

EMS Triage and Transport Guidelines

System Background

Minnesota's statewide trauma system was established in July 2005 when Gov. Pawlenty signed legislation into law charging the Commissioner of Health to adopt criteria ensuring that severely injured people are promptly transported and treated at trauma hospitals appropriate to the severity of their injuries. In conjunction with the enactment of the trauma system law, the Emergency Medical Services Regulatory Board was successful in initiating complementary legislation to ensure the ambulance services are prepared to participate in a statewide trauma system.

EMS Requirements

With the implementation of the new statewide trauma system, licensed ambulance services will be required to have written, age-appropriate triage and transport guidelines consistent with the criteria issued by the State Trauma Advisory Council (STAC) and approved by the Emergency Medical Services Regulatory Board (EMSRB). The EMSRB may approve an ambulance service's requested deviations from the guidelines due to the availability of local or regional trauma resources if the changes are in the best interest of the patient's health. The EMSRB statute, Minn. Stat., sec. 144E.101, subd. 14, requires the guidelines to be established and approved by July 1, 2009.

Trauma System Criteria

Minnesota Statutes, section 144.604 requires that ground ambulances transport major trauma patients with compromised airways immediately to the nearest designated trauma hospital if one exists within 30 minutes transport time. If no trauma hospital exists within 30 minutes, the patient with a compromised airway must be transported to the closest hospital. Additionally:

1. Ground ambulances must transport major trauma patients to a level I or II trauma hospital if one exists within 30 minutes transport time;
2. If no level I or II trauma hospital exists within 30 minutes, ground ambulances must transport to the closest trauma hospital, or to a more appropriate, higher-designated trauma hospital if predetermined by the ambulance service medical director;

3. If no designated trauma hospital exists within 30 minutes transport time, ground ambulances must transport to the closest hospital. If no designated trauma hospital exists within 30 minutes transport time, transport to the closest hospital.

This "30 minute rule" means that an undesignated hospital will be bypassed for a designated trauma hospital that is within 30 minutes transport time.

Guidelines Development

Trauma hospitals vary in their resources and their capacity to care for certain injuries. Therefore, local trauma triage and transport guidelines should consider the specific injuries for which the local trauma hospitals are capable of caring, thus avoiding the unnecessary transfer of patients who can be treated locally. Developing and maintaining open communication with local hospitals while considering the patients' best interest is imperative for developing an optimal trauma triage and transport guidelines.

The guidelines should also identify which patients will be transferred to another hospital emergently. In such cases the EMS provider should notify the local receiving facility of the patient's condition so that arrangements for transfer to definitive care can begin immediately.

The patient's best interest may be served by using air medical transportation or an advanced life support (ALS) ground ambulance intercept. These options may provide initial transport to definitive care or offer the patient a higher level of care without prolonging scene time. If air medical transport can arrive on scene within 15 minutes of EMS arrival, delaying transport for a helicopter scene response may be appropriate. Otherwise, the air medical provider should be instructed to meet the patient at the receiving hospital. As always, this decision will be made by the EMS responder.

It is expected that EMS providers and/or on-line medical control may override these guidelines when it is in the patient's best interest. In such circumstances, the EMS medical director should review the case with the ambulance crew afterward to ensure it was appropriate and to determine if there is a need for

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education or policy review. Consultation with the STAC and the EMSRB Medical Direction Advisory Committee is always available to medical directors.

Special Considerations

The following injuries are typically cared for definitively at a level I or II trauma hospital:

- Spinal cord injuries
- Closed head injuries with a decreased LOC, penetrating head injuries or depressed skull fractures
- Unstable or open pelvic fractures
- Major chest wall injuries
- Multiple long bone fractures
- Multiple system injuries (e.g., head and chest, chest and abdomen)

Second or third degree burns over >20%TBSA are definitively cared for at a burn center.

Critical Trauma Patient Indicators

The following indicators identify trauma patients who meet the transport parameters of the state guidelines. The existence of any one or more of these indicators should trigger use of the service's written trauma triage and transport guidelines.

1. Altered level of consciousness (less than "A" on AVPU scale) resulting from a traumatic event
2. Respiratory distress/airway compromise resulting from a traumatic event
3. Shock/diminished perfusion resulting from a traumatic event:

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

4. Severe burns
5. Other considerations:

- Severe multiple injuries (2 or more systems) or severe single system injury
- Cardiac or major vessel injuries resulting from blunt or penetrating trauma
- Injuries with complications (e.g., shock, sepsis, respiratory failure, cardiac failure)
- Severe facial injuries
- Severe orthopedic injuries.
- Co-morbid factors (e.g., age <5 or >55 years, cardiac or respiratory disease, insulin-dependent diabetes, morbid obesity)
- Evidence of traumatic brain injury &/or spinal cord injury (e.g. new paralysis).

Steps to Developing Trauma Triage and Transport Guidelines

1. Determine the trauma designation level of the hospitals within 30 minutes transport time of the primary service area.
2. Establish a line of communication with those hospitals and identify their capabilities with respect to trauma.
3. Develop transport directives in accordance with statewide trauma system parameters.
4. Develop and implement guidelines for activation of air medical and/or ALS intercept consistent with local resources.
5. Develop and implement a reporting and follow-up mechanism for guideline deviations.
6. Submit the guidelines to the EMSRB for approval.

Additional information

Inquiries regarding EMS triage and transport guidelines should be directed to:

**Minnesota Emergency Medical Services
Regulatory Board
(651) 201-2800**

www.emsrb.state.mn.us