MINNESOTA
STATEWIDE TRAUMA SYSTEM

State Trauma Advisory Council Strategic Initiatives Work Group Final Report

Introduction

Background

The State Trauma Advisory Council's (STAC) Strategic Initiatives Work Group was formed by STAC Chair Dr. Michael McGonigal to assist the STAC in identifying initiatives with the greatest potential to remove barriers to optimal trauma care. The work group's recommendations will guide the STAC's strategic priorities in the coming years. The group began meeting in January 2021.

Prior to the formation of the work group, trauma system stakeholders contributed ideas for strategic initiatives, which resulted in a comprehensive list of opportunities for the trauma system. State Trauma Advisory Council members then independently ranked the list items by priority and the results were aggregated. (See Appendix A*: STAC Ranked Priorities*.)

Charge

The work group was charged to:

- Review the State Trauma Advisory Council's 2019 ranked list of possible initiatives.
- Identify initiatives that have the greatest potential to remove barriers to the best possible care and improve outcomes for trauma patients across the state.
- Prioritize the initiatives considering:
  - How significant the impact is likely to be, and
  - How achievable the initiatives are, given the current resources and capabilities of the trauma system.
- Make recommendations to the STAC.

Members

The multi-disciplinary work group membership consisted of both STAC members and trauma care professionals with a special interest in this topic. The State Trauma Advisory Council and Minnesota Department of Health acknowledge their patience, collaboration, respectful diplomacy and dedicated effort in navigating this multi-faceted topic.

- Maria Flor, RN; STAC Member

- Julie Gutzmer, MD; STAC Member
- John Lyng, MD; STAC Member
- Laura Anderson, RN; Abbott Northwestern Hospital
- Michael Doering, RN; M Health Fairview
- Peggy Sue Garber, RN; Mayo Clinic Health System – Fairmont
- Jodi Korpela, Registrar; St. Luke's Hospital
- Paul Louiselle, CEO; Pediatric Surgical Associates
- Jason McDonald, RN; St. Cloud Hospital
- Cory Pylkka, RN; Fairview Range Medical Center
- Dawn Rolling, RN; M Health Fairview
- Scott Tomek, Paramedic; Allina Health System
- Linda Vogel, RN; Essential St. Mary's Medical Center

Work Group Process

Like the STAC, work group members independently ranked the list of potential initiatives. (See Appendix B: *Work Group Ranked Priorities*.) Those results were also aggregated and, together with the STAC's ranking results, served as a basis for the work group's discussion.

Each potential initiative—regardless of the item's priority ranking—was discussed during a series of meetings between January and August 2021 sufficiently to ensure that each member understood the topic. For each, they considered the *significance*, *achievability*, and *priority*.

- *Significance* means how much impact the initiative is likely to have on trauma patient care, quality, and outcomes. Since many of the potential initiatives are necessarily system-level initiatives, characterizing significance can be abstract.
- *Achievable* means how likely the STAC can accomplish the initiative with the resources currently available to the trauma system. Resources can include funding, staff, political support, time, etc. If resources increase, achievability rankings should be reassessed, and priorities reconsidered.
- *Priority* means how important it is that the STAC undertake this activity in comparison to its other activities and responsibilities. Since several entities share responsibilities for the operation of the trauma system, (e.g., RTACs, hospitals, EMS agencies, physicians, nurses, paramedics) it is possible for an initiative to be a high priority for the *trauma system* but a low priority for the *STAC*.

Executive Summary

1. Support MDH and partner efforts to secure adequate and stable funding for the trauma system.
2. Expand the trauma registry dataset to objectively collect factors that contribute to transfer delays and quantify the amount of time the transfers are delayed when they do occur.

3. Support efforts to:
    - Obtain consistent, ongoing access to EMS registry data.
    - Obtain the remaining the North and South Dakota Level 2 trauma registry records.
4. Monitor the benchmarks that the STAC can measure with the current datasets. Add additional benchmark reports as datasets become complete and/or available.
5. Monitor trauma care by critically reviewing site visit reports for evidence of widespread opportunity to improve trauma care practice, particularly associated with managing conditions or performing procedures known to be challenging, difficult, prone to confusion or wide variation, or low frequency/high-risk.
6. Actively seek opportunities to support clinical practice of EMS and hospital clinicians by identifying practice resources that encourages a standardize approach to these conditions and/or procedures.
7. Maintain an index of practice resources to which clinicians can refer and actively encourage clinicians to refer to it for guidance.
8. Investigate and review the formal and informal networking that currently occurs throughout the trauma system. Make note of what is working well, and support and encourage the development of networks across the system.
9. Establish an expectation of RTACs to report salient activities and plans to the STAC on a regular schedule, perhaps biannually, through a formal medium.
10. Establish an expectation of STAC to ensure representation at RTAC's quarterly Leadership Forum where the status of hospitals in RTACs' respective regions can be discussed.
11. Study and consider implementing mentorship programs for trauma program managers and medical directors.
12. Develop a more advanced course for experienced trauma program leaders that provides the next level of information beyond Trauma Program 101 to provide more in-depth and insightful advice.

Top Five Findings and Recommendations

Five potential initiatives rose to the top of the list as highly significant, a high priority for the STAC, and reasonably achievable. They fall within four domains:

- Data Analysis
- Clinical Practice
- Trauma Hospital Leadership
- Inter-Facility Transfer Resources

Data Analysis

Analyze Data to Identify and Address Issues in Trauma Care

Significance: High **Achievability**: Medium **Priority**: High

Benchmark Statewide System Performance

Significance: High **Achievability**: High **Priority**: High

The analysis and use of data to drive policy decisions and to identify both operational and clinical performance-related opportunities is broadly considered to be a high priority by STAC members and system stakeholders alike.

Benchmarking statewide trauma system performance is the process of identifying objective measures that characterize efficient and effective operation of the system, and then monitoring those measures over time to ensure that those components of the system continue to function within acceptable parameters. Benchmarks require a steady and reliable source of data that can consistently be processed and analyzed to produce periodic benchmark reports.

The trauma system databank consists of component databases of varying robustness:

- Minnesota trauma registry
- Minnesota EMS registry (legacy only; no current data)
- Minnesota death records
- North and South Dakota Level 1 and 2 trauma registries (partial; 3 of 5 hospitals reporting)

While the system has a modestly robust databank, other injury-related datasets, such as crash records and rehabilitation data, are not part of the trauma system databank and, therefore, their elements are not available for use in benchmarking.

Still, this work group does not recommend the pursuit of additional dataset. Only 30 percent of a full-time equivalent (FTE) is allocated for data analysis and no FTE is allocated for data management. Managing and analyzing even the system's current volume of data requires more resources to be allocated to data management and epidemiological analysis than is currently possible. It is futile to build a robust data repository without providing the staff resources needed to transform the data into actionable information.

But benchmarking and analysis of information is important for data-driven decision making. The work group recommends that the STAC do what can be done with the current epidemiological and data management resources while supporting efforts to increase these resources to meet the demands of the system.

Recommendation

1. Monitor the benchmarks that the STAC can measure with the current datasets. Add additional benchmark reports as datasets become complete and/or available. Current benchmark measures that can be measured are likely related to:
    - Trauma death after admission to Level 3 or Level 4 Trauma Hospital
    - Admitted to a Level 3 or Level 4 Trauma Hospital then transferred

- Transferred to an undesignated hospital

2. Utilize the existing data judiciously by prioritizing inquiries so as not to overwhelm the system's limited data resources.
3. Support efforts to:
   - Obtain consistent, ongoing access to EMS registry data.
   - Obtain the remaining the North and South Dakota Level 2 trauma registry records.

Clinical Practice

Identify Clinical Practice Resources (e.g., Practice Management Guidelines) For Doctors, Nurses and/or EMS Personnel

Significance: High **Achievability**: High **Priority**: High

Written practice standards, such as practice management guidelines, can reduce variations in care and improve overall outcomes within a hospital or ambulance service. Practice standards adopted broadly across many hospitals and ambulance services can reduce variations in care and improve population outcomes across the trauma system. The STAC is uniquely positioned to broadly monitor trauma care practice through the review of Level 3 and 4 Trauma Hospital site visit reports and identify opportunities where more standardized practice might benefit the population.

Recommendation

1. Monitor trauma care by critically reviewing site visit reports for evidence of widespread opportunity to improve trauma care practice, particularly associated with managing conditions or performing procedures known to be challenging, difficult, prone to confusion or wide variation, or low frequency/high-risk.
2. Actively seek opportunities to support clinical practice of EMS and hospital clinicians by identifying practice resources that encourages a standardized approach to these conditions and/or procedures.
3. Maintain an index of practice resources to which clinicians can refer and actively encourage clinicians to refer to it for guidance.

Trauma Hospital Leadership

Provide Standardized Orientation for Hospital Trauma Program Leaders—Program Managers and Medical Directors

Significance: High **Achievability**: High **Priority**: High

Level 3 or 4 trauma program managers and medical directors require unique knowledge to lead their hospitals' trauma programs that is not intuitive, and educational resources are not widely available. Programs also experience frequent turnover of these positions, which compounds an already challenging situation.

Some activity is currently occurring:

- Trauma system staff offer an elementary orientation for trauma program managers and medical directors (i.e., *Trauma Program 101*). Taken too soon, the information in this class lacks context and is overwhelming.
- Some regional trauma advisory committees (RTACS) have created an orientation manual and shared it broadly.
- Trauma program managers can avail themselves of quarterly, statewide networking meetings where they can share best practices and consult with colleagues about ideas and problems. Some health systems have established system-level trauma program networks too.

But more is needed.

Recommendation

1. Study and consider implementing mentorship programs for trauma program managers and medical directors. Mentoring can be an extremely effective method of transferring important information from seasoned to developing leaders. A work group of knowledgeable stakeholders can develop options and address questions such as what group is best suited to lead such an initiative, what the STAC's role should be, how to identify and connect mentors and mentees.
2. Develop a more advanced course for experienced trauma program leaders that provides the next level of information beyond *Trauma Program 101* to provide more in-depth and insightful advice. Topic might be, for example, advocating with administration, creating culture change from trauma program up, influencing trauma care with intermittent clinicians, succeeding at the site visit, inspiring staff to clinical excellence.
3. Investigate and review the formal and informal networking that currently occurs throughout the trauma system. Make note of what is working well, and support and encourage the development of networks across the system.

Inter-Facility Transfer Resources

Increase the Capacity and Stability of the Medical Transportation System/Increase Availability of Transfer Resources

Significance: High **Achievability**: Medium **Priority**: High

The past years have seen the systemization of health care—first the systemization of trauma care through the trauma system, then stroke care through the stroke system. Other conditions benefit from systemized care too. Systemized care addresses the urgent and complex needs of patients with conditions that are best treated at hospitals with the depth and breadth of resources amassed for that purpose. Since resources can sustain only a few such hospitals, systemized care depends heavily on a robust and stable transportation infrastructure that can move patients to those hospitals.

Anecdotal reports suggest that hospitals may make transfer decisions quickly but spend a considerable amount of time arranging for transfer, often calling several agencies before

finding one that is available to transfer a trauma patient and provide the needed skill level (e.g., advanced vs. basic life support). Ambulance services are subject to weather, competing demands from 911 activity and transfer requests from other area hospitals, and staff shortages.

But transfer delays are also caused by factors other than those related to EMS. Sending and receiving hospitals can contribute to delays, as can patients and their families.

Mitigating transfer delays is a primary goal of the trauma system. It is difficult to target solutions when no quantifiable data exists to guide the system toward corrective actions.

Recommendations

1. Expand the trauma registry dataset to objectively collect factors that contribute to transfer delays and quantify the amount of time the transfers are delayed when they do occur. This is a first step toward establishing a performance standard from which variation can be detected and measured.

For a later time: When sufficient resource become available, collaborate with other systems of care to evaluate the utility of a one-call center to which hospitals can place their interfacility transport request. Such a service would free limited hospital staff for patient care-related activities rather than logistical coordination.

Additional Recommendations

Other potential initiatives were considered significant, but not a high priority for the STAC or have low achievability at the present time. Others were less significant, but achievable. Some recommendations that follow are appropriate for immediate action, while others point to needs that might be addressed when better funding for the trauma system is achieved. These potential initiatives should be periodically reviewed and reprioritized as resources are added to the trauma system.

Funding

Actively seek an additional/alternative funding source for the trauma system

Significance: High **Achievability**: Medium **Priority**: Low

Address uncompensated trauma care

Significance: High **Achievability**: Low **Priority**: Low

Securing adequate and stable funding is perhaps the more important issue facing the trauma system. The trauma system's operating budget exceed its appropriation by more than 100 percent. Minnesota's six regional trauma advisory committees (RTACs) are unfunded and operate largely through the in-kind support of their members.

A fully funded trauma system has sufficient staff to provide leadership, manage hospital designations, manage and analyze data to monitor trauma care and measure performance, and supports education, injury prevention and outreach activities. It facilitates performance improvement through case reviews and subsidizes ambulance services' and hospitals'

uncompensated trauma care to maintain an infrastructure that is prepared to provide the resources trauma patients need. This model to improve outcomes and reduce mortality from injury is expensive, but a wise investment.

The primary responsibility for funding the trauma system rests with MDH, so It is not a high priority for the STAC, specifically.

1. Support MDH and partner efforts to secure adequate and stable funding for the trauma system.

Data Analysis

Study and optimize EMS field triage of trauma patients

Significance: High **Achievability**: Low* **Priority**: High

1. When EMS data and sufficient analytical resources become available, evaluate the effectiveness of the EMS field triage guidelines at directing major trauma patients to their optimal destination. Consider comparing the effectiveness of the Minnesota field triage guideline to the guideline recommended by the Centers for Disease Control.

* Achievability is low because there is currently no access to EMS data and insufficient epidemiological resources. Achievability will improve as these resources increase, at which time the STAC should consider this for more immediate action.

Increase the sophistication and comprehensiveness of data validation activities

Significance: High **Achievability**: Low **Priority**: Medium

Some data validation activities occur today, but comprehensive data validation is time consuming. Data is important to the system; validity is important for credibility; and there is wide variation in registrar training, knowledge, and expertise.

1. As resources become available, increase data validation activities. Use results to target education.

Build RTAC's proficiency in accessing and using data

Significance: Medium **Achievability**: High **Priority**: Low

It is important to RTACs to have access to data about their regions. Using the data effectively also involves learning to extract, clean, validate and analyze it. RTAC leaders work with MDH staff to develop training opportunities. As such, this is low priority for STAC action.

Incorporate rehabilitation into the trauma system

Significance: Medium **Achievability**: High **Priority**: Low

Incorporating rehabilitation data into the trauma system would provide the ability to assess patient outcomes though discharge to the community, which is the goal of a mature trauma system. The current level of resources will not sustain this activity.

Expand the trauma databank to include additional datasets (e.g., traffic, death, payer, rehabilitation)

Significance: Medium **Achievability**: Medium **Priority**: Low

1. As resources become available, consider expanding the trauma databank as need dictates.

Study and measure post trauma care; compare outcomes

Significance: Medium **Achievability**: Low **Priority**: Low

Benchmark regional system performance

Significance: Medium **Achievability**: Low **Priority**: Low

Benchmark hospital performance/outcomes

Significance: Medium **Achievability**: Low **Priority**: Low

Risk-adjusted analysis of trauma outcomes is not possible with the trauma system's current epidemiological resources.

1. As resources become available, consider engaging in risk-adjusted analysis of trauma outcomes by hospital. If risk-adjustment is not possible because of insufficient numbers, compare against national data.
2. When resources become available, provide benchmark reports to RTACs and individual hospitals comparing their performance on trauma system benchmark measures.

Identify geographic locations and causes of trauma deaths

Significance: Low **Achievability**: Medium **Priority**: Low

Locations of traffic deaths are tracked by the Department of Public Safety. The utility of mapping other injury fatalities is not immediately clear. As such, this is a low priority for STAC action.

Clinical Practice

Identify patients likely to benefit from aeromedical transport

Significance: High **Achievability**: Low **Priority**: Medium

It is the role of a fully functional trauma system to monitor for overuse of aeromedical transport, both to preserve a scarce commodity and prevent unnecessary costs. Clinical literature has produced some algorithms that can be helpful in identifying patients likely to benefit from aeromedical transport. But this can vary by system, and Minnesota has no system-specific data.

1. When EMS data becomes available, incorporate the use of aeromedical transportation into the trauma system's benchmark measures.
2. When EMS data and sufficient analytical resources become available, consider identifying patients likely to benefit from aeromedical transport within the Minnesota trauma system.

Explore the administration of whole blood in the pre-hospital theater

Significance: Medium **Achievability**: Low **Priority**: Low

A few EMS systems in the country have successfully implemented the use of whole blood in their urban service areas. Rural trauma patients are likely to see the greatest benefit from pre-hospital blood administration, but logistics are virtually insurmountable today. As such, this is a low priority for STAC action.

Promote community paramedic utilization for post-acute care

Significance: Low **Achievability**: Medium **Priority**: Low

Community paramedics have traditionally provided longitudinal chronic care rather than post-acute care. The work group is not aware of a need to expand the role into the post trauma acute care environment.

Increase the breadth of trauma training available to physicians, surgeons, advance practice providers and nurses

Significance: Low **Achievability**: Low **Priority**: Low

Trauma care skills are not consistently smooth and competent across the system due to inexperience. Training combats skill decay resulting from inexperience.

It is the goal of the trauma system for every clinician to be competent, comfortable and well-practiced in their trauma care skills. Barriers to achieving that goal are likely not related to the *number* of educational opportunities, but rather the *cost* of those opportunities and the clinicians' motivation to avail themselves.

1. Support efforts to fund trauma training for clinicians and to remove barriers to building a competent, comfortable and well-practiced clinical workforce.

Networking

Increase information sharing between STAC and RTACs so that RTACs know what is happening with hospitals in their regions

Significance: Medium **Achievability**: High **Priority**: Medium

1. Establish an expectation of RTACs to report salient activities and plans to the STAC on a regular schedule, perhaps biannually, through a formal medium. This could occur in writing, in summary, by questionnaire or bullet points, but needn't be an item on the STAC's agenda.
2. Establish an expectation of STAC to ensure representation at RTAC's quarterly Leadership Forum where the status of hospitals in RTACs' respective regions can be discussed. This could be accomplished by MDH staff on the STAC's behalf.

Injury Prevention and Outreach

Integrate hospitals into Toward Zero Deaths networks and activities

Significance: Medium **Achievability**: Medium **Priority**: Low

Hospitals, often in collaboration with their RTACs, engage with their TZD networks to varying degrees. This is an important system initiative, but a low priority for STAC action.

Develop and promote injury prevention activities

Significance: Medium **Achievability**: Medium **Priority**: Low

Place bleeding control equipment in public areas

Significance: Medium **Achievability**: Low **Priority**: Low

The provision of injury prevention activities is suited for local and regional organizations that are directly connected to their communities rather than the STAC. The STAC's role is largely supportive.

1. Advocate for funding and resources to support local and regional injury prevention activities.
2. As resources become available, consider developing a comprehensive accounting of injury prevention activities that are occurring across the state. Provide leadership for the coordination of need-based injury prevention activities that are driven by injury data and seek to reduce redundancy.

Engage in activities to increase public awareness of trauma epidemiology and use of the trauma system

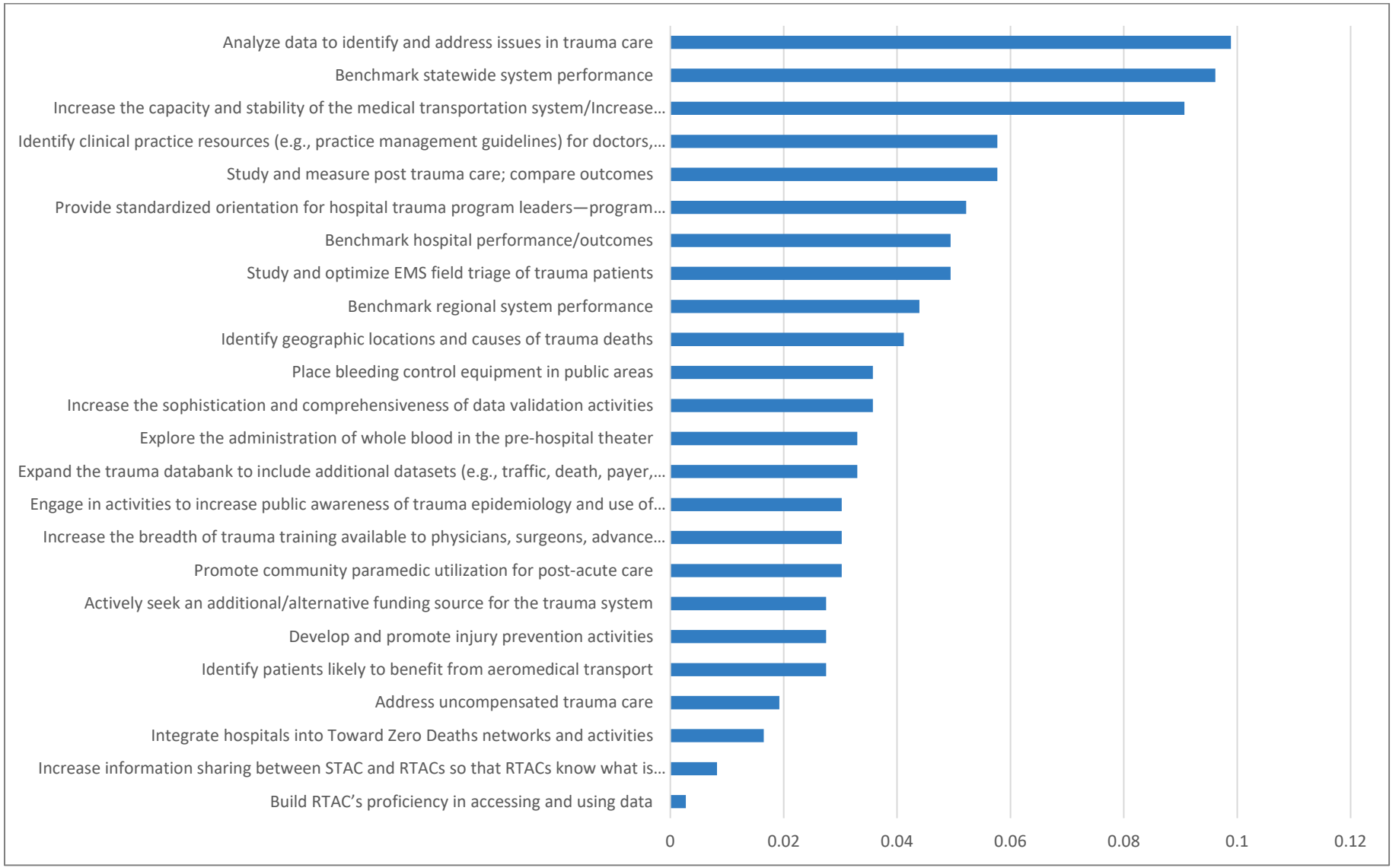
Significance: Low **Achievability**: Medium **Priority**: Low

Public awareness is commonly incorporated into local and regional outreach activities. This is a low priority for STAC action.

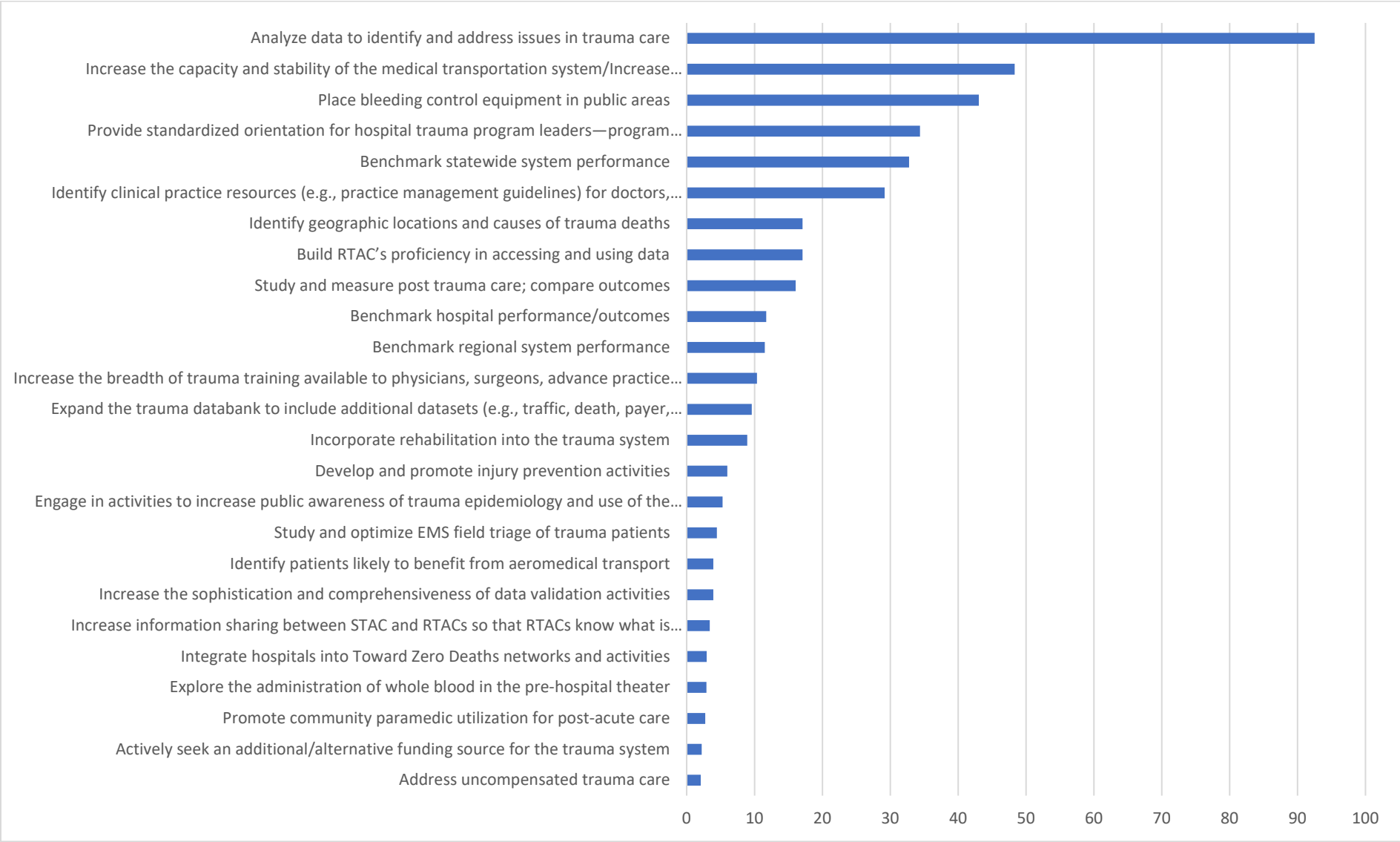
Appendix A: STAC Ranked Priorities

Weighted Rank Order	Priority
1	Analyze data to identify and address issues in trauma care
2	Benchmark statewide system performance
3	Increase the capacity and stability of the medical transportation system/Increase availability of transfer resources
4	Study and measure post trauma care; compare outcomes
4	Identify clinical practice resources (e.g., practice management guidelines) for doctors, nurses and/or EMS personnel
6	Provide standardized orientation for hospital trauma program leaders—program managers and medical directors
7	Study and optimize EMS field triage of trauma patients
7	Benchmark hospital performance/outcomes
9	Benchmark regional system performance
10	Identify geographic locations and causes of trauma deaths
11	Increase the sophistication and comprehensiveness of data validation activities
11	Place bleeding control equipment in public areas
13	Explore the administration of whole blood in the pre-hospital theater
13	Expand the trauma databank to include additional datasets (e.g., traffic, death, payer, rehabilitation)
15	Engage in activities to increase public awareness of trauma epidemiology and use of the trauma system
15	Increase the breadth of trauma training available to physicians, surgeons, advance practice providers and nurses
15	Promote community paramedic utilization for post-acute care
18	Identify patients likely to benefit from aeromedical transport
18	Develop and promote injury prevention activities
18	Actively seek an additional/alternative funding source for the trauma system
21	Address uncompensated trauma care
22	Integrate hospitals into Toward Zero Deaths networks and activities
23	Increase information sharing between STAC and RTACs so that RTACs know what is happening with hospitals in their regions
24	Develop and promote injury prevention activities
25	Build RTAC's proficiency in accessing and using data
NR	Incorporate rehabilitation into the trauma system

Weighted Ranking



Appendix B: Work Group Ranked Priorities

Weighted Rank Order	Priority
1	Analyze data to identify and address issues in trauma care
2	Increase the capacity and stability of the medical transportation system/Increase availability of transfer resources
3	Place bleeding control equipment in public areas
4	Provide standardized orientation for hospital trauma program leaders—program managers and medical directors
5	Benchmark statewide system performance
6	Identify clinical practice resources (e.g., practice management guidelines) for doctors, nurses and/or EMS personnel
7	Identify geographic locations and causes of trauma deaths
8	Build RTAC's proficiency in accessing and using data
9	Study and measure post trauma care; compare outcomes
10	Benchmark hospital performance/outcomes
11	Benchmark regional system performance
12	Increase the breadth of trauma training available to physicians, surgeons, advance practice providers and nurses
13	Expand the trauma databank to include additional datasets (e.g., traffic, death, payer, rehabilitation)
14	Incorporate rehabilitation into the trauma system
15	Develop and promote injury prevention activities
16	Engage in activities to increase public awareness of trauma epidemiology and use of the trauma system
17	Study and optimize EMS field triage of trauma patients
18	Increase the sophistication and comprehensiveness of data validation activities
19	Identify patients likely to benefit from aeromedical transport
20	Increase information sharing between STAC and RTACs so that RTACs know what is happening with hospitals in their regions
21	Integrate hospitals into Toward Zero Deaths networks and activities
22	Explore the administration of whole blood in the pre-hospital theater
23	Promote community paramedic utilization for post-acute care
21	Actively seek an additional/alternative funding source for the trauma system
25	Address uncompensated trauma care

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