secure advisory channel to the Bureau of Emergency Medical and Trauma Services (BEMTS).

3.3. Expand the voting body of the TSAC to proportionately represent the breadth of stakeholders, including EMS, trauma centers, rehabilitation, pediatrics, rural providers, military partners, and the public.

3.4. Promote public and legislative awareness and support of the Iowa trauma system through coordinated communication strategies, leveraging data-driven reports.

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 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

Revision of the 1994 Iowa trauma system plan was a priority recommendation from the 2015 systems consultation. In developing the new trauma system plan, the lead agency convened a workgroup through the System Development Subcommittee of TSAC. While participation was open to all interested parties, several pioneering leaders and experienced Iowa trauma stakeholders were purposefully engaged to contribute their historical perspective and subject-matter expertise.

The current plan for Iowa's Trauma System Development was published in April 2023 and formally reviewed in July of 2024 and included five strategic priorities with associated action plans and timelines. In March 2025, an addendum to the trauma system plan was published to address a shift in priorities and adjusted timelines. Two strategic priorities, trauma system funding and disaster preparedness were added to the plan. The addendum to the plan was approved in April of 2025 and subsequently published in May. The seven total priorities are largely administrative and operational in nature.

A 2023 executive order placing a statewide moratorium on rulemaking and mandating a comprehensive review of existing rules with an overarching goal to lean state government. The

moratorium affected the timeline and action steps of the development of the trauma system plan. This executive order is on a rolling basis, occurring every five years, which may impede progression of the Plan.

In its current form, Iowa's trauma system plan does not address each of the twelve Essential Trauma System Elements outlined in the *American College of Surgeons Trauma Systems Consultation Guide*. Notable missing Essential Elements include multidisciplinary advisory group, continuum of care, trauma system registry, system wide performance improvement, confidentiality and discovery, and military integration.

While the Trauma System Plan provides important direction for system development, opportunities remain to strengthen its effectiveness. Most notably, the plan was not informed by a comprehensive needs assessment, leaving it without an evidence-based foundation for setting priorities or guiding resource allocation. It also does not address the role of trauma centers in neighboring states or account for the transfer of Iowa patients across state lines, a longstanding issue that directly impacts access and continuity of care.

Beyond these structural concerns, the Trauma System Advisory Council (TSAC) has limited representation from rural areas, raising questions about whether the perspectives of rural providers and patients are adequately reflected. Dissemination mechanisms for the plan are largely passive, reducing awareness and stakeholder engagement. Finally, the plan does not sufficiently address vulnerable populations or healthcare disparities within the trauma patient population, leaving a critical gap in efforts to ensure equitable care across the system.

The trauma system plan should serve as the roadmap for system design, standards of care, and coordinated operations. Built on a comprehensive inventory and needs assessment, it should identify resources, gaps, population demographics, and barriers to access, with special attention to vulnerable groups such as pediatric, geriatric, and burn patients. Developed by the lead agency with input from multidisciplinary and regional partners, the plan should set measurable goals, align with regulatory standards, and integrate EMS, public health, injury prevention, and preparedness efforts. There should be regular review and updates to ensure the plan remains responsive to system and population needs.

Tackling these gaps would strengthen Iowa's trauma system in practical and measurable ways. A comprehensive needs assessment would provide the evidence base needed to set clear priorities and direct resources where they will have the greatest impact. Recognizing and planning for transfers across state lines would align the system with the realities of patient care and improve coordination with neighboring states. Broader rural representation on the Trauma System Advisory Council (TSAC) would ensure that the voices of providers serving the most geographically isolated communities are heard and reflected in decision-making. More proactive strategies to share the Trauma System Plan would increase awareness, engagement, and consistency across stakeholders. And finally, focusing on vulnerable populations and healthcare disparities would help the system deliver more equitable care and better outcomes for patients statewide.

Recommendations

4.1. **Conduct a comprehensive needs assessment to establish baseline data, identify gaps in access and outcomes, and guide resource allocation for future trauma system planning.**

4.2. **Revise the trauma system plan at a defined interval with metrics to ensure inclusion of all twelve Essential Trauma System Elements.**

4.3. Integrate neighboring states into the trauma system plan to capture patient transfer patterns, align protocols, and improve care coordination for trauma patients.

4.4. Strengthen trauma system plan dissemination using active methods such as direct outreach, stakeholder briefings, and targeted communication to build awareness and engagement.

4.5. Address vulnerable populations and healthcare disparities directly within the trauma system plan.

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

The Division of Public Health houses the Chronic, Congenital, and Inherited Conditions Bureau and the Family Health Bureau, separate from the Bureau of EMS and Trauma. These partner bureaus employ a Disability and Injury Prevention Project Director, a Violence Prevention Coordinator, and a Violence Prevention Consultant that have responsibilities in injury prevention and outreach. Within BEMTS, there is not a staff member dedicated to injury prevention, outreach, and coordination. The current statewide injury prevention activities are fragmented and dependent on community resources and the efforts of Level I and II trauma facilities. The trauma system does not have full integration and coordination of injury prevention programs. The bureau does provide some injury prevention information during the trauma program webinars, monthly trauma bulletins, and quarterly TSAC meetings. EMS for Children (EMSC) also provides education that includes information regarding injury prevention activities. However, the majority of injury prevention activities are conducted at the hospital and community level.

There is not a state-level forum for injury prevention professionals to share their work and outcomes or an injury prevention subcommittee within TSAC. In addition, there are limited state-wide injury prevention activities that are data driven with measurable outcomes that are tracked for effectiveness and reported at TSAC or other trauma system committees. BEMTS should create an injury prevention subcommittee from the TSAC that is comprised of injury prevention professionals and public members.

As stated in other sections, BEMTS has limited funding to support injury prevention initiatives. The current source of injury prevention funding for all bureaus with injury prevention responsibilities is through the federal grants such as the CDC Core State Injury Prevention Program Grant, Public Health and Human Services Block Grant, and EMS for Children Health Resources and Service Administration (HRSA). Temporary funding is also available through the Association of State and Territorial Health Officials (ASTHO) and the National Council on Aging (NCOA). BEMTS should conduct a financial needs assessment which includes injury prevention activities.

There is evidence that several organizations (e.g., Falls Prevention Coalition, Injury Free Coalition for Kids) are active in Iowa to promote injury prevention and awareness. These organizations address a broad variety of injury patterns and populations.

One of the activities considered essential to the development and implementation of injury control and prevention programs is the engagement of the lead agency and key stakeholders in the development of the community health needs assessments and the community health improvement plans. The Iowa HHS has an internal Community Health Assessment (CHA) and Community Health Improvement Plan (CHIP) team that created minimum recommendations for

what should be included in community assessments and plans. Local Boards of Health (LBOH) are required to complete the CHA every five years. Recently the Iowa HHS partnered with the CHA, the CHIP, and the Healthy Iowans teams to start a biannual webinar for partners to learn how the work of these teams connects to Healthy Iowans.

Iowa HHS has a partnership with the University of Iowa Injury Prevention Research Center. In 2024, a Trauma Care Research and Practice Action Team was developed. The BEMTS program manager serves as the lead for this team. In addition, this partnership is updating the Iowa Burden of Injury report. County level burden of injury reports are available and utilized to assist with prioritizing local injury prevention programs.

The Iowa Community HUB is an online statewide community care hub that partners with organizations to connect Iowans to evidence-based programs related to injury prevention and health promotion. An example of this collaborative community-clinical linkage for falls prevention is the Iowa Falls Prevention Coalition. Additionally, the department collaborates with the University of Iowa College of Public Health to share public-facing injury data in the online Iowa Health Fact Book.

A Safe States Alliance consultation visit was conducted in 2020 and identified three key strategies: enhance the use of data to guide IVP activities, strengthen communication with state and local communities about challenges and potential solutions, and build capacity among IVP professionals and partners to foster effective collaboration and shared success.

The 2023 Iowa trauma registry report identified falls and motor vehicle crashes as the most common causes of injury, with falls as the leading cause of death from trauma-related deaths. It also showed that firearm related injuries have decreased since 2012. From 2023 to 2024, the EMS and Trauma registries showed an increase in the number of EMS trauma-related incidents and number of facility trauma cases. The increase in trauma EMS and trauma facility numbers highlight the need for effective injury prevention programs. The BEMTS trauma registry report should be utilized to define injury prevention priorities and prevention funding at the state level.

Recommendations

5.1.1. **Utilize the BEMTS trauma registry reports to prioritize the injury prevention initiatives and to monitor the effectiveness of the injury prevention programs.**

5.1.2. Include injury prevention activities in the BEMTS financial needs assessment.

5.1.3. Create an injury prevention subcommittee from TSAC and include public representation on this subcommittee.

5.1.4. Create a community-facing platform to share the injury prevention data in a meaningful, usable format for a broad group of stakeholders including community leaders, the public, and providers within the trauma system.

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

BEMTS is authorized by Iowa Code 147A to provide administrative oversight of the EMS system. BEMTS achieves this oversight through dedicated staff and a contracted part-time Medical Director. The EMS Medical Director ensures care protocols and treatment guidelines are appropriate for the scope of practice of each authorized EMS Service. BEMTS has a long-standing relationship with services and an established EMS Advisory Council that meets quarterly.

Iowa EMS consists of 725 authorized EMS services, operating from 904 service locations. Of these services, roughly 82% operate at the Basic Life Support (BLS) level and 18% operate at the Advanced Life Support (ALS) level. Additionally, 373 services are non-transport, 507 are ground ambulance transport services, and 24 are air medical services. The majority of EMS services are staffed by a volunteer workforce. 558 (62%) of services are staffed entirely by volunteers, with another 98 (11%) staffed by a combination of paid and volunteer workforce. The remaining 248 (27%) are staffed by fully paid personnel.

Per Iowa Administrative code 641.132, each service program shall have a designated medical director. The medical director develops, approves, and updates service protocols. Each authorized service is required to have protocols that are aligned with the Iowa EMS Scope of Practice and the National Model EMS Clinical Guidelines.

National Registry of EMT certification is required for initial provider certification. A medical service director may require additional training and competency requirements above the minimal state requirements. Emergency medical providers are required to submit applications for renewal every 2 years. The recertification renewal includes completion of minimal trauma requirements based on level of certification. While not a requirement, several EMS agencies obtain this requirement by attending Prehospital Trauma Life Support (PHTLS) and/or Rural Trauma Team Development (RTTDC) courses. BEMTS is not prescriptive in which courses meet this requirement.

As reported, Iowa’s EMS workforce has historically relied on volunteerism. Stakeholders shared that emergency medical responses have been localized and fragmented, resulting in a highly fractured, unsustainable system of care. The system's challenges have become even more apparent as diminishing rural behavioral health and maternal-child health services have resulted in rising EMS service demands. Coupled with a lack of recruitment and retention investments, these challenges have resulted in uncertain and inconsistent care. The decline of rural EMS transport availability has further shown the need for services to pursue affiliation agreements with neighboring communities and reliance on air medical assets for inter-facility transport of trauma patients. Affiliation agreements under Iowa Administrative Code 641-132 define operational relationships in normal day-to-day operations to ensure compliance with EMS rules. While this approach may work for the short term, it can also present additional problems during incumbent weather conditions and does not address the root cause for sustainability. BEMTS continues to focus on mitigating the decline of EMS services by offering supportive technical assistance, education opportunities, and supporting EMS as an essential service at the county level. The designation as an essential service often leads to the establishment of dedicated funding mechanisms and resource allocation to support systems, which are frequently strained by workforce issues and high costs. There is a growing consensus that all levels of government share the responsibility for supporting EMS to ensure its viability. Policymakers should be urged

to integrate EMS into broader health planning and ensure robust, equitable funding to meet community needs. To date, BEMTS has not championed or led a formal EMS workforce assessment. The Iowa EMS Association appears to have a legislative presence and may be a valued partner when addressing these concerns.

The administrative oversight and development of comprehensive EMS and trauma systems is a function of BEMTS. While there is evidence of some collaboration across program areas, it appears that EMS is not fully integrated into the trauma system planning process. Iowa EMS agencies and Iowa EMS Association should be engaged to ensure system, and regional priorities are aligned with trauma system plans.

Recommendations

5.2.1. **Assure EMS and trauma system priorities regarding operations, clinical outcomes, advocacy, and resources are aligned.**

5.2.2. Conduct EMS needs assessment to:

a. Focus on workforce staffing
b. Quantify the fiscal impact of providing EMS services

5.2.3. Promote EMS as an essential county service.

5.2.4. Identify and implement strategies to support and sustain EMS workforce.

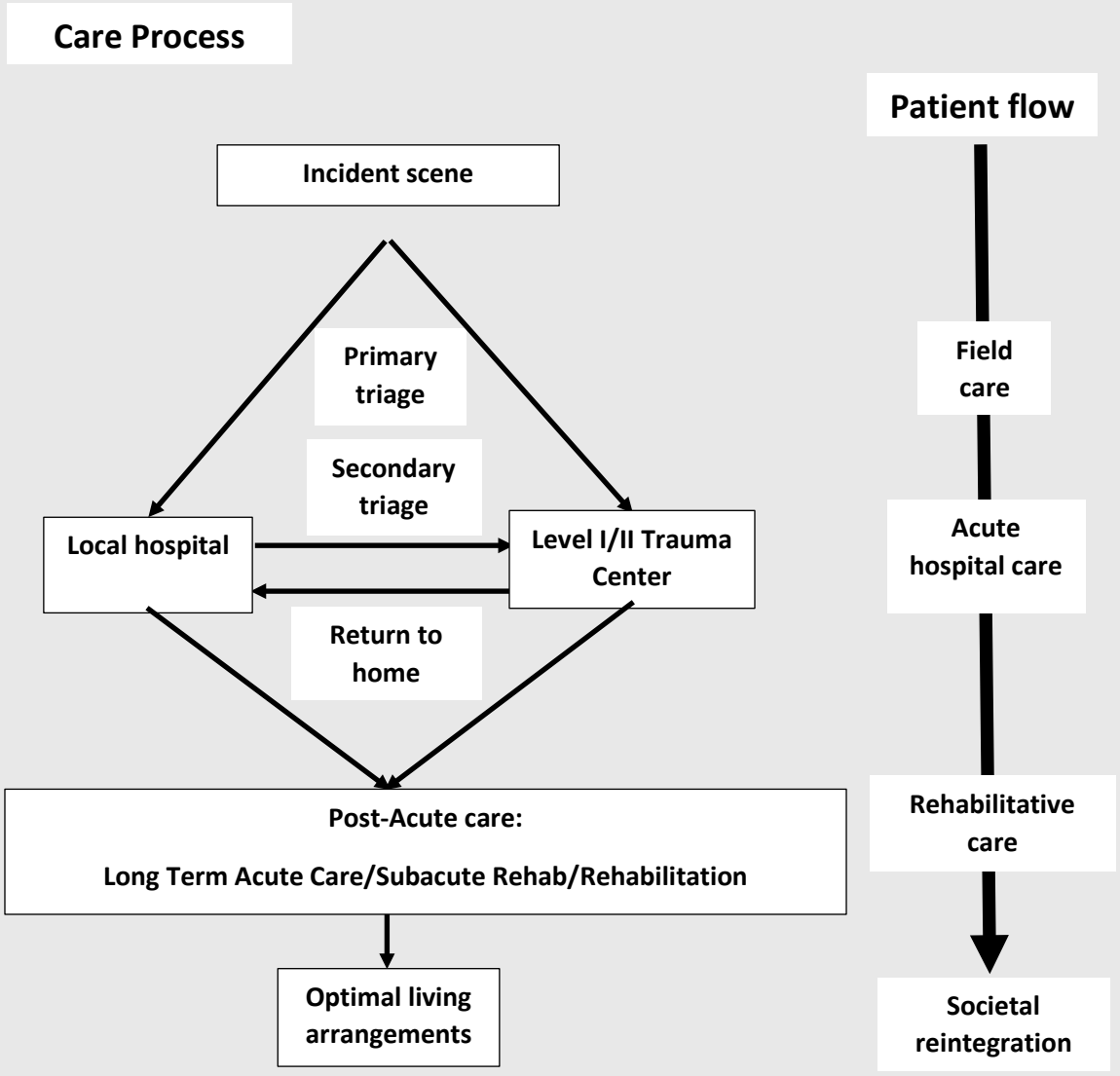
5.2.5. Align local protocols to ensure trauma best practices.

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

Iowa Health and Human Services (HHS) is the lead agency that oversees trauma system triage and patient flow. Patients typically enter the Iowa state trauma system through a widely distributed, tiered network of emergency medical services (EMS). Triage, destination, and transport decisions are determined by locally adapted protocols informed by state Administrative Rule 641.135 and National Guidelines for the Field Triage of Injured Patients. Additionally, some patients may present directly to a hospital or require subsequent interfacility transfer to a higher-level trauma center.

Bureau of Emergency Medical and Trauma Services (BEMTS) monitors for timely and appropriate triage and transfer of injured patients to definitive care and uses indicators established by the System Evaluation Quality Improvement Committee (SEQIC). Data concerning over triage, under triage, and interfacility transfers are collected through a variety of administrative and reporting mechanisms, including case reviews, internal hospital processes, and the state trauma registry. Despite these efforts, the accuracy and effectiveness of reporting and performance evaluation rely on individual hospital protocols, fragmented review procedures, and insufficient utilization of data for system-wide improvement. Oversight of interfacility transfers is further complicated by the proximity and increasing use of trauma centers in at least five neighboring states. While individual local EMS and county agencies engage neighboring state trauma centers, there remains limited regional and state-level oversight, tracking, and analysis of trauma patient volumes, associated expenditures, and repatriation activities.

Although the current system may adequately manage individual and modest numbers of injured patients, Regional Medical Operations Coordination Centers (RMOCCs) could routinely better collate and monitor larger volumes of cases as well as key factors influencing time to definitive care. These factors include trauma team activation, emergency department length of stay, bed and specialty service availability, case screening and coordination with accepting physician, network authorization, method of transfer, and final destination, including complex scenarios involving double and triple jumps. Additionally, in the event of a mass casualty event, RMOCCs could facilitate multiple levels of stakeholder communication, patient tracking, and resource allocation such as patient load-balancing and effective deployment of transportation assets.

Recommendations

5.3.1. **Establish Regional Medical Operations Coordination Centers (RMOCCs) to monitor and facilitate injured patients receiving the appropriate care at the right facility and in the right time frame during daily operations and scalable to disaster response.**

5.3.2. Identify and develop plans to mitigate delays to definitive care.

5.3.3. Develop mechanisms to identify and track injured patients transferred between neighboring states from their initial destination through repatriation.

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

The Iowa Trauma System is highly inclusive, with all hospitals required to be designated at least as Level IV trauma centers. Currently the system includes three Level I centers (including one Level I pediatric trauma center), three Level II centers (including two Level II pediatric trauma centers), 15 Level III centers, and 100 Level IV centers. A particular strength supporting the system is that Level I and II center verification is conducted through the American College of Surgeons (ACS) Verification, Review, and Consultation (VRC) Program. Most Level III (with one exception) and all Level IV centers are verified through a state process.

Although the state verification program has improved with the addition of chart review, the consultation team was concerned about the robustness of the review process given the large number of centers and the limited FTEs available to perform reviews. Even under ideal circumstances on a 3-year verification cycle, BEMTS must conduct at least 38 visits annually. The limited number of staff qualified to administer the state trauma verification program represents a critical deficiency in the system. As such, we would recommend the augmentation of staff to support the state verification review program and maintain alignment with ACS standards.

Iowa's early adoption of an inclusive system, requiring all hospitals to be verified at Level IV or higher, may have produced variability in capability and commitment among centers. This variability is exacerbated by the lack of consequences for failing verification visits. Stakeholders reported that some centers repeatedly perform poorly on verification visits across multiple years. Local EMS agencies generally recognize these differences and triage appropriately, but additional efforts are needed to assure a consistent minimum level of trauma care performance statewide.

The 2015 Iowa Trauma System Consultation report described the verification process as one that "lacked teeth," and that assessment remains unchanged. The lack of consequences limits hospital administrators' prioritization of trauma care. Furthermore, despite community need, higher functioning centers have no financial or operational incentive to advance their level of verification commensurate with capabilities. The lead agency should explore options, including financial support of centers that verify at a higher level, to support trauma readiness costs. This funding could then potentially be withdrawn as a consequence for centers who subsequently fail to meet standards.

Trauma center leadership, including Trauma Medical Directors (TMDs) and Trauma Program Managers (TPMs), are foundational to the trauma system managing injury care in the State of Iowa. One significant concern identified during the consultation was the TPM turnover rate noted to be as high as 33% per year. With the inherent time required to hire and train a TPM, this has led to a substantial disruption of leadership continuity and has had a detrimental effect on the trauma system. This turnover appears related to job dissatisfaction by TPMs juggling multiple roles and not feeling adequately appreciated or supported. However, to define the problem more thoroughly, exit interviews should be conducted with TPMs leaving their positions to better understand the drivers of attrition. In response to this concern, the lead agency has initiated a training and outreach process for new TPMs, but it is to be seen if this initiative will have the intended effect of reducing and stabilizing turnover, which will be essential for trauma system growth and improvement. Additional possible solutions to circumvent this issue include adding measures to the trauma verification rules to delineate/authorize the time, education/training, and resources required to optimize TPM recruitment and retention.

Up to 20% of injured Iowans receive injury care at out-of-state trauma centers due to proximity to state borders, yet those centers have not been engaged by the Iowa Trauma System. This issue was raised in the 2015 report but there has been limited action over the past decade to ameliorate this problem.

The state currently lacks a Regional Medical Operation Coordination Centers (RMOCCs), , that can track capacity, load-balance patients effectively, and assist with management of complex cases. RMOCCs have been proposed and have garnered some support, but there has been a lack of funding for their development and implementation. A contingency based pediatric RMOCC exists for Region 7 (Missouri / Iowa collaboration) but does not function on a daily basis to support the needs of the trauma systems in those two states.

Recommendations

5.4.1. Establish both consequences and incentives to ensure trauma centers meet required standards.

5.4.2. Identify and implement strategies to reduce trauma program manager (TPM) turnover.

5.4.3. Increase lead agency FTEs dedicated to verification and oversight to ensure robust, timely reviews.

5.4.4. Expand chart review in state verification process to include evaluation of clinical care.

5.4.5. *Develop a process to identify, recognize, and engage out-of-state trauma facilities that functionally serve Iowa patients:*

a. *Determine the scope of their contribution to the Iowa trauma system.*
b. *Request data on Iowa patients treated.*
c. *Establish interfaces for performance improvement collaboration.*

(*This was also a recommendation in the 2015 Iowa Trauma System Consultation.)*

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

Current and widespread knowledge about the capacity, availability, and capabilities of state rehabilitation services remain unconfirmed. Following the 2015 American College of Surgeons Trauma System Consultation report, there have been anecdotal accounts of progress regarding several of the nine recommendations related to rehabilitation; however, various challenges persist.

The rehabilitation system is integrated at several points within the state trauma system. Acute care therapy participates in the Trauma System Advisory Committee (TSAC) as well as various individual hospital trauma committees. However, the July 2025 rescindment of the TSAC may diminish state-level recognition of this consequential phase in the continuum of trauma care. Furthermore, while many individual trauma centers offer a range of acute rehabilitation services,

awareness of and access to ongoing rehabilitation care, including facilities in closer proximity to patients' communities, remain constrained by wait times of at least 3-7 days, the availability of specialized care (e.g. dialysis, severe traumatic brain injury, high-level spinal cord injury, and tracheostomy and ventilator management), and in- and out-of-state healthcare system and insurance network affiliations.

Since 2015, there has been no comprehensive resource needs assessment and gap analysis of state rehabilitation services for trauma patients to corroborate capacity and availability of contemporary and needed services particularly for specialized care for patients with severe traumatic brain and high-level spinal cord injuries. Regular needs assessments could mitigate prolonged wait times, lengths of stay, and associated expenses as well as facilitate patients' recuperation and repatriation.

Recommendations

5.5.1. ***Complete a comprehensive resource needs assessment and gap analysis of state rehabilitation services to meet the needs of trauma patients.***
(*This was also a recommendation in the 2015 Iowa Trauma System Consultation.)*

5.5.2. Sustain ad hoc rehabilitation representation on the state Trauma System Advisory Committee (TSAC).

5.5.3. Facilitate collaboration between trauma system leadership and rehabilitation centers to increase accessibility of inpatient rehabilitation services for trauma 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 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 Bureau of Emergency Medical and Trauma Services (BEMTS) operates within the Public Health Division of Iowa HHS, which supports natural integration of the trauma system with other agencies (e.g., public health, child protective services). Trauma program staff regularly attend EMS for Children and EMS Advisory Council meetings. The BEMTS Bureau Chief meets individually with each new local public health administrator to build relationships, establish

communication channels, and offer access to resources and expertise. However, these collaborations lack formal structure.

County-level healthcare coalitions exist, primarily focused on disaster response, which could provide a natural framework to integrate other agencies with the trauma system. This integration already occurs informally in many rural areas, where local trauma program managers often serve in multiple county roles. Regional Trauma Advisory Councils (RTACs) should be developed to integrate local resources. These RTACs should report regularly to the TSAC to ensure bi-directional flow of information across all partners.

Iowa allows counties to designate EMS as an essential service; 21 of 99 counties have done so, ensuring EMS a formal role in county service integration. This designation indirectly highlights the trauma system, but the emphasis remains on EMS.

A state-sponsored symposium held biennially brings together emergency management, EMS, and trauma stakeholders. There is an opportunity to leverage stakeholder engagement to educate the public and state legislators about the trauma system's public health value and to advocate for sustained support and funding.

Despite these connections, the trauma system has not fully leveraged partnerships with key stakeholders necessary to optimize system function, including law enforcement, mental health services, payors, and the public.

Recommendations

5.6.1. **Utilize Regional Trauma Advisory Councils (RTACs) within the system structure to enhance operational value, coordinate trauma system development, and integrate local resources including non-traditional partners (law enforcement, behavioral health, payers, military, public health).**

5.6.2. Develop and maintain a strategy for broad stakeholder engagement across the inclusive trauma system.

5.6.3. Use stakeholder engagement to educate the public and state legislators about the trauma system's public health value and to advocate for sustained support and funding.

5.6.4. Improve collaboration and bi-directional communication across all trauma system stakeholders.

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 Iowa does not require trauma center verification based upon need but has done some exploratory geographic analysis of its trauma system. Geospatial mapping efforts have demonstrated the population access to Level I and II trauma center care. Due to the state's inclusive trauma system model, almost all of the population has access to some level of trauma center. In some peripheral areas of the state, there is a paucity of trauma center access. However, this gap is filled by trauma centers in neighboring states.

Though the lead agency does not have statutory authority to verify trauma centers based on population needs, understanding the barriers and challenges associated with access to injury care is vital for the health and safety of Iowans, particularly those in vulnerable rural communities. State injury data should be utilized to develop a needs-based assessment of the system focusing upon injury patterns, locations, and access to timely and appropriate level trauma care. With this analysis, the lead agency should focus efforts on identifying gaps in access to care and develop mitigation solutions, including encouraging and incentivizing trauma centers to maintain verification consistent with the capabilities of the center.

There does not appear to be a significant increase in higher-level centers which threaten trauma patient volumes of legacy centers. However, market forces could potentially lead to this issue. If possible, the lead agency should develop the authority to control allocation of centers and designate based on need.

Recommendations

6.1. Perform a needs assessment of the system based on injury data to ensure appropriate geographical distribution of trauma centers.

6.2. Incentivize trauma centers to be verified at a level consistent with their capabilities.

6.3. Explore options for the lead agency to have the authority to allocate and designate trauma centers based on need.

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 Iowa HHS Bureau of Emergency Medical and Trauma Services (BEMTS) has oversight of the trauma and EMS registries. BEMTS is responsible for producing data analytics at multiple levels. Additionally, BEMTS leads two stakeholder driven committees: the System Evaluation and Quality Improvement Committee (SEQIC) and the Data Management Committee (DMC). These committees offer consultation and feedback to support the registry.

The State EMS and trauma registries are hosted by ImageTrend, which is funded by Iowa HHS; trauma centers can use the web-based version at no cost. All trauma centers report to the state registry, with 116 of the 121 designated trauma centers utilizing the state's ImageTrend Patient Registry. The remaining centers use an alternative vendor's system and upload batch records to the state registry. The EMS data registry is managed through ImageTrend Elite, which is also offered at no cost to EMS agencies. In 2023, a total of 716 EMS agencies reported to the state EMS registry. EMS service programs are required to submit data to the Department by the last day of the month following the month in which services were provided. A "data bridge" connects the ImageTrend Elite Registry (EMS) and the ImageTrend Patient Registry (trauma), enabling deterministic linkages between records. While this functionality allows linkage across EMS and trauma patient data, linked data are not used for analytic and system performance improvement purposes.

Trauma centers are required to comply with administrative rules and verification standards, which mandate that all patients meeting registry inclusion criteria be entered into the system within 60 days of discharge at least 80% of the time. Hospitals that fall short of this threshold may receive a criterion deficiency or be subject to other disciplinary actions as part of the verification process. Through the ImageTrend registry, BEMTS provides an interactive concurrency report to all participating facilities. The Trauma Registry Report does not include detailed information on data completeness and missingness, and there is no systematic process for addressing data quality issues.

BEMTS conducts trauma verification visits where reviewers engage with facility staff to evaluate and discuss the quality and completeness of trauma registry data. The practice of citing centers for data quality issues during triennial site visits is insufficient to ensure consistent data quality.

The state trauma registry has several notable strengths. It includes all hospitals that provide care to injured patients and requires participation. The registry is also supported by a well-established data dictionary that aligns with the National Trauma Data Standard (NTDS), and a 0.5 FTE epidemiologist is dedicated to its operations.

However, significant challenges remain. There is no high-level trauma expertise guiding the use of registry data to advance the trauma system. The registry is not adequately staffed, creating barriers to its effective management. The Trauma System Coordinator is responsible for all state verification activities, leaving insufficient time to lead and oversee the registry.

In addition, the state lacks a comprehensive data quality plan to systematically identify and resolve data quality issues across facilities. Without such a framework, the reliability of data is limited, and opportunities to strengthen trauma system decision-making are missed. Registry

data are not consistently used to answer critical questions about patient outcomes, to identify statewide quality or patient care issues, or to support a coordinated performance improvement process.

Finally, the absence of targeted education for trauma registrars contributes to variability in data quality. Without consistent training and support, data accuracy and completeness are limited, reducing the registry's overall impact.

Recommendations

7.1. **Engage trauma system expertise to oversee the registry and guide the systematic use of data for trauma system development.**

7.2. **Create a comprehensive data quality plan that addresses the following:**

- a. **Timely completion**
- b. **Systematic identification of issues through analytics and audits, problem resolution, and registrar training**
- c. **Loop closure on data quality issues**

7.3. Provide adequate staffing for the trauma registry to ensure the timeliness, completeness, and accuracy of data submitted.

7.4. Separate trauma registry responsibilities from verification job functions.

7.5. Provide targeted education and ongoing training for trauma registrars to strengthen data accuracy, completeness, and consistency across the state.

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

Since the 2015 trauma systems consultation, BEMTS added a 0.5 full time equivalent epidemiologist. With the addition of this asset to support analysis of registry and other data sources, a more robust analysis of injury data has been reported, via the Iowa Trauma Registry Report, for the data years 2022 and 2023. The 2024 data year analysis is in process.

The 2023 Iowa Trauma Registry Report reflects a comprehensive look at trauma care across the state, drawing from both inpatient and outpatient events, as well as state death certificates and national mortality data. With 121 facilities actively reporting, the registry continues to serve as a cornerstone for understanding the performance and challenges of Iowa's trauma system. The report confirms what prior years have shown: that older Iowans remain the most affected, with those over age 65 accounting for the largest share of trauma cases, and with injuries among patients in their 60s and older steadily increasing.

Falls remain the dominant cause of injury, representing more than four out of five reinjury events, and they also stand as the leading cause of trauma-related death. Motor vehicle

crashes, while far less frequent, continue to be the second most common mechanism of serious injury, underscoring the need for ongoing road safety initiatives. At the same time, firearm-related injuries leading to trauma visits have decreased since 2021. The report also highlights suicide as a persistent and complex contributor to trauma mortality, reinforcing the importance of comprehensive prevention strategies that include community engagement, mental health resources, substance use regulation, and firearm safety.

Operationally, the system faces rising demands. Emergency department length of stay continues to grow, now averaging more than 217 minutes. This trend, coupled with an aging population and increasing injury burden from falls, places pressure on trauma centers and underscores the importance of ongoing system improvements.

Taken together, the 2023 data show both the strengths and the vulnerabilities of Iowa's trauma system. The registry offers a powerful lens for guiding policy, targeting prevention, and improving outcomes. Falls, motor vehicle crashes, poisonings, and suicide remain the priority areas for prevention and intervention. At the same time, the operational findings point to the need for efficiency gains and workforce support to keep pace with the state's changing trauma care demands.

While the Iowa Trauma Registry produces a robust epidemiology report, its utility for systemwide improvement is limited by several factors. The report's wealth of data is not translated into a clinically focused, accessible format that would allow a broad range of stakeholders to easily apply the findings to prevention, practice, and policy. In addition, the current analytic approach is not aligned with metrics that would enable system leadership to assess the effectiveness of processes or demonstrate meaningful impact on patient outcomes. ACS TQIP reports are not utilized in aggregate to assess national benchmark performance and identify areas of opportunity. The epidemiologist's expertise is essential for rigorous analysis, and the selection of measures is most effective when guided by clinicians who define the key performance questions and objectives as outlined in the trauma PI plan. This partnership ensures the data remain clinically relevant, actionable, and tied directly to improving outcomes. Compounding these challenges, the absence of published reports that distill trauma system performance for public and legislative audiences leaves a missed opportunity to strengthen advocacy and build support for future system development.

Epidemiologic data provide trauma leaders and public health officials with the ability to track injury trends, identify emerging threats, and guide the allocation of resources. These data are essential for planning, evaluating, and refining prevention programs, system policies, and disaster response efforts. Regular reporting ensures transparency, informs policymakers and the public, and supports strategies to reduce injury-related morbidity and mortality across all populations.

Recommendations

8.1. Translate epidemiology data into a clinically focused, user-friendly format that highlights actionable findings.

8.2. Use analytic methods that directly track how the system is performing, show whether processes are working, and clearly demonstrate their impact on patient outcomes.

8.3. Codify clinician-led oversight of relevant trauma performance measures, with the epidemiologist providing analytic expertise to ensure accuracy and rigor.

8.4. Consider implementing a statewide TQIP collaborative to modernize the approach to national benchmarking for outcomes and process measures.

8.5. Publish regular reports that clearly communicate trauma system performance to public and legislative audiences, strengthening advocacy and sustaining support for system development.

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 BEMTS trauma program is responsible for administering system-wide PI activities and fulfills this responsibility through several key mechanisms, including the System Evaluation Quality Improvement Committee (SEQIC), the Trauma System Advisory Council (TSAC), the trauma verification process, and the trauma registry. Similarly, the EMS Advisory Council (EMSAC), the Quality Assurance Standards and Protocols Committee (QASP), and the EMS registry support the EMS system-wide performance improvement initiatives.

TSAC, SEQIC, EMSAC, and QASP convene quarterly to review trauma system performance improvement activities. Membership in these committees is multidisciplinary, with representation from key stakeholder organizations including those that represent surgeons, emergency physicians, EMS, nurses, trauma program managers, and trauma registrars. BEMTS maintains

real-time oversight through dashboards managed by the trauma program epidemiologist. The dashboards allow for monitoring of registry concurrency and conducting relative mortality analysis. At the facility level, Level I and II hospitals integrate their TQIP reports into their performance improvement initiatives.

Iowa's trauma system performance improvement priorities currently focus on revising triage and transfer guidelines, updating trauma center standards, supporting the Rural Trauma Team Development Course (RTTDC), and providing education through monthly webinars that address emerging issues. Recent successes in performance improvement include addressing complications or near-miss events following prehospital needle thoracostomies, implementing virtual trauma center verification reviews during the COVID-19 pandemic, and refining the report-writing process for the verification reports.

The SEQIC performance improvement process includes several measures, including the examples outlined in the table below.

Measure
Transfer delays to definitive care
Reinjury trends for patients with more than one injury event
Mortality
Surgeon and physician response times
Probability of survival calculated
Autopsies performed on deceased trauma patients
Blood alcohol recorded
Drug screen completed
Initial hospital GCS<9 without head CT prior to transfer
GCS <9 and arrival to definitive care >3hours post-injury
Survival rates for low, medium, and high-risk traumas
ED length of stay with and without trauma activation
Trauma team activation (over and under triage)
Trauma registry concurrency (incidents submitted within 60 days of patient discharge)
Trauma registry incidents with validity score of 84%

The BEMTS epidemiologist developed statistical computing language to calculate the W, M, and Z scores for assessing risk-adjusted mortality. The epidemiologist's Relative Mortality metric is in the process of being introduced to the trauma centers. The plan is for each of the trauma centers to receive a customized SEQIC report tailored to their trauma program. Each report will include a full description of the indicators, detailed methodologies for how they are calculated, and guidance on their interpretation.

The SEQIC indicators reports are sent to each trauma center as a form of state benchmarking. These reports compare facilities by trauma center levels. ACS-verified Level I and II trauma centers submit data to the ACS Trauma Quality Programs, and centers participating in the Trauma Quality Improvement Program (TQIP) use their reports for benchmarking. At the state-level, trauma centers participate in quarterly TSAC, Data Management Subcommittee to review

and improve adult and geriatric trauma care. However, the reports that are sent from BEMTS to the trauma facilities as benchmarking reports do not include expectations for addressing low performance.

Despite these efforts, there is currently no written system-wide trauma performance improvement plan. The absence of such a plan contributes to fragmentation across system-level performance improvement activities. Moreover, there is limited evidence that existing indicators are tied to performance improvement measures or that action plans are consistently developed, monitored, and reported back through the committees to track progress.

Lastly, all phases of trauma care are not included in the system-wide performance improvement process. An example is access to rehabilitation or delays in transfer to rehabilitation beds are not included in the review process.

Verification reviews of the trauma facilities take place every three years. It is not clear how the verification findings are integrated into the system performance improvement process to assist other trauma centers. This process is not well defined, and verification reports are not robust enough to identify performance trends. TQIP reports are a recommended substitute to utilizing the verification reports. To move forward with this concept, funding is needed to assist all Level III trauma facilities to participate in TQIP. The TQIP reports provide a national perspective of outcomes and potential initiatives to improve care.

There is also uncertainty regarding whether registry data validation, completeness, and timeliness are integrated into the system-wide performance improvement reviews. While some evidence suggests these factors are monitored, they do not appear as consistent agenda items within TSAC meetings, which limits transparency and coordinated oversight.

Overall, the system-wide performance improvement process remains fragmented, primarily due to the absence of a written system-wide trauma performance improvement plan. Developing a formal system-wide PI plan would provide the structure and process for all committees and stakeholders to integrate and align. Once developed, BEMTS should provide education and training to ensure stakeholders understand their role in the plan. Additionally, stakeholders should participate in defining the registry reports and data elements needed for successful implementation.

Recommendations

9.1. **Develop, implement, and monitor a system-wide trauma performance improvement plan which reflects contemporary indicators and processes across the continuum of care.**

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

9.3. Establish definitions and common terminology that support the trauma system-wide performance improvement plan.

9.4. Create a process to inform, educate, and implement the trauma system performance improvement plan with all stakeholders.

9.5. Integrate trauma registry reports and dashboards to support the system-wide performance improvement plan.

9.6. Create corrective action plans for when dashboard performance measures do not meet established targets.

9.7. Ensure loop closure (event resolution) of identified gaps.

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

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

Iowa has robust confidentiality and discoverability rules in place- Iowa Code 22.7 (Confidential records) and Iowa Code 715C (Personal Information Security Breech Protection). Within these parameters, data and information access to and re-disclosure is governed by Iowa HHS policy and procedures.

Chapter 641.134 of Iowa Code provides Health and Human Services (HHS) protection to conduct chart reviews that are not subject to discovery by subpoena or admissible evidence and that all information and documents are confidential.

The BEMTS has a Data Request Form available to standardize, track, and quickly fulfill data requests received. Individuals submit the Data Request Form to the BEMTS Bureau Chief, indicating the intended use of the data and which specific datasets are to be utilized. BEMTS reviews the data request and works with the HHS Bureau of Data Sharing, Privacy and Open Records. They determine the type of data request, legal parameters for data use and disclosures, and the need for a Data Sharing Agreement. BEMTS then fulfills the approved request to extract data from the Iowa Trauma Registry using secure methods.

Specific trauma cases may be reviewed at statewide trauma system meetings for educational purposes, only with patient consent. Information may also be shared if the material has been reviewed by HHS legal counsel to ensure HIPAA safe harbor standards are met. This process is thought to prohibit BEMTS led system improvement and reporting.

Legislation or legal approval should be obtained that enables the access and use of trauma data for the purpose of trauma performance improvement while assuring the same protection afforded to HHS.

Recommendations

10.1. Seek legal approval that enables the use of protected health information for statewide trauma performance improvement.

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

Disaster preparedness and response in Iowa is guided by a layered framework that originates from and continues to rely on local hazard vulnerability analysis and community resources, proceeds to intra-county mutual aid agreements, and may ultimately involve requests for state-level assistance. Although the trauma system constitutes a critical component of local, regional, and state strategies for managing mass casualty incidents (MCI), its current readiness and the extent of its integration into disaster and surge response plans remain uncertain as a comprehensive statewide assessment has yet to be conducted.

Iowa Health and Human Services (HHS) coordinates healthcare coalitions and emergency management through its Bureau of Preparedness and Response and evaluates trauma system resources via the Bureau of Emergency Medical and Trauma Services (BEMTS). While it does not have a centralized communication center, it promotes interhospital communication through various mechanisms, such as WebEOC, the 24/7 Public Health Emergency Notification Line, Health Alert Network, and Iowa Statewide Interoperable Communications System. An additional platform, CyncHealth, was explored for real time bed tracking in surge event but has been suspended. Additionally, there is currently no standardized method to track patients throughout a disaster response.

Trauma system readiness is largely determined by the preparedness of local hospitals and their after-action reviews (AAR) following tabletop exercises and disaster drills. However, the AARs from two recent actual incidents, the January 2024 shooting in Perry and the May 2024 Greenfield tornado, provided valuable insight and corroborated several identified strengths and limitations. Higher level trauma centers were rapidly alerted and demonstrated capacity to receive a sizable influx of patients; however, initial notifications were inaccurate or inconsistently communicated. In both events, discrepancies in patient tracking and distribution were observed; for the Perry shooting, two Des Moines hospitals ultimately received far fewer patients than anticipated whereas after the Greenfield tornado, one Des Moines hospital received several patients while another unexpectedly managed more than twenty casualties.

When a disaster or MCI requires a statewide response, Iowa HHS has the ability to request supplies and resources from neighboring states and the Federal Emergency Management Agency. For additional personnel, it has access to the Iowa Statewide Emergency Registry of Volunteers (i-SERV), Disaster Medical Assistance Teams, Public Health Response Teams, and the Iowa National Guard and Reserve Components. However, without a formal trauma-specific surge plan, the availability, scale, and composition of augmentation is unknown.

Regional Medical Operations Coordination Centers (RMOCCs) could centralize, streamline, and enhance communication, patient tracking, and coordination of a broader healthcare response by multiple levels of stakeholders, state agencies, and Emergency Support Function 8 partners.

Recommendations

11.1. **Complete a comprehensive assessment of the state trauma system's emergency preparedness and its integration in state emergency planning.**

11.2. Establish and integrate Regional Medical Operations Coordination Centers (RMOCCs) into daily operations that are readily scalable for disaster response in all regions of the state.

11.3. Develop structured mechanisms for prehospital and interfacility communications.

11.4. Formalize a trauma system surge plan, including military medical personnel.

11.5. Develop a mechanism to identify and track patients during a disaster or mass casualty event.

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

Iowa does not host any large active-duty military installations, but military medical assets of the Iowa National Guard and Reserve components could play an important role in state and

national defense. The state's primary military facility, Camp Dodge in Johnston, IA houses the Iowa Army National Guard headquarters and provides training for medical and operational units. Approximately 600 Guard and Reserve medical personnel possess Role 1 and Role 2 capabilities and represent an important but underutilized readiness resource. At present, the Iowa Trauma System Plan does not explicitly address military integration and was not developed in collaboration with military trauma or emergency care representatives. There are no statewide memoranda of understanding (MOUs) authorizing military medical personnel to practice in civilian trauma centers for clinical readiness or contingency operations. Iowa's inclusive trauma system design and culture of collaboration create a favorable environment for military-civilian partnerships. The National Guard maintains local affiliation agreements with some civilian hospitals, demonstrating proof-of-concept for collaborative trauma training and education. These military civilian partnership agreements enable sustainment training within scope of practice for medical students, military medics, nurses, and physicians.

Military support is formally integrated into the state's broader disaster and emergency response framework through the Iowa Emergency Response Plan though not actively exercised. The state emergency response plan explicitly outlines National Guard roles in disaster operations, ensuring legal and operational pathways for activation. The Governor may activate National Guard resources during civil emergencies. Once activated, all military support is authorized under the operational control of the Military Division of the Department of Public Defense. Guard units can provide medical personnel, deploy field hospitals and ambulances, and support coordination at county and state levels. While conceptually effective for a scalable, integrated military-civilian surge response, this integration is not codified within the Iowa Trauma System Plan.

Iowa lacks formal statutory or regulatory mechanisms to integrate military assets into the Iowa trauma system. Military representatives are not consistently seated on the Trauma System Advisory Council (TSAC). Training and clinical readiness opportunities are fragmented and inconsistent across facilities. No system-wide agreements exist for credentialing or privileging of military personnel in civilian trauma centers. Finally, the absence of a reciprocal partnership framework for civilian or military mass casualty incidents (MCIs) creates a gap in contingency planning.

National best practice guidance emphasizes the need for integration of military and civilian systems, including mutual credentialing, clinical training, and readiness partnerships. Best-in-class states establish MOUs that permit military providers to work within civilian trauma centers for readiness. The Joint Trauma System (JTS), which serves as serves as the Department of Defense (DOD) trauma system strongly supports military civilian trauma system integration to ensure bidirectional data sharing and sustainment of trauma care skills as a national defense imperative.

Enhancing military integration will improve statewide trauma readiness, expand surge capacity, and strengthen Iowa's preparedness for disasters, MCIs, and the contingency of large-scale combat operations (LSCO). It will also support clinical readiness of Iowa's Guard and Reserve medical personnel, many of whom serve as frontline providers in both domestic disasters and combat deployments.

Recommendations

12.1. Foster active military representation on the Trauma System Advisory Council (TSAC) by Iowa National Guard and Reserve medical units.

12.2. Develop system-level memoranda of understanding (MOUs) between the lead agency, civilian trauma centers, and the Iowa National Guard and Reserve to authorize credentialing reciprocity and clinical participation of military personnel.

12.3. Incorporate military resources into the next iteration of the Iowa Trauma System Plan, aligning with the Iowa Emergency Response Plan, to clarify roles in mass casualty incidents and disaster response.

12.4. Create and maintain a comprehensive inventory of Iowa military medical personnel and specialties to improve planning and integration with civilian healthcare partners.

12.5. Consider development of military civilian training partnerships at Level I and Level II trauma centers as primary readiness platforms for Iowa National Guard and Reserve medical personnel.

Appendix A: Acronyms

AAAM – Association for the Advancement of Automotive Medicine
ACS – American College of Surgeons
AEMT – Advanced Emergency Medical Technician
ALS – Advanced Life Support
ASTHO – Association of State and Territorial Health Officials
ATS – American Trauma Society

BEMTS – Bureau of Emergency Medical and Trauma Services
BLS – Basic Life Support

CDC – Centers for Disease Control and Prevention
CHA – Community Health Assessment
CHIP – Community Health Improvement Plan
COT – Committee on Trauma
CQI – Continuous Quality Improvement

DMC – Data Management Committee
DUI – Driving Under the Influence
DoD – Department of Defense

ED – Emergency Department
EMR – Emergency Medical Responder
EMS – Emergency Medical Services
EMSC – Emergency Medical Services for Children
EMT – Emergency Medical Technician
HCC – Healthcare Coalition
HHS – Health and Human Services
HRSA – Health Resources and Services Administration

IVP – Injury and Violence Prevention

LOS – Length of Stay

MCI – Mass Casualty Incident
MOU – Memoranda of Understanding

NCOA – National Council on Aging
NTDB – National Trauma Data Bank

OEM – Office of Emergency Management

PHTLS – Prehospital Trauma Life Support
PI – Performance Improvement

QASP – Quality Assurance Standards and Protocols Committee

RMOCC – Regional Medical Operations Coordination Center
ROI – Return on Investment
RTTD – Rural Trauma Team Development

SCI – Spinal Cord Injury
SEQIC – System Evaluation and Quality Improvement Committee
STB – Stop the Bleed

TBI – Traumatic Brain Injury
TMD – Trauma Medical Director
TPM – Trauma Program Manager
TQIP – Trauma Quality Improvement Program
TSAC – Trauma System Advisory Council
TSC – Trauma Systems Consultation

Appendix B: Methodology

The Iowa Bureau of Emergency Medical and Trauma Services requested this consultative review of the Iowa 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 six nationally recognized trauma experts, including: two trauma surgeons, an emergency medicine physician, a state emergency medical services director, and two state trauma program managers. Biographical information about the 9 ACS TSC Review Team Members is provided in Appendix C.

The primary objective of the ACS TSC for the Iowa 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 lead agency. Other information publicly available on government and official websites was also assessed.

The ACS TSC Review Team convened for a site visit from September 22nd-25th, 2025 in Des Moines, IA. 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 Iowa 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 40 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 Iowa 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

Brian Eastridge, MD, FACS
Role: Trauma Surgeon
(Team Lead)

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).

Peter Fischer, MD, MS, NRP, FACS
Role: Trauma Surgeon, EMS Specialty Reviewer

Peter E. Fischer MD, MS, NRP is the Trauma Medical Director of Washington Regional Medical Center in Fayetteville, AR and an Adjunct Clinical Professor of Surgery for the University of Arkansas. He completed his residency in general surgery at the University of Tennessee at Memphis and subsequently a surgical critical care fellowship at Oregon Health and Science University in Portland, OR. Prior to and during residency he worked as a Firefighter/Paramedic. He was previously at Carolinas Medical Center in Charlotte, NC before returning to Memphis in 2016, and transitioning to Arkansas in 2025. He is the Medical Director for Hospital Wing Air Ambulance Service and serves as Medical Team Manager for Tennessee Task Force 1 (one of 28 FEMA Urban Search and Rescue Teams). He is the Vice Chair for the AR Committee on Trauma and the current Chair of the EMS Committee for the National COT. He has a strong clinical and research interest in prehospital trauma care and trauma system development.

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.

Christopher Kang, MD, FACEP, FAWM
Role: Emergency Medicine Physician

Christopher S. Kang, MD, FACEP, FAWM, is an emergency physician at Madigan Army Medical Center in Tacoma, Wash. He also serves on the faculty of the hospital's emergency medicine residency program. Dr. Kang has served at the state, regional, and national levels of various emergency and preparedness organizations as well as presented at state, national, and international meetings. He served on the Board of Directors of the American College of Emergency Physicians (ACEP) from 2015-2024, including President from 2022-2023. He also served as ACEP liaison to the American College of Surgeons Committee on Trauma and the

Center for National Trauma Research. He earned his medical degree and completed his residency in emergency medicine at Northwestern University in Chicago.

Fergus Laughridge, ASM, CPM
Role: EMS Director

With more than four decades of experience in emergency medical services and healthcare policy, He brings a wealth of expertise and commitment to assuring regulatory compliance for high performance and dynamic healthcare systems including trauma systems.
Mr. Laughridge has served as the Director of Nevada State Emergency Medical Systems and Trauma program where he was responsible for assuring the quality of out of hospital emergency medical and trauma services throughout Nevada. As State Director, he was involved with numerous federal and state activities relating to emergency preparedness and response. As President of the National Association of State Emergency Medical Services Official, he was instrumental in the formation of the Trauma Managers Council (TMC). The TMC provides state trauma programs a forum that is focused on developing and maintaining trauma systems.
Mr. Laughridge currently serves as the Health Director for Fort McDermitt Paiute Shoshone Tribe in McDermitt, Nevada. As Health Director, he is responsible for the continued development of comprehensive quality health care service delivery for American Indian populations.

Mr. Laughridge continually serves on various committees centered on quality patient care, trauma systems, emergency preparedness, behavioral health and credentialing of healthcare systems.

Elizabeth Atkins, MSN, RN, TCRN
Role: Trauma Program Manager

Elizabeth ‘Liz’ Atkins is the Executive Director of the Georgia Trauma Care Network Commission. Before joining the Georgia Trauma Commission, Liz most recently served as Executive Director of Trauma and Burn Services at Grady Memorial Hospital, an ACS-verified Level I trauma center, and ABA-verified Burn Center in Atlanta, Georgia. She has over 30 years of progressive clinical leadership experience in pediatric and adult trauma, cardiac, critical care, and flight nursing. Liz earned an associate degree in nursing from Drexel University in Philadelphia, PA, and has practiced critical care nursing along the East Coast before moving to the Atlanta area in 2005. Liz is a graduate of the Duke University master's program in nursing and healthcare leadership. Her work at Duke has led to the development of a novel approach to statewide trauma center performance evaluation, which has been put into practice within the Georgia Trauma System. She was the 2017 Finance Fellow for the Trauma Center Association of America (TCAA), completing a trauma center programmatic staffing chapter for the TCAA Finance Manual.

Liz is active in state and national organizations, including the Society of Trauma Nurses (STN), where she currently serves as President-Elect. She has previously served as Treasurer and

Director-at-Large and was Chair of the STN Annual Conference planning committee, Editorial Board member for the Journal of Trauma Nursing, and STN Liaison to the American College of Surgeons Committee on Trauma Education Pillar. Liz is the Past Chair of the TCAA Trauma Systems Committee and Advisory Board member of LifeLink Georgia. She has also served as Chair of the Georgia Committee for Trauma Excellence and is an accreditation site reviewer for the Pennsylvania Trauma Systems Foundation. Liz has presented nationally on trauma-related topics, including trauma performance improvement, trauma quality collaboratives, trauma center leadership, trauma finance, and trauma data quality management. She is a course director for Advanced Trauma Care for Nurses (ATCN) and faculty for the TCAA Trauma Medical Director Course. Liz has co-authored peer-reviewed publications on clinical trauma care, trauma systems, finance, 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	Affiliation/Company	Role
Adella J Boeding	University of Iowa Health Care - North Liberty	Trauma Verification Survey Team; Iowa ENA
Amber Campbell	Monroe County Hospital	TPM
Andrea Bladel	MercyOne Genesis Davenport	TPM; Iowa ENA; Iowa Hospital Association
Andrea Wernimont	MercyOne North Iowa	TPM
Andrew Trau	UnityPoint Health Des Moines	Injury Prevention and Outreach Coordinator
Ann Lengeling	Stewart Memorial Community Hospital	Hospital Administrator
Ashley Funkhauser	Iowa HHS	Communications
Bailey Krull	Waverly Health Center	TPM; Trauma Verification Survey Team; Hospital Administrator
Bailey Rickels	University of Iowa Health Care	Injury Prevention
Beth Fuchsen	UnityPoint Health Des Moines	TPM; Trauma Verification Survey Team; Iowa ENA; TSAC Representative
Brad Leedom	Monroe County Hospital	Trauma Care Provider - ED
Brad VandeLune	Iowa HHS - Bureau of Emergency Medical and Trauma Services	Bureau Chief
Brenna Winters	UnityPoint Allen	TPM
Brent Spear	Iowa HHS - Bureau of Preparedness and Response	Bureau Chief, Preparedness and Response
Brett Tjepkes	Governor's Traffic Safety Bureau	GTSB
Brian Rayhons	West Des Moines EMS	EMS Provider
Brooke Thielen	CHI Health Mercy Council Bluffs	Trauma Care Provider - RN
Cambray Penning	Grundy County Memorial Hospital	TPM
Carlos Pelaez, MD, FACS	The Iowa Clinic; UPH Iowa Methodist Medical Center	TMD; ACS-COT Iowa Chapter; TSAC Representative; Trauma Verification Survey Team
Carol Fridal		Trauma Verification Survey Team
Cassandra Neumann	Adair County Memorial Hospital	TPM
Charles Gipson	MEDIC EMS of Scott County	EMS Provider
Chelsy Funaro	UPH Iowa Methodist Medical Center / Blank Children's Hospital	Pediatric TPM; Trauma Verification Survey Team
Chris Dahlstrom	MercyOne Elkader	EMS
Cieara Reed	Jackson County Regional Health Center	TPM
Colleen Powell	Governor’s Traffic Safety Bureau	GTSB
Craig Liscum	UnityPoint Health St. Luke's Cedar Rapids; St. Luke's Marion ED	TPM
Dan Davis	Des Moines Fire Department	EMS Provider
Danielle Warner	Sioux Center Health	TPM

David Stilley, MD	Iowa HHS	State Health Department; DMAT; AED Program Medical Director
David Thomas, MD	SEQIC	Trauma Verification Survey Team; TSAC; SEQIC Representative
Debra Sweeney	MercyOne	Hospital Administrative Assistant
Denyse Gipple	Keokuk County Hospital	TPM
Dionne Skeete, MD, FACS	University of Iowa Health Care	TMD; ACS-COT Iowa Chapter; Trauma Verification Survey Team
Dustin Derflinger, DO	Des Moines Fire Department	EMS Medical Director
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