

Minnesota Comprehensive Statewide Trauma System Plan

December 2004

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Trauma Systems Planning Subcommittee

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Preface

Historical Background

Previous attempts over the past 20 years to design and implement a statewide trauma system in Minnesota failed largely for lack of input and upfront involvement from rural trauma care providers. These earlier efforts focused on quickly moving the critically injured patient exclusively to the large “trauma centers” in the metro areas. Because these centers are equipped with advanced technology and highly trained surgical specialist capable of treating severe injuries on a 24/7 basis, and because morbidity and mortality dramatically increase after one hour from the time of injury to definitive care (the “golden hour”), it was felt that rapid transport to these facilities offered the best outcomes for critically injured patients. This “exclusive” system approach, though consistent with national trends of the time, failed to address the needs of, and potential for, rural trauma care providers providing appropriate early intervention in evaluating and stabilizing trauma patients. As a result, these efforts did not achieve widespread support.

Since those earlier years, federal and state planners have come to realize that building an “inclusive” trauma system, whereby efforts are clearly inclusive of rural providers, will have a greater affect on trauma outcomes, especially for those with serious but survivable injuries.

Two essentials of a successful inclusive trauma system are rural-based education and establishing in-house performance improvement (PI) processes to evaluate and enhance trauma care provided at the local level. The most beneficial trauma education should be realistic, affordable, and accessible to the rural providers. Similarly, local PI efforts must be data-driven in order to best affect the quality of trauma care. Ultimately, both are hi-lighted in the 2004 Minnesota Comprehensive Statewide Trauma System Plan.

Development of the Minnesota Comprehensive Statewide Trauma System Plan

In 2000, with the support of a small federal grant, the Minnesota EMS Regulatory Board (EMSRB) assembled the Trauma Core Work Group (TCWG), a large committee of interested stakeholders, to begin a new effort to develop a statewide trauma system. By September 2002, the TCWG along with the EMSRB felt the best way to further this effort was to continue their advocacy and involvement, but to ask the Minnesota Department of Health (MDH) to assume the lead agency role. The MDH accepted.

In April 2003, Dianne Mandernach, Commissioner of Health, appointed 14 people to the Trauma System Planning Subcommittee (TSPS) to continue the previous efforts of the EMSRB and the TCWG. At that time, Commissioner Mandernach charged the TSPS to, “Develop and publish a draft plan for a comprehensive trauma system for Minnesota.” In December 2003, after eight months of meetings, the TSPS completed its work.

Four important concepts guided the plan development:

- The system is designed to rapidly evaluate and treat severe trauma; it does not address medical emergencies or “routine” injury.
- The proposed system will not disrupt existing referral patterns; rather the system seeks to continually improve the quality of care we provide.

- Proper system support and education will allow many trauma patients to be treated in their own communities; with those requiring a higher level of care assessed, stabilized and transferred rapidly and efficiently.
- The system needs a universal feel, with some variations to accommodate the wide geographic, population and resources variances found in the state; the plan will have general state guidelines, but encourages enhancements at the local or regional levels.

The goal is for all hospitals to voluntarily participate in the state trauma system, making it truly a statewide cooperative effort in caring for critically injured patients. No hospital will be required to participate at a level other than what they self-select and for which they qualify for state designation or for verification by the American College of Surgeons.

The system is designed to match facility resources with the needs of the patient as quickly and efficiently as possible.

Conclusion

The “draft” plan was widely distributed and presented to numerous trauma care stakeholders around the state for eight months. During those engagements, the MDH collected and published nine pages of questions, comments, and suggestions. Remarkably, there was widespread industry support for this plan - many of the more contentious questions and concerns from previous efforts were addressed by the TSPS in writing the plan.

On October 28, 2004, after reviewing the comments and questions, and after hearing from several of the pilot sites that tested the plan, the TCWG came to consensus to amend the draft plan to include the replies to the many questions and comments, and to re-publish it as the “final plan.” Within these pages is the “final plan.”

Minnesota Trauma Systems Planning Subcommittee Membership and *Other Participants

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State EMS Trauma Triage and Transport Guidelines

Introduction

The State EMS trauma triage and transportation guideline is designed to assist EMS providers and medical directors in identifying critical trauma patients who will most benefit from the state trauma system. These guidelines also provide general direction for how these critical trauma patients should rapidly and efficiently access definitive trauma care through the local EMS system. These proposed guidelines will apply to all Minnesota licensed ambulance services and will be regulated by the EMS Regulatory Board (EMSRB).

It is unrealistic and unproductive to expect a single EMS guideline to appropriately address every local and regional resource. Therefore, proposed State EMS Trauma Triage and Transport Guideline will provide general goals and parameters, which will be implemented at the local and/or regional level. As a result, every licensed Minnesota ambulance service will have its own specific trauma triage and transport guideline that best addresses the goals and parameters of the state guideline. It is expected that these local and/or regional plans be in writing, signed by the ambulance service's medical director, and maintained and available for review.

Ambulance services wishing to deviate from the state goals and parameters to better meet local or regional trauma resources may do so. In these situations, the EMSRB must review and approve them prior to local adoption.

- All EMS medical directors are encouraged to participate in the EMSRB's Medical Direction Standing Advisory Committee (MDSAC), especially those who will propose local changes to the state guidelines. Information about this committee is available at 612/627-6000 or <http://www.emsrb.state.mn.us/mdsac.asp>.

Currently, the EMSRB does not have legislative authority to regulate this area of ambulance operations. The draft trauma plan assumes that the EMSRB will desire and seek this statutory change in concert with any future State Trauma System legislation proposed by the Minnesota Department of Health.

“30 Minute Rule” - Goal and Parameters

The primary goal of the EMS trauma triage and transportation guideline is to assure that trauma patients who meet any of the “Critical Trauma Patient Indicators” are transported to the highest state designated trauma facility within 30 minutes transport time - the 30 minute rule. It is recognized, however, that there are some areas of the state where geography and/or weather dictate longer transport times than this goal. In these instances, local guidelines should indicate transportation to the closest state designated trauma facility.

Often, the highest state designated trauma facility within 30 minutes will be the local Level IV (*see “Designated Hospitals as Trauma Centers” in the next section*) designated hospital. In these situations, when the transport hospital is a Level IV, the EMS providers should quickly initiate transfer arrangements according to local protocol. (e.g. In one Minnesota community, this is accomplished by the on-scene EMT's, who are expected to activate the local hospital's trauma team response and initiate the launch of a medical helicopter to respond to the hospital).

There will be occasions when a critical trauma patient is transported to the highest-level designated trauma facility within 30 minutes transport time, resulting in the “bypass” of a closer but lower designated facility (e.g. bypass of a Level III for transport to a Level I or II).

Examples of Potential “Bypass” Situations

- *Suspected spinal cord injuries should be directed to a Level I or II trauma facility as soon as possible - if there is no airway or breathing compromise*
- *Burns with > 20% TBSA of 2nd or 3rd degrees should be directed to a Burn Center as soon as possible*
- *Penetrating head injury or depressed skull fractures*
- *Unstable pelvic fractures*
- *Multiple long bone fractures*
- *Multiple system injuries (e.g. head and chest, chest and abdomen)*

The intent of a “bypass” is to avoid under-triage of a critical trauma patient and to eliminate delaying patient admission to definitive care.

Local resources, however, will drive this issue. Level III facilities, for example, often differ in their ability and resources to care for certain injuries. Therefore, local trauma triage and transport guidelines should address specific injuries that the local Level III is capable of treating - avoiding over-triage of patients who can be treated locally without the need for a transfer. In these situations, it may not be appropriate for the patient to bypass a Level III for a Level I or II.

Similarly, it would not be appropriate for a patient to by-pass a Level II facility for transport to a Level I – even if the Level I is within the 30 minute guideline – if the Level II is capable of providing definitive care. Again, coordination at the local and/or regional level must clearly address these sorts of situations, bearing in mind always what is best for the patient.

When in doubt, the state trauma system will promote over-triage vs. under-triage. It is always better for the patient to err on the side of transport to a higher level of trauma care than to transport to a lower level of trauma care that results in unnecessary transfers and delays to definitive care.

Exception to the “30 Minute Rule”

A compromised airway is a situation for ignoring the “30 minute” standard and transporting immediately to the nearest designated trauma facility, whatever its level. It is imperative that a secure airway is established as soon as possible in a severe trauma case.

Examples of the Exception to the “30 Minute Rule”

- *Compromised airway and unable to intubate in the pre-hospital setting*
- *GCS < 8 or AVPU – P or U that cannot be intubated in the pre-hospital setting*

Local guidelines must address the quickest way to transport the critical trauma patient to the appropriate hospital. This should include the use of aeromedical services and/or ALS intercepts as a means of providing higher-level pre-hospital care without delaying scene time. In general, if aeromedical services are available within 15 minutes, delaying transport for a helicopter scene

response may be appropriate. Otherwise, transportation should be initiated, with aeromedical services directed to meet the patient at the transport hospital.

In cases such as prolonged extrication, however, professional judgment by EMS providers is needed. The 15-minute response “clock” would still begin upon arrival of EMS at the scene, but if aeromedical resources can arrive on-scene before the extrication is completed (though it took longer than 15 minutes), then it clearly benefits the patient to have those resources make a scene response.

In the acute setting, EMS providers and/or on-line medical control may override these guidelines if it is in the best interest of the patient. In these instances, the EMS medical director must review the case with the EMS crew for appropriateness and for potential educational follow-up. Consultation with the State (and Regional – if available) Trauma Advisory Council (STAC) – Performance Improvement committee should be available to all medical directors.

Note: No critical trauma patient should be transported to a facility not participating in the state trauma system unless no other reasonable alternative is available – for instance, the next closest facility is more than 30 minutes away.

Local and / or Regional EMS Trauma Patient Triage and Transportation Guideline Development

1. Determine trauma facility designation and capabilities of all hospitals within 30 minutes of the PSA borders and establish transport directives according to state parameters.
2. Develop and implement guidelines for activation of aeromedical and/or ALS intercept according to local resources.
3. Develop and implement a reporting and follow-up mechanism for guideline deviations.
4. If local and / or regional guidelines deviate from the state parameters, arrange for EMSRB review.

Critical Trauma Patient Indicators

Following are the indicators to assist EMS providers in determining which trauma patients meet the transport parameters of the state guidelines. Any one or more of the following indicators should activate the local trauma transport guidelines. It is important to emphasize that the following indicators must be related to a traumatic event. **(See Appendix A: EMS Triage and Transport Flow Chart).**

Critical Trauma Patient Indicators – resulting from a traumatic event

- I. Altered Level of Consciousness (less than “A” on AVPU)
- II. Respiratory Distress / Airway Compromise
- III. Shock / Diminished Perfusion

	Systolic Blood Pressure	Heart Rate	Respiratory Rate
Adult 18 years or over	<90	>120	<10 or >30
Children ≥ 6 years School Age	<90	<60 or >160	<10 or >30
2-5 years (pre-school)	<80	<60 or >180	<10 or >40
12-24 months (toddler)	<75	<70 or >180	<16 or >50
0 - 12 months (infant)	<70	<80 or >180	<20 or >60

IV. Severe Burns

V. Other Considerations (6)

1. Severe multiple injuries (2 or more systems) or severe single system injury
2. Cardiac or major vessel injuries
3. Injuries with complications (e.g., shock, sepsis, respiratory failure, cardiac failure)
4. Severe facial injuries
5. Severe orthopedic injuries
6. Comorbid factors (e.g., Age < 5 or >55 years, cardiac or respiratory disease, insulin-dependent diabetes, morbid obesity)

Note: On-scene provider instincts are a valuable part of the trauma system; therefore, EMS providers and local medical control should be allowed flexibility for clinical judgment in situations that are unclear. The crucial decision for patient care is that appropriate resources are called in – or activated – as soon as possible. The sooner that decision is made, the better the outcomes – and those timely decisions are usually made at the scene.

Designation of Minnesota Hospitals as Trauma Centers

Introduction

The Commissioner of Health will be the designating authority for all levels of trauma centers. A trauma center designation will be for three years. Prior to expiration, the trauma center will need to complete a re-verification process or be awaiting the authority's re-verification visit or results. Following an acceptable re-verification, the trauma level designation will be approved for another three-year cycle. This will be an ongoing process.

In cases where there is an interim period between the end of the three-year designation and the completion and acceptance of requirements from the authority, the hospital's state trauma center designation will become "provisional." This provisional status is valid for up to one year. No restrictions will be assigned to the provisional status. If, after one year, the hospital has not satisfied the authority's conditions for re-verification and state designation, both the provisional status and the state trauma center designation will be rescinded and the hospital will no longer be a participant in the state trauma system. All re-designations will be post-dated to the original expiration date.

As an inclusive trauma system, all hospitals are encouraged to participate by declaring to the Commissioner of Health their self-selected level of trauma care. The desire is for all hospitals to voluntarily participate, making the system truly a statewide cooperative effort in caring for critically injured patients. The system goal is to match a facility's resources with the needs of the patient as quickly and efficiently as possible. Many patients will require initial life-saving hospital stabilization before being transferred to a higher level of care. This is encouraged; the success of the system will be measured, in part, by how safely and quickly these patients are stabilized and transferred to definitive surgical care. Foundational to the system is the educational support for staff at smaller, often rural hospitals, so that a level of comfort and skill in caring for severely injured patients can be maintained. No hospital will be required to participate at a level other than what they self-select and for which they qualify for designation.

EMS will not transport critical trauma patients to any hospital that chooses to not participate in the state trauma system, unless no other reasonable alternative is available – for instance, the next closest facility is more than 30 minutes away.

Process for Designations

Minnesota Levels I and II Trauma Centers

For many years, a small number of Minnesota hospitals have voluntarily maintained verification through the American College of Surgeons (ACS) as either Level I or II Trauma Centers. Through these individual institutional commitments, pockets of excellence in trauma care and prevention exist throughout Minnesota. The expertise from these institutions has provided trauma care leadership, and advocacy to all Minnesotans, and will continue as key participants in a formalized state trauma system.

Hospitals seeking to maintain or to become Minnesota Level I or II trauma centers will successfully complete the American College of Surgeons (ACS) verification standards at their own cost, and successfully complete the following designation process:

- Pass ACS verification.
- Submit completed ACS verification documentation to the State Trauma Advisory Council (STAC), which will send a letter of recommendation to the Commissioner of Health for designation.
- Commissioner of Health will grant the appropriate three-year state trauma center designation.

As the designating authority, the Commissioner or designee maintains the right to verify information via correspondences and/or a site review throughout the designation period.

Changes in the status of a trauma center must be self-reported to the STAC, and to other regional hospitals and local EMS providers/authorities – who may need to adjust their guidelines accordingly.

Minnesota Level III Trauma Centers

See Appendix B: Level III and IV Trauma Center Criteria

In much of rural Minnesota, a Level III trauma facility will, based on good criteria, ratchet up the state trauma system measurably, by providing first line, quickly accessible surgical interventions, and by making the difficult tough and timely transfer decisions to refer or not refer trauma patients to higher-level care.

Hospitals seeking Level III trauma center designation must meet the appropriate state trauma center criteria and successfully complete the following proposed verification process:

- Complete and submit a self-reported survey to the STAC for review, verifying that the hospital meets the state criteria as a Level III trauma facility.
- If the survey is incomplete or there is a need for clarification, the STAC will request a written reply to address the identified concerns. Once the STAC is satisfied with the written reply they will arrange for a site review visit.
- Upon successful completion of the site review, the review team will make written recommendations to the STAC. Once approved by the STAC, a letter of recommendation will be sent to the Commissioner of Health for final approval and designation.
- Commissioner of Health will grant the appropriate three-year state trauma center designation.

As the designating authority, the Commissioner or designee maintains the right to verify information via correspondences and/or a site review throughout the designation period.

Changes in the status of a trauma center must be self-reported to the STAC, and to other regional hospitals and local EMS providers/authorities – who may need to adjust their guidelines accordingly.

Minnesota Level IV Trauma Centers
See Appendix B: Level III and IV Trauma Center Criteria

It is anticipated that the majority of hospitals in Minnesota will seek and obtain a level IV trauma center designation. Small hospitals are critical to the success of a state trauma system. They currently serve as the first line of hospital care for traumatically injured patients. As such, they are called upon to make rapid, life-saving decisions without the staff and technological support found in larger facilities. Isolation from these resources, and lack of high trauma volume underscore the need for the supportive environment that the trauma system aims to provide – in terms of education, non-punitive performance improvement feedback, and a consultative network of transfer/referral facilities.

Hospitals seeking Level IV trauma center designation must meet the appropriate state trauma center criteria and successfully complete the following proposed verification process:

- Complete and submit a self-reported survey to a STAC for review, verifying that the hospital meets the state criteria as a Level IV trauma facility.
- If the survey is incomplete or there is a need for clarification, the STAC will request a written reply to address the identified concerns. Once approved by the STAC, a letter of recommendation will be sent to the Commissioner of Health for final approval and designation.
- Commissioner of Health will grant the appropriate three-year state trauma center designation.
- A site review team will visit each designated Level IV hospital within three years of the designation, and every three years thereafter, to coincide with the re-verification process.

As the designating authority, the Commissioner or designee maintains the right to verify information via correspondences and/or a site survey throughout the designation period.

Changes in the status of a trauma center must be self-reported to the STAC, and to other regional hospitals and local EMS providers/authorities – who may need to adjust their guidelines accordingly.

Site Review Committee

The STAC will maintain a Site Review Committee, which will likely consist of 15 –20 individuals selected by the Commissioner of Health. Members will be representative from the Minnesota Department of Health, ACS Levels I and II hospitals, state designated Level III and IV trauma facilities, the Comprehensive Advanced Life Support program, and the Minnesota Hospital Association. Committee members may be nonresidents of Minnesota.

The STAC is responsible to coordinate and assemble small teams from the Site Review Committee to conduct verification site reviews of Levels III and IV trauma center applicants, and re-verification reviews every three years. The purpose of a site visit is to determine compliance with the classification criteria. Teams will consist of two to three reviewers, each of whom will not have a potential conflict of interest. The STAC will attempt to assign team members who come from outside the applicant hospitals' regional area.

The STAC will develop a feedback mechanism for hospitals to comment on the process and the review team in order to assist the STAC in determining how they are doing.

Re-Verification of Trauma Center Designation

The re-verification visits will focus on two areas: whether there is compliance with the designation criteria, and identifying how the system can collaboratively support the ongoing and future needs of the hospital's trauma care commitment. Specific suggestions for improvement will have an educational feedback focus. It is important that these visits are collaborative and not punitive.

Revocation of Designation

The department may revoke the trauma center designation if evidence exists that the facility does not meet standards of the statewide trauma plan or if a facility denies or refuses a reasonable request by the Commissioner or designee to verify information via correspondences and/or an on-site survey during the designation period.

Inter-facility Transfers

Introduction

One of the key necessities of an effective trauma system is the rapid movement of a critically injured patient from the initial stabilization facility to definitive trauma/surgical care. Better outcomes are closely linked to the time it takes for a facility to determine that the patient requires a higher level of care, and is able to quickly initiate the transfer of that patient.

In-house Procedures

In order to accomplish this in the most efficient and skillful manner possible, all participating Level III and IV trauma facilities must have predetermined and prewritten procedures that direct the internal process for rapidly and efficiently transferring a trauma patient to definitive care. The plan should address such things as: appropriate ground and air transport services, along with primary and secondary contact numbers; and what supplies, records, or other necessary resources will accompany the patient. Most importantly, the plan clearly identifies the anatomic and physiologic criteria that if met, will immediately initiate transfer to definitive care.

Transfer Agreements

Transfer agreements must be in place and kept updated with facilities capable of caring for major trauma, severe burns, and acute spinal cord injuries. In the case of burns, a back-up facility needs to be identified in case the primary transfer facility cannot take the patient. There is no requirement to designate one facility as a “primary” transfer facility. Hospitals may transfer patients to any facility with which they have a written transfer agreement. **(See Appendix C: Examples of Transfer Agreements).**

Suggested Criteria for Consideration of Transfer (taken from “Resources for Optimal Care of the Injured Patient 1999,” page 21. Appendix D outlines the sort of injuries (and other considerations) for which all levels of trauma center designation ought to have a predetermined plan, for both in-house care and rapid transfer activation. **(See Appendix D: Suggested Criteria for Consideration of Transfer).**

Trauma Registry

Introduction

The American Trauma Society defines a trauma registry as, “A collection of data on patients who receive hospital care for certain types of injuries. Such data are primarily designed to ensure quality trauma care and outcomes in individual institutions and trauma systems, but have the secondary purpose of providing useful data for the surveillance of injury morbidity and mortality.” As this definition suggests, the trauma registry is the backbone of any trauma system. Without it, there is no way to measure if the trauma care provided actually affects outcomes, or to identify system performance improvement and education needs. As such, a trauma registry providing comprehensive and valid quality improvement information may be the most important part of a trauma system.

Minnesota currently has an extensive but not complete trauma data system. It conforms to the standards of both the National Trauma Data Bank (NTDB) and the State and Territorial Injury Program Directors Association (STIPDA). Although the data system is neither complete nor statewide, it functions as an important tool in performance improvement and the identification and prevention of trauma across the state. The data system shows a picture of trauma in Minnesota drawn from trauma reported by other information systems as well: injuries treated in hospitals (hospital discharge dataset obtained through the Minnesota Hospital Association); information from the State’s Traumatic Brain Injury (TBI) and Spinal Cord Injury (SCI) registry; certificate of death information; information from surveys (the behavioral risk factor surveillance system and the Minnesota student survey); specific trauma events reported by other data system (the Fatal Analysis Reporting System/Crash Outcome Data Evaluation System [FARS/CODES]; the medical examiner’s office, and the State Fire Marshal). The initial treatment for trauma injuries usually is delivered by the EMS system; therefore the trauma data system has begun working with the Minnesota EMS Regulatory Boards’ (EMSRB) EMS data system – MnSTAR. Further, because trauma injuries do not respect state borders, and trauma treatment frequently crosses those same borders, we are working with “border” hospitals to obtain and exchange trauma data specific to improving the care of these interstate patients.

Appendices F and G describe the trauma specific data that would be reported by every hospital participating in the trauma system. Because resources vary among large to small hospitals, the proposed requirements reflect those variations, with higher-designation trauma centers having more comprehensive reporting requirements to reflect the more comprehensive care they provide. The goal is for the trauma registry to be an accurate and complete tool for an individual hospital to compare its procedures, staffing and outcomes to similar hospitals (in aggregate) in order to improve local care – thus advancing optimal care of trauma patients everywhere. A great deal of effort in the hospital reporting design was made in order to balance the need for a comprehensive minimum data set that would be useful at the local level against the need for ensuring that the details of the reporting requirements are not overly burdensome.

Administration & Oversight of the Trauma Registry

A Performance Improvement Committee (PIC) will be established as part of a comprehensive trauma statute to administer the statewide trauma registry. Organizationally, the PIC will be under the authority of the State Trauma Advisory Council (STAC). Details of the PIC composition will be determined at a later date.

The PIC will be assigned a three-fold charge: to provide technical consultation for users of the system, to develop and implement policies regarding the collection and distribution of trauma registry data in compliance with applicable state and federal law, and to monitor quality of the system with a focus of education and improvement.

The PIC will also be responsible to develop, maintain, and update a trauma registry data dictionary.

The PIC will develop and distribute standardized reports to support local, regional, and state authorities in performance improvement, public health, and injury prevention initiatives. Only aggregate data will be used for reports. Facility specific information will only be available to the individual facility.

The PIC will work with the EMSRB Data Policy Standing Advisory Committee to assure uniformity of standards and efficiency of resources.

Guiding Principles for the PIC

- ❑ The PIC will work with other trauma system committees, working to understand what the other committees need.
- ❑ The PIC will assure that the trauma system is engaged in the public health surveillance of trauma, that the primary functions of a trauma system are occurring, and that the data collected are being evaluated.
- ❑ Data need to be accessible and need to flow in both directions. There should be a queryable data set, a research data set, and “canned” reports.
- ❑ Data must be mandatory, verifiable and protected.
- ❑ Appropriate state and federal law will govern data.
- ❑ Data will focus on supporting the continuum of care: from the 911 call and pre-hospital data to community re-integration.
- ❑ The trauma system must be patient-care driven and improvement oriented.
- ❑ Data quality and validity will be of paramount concern. The PIC will work to assure that conclusions drawn are supported by the data and are unbiased.

Design of the Collection Tool

All trauma registry data will be electronically* submitted on a quarterly basis to the trauma registry. The Minnesota Department of Health (MDH) will create the means for established registry collection systems to submit required data without changing vendors, and for facilities not currently collecting and reporting registry data to submit data electronically. The MDH will be the registry’s conduit and translator to ensure consistency of data.

**Some rural Level IV trauma facilities may be able to submit paper forms to the MDH – this will be determined on a case-by-case basis.*

The system will internally validate the data, and will work with others, including the MnStar (See **Appendix E: MNSTAR Forms**) and the Department of Public Safety’s Crash Outcome and Evaluation System (CODES), to ensure that trauma data are unduplicated, accurate, and consistent.

Finally, each submitting facility will have full access to its own data and to aggregate statewide data through the trauma registry maintained by the State.

What Data Must be Submitted to the Trauma Registry

Level I and II trauma centers will submit the required National Trauma Data Bank data elements as the core. (See **appendix F: Levels I – II Registry, National Trauma Data Bank Elements for details**)

Level III and IV trauma centers will submit the current Minnesota Report of Injury (ROI) elements for all trauma cases meeting the inclusion criteria, plus some additional items. Training on the data collection tool will be provided by the MDH and interspersed throughout the year. Every attempt will be made to limit travel by utilizing advanced training technologies that allow for onsite, interactive instruction.

(See **appendix G: Level III and IV Registry, Current Report of Injury Form with Additional Data Elements for details**).

Inclusion Criteria

Trauma data reported to the Minnesota trauma registry must include all patients with a primary or secondary discharge ICD-9-CM diagnosis code of 800.00 - 959.9, 987.9 (smoke inhalation), 991.0-3 (frostbite), 994.0 (lightning), 994.1 (drowning), 994.7 (strangulation), 994.8 (electrical current), AND any one or more of the following:

- All patients (any diagnosis) for which a Trauma Team Activation was initiated;
- All trauma patients who were dead on arrival at the facility;
- All trauma patients who died in the facility;
- All trauma patients transferred to or from another hospital, including patients who are transferred for evaluation but are not admitted (Patients with a “primary” medical or psychological diagnosis code with a “secondary” injury code that are transferred for primary psychological reasons should be excluded.);
- All trauma patients admitted to an intensive care unit;
- All trauma patients admitted to the facility with length-of-stay \geq than 48 hours

Note: The following ICD-9-CM diagnosis codes are **EXCLUDED** from the inclusion criteria:

1. 905-909, (Late Effects). This data is available through other means if needed.
2. 820 –821, (Isolated hip fractures/femoral neck fractures) when coded with:
 - E884.2 (fall from a chair)
 - E884.3 (fall from wheelchair)
 - E884.4 (fall from bed)

- E884.5 (fall from other furniture)
 - E884.6 (fall from commode)
 - E885 (fall from same level from slipping, tripping, or stumbling)
3. 930-939, (Foreign bodies)

See Appendix H: Minnesota Trauma Registry Inclusion Criteria Flow Chart

Governance Structure

Introduction

This draft proposal assumes the Commissioner of Health will be the legally responsible entity for the state trauma system. As with other state-issued licenses, certifications, regulations and certifications, commissioners are typically assigned the responsibility and authority and are either given broad discretion in exercising that authority or the authority is circumscribed by statute or rule.

The proposed governance of the state trauma system consists of two levels: a required state-level oversight and coordinating entity, and voluntary regional-level entities for detailed regional planning, advocacy, and support. Currently, there are no active regional governing authorities. Because of this, statewide minimum standards will be established, with an allowance for regional variations, if and when the trauma-related organizations within a given region come together and agree on changes in standards they would want in the region. No specific boundaries are proposed for the formation of regional entities, allowing for enhancement of existing referral patterns that cross borders of other regional groupings (e.g. EMS, RDC's, MDH Districts).

The EMS Regulatory Board (EMSRB) will provide coordination and adoption of trauma related EMS guidelines, and assume the lead role in the oversight of any EMS specific trauma legislation.

Structure

State

- Statewide Trauma Advisory Council (STAC). The STAC will provide professional and community input to the Commissioner in all areas relating to trauma. The Commissioner of Health, in consultation with the EMSRB and the Commissioner of Public Safety, would name the Council members, assuring that the council be widely representative of trauma interests in the state. The STAC should be independent of the existing MDH license and certification process. The council would function with at least two committees for specialized work.
 - Performance Improvement Committee (PIC). The PIC will monitor quality of the system based on information in the trauma registry, from other information sources, and professional judgment. The PIC will also be responsible to develop, maintain, and update a trauma registry data dictionary. Its primary purpose is that of education and improvement. (See pages 9-10 for additional activities of the PIC).
 - Site Review Committee. The Site Review Committee will have the primary purpose to provide the periodic site reviews for hospitals that are seeking trauma system designation or renewal status. (See page 7 for additional information on the Site Review Committee).

- EMS Regulatory Board (EMSRB). The EMSRB will have approval authority for the State EMS Triage and Transport Guidelines, and all local or regional changes to the State EMS Guidelines. (See page 1 for additional information on the EMSRB).

Regions

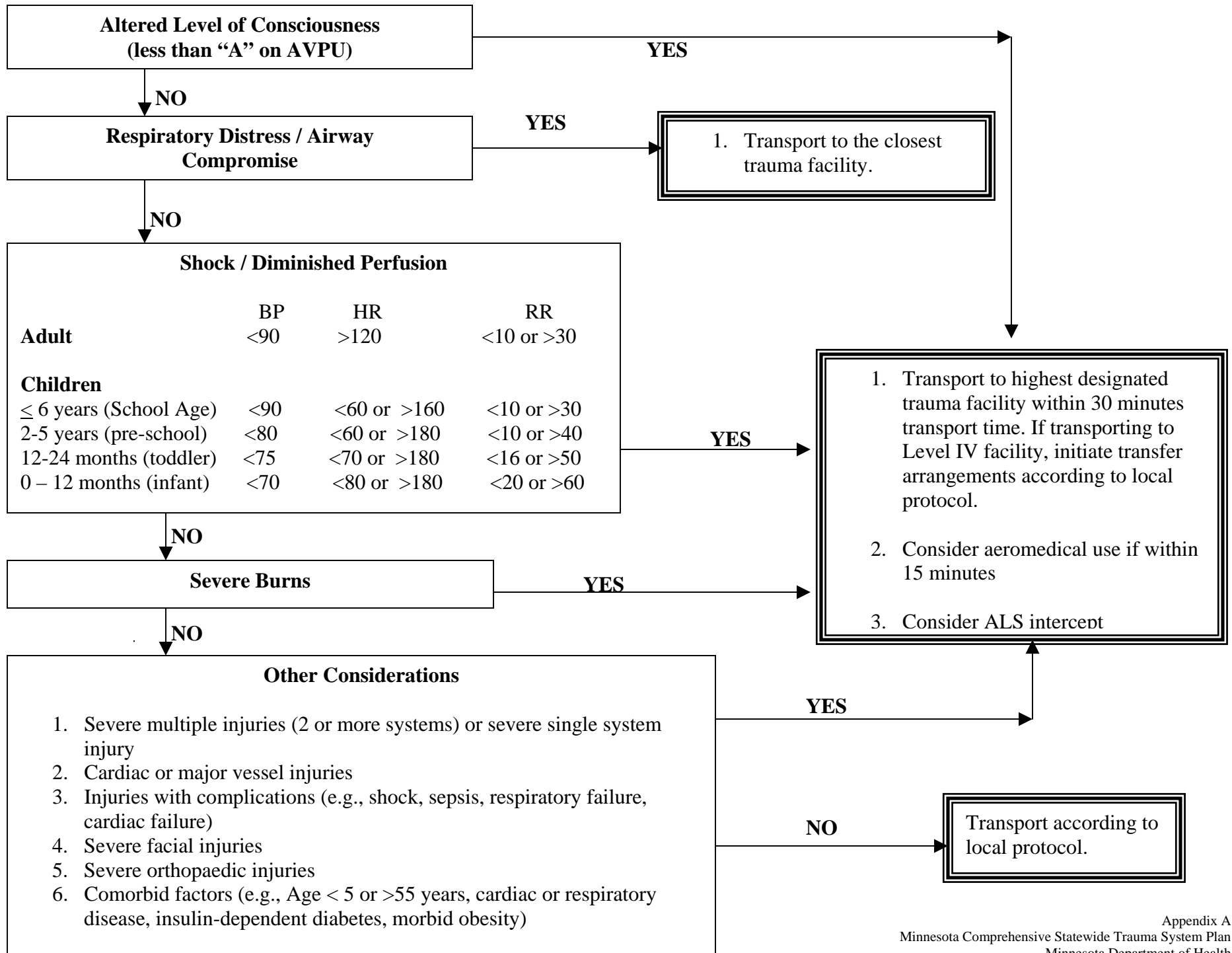
- Regional Trauma Advisory Council (RTAC). RTACs may be formed on an as-needed basis, typically when the statewide trauma standards need modification within the region in order to better serve patients and to accommodate specific regional conditions. The Commissioner of Health, in consultation with the EMSRB and the Commissioner of Public Safety, will name the Council members. Membership suggestions will come from interested parties in the region and will reflect wide representation of regional trauma interests. RTACs need not mirror existing regional boundaries - in recognition that existing and potentially future referral patterns cross these geographic boundaries. The RTAC could function as a “committee of the whole” or could utilize subcommittees, most likely in the areas of:
 - Performance Improvement (PI) – paralleling the state PIC, with an emphasis on the region’s system quality and on education and system improvement.
 - Protocols Subcommittee – for reviewing and making recommendations on modifying the state EMS triage and transport guidelines, and hospital patient transfer protocols for the region.

Bibliography

1. Committee on Trauma, *American College of Surgeons, Resources for Optimal Care of the Injured Patient, 1999.*
2. Committee on Trauma, *American College of Surgeons, Resources for Optimal Care of the Injured Patient, 1993.*
3. Minnesota Trauma Care Work Group, *Minnesota Comprehensive Trauma System, 1993.*
4. Health Resources and Services Administration, Trauma-EMS Systems Program, *Trauma-EMS Listserv.* This is an electronic listserv maintained by the federal Trauma-EMS Program as a means to connect all state trauma coordinators together for posting queries and information sharing. This tool provided real-time current trauma system information from around the country, and gave pointed insights into what works and what does not work in other state systems.
5. Minnesota Trauma Core Work Group and subgroups, *2002 meeting minutes, 2002.*
6. Minnesota Trauma Care Task Force, *Model Criteria for Trauma Stabilization Facilities and Community Trauma Facilities, 1995.*
7. Minnesota Trauma Care Task Force, *Model Protocols for Triage and Transfer of the Trauma Patient, 1995.*
8. State Trauma Plans from many states, most noteworthy are: *Wisconsin, North Dakota, Iowa, Washington, Maryland, Illinois, Oklahoma, Oregon.*

Appendix A

EMS Triage and Transport Flow Chart



Appendix B

Level III and IV Trauma Center Criteria

Level III and Level IV Trauma Center Criteria

Category	Level III	Level IV	Annotation
INSTITUTIONAL ORGANIZATION	E	E	The board of directors, administration, and medical, nursing and ancillary staff shall make a commitment to providing trauma care commensurate to the level at which the facility is applying for categorization and or is verified.
Trauma Program	E	E	The trauma program shall be established by the facility with approval from the medical staff, board of trustees, and administration, and represented on an organizational chart. This may be in conjunction with an existing department; for example, emergency or surgery appropriate.
Trauma Team Activation	E	E	Trauma Centers shall have trauma team activation protocols / policies to include: 1) lists of all team members, 2) response requirements for all team members when a trauma patient is enroute or has arrived, 3) the criteria, based on patient severity of injury, for activation of the trauma team, and 4) the person(s) authorized to activate the trauma team.
	E	NA	The trauma team activation policy shall include both physiological and anatomic criteria for when the ED physician is expected to be present upon the arrival of the patient.
	NA	E	The trauma team activation policy shall include both physiologic and anatomic clinical indicators for when the on-call medical provider covering the ED is expected to respond and meet the patient when given timely notice by EMS.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
Trauma Program Medical Director	E	D	Trauma program medical director shall be a board-certified or boards-in-progress physician with special interest in trauma care. Trauma Centers shall have a physician on staff whose job description defines his/her role and responsibilities for trauma patient care, trauma team formation, supervision/leadership, and trauma training/continuing education and acts as the medical staff liaison for trauma care with out-of-hospital medical directors, nursing staff, administration, and higher level trauma centers. The trauma center medical director shall be currently verified in ATLS® and/or CALS trained, recertifying/training every four years.
Trauma Program Coordinator / Manager	E	D	For Level III trauma centers, this person shall be a RN with clinical experience in trauma care. As an alternate, other qualified allied health personnel with clinical experience in trauma care may be appropriate. It is expected that the Coordinator/Manager has allocated time for the trauma program.
	NA	E	For Level IV trauma centers, this individual shall work in conjunction with the medical director, helping to organize and coordinate the facilities' trauma care response. Ideally this individual should be a RN with emergency/trauma care experience. As an alternative, other allied health personnel with clinical experience in emergency/trauma care may fulfill this role.
HOSPITAL DEPARTMENTS / SECTIONS			
Surgery	E	NA	Institution must have a process to review surgical trauma care management.
Orthopedic	E	NA	May be covered by a surgeon with the ability to do orthopedic surgery and who is credentialed by the hospital to do so. Institution must have a process to review orthopedic trauma care management.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
Anesthesia	E	NA	May be covered by a CRNA. Institution must have a process to review anesthesia's trauma care management
Emergency	E	D	Institution must have a process to review emergent trauma care management
Medical Staff and Performance Improvement	E	E	The hospital must have a process to review all trauma care management. *Performance Improvement Section of this document contains specifics.
CLINICAL CAPABILITIES			
Published On-call Schedule	E	E	Published and posted call schedules must specifically identify the physician on call for the emergency department.
General Surgery	NA	E	PA and NP must have back-up physician of record.
General Surgery	E	D	Local criteria may be established to allow the general surgeon to take call from outside the facility, but with clear commitment on the part of the facility and the surgical staff that the general surgeon will be available to the ED physician for consultation to assist in the decision for need of surgical interventions or transfer. The surgeon must also be available to care for trauma patients in the ICU. Compliance with this requirement and applicable criteria must be monitored by the trauma PI program. Should the usual general surgical coverage be unavailable for any reason a formal back-up plan indicating how trauma patients will be managed is required.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
Anesthesia	E	NA	May be covered by certified nurse anesthetist (CRNA).
Emergency Medicine	E	D	24-hour coverage by a physician who is present at all emergency resuscitations. If the physician is off-site, his/her response to the hospital should be 15 minutes. (See “Clinical Qualifications for further emergency physician details.)
	NA	E	Physician assistants (PA) and/or nurse practitioners (NP) may provide lead coverage in the emergency department. 24-hour coverage must be provided. If the PA &/or NP is off-site, his/her response to the hospital should be 15 minutes. (See “Clinical Qualifications for further Other Medical Staff Covering Emergencies.)
Orthopedic Surgery	E	NA	<p>The ED physician, in consultation with the general surgeon, makes critical trauma care decisions in the emergency department. There is no expectation that an orthopedic surgeon be onsite or immediately available.</p> <p>While orthopedic surgical capabilities will vary among Level III’s, it is an expectation that all Level III’s be able to handle basic orthopedic surgical cases. It is the responsibility of the Level III’s to have protocols that clearly define which cases they can handle and which cases require transfer to an appropriate facility.</p> <p>If necessary, the same individual may cover both general surgery and orthopedic surgery if he/she meets the clinical qualifications for each discipline.</p>
Radiology	E	D	
CLINICAL QUALIFICATIONS			
General Surgeon	E	NA	Physician representation and participation at the trauma performance

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
<p>Emergency Physician</p> <p>Other Medical Staff Covering Emergencies (e.g. locum tenums)</p> <p>Orthopedic Surgeon</p>	E	D	improvement, peer review, and multidisciplinary committees.
	E	D	If board certified, then required to only have successfully completed an Advanced Trauma Life Support (ATLS®) or Comprehensive Advanced Life Support (CALs) course. If NOT board certified, then must be current as an ATLS® provider, or have taken CALs within the past four years.
	E	D	If board certified, then required to only have successfully completed an Advanced Trauma Life Support (ATLS®) or Comprehensive Advanced Life Support (CALs) course. If NOT board certified, then must be current as an ATLS® provider, or have taken CALs within the past four years.
	E	NA	Must be a current ATLS® provider or have completed a CALs course within the past four years. This requirement is for those who are regularly scheduled in the Emergency Department. It does not apply to those who are called in to back-up the attending physician during an unusual and rare event. The performance improvement process should review all such cases.
	E	E	May be a surgeon with the ability to do orthopedic surgery and who is credentialed by the hospital to do so. (Note: This is “Essential” for Level IV facilities ONLY if orthopedic surgical services are provided).
	D	D	If board certified, then required to only have successfully completed an Advanced Trauma Life Support (ATLS®) or Comprehensive Advanced Life Support (CALs) course. If NOT board certified, then must be current as an ATLS® provider, or have taken CALs within the past four years.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
Nursing – Trauma Education	E	E	Nurses responsible for emergency care must have successfully completed appropriate professional trauma education. Example: TNCC, CALS, ATCN, CATN, or trauma nursing equivalent that meets the in-house training objectives outlined in the plan.
EMERGENCY DEPARTMENT CAPABILITIES			
Presence of surgeon at resuscitation	D	NA	Must be on-call for consultation
Presence of physician at initial resuscitation	E	D	
Physician capable of initial resuscitation who is on-call and available to the ED	NA	E	Immediate physician consultation must be available for PA’s or NP’s who provide initial trauma care resuscitation.
Presence of PA or NP at initial resuscitation	NA	E	
Emergency Department physician director	E	D	
Emergency department equipment for all ages:			
• Airway control and ventilation equipment	E	E	
• Pulse Oximetry	E	E	
• Suction Devices	E	E	
• Electrocardiograph / oscilloscope / defibrillator	E	E	
• Standard IV fluids and administration sets	E	E	
• Large bore IV catheters	E	E	

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
<ul style="list-style-type: none"> • Supplies for: <li style="padding-left: 20px;">Cricothyrotomy <li style="padding-left: 20px;">Thoracostomy <li style="padding-left: 20px;">Central lines • Drugs necessary for emergency care • X-ray available 24-hours/day • Nasal-gastric / oral-gastric tubes • Spine immobilization boards and C-collars • Pediatric length-based resuscitation tape • Thermal control for patient and fluids/blood • Rapid infuser system • End-tidal CO2 detector • Communications with EMS 	<p style="text-align: center;">E E D E E E E E E E E E</p>	<p style="text-align: center;">E E NA E E E E E E E E E</p>	<p style="text-align: center;">May be on-call May use pressure bag May be disposable</p>
<p>OPERATING ROOM CAPABILITIES</p> <p>Presence of surgeon at operative procedures</p> <p>Available 24-hours/day</p>	<p style="text-align: center;">E E</p>	<p style="text-align: center;">NA D</p>	

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
Operating room equipment: <ul style="list-style-type: none"> • Thermal control for patient and fluids/blood • X-ray capabilities including c-arm intensifier • Rapid infuser system 	E	E	Essential for Level IV only if operating room is available
	E	D	
	E	NA	
POSTANESTHETIC RECOVERY CAPABILITIES RN available 24-hours/day <ul style="list-style-type: none"> • Equipment for monitoring and resuscitation • Pulse oximetry Thermal control for patient and fluids/blood	E	NA	ICU is acceptable
	E	D	
	E	D	
	E	D	
INTENSIVE CARE UNIT CAPABILITIES RN's with trauma education	E	NA	Nurses responsible for ICU care of trauma patients must have successfully completed appropriate professional trauma education. Example: TNCC, CALS, ATCN, CATN, or trauma nursing equivalent that meets the in-house training objectives outlined in the plan.
<ul style="list-style-type: none"> • Equipment for monitoring and resuscitation 	E	NA	
RESPIRATORY THERAPY CAPABILITIES On-call 24-hours/day	E	NA	May be provided by nurses with specific in-house ventilator training. Records of in-house CEU's must be maintained.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
RADIOLOGICAL SERVICES			
Computed tomography	E	NA	
CLINICAL LABORATORY SERVICES			
Standard analyses of blood, urine, and other body fluids, including micro sampling when appropriate	E	E	
Blood typing and cross matching	E	E	
Coagulation studies	E	D	
Comprehensive blood bank or access to community blood bank	E	E	
Blood gas and ph determination	E	D	
Microbiology	E	D	
ACUTE HEMODYALYSIS CAPABILITIES			
Transfer agreement	E	E	Transfer agreement with facility capable of caring for a major trauma patient.
BURN CARE – ORGANIZED CAPABILITIES			
Transfer agreements with burn center	E	E	A secondary agreement is necessary in case the primary burn facility has no current capacity to receive another patient.

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
<p>ACUTE SPINAL CORD MANAGEMENT CAPABILITIES</p> <p>Transfer agreement</p>	E	E	Transfer agreement with facility capable of caring for a major trauma patient
<p>PERFORMANCE IMPROVEMENT</p> <p>Performance Improvement Program</p>	E	E	<p>The trauma PI program shall be consistent with medical staff and facility policies. All trauma centers shall work with the MDH in statewide PI activities</p> <p>The PI process may be performed by the trauma centers' trauma committee or by an appropriate PI standing committee.</p> <p>If teleradiology is utilized, this process shall be monitored and evaluated by the trauma performance improvement program</p> <p>Trauma centers shall have a formal trauma related diversion/bypass policy and a mechanism established to review times and reasons for trauma related diversion/bypass.</p> <p>The trauma performance improvement program shall consist of a formal policy that includes a minimum of the following:</p> <ol style="list-style-type: none"> 1. Defined population of trauma patients to be monitored 2. Set of indicators/audit filters 3. Frequency of review 4. Multidisciplinary physician involvement 5. Standard of care 6. Demonstration of loop closure and resolution <p>The overall responsibility of concurrent and retrospective review of the care of trauma patients lies with the trauma program medical director and the trauma program coordinator/manager, in conjunction with the trauma performance improvement committee and the physician multidisciplinary</p>

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
<p>Trauma Registry:</p> <ul style="list-style-type: none"> ○ In-house ○ Participation in state, local, or regional registry <p>Audit all trauma deaths</p> <p>Morbidity and Mortality Review</p> <p>Multidisciplinary Trauma Conference</p> <p>Age specific transfer agreements with appropriate facility</p> <p>Trauma Transfer Plan/Protocol</p>	<p>E</p> <p>D</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p>	<p>D</p> <p>E</p> <p>E</p> <p>D</p> <p>E</p> <p>E</p> <p>E</p> <p>E</p>	<p>peer review committee.</p> <p>A physician must review level IV trauma cases attended by NP/PA.</p> <p>A mechanism shall be established by which all physicians caring for trauma patients in the trauma center are involved in peer review of the care. Physicians should regularly review and discuss: 1) the results of trauma peer review activities, 2) problematic cases including complications, and 3) all trauma deaths identifying each death as <u>non-preventable, possibly preventable, or preventable</u>*. (A physician must review PA and NP patient care). The peer review process and minutes of this committee should be confidential and in accordance with facility and medical staff policy. Utilization of trauma registry data will facilitate the entire PI and peer review process.</p> <p>*The Performance Improvement Committee of the STAC will develop standardized definitions based on industry standards.</p> <p>This is a pre-determined, pre-written protocol / flow chart that directs the internal process for rapidly and efficiently transferring a trauma patient to definitive care. The plan should address such things as: appropriate</p>

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Category	Level III	Level IV	Annotation
			ground and air transport services, along with contact numbers and back-up providers; and what supplies, records, personnel and/or other necessary resources will accompany the patient. Most importantly, the plan clearly identifies the anatomic and physiologic criteria that if met, will immediately initiate transfer to definitive care. Note: Every effort should be made to ensure that when a patient is transferred, it is to the most appropriate facility the first time.
<p>PREVENTION</p> <p>Coordination and/or participation in community prevention activities</p>	E	D	

E = Essential Criteria

D = Desired Criteria (not required)

NA = Not Applicable

Appendix C

Examples of Inter-facility Transfer Agreements

TRAUMA TRANSFER AGREEMENT

This agreement is made as of the (day) day of (month), (year) by and between (referring hospital) generally at (city, state), a (nonprofit corporation), and (receiving hospital) at (city, state), a (nonprofit corporation).

Whereas, both the (referring hospital) and the (receiving hospital) desire, by means of this Agreement, to assist doctors and the parties hereto in the treatment of trauma patients; and whereas the parties specifically wish to facilitate: (a) the timely transfer of such patients and medical and other information necessary or useful in the care and treatment of trauma patients transferred, (b) the determination as to whether such patients can be adequately cared for other than by either of the parties hereto, and (c) the continuity of the care and treatment appropriate to the needs of trauma patients, and (d) the utilization of knowledge and other resources of both facilities in a coordinated and cooperative manner to improve the professional health care of trauma patients.

Now, therefore, this agreement witnesseth: That in consideration of the potential advantages accruing to the patients of each of the parties and their doctors, the parties hereby covenant and agree with each other as follows:

1. In accordance with the policies and procedures of the (referring hospital) and upon the recommendation of the attending doctor, who is a member of the medical staff of the (referring hospital) that such transfer is medically appropriate, a trauma patient at the (referring hospital) shall be admitted to (receiving hospital) of (city, state) as promptly as possible under the circumstances, provided that beds are available. In such cases, the (referring hospital) and (receiving hospital) agree to exercise their best efforts to provide for prompt admission of the patients.
2. The (referring hospital) agrees that it shall:
 - a. Notify the (receiving hospital) as far in advance as possible of impending transfer of a trauma patient.
 - b. Transfer to (receiving hospital) the personal effects, including money and valuables, and information relating to same.
 - c. Effect the transfer to (receiving hospital) through qualified personnel and appropriate transportation equipment, including the use of necessary and medically appropriate life support measures. (Referring hospital) agrees to bear the responsibility for billing the patient for such services, except to the extent that the patient is billed directly for the services by a third party.
3. The receiving Institution's responsibility for the patient's care shall begin when the patient is admitted, either as an inpatient or an outpatient, to that Institution. If (receiving hospital) air medical transportation service is used to transport the patient, (receiving hospital) responsibility for the patient's care shall begin upon transfer of care to the (receiving hospital) air medical personnel.
4. The (referring hospital) agrees to transmit with each patient at the time of transfer, or in the case of emergency, as promptly as possible thereafter, an abstract of pertinent medical and other records necessary in order to continue the patient's treatment without interruption and to provide identifying and other information.
5. Bills incurred with respect to services performed by either the (referring hospital) or the (receiving hospital) shall be collected by the party rendering such services directly from the patient, third party, and neither the (referring hospital) nor the (receiving hospital) shall have any liability to the other for such charges.
6. This Agreement shall be effective from the date of execution and shall continue in effect indefinitely, except that either party may withdraw by giving thirty (30) days notice in writing to the other party of its intention to withdraw from this Agreement. Withdrawal shall be effective at the expiration of the thirty (30) day notice period. However, if either party shall have its license to operate revoked by the State, this Agreement shall terminate on the date such revocation becomes effective.

7. The Board of Directors of the (referring hospital) and the Governing Body of the (receiving hospital) shall have exclusive control of the policies, management, assets, and affairs of their respective facilities. Neither party assumes any liability, by virtue of this Agreement, for any errors, acts, omissions, negligence, liability, debts or other obligations of the other party to this Agreement.
8. Nothing in this Agreement shall be construed as limiting the right of either to affiliate or contract with any hospital or nursing home on either a limited or general basis while this Agreement is in effect.
9. Neither party shall use the name of the other in any promotional or advertising material unless review and approval of the intended use shall first be obtained from the party whose name is to be used.
10. The parties hereby agree to comply with all applicable laws and regulations concerning the treatment and care of patients designated for transfer from one health care institution to another, including but not limited to the Emergency Medical Treatment and Active Labor Act, 42 U.S.C. 1395dd.
11. This Agreement may be modified or amended from time to time by mutual agreement of the parties, and any such modification or amendment shall be attached to and become part of this Agreement.

In witness whereof, the parties hereto have executed this Agreement the day and year first above written.

(Receiving Hospital)

(Referring Hospital)

By: _____ By: _____
(Name of Representative) *(Name of Representative)*

Date: _____ Date: _____

INTERFACILITY TRANSFER AGREEMENT

From _____, _____, **Minnesota**
to _____ **Hospital**, _____, **Minnesota**

In the event that _____ Hospital would need to transfer a patient to a higher level of care, agreement has been reached with _____, to accept mutually agreed upon patients. _____ Hospital Staff will contact a member of the _____ Medical Staff to arrange for transfer. _____ Hospital will copy and send all pertinent medical information with the patient. Transportation arrangements shall be made collaboratively with both parties.

The decision to transfer or accept patients will not be influenced by patient residency or ability to pay.

This agreement shall be in effect until one or both parties give 30 day written notification of revisions or dissolution of the agreement.

Vice President Medical Staff
_____ Hospital

Chief of Staff _____ Hospital

Date: _____

Date: _____

Chief Executive Officer
_____ Hospital

Chief Executive Officer _____ Hospital

Date: _____

Date: _____

Appendix D

Suggested Criteria for Consideration of Transfer

Suggested Criteria for Consideration of Transfer

Central Nervous System

- Penetrating injury /open fracture, with or without cerebrospinal fluid leak
- Depressed skull fracture
- GCS <14 or deterioration
- Spinal cord injury or major vertebral injury

Chest

- Major chest wall injury or pulmonary contusion
- Wide mediastinum or other signs suggesting great vessel injury
- Cardiac injury
- Patients who may require prolonged ventilation

Pelvis/Abdomen

- Unstable pelvic ring disruption
- Pelvic fracture with shock or other evidences of continuing hemorrhage
- Open pelvic injury
- Solid organ injury

Major Extremity Injuries

- Fracture/dislocation with loss of distal pulses
- Open long-bone fractures
- Extremity ischemia

Multiple-System Injury

- Head injury combined with face, chest, abdominal, or pelvic injury
- Burns with associated injuries
- Multiple long-bone fractures
- Injury to more than two body regions

Comorbid Factors

- Age >55 years
- Children \leq 5 years of age
- Cardiac or respiratory disease
- Insulin-dependent diabetes, morbid obesity
- Pregnancy
- Immunosuppression

Secondary Deterioration (Late Sequelae)

- Mechanical ventilation required
- Sepsis
- Single or multiple organ system failure (deterioration in central nervous, cardiac, pulmonary, hepatic, renal, or coagulation systems)
- Major tissue necrosis

Appendix E

Trauma Nursing Educational Objectives

Trauma Nursing Educational Objectives

Goal: Define trauma and the role of the trauma nurse across the continuum.

Objectives: On completion of this course, the learner should be able to:

1. Identify the common mechanisms of injury associated with blunt and penetrating trauma.
2. Describe and demonstrate the components of the primary and secondary nursing assessment of the trauma patient.
3. Based on the assessment findings, list appropriate interventions for recognized and suspected life-threatening and non-life-threatening injuries.
4. Correlate signs and symptoms to specific pathophysiologic changes as they relate to potential injuries.
5. Describe the ongoing assessment and methods used to evaluate the effectiveness of the interventions.
6. Examine your facility's specific criteria and protocols for admission or transfer of the trauma patient.

NOTE: Each objective must address age specific (i.e. infant, child, adult) principles.

Appendix F

Levels I & II Registry

National Trauma Data Bank

Table/Record Name	Field Name	Definition	Available in MTDB? (Y/N)
Facility	ASCIVER	ASCII Template Version Number	Y
	SUB_DATE	Submission Date	Y
	AHA_NO	Facility AHA Number	Y
	FACILITY	Facility Name	Y
	ADRS1	Facility Address 1	Y
	ADRS2	Facility Address 2	Y
	CITY	Facility City	Y
	STATE	Facility State	Y
	ZIPCODE	Facility Zipcode	Y
	FIRSTNM	Facility Contact Person First Name	Y
	LASTNM	Facility Contact Person Last Name	Y
	PHONE	Facility Contact Person Telephone	Y
	PHONE_EXT	Facility Contact Person Telephone Extension	Y
	SOURCE	Facility Source System Name	Y
	SOURCVER	Facility Source System Version Number	Y
	ACS_VER	ACS Verification Level	Y
	STATEDES	State Designation	Y
	ADULTBED	Number of Adult Hospital Beds	Y
	PEDBED	Number of Pediatric Hospital Beds	Y
	BURNBED	Number of Burn Hospital Beds	Y
	TRICUBED	Number of ICU Beds Available for Trauma Patients	Y
	BRICUBED	Number of ICU Beds Available for Burn Patients.	Y
	TEACHSTAT	Hospital Teaching Status.	Y
	HOSPTYPE	Hospital Type.	Y
Incident	INC_KEY	Incident key	Y
	PAT_ID	Patient Identifier	Y
	REV_DATE	Incident Revision Date	Y
	DOB	Date of Birth	Y
	GENDER	Gender	Y
	RACE	Race/Ethnicity	Y
	PAYMENT	Principal Payment Source	Y
	INJSITE	Site at Which Injury Occurred	Y
	WORK_REL	Work Relatedness of Injury	Y
ECODE	E-Code	Y	

GCS_EYE	Lowest Glasgow Eye Component at the Scene	Y
GCS_VRB	Lowest Glasgow Verbal Component at the Scene	Y
GCS_MOT	Lowest Glasgow Motor Component at the Scene	Y
GCS_AQ	GCS Assessment Qualifier at the Scene	Y
GCS_TOT	Glasgow Coma Scale Total at the Scene	Y
INJDATE	Date on Which Injury Occurred	Y
INJSTATE	State in Which Injury Occurred	Y
INJCNTY	County in Which Injury Occurred	Y
INJCNTRY	Country in Which Injury Occurred	Y
INJTYPE	Injury Type	Y
HOSPTRAN	Inter-Hospital Transfer	
ADMDATE	First Recorded Date of Patient's Arrival at Reporting Hospital ED	Y
ADMTIME	First Recorded Time of Patient's Arrival at Reporting Hospital ED	Y
TSTIMELY	Was Trauma Surgeon Arrival in ED Timely	
ED_SBP	First Systolic Blood Pressure in ED	
ED_RESP	First Unassisted Respiratory Rate in ED	
ED_RR_AQ	Respiratory Rate Assessment Qualifier in ED	
ED_TEMP	First Temperature in ED	
TEMP_SC	Temperature Scale	
HCT	Head CT Results	
ABDEVAL	Abdominal Evaluation	
ABDETYPE	Abdominal Evaluation Type	
ED_BASED	Base Deficit/Excess in ED	
ED_EYE	Lowest Glasgow Eye Component in ED	
ED_VERB	Lowest Glasgow Verbal Component in ED	
ED_MOTOR	Lowest Glasgow Motor Component in ED	
EDGCS_AQ	GCS Assessment Qualifier in ED	
EDGCS TOT	Glasgow Coma Scale Total in ED	Y
ED_RTS	Revised Trauma Score in ED	
ALCOHOL	Alcohol Present in Blood	Y
DRUGS	Drugs Present	Y

	ADMSERV	Admitting Service	
	ED_DISP	Emergency Department Disposition	Y
	ISS	Total Injury Severity Score	Y
	PROBOFSURV	TRISS Survival Probability	
	LOS	Length of Stay in Hospital	Y
	ICU_DAYS	Days of Total Stay in ICU	
	VENT_DAYS	Ventilator Support Days	
	FIM_FEED	FIM Self-Feeding Score at Discharge	
	STAT_FEED	Status of FIM Self-Feeding Score	
	FIM_LOCOM	FIM Locomotion Score at Discharge	
	STAT_LOCOM	Status of FIM Locomotion Score	
	FIM_EXPR	FIM Expression Score at Discharge	
	STAT_EXPR	Status of FIM Expression Score	
	FIM_SCORE	Total FIM Score	
	DC_DATE	Date of Discharge or Death	Y
	HOSP_DISP	Discharge Disposition	Y
	HOSP_CHRG	Billed Hospital Charges	Y
	DC_STATUS	Discharge Status	Y
Complication	INC_KEY	Incident key	Y
	COMPCODE	Complication Code	Y
Diagnosis	INC_KEY	Incident key	Y
	DCODE	ICD-9-CM Code of Diagnosis	Y
	AISCODE	AIS Full Code of Diagnosis	
	AISSCORE	AIS Severity Score	
Intubation	INC_KEY	Incident key	
	LOCATION	Intubation Location Indicator	
	INTUB_TYPE	Intubation Type	
Pre-Existing Comorbidity Factors	INC_KEY	Incident key	Y
	FAC_CODE	Factor Code	Y
Prehospital Procedures	INC_KEY	Incident key	
	PREH_PROC	Prehospital Procedure	
Procedure	INC_KEY	Incident key	Y
	PCODE	ICD-9-CM Code of Procedure	Y

	CPT_CODE	CPT-4 Code of Procedure	
	OPDATE	Date at Which Procedure Occurred	
	OPTIME	Time at Which Procedure Occurred	
	ORVISITNO	OR Visit Number	
Safety	INC_KEY	Incident key	Y
Equipment	SAFETY	Safety Equipment Used	Y