A close-up, low-angle photograph of a clock face, showing the numbers 11 and 12. The clock is illuminated with a warm, golden light, creating a sense of urgency and time. The hands of the clock are visible, and the overall tone is serious and focused.

South Dakota Trauma System Resource Manual



South Dakota Trauma System Resource Manual

December 2016

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Preamble

Preamble

The American College of Surgeons Committee on Trauma (ACS-COT) provide resources for the development and improvement of state and regional trauma systems including the continuum of care model from prevention, pre-hospital, definitive care, to rehabilitation. Currently the ACS-COT verifies Level I, II, and III trauma centers through an official site visit process. As of this writing, the current guiding document for preparation of the verification process is *Resources for Optimal Care of the Injured Patient: 2014 (Orange Book)*. Subsequently, resources from the ACS-COT were used in the development of South Dakota's Trauma System.

Purpose

The purpose of the South Dakota Trauma System Resource Manual is to provide guidance for the continued development and ongoing improvements of local trauma hospitals to improve care of the injured patient. This document will be revised to reflect improvements to the Trauma System.

Summary

Summary

Legislation enacted in 2008 enabled the Department of Health, with input from the Department of Public Safety, to develop, implement, and administer a trauma care system, including a statewide trauma registry that involves all hospitals and emergency medical services within the state.

A trauma system is an organized response to managing and improving the care of severely injured people. It spans the continuum-of-care from prevention, pre-hospital care, acute care to rehabilitation. It has been established to ensure that injured people are promptly transported to and treated at facilities appropriate to the severity of their injury. A trauma system also provides a foundation for disaster preparedness and response. As part of its day-to-day activities, a trauma system coordinates the movement and care of severely injured people.

Overview

Following legislation in 2008 and subsequent Administrative Rules adoption in 2009, every healthcare facility in South Dakota has been designated as a Trauma Hospital; thirty-one presentations have overviewed the development and vision of the trauma system; every ambulance service has completed a trauma transportation plan; and, standards including Trauma Alert Patient and Trauma Team Activation criteria have been implemented. A state trauma website has been developed and a state trauma registry has been implemented to capture data meeting inclusion criteria for subsequent analysis.

The successful efforts of many have ensured trauma care in South Dakota meets state and national standards for the safety and care of the injured patient. Through ongoing development and performance improvement, the state Trauma System will continually advance as healthcare facilities further mature and improve upon individual trauma systems.

TRAUMA CARE SYSTEM

The trauma care system and statewide trauma registry were established and defined through South Dakota Codified Law (SDCL) 34-12-52 to 34-12-55. SDCL34-12-52 (5) defined “Trauma care system” as a statewide system for the prevention of trauma and the provision of optimal medical care to trauma victims that includes both the provision of appropriate health care services and provision of emergency medical care, equipment, and personnel for effective and coordinated pre-hospital, hospital, inter-hospital, and rehabilitative care for trauma patients. SDCL 34-12-53, subsequently, allowed for the development of a statewide trauma registry based on national standards for data collection.

DESIGNATION LEVELS

The South Dakota Trauma System recognizes six levels of designation:

- TTH-Tertiary Trauma Hospital (ACS I)
- RTH-Regional Trauma Hospital (ACS II)
- ATH-Area Trauma Hospital (ACS III)
- CTH-Community Trauma Hospital (Level IV)
- TRH-Trauma Receiving Hospital (Level V)
- NTH-Non-Trauma Hospital (Level VI)

State Designated Trauma Hospitals can be found in Appendix A.

MANDATORY TRAUMA HOSPITAL DESIGNATION

South Dakota requires mandatory Trauma Hospital Designation per SDCL 34-12-55. Each hospital was required to meet the requirements of one of the designation levels by January 1, 2012. Hospitals shall renew designation every three years from designation issuance.

MANDATORY TRAUMA TRANSPORTATION PLANS

South Dakota requires every ambulance service complete a pre-defined Trauma Transportation Plan by January 1, 2012. Trauma Transportation Plans collect services demographics, education, resources, and transport decisions. Ambulance services shall submit a revised trauma plans every five years to the department. Definitions for ambulance services can be found in Administrative Rule 44:68:03.

TRAUMA TEAM ALERT PATIENT

The definition of a “Trauma Team Alert” patient follows specific triage assessments including physiological absolutes, anatomical absolutes, mechanism of injury, and co-morbidities criteria. Patients meeting criteria must be transported promptly to the highest level trauma hospital within the local transport area. Aeromedical services are often used in South Dakota due to diverse transport distances and are often included in ambulance service trauma transportation plans.

TRAUMA TEAM ALERT ACTIVATION

Emergency Medical Services (EMS) is often the first response to the injured patient. Early incident detection, early EMS notification, early treatment and transportation, and early Trauma Team Alert activation are crucial for the reduction of morbidity and mortality. This takes a coordinated effort between EMS and emergency room staff. Due to the diverse transport distances, aeromedical transport services are often utilized. EMS plays an instrumental role in early notification and transport of the trauma patient. The Trauma Team Alert Activation criteria was established and distributed to all EMS agencies and Trauma Hospitals as uniform activation criteria. Early communication to receiving facilities ensures trauma team personnel and resources are present upon the patient’s arrival. Hospitals should continually review Over/Under triage to meet acceptable standards determined by the American College of Surgeons-Committee on Trauma.

TRAUMA TRANSPORTATION PLANS

Transportation Plans collect ambulance service demographics, education, resources, and transport decisions ensuring trauma patients are transported to definitive care facilities. Trauma transportation plans have been reviewed and approved by the ambulance service director, the service medical director, and each receiving facility noted on the plan. Each service is required to review and submit a new trauma plan every five years.

Injury Epidemiology

Injury Epidemiology

Injury epidemiology is the study and evaluation of frequency, rates, and patterns of injury in a population. South Dakota collects data through several venues that will assist state and local trauma systems in evaluating injury epidemiology. Injury epidemiology plays an important role in establishing local and state injury prevention programs.

Trauma Hospitals should be cognizant of available resources to track injury frequency, rates, and patterns within the communities served.

The Office of Highway Safety—Accident Records provides a summary each year on motor vehicle crashes. Trauma remains the leading cause of death between ages 0 and 44 in South Dakota. For example, a statistical summary from 2011 shows the following data:

SD Statistical Summary 2014-2015	2014	2015
Reported Motor Vehicle Traffic Crashes	17,346	17,791
Amount of Motor Vehicle Traffic Crash Property Damage	\$99 Million	\$104 Million
Number of Motor Vehicle Traffic Crash Injuries	5,090	5,525
Number of Motor Vehicle Traffic Crash Fatalities	136	134
Economic Loss from Motor Vehicle Traffic Crashes	\$402 Million	\$449 Million
Source: SD Department of Public Safety—Office of Accident Records		

Fatalities and Injuries by Age Group 2011 South Dakota				
Age	# of Fatalities	%	Number of Injuries	%
0-5	1	0.7	81	1.5
6-13	3	2.2	172	3.1
14-15	4	3.0	214	3.9
16-17	3	2.2	303	5.5
18	1	0.7	178	3.2
19	1	0.7	135	2.4
20	3	2.2	163	3.0
21-24	12	9.0	554	10.0
25-34	20	14.9	1030	18.6
35-44	13	9.7	691	12.5
45-54	25	18.7	736	13.3
55-64	27	20.1	676	12.2
65-Over	21	15.7	587	10.6
Unknown	0	0.0	5	0.1
Total	134	100	5525	100
Source: SD Department of Public Safety-Office of Accident Records				

Crash Reports

City/county annual crash reports can also be obtained through Accident Records; the website can be accessed via <http://dps.sd.gov>, then Accident Records.

Office of Health Statistics

The South Dakota Department of Health, Office of Health Statistics shows in 2010 accidental deaths were the sixth leading cause of deaths among South Dakotans. In 2010, 391 or 5.5 percent of deaths were due to accidents. The highest type of motor vehicle death in 2010 was car occupant with 71 deaths. The highest death in the other causes of accidental death in 2010 was falls with 130 deaths.

Source: Mortality Overview 2010: South Dakota DOH, Office of Health Statistics

SD Codified Laws and Administrative Rules

South Dakota Codified Laws and Administrative Rules

CHAPTER 34-12-52

DEFINITION OF TERMS

34-12-52. Definition of terms. Terms used in this section and §§ 34-12-53 to 34-12-55, inclusive, mean:

- (1) "Department," the Department of Health;
- (2) "Emergency medical services," health care provided to the patient at the scene, during transportation to a medical facility, between medical facilities, and upon entry at the medical facility;
- (3) "Hospital," a hospital licensed pursuant to chapter 34-12;
- (4) "Trauma," a sudden, severe injury or damage to the body caused by an external force that results in potentially life-threatening injuries or that could result in the following disabilities:
 - (a) Impairment of cognitive or mental abilities;
 - (b) Impairment of physical functioning; or
 - (c) Disturbance of behavioral or emotional functioning;
- (5) "Trauma care system," a statewide system for the prevention of trauma and the provision of optimal medical care to trauma victims that includes both the provision of appropriate health care services and provision of emergency medical care, equipment, and personnel for effective and coordinated prehospital, hospital, inter-hospital, and rehabilitative care for trauma patients;
- (6) "Trauma hospital," a hospital designated by the department as providing a specialized program in trauma care with appropriately trained personnel, equipment, and other facility resources that are specifically organized to provide optimal care to a trauma patient at the facility; and
- (7) "Trauma registry," patient-specific trauma data that is maintained by a health care facility, in a format prescribed by rules promulgated pursuant to § 34-12-54.

Source: SL 2008, ch 168, § 1.

CHAPTER 34-12-53

TRAUMA CARE SYSTEM AND STATEWIDE TRAUMA REGISTRY

34-12-53. Trauma care system and statewide trauma registry. The department, with input from the Department of Public Safety, shall develop, implement, and administer a trauma care system including a statewide trauma registry that involves all hospitals and emergency medical services within the state.

Source: SL 2008, ch 168, § 2.

CHAPTER 34-12-54

PROMULGATION OF RULES REGARDING TRAUMA CARE SYSTEM

34-12-54. Promulgation of rules regarding trauma care system. The department, with input from the Department of Public Safety, shall promulgate rules pursuant to chapter 1-26 to provide for a trauma care system and statewide trauma registry. The rules shall include:

- (1) Designation of the levels of trauma hospitals and the resources each hospital is required to have concerning personnel, equipment, data collection, and organizational capacity for each level;
- (2) Prehospital emergency medical services triage and treatment protocols for trauma patients; and
- (3) Requirements for collection and release of trauma registry data.

Source: SL 2008, ch 168, § 3.

CHAPTER 34-12-55

EACH HOSPITAL TO MEET REQUIREMENTS OF ONE DESIGNATED LEVEL OF TRUAM HOSPITAL.

34-12-55. Each hospital to meet requirements of one designated level of trauma hospital. Each hospital shall meet the requirements of one of the designated levels of trauma hospitals as provided for in § 34-12-54 by January 1, 2012. The department may not direct a hospital to establish a certain level of designation.

Source: SL 2008, ch 168, § 4.

ARTICLE 44:68

STATE TRAUMA CARE SYSTEM

Chapter

44:68:01	Definitions.
44:68:02	Trauma hospital designation.
44:68:03	Pre-hospital emergency services triage and treatment protocols.
44:68:04	Statewide trauma registry.

CHAPTER 44:68:01

DEFINITIONS

Section

44:68:01:01	Definitions
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44:68:01:01. Definitions. Terms defined in SDCL 34-12-52 have the same meaning in this article. In addition, terms used in this section mean:

(1) "Advanced life support (ALS)," a level of prehospital and interhospital emergency care consisting of basic life support procedures and definitive therapy including the use of invasive procedures and may include the use of drugs and manual defibrillation;

(2) "Advanced trauma life support (ATLS)," the advanced trauma life support course authorized by the American College of Surgeons -- Committee on Trauma;

(3) "Local emergency medical services transport plans (LEMSTP)," any plan developed by any emergency medical service, medical director, and hospital official which establish the most efficient method to transport trauma patients;

(4) "Trauma nursing core course (TNCC)," the trauma nursing core course authorized by the Emergency Nurses Association;

(5) "Trauma team," a group of health care professionals, designated by the local hospital, who provide care to the trauma patient; and

(6) "Trauma team alert patient," any patient that has injuries that require the activation of the local hospital trauma team.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

CHAPTER 44:68:02

TRAUMA HOSPITAL DESIGNATION

Section

44:68:02:01	Levels of designation.
44:68:02:02	Level I, Level II, or Level III trauma hospital designation.
44:68:02:03	Level IV and Level V trauma hospital designation application.
44:68:02:04	Level VI hospital designation application.
44:68:02:05	Failure to maintain designation as a trauma hospital.
44:68:02:06	Recognition of out-of-state trauma hospitals.
44:68:02:07	Designation criteria for Level IV community trauma hospitals.
44:68:02:08	Designation criteria for Level V trauma receiving hospitals.

44:68:02:01. Levels of designation. The six levels of trauma hospital designation are:

- (1) Level I -- tertiary trauma hospital;
- (2) Level II -- regional trauma hospital;
- (3) Level III -- area trauma hospital;
- (4) Level IV -- community trauma hospital;
- (5) Level V -- trauma receiving hospital; and
- (6) Level VI -- non-trauma hospital.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:02. Level I, Level II, or Level III trauma hospital designation. Any hospital applying for Level I, Level II, or Level III trauma hospital designation shall present evidence of current trauma hospital verification from the American College of Surgeons. The department shall issue a certificate of designation with an expiration date consistent with the American College of Surgeons verification expiration date.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:03. Level IV and Level V trauma hospital designation application. Any hospital applying for Level IV or Level V trauma hospital designation shall submit an application to the department on a form prescribed by the department. The department or its designee shall conduct an on-site visit to verify the content of the application. Once the application is approved, the department shall issue a certificate of designation to the facility. The certificate of designation shall have an expiration date of no more than three years from the date of issuance.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:04. Level VI hospital designation application. Level VI is limited to hospitals licensed pursuant to § 44:04:01:02. Any hospital seeking designation as a Level VI hospital shall submit an application to the department indicating the following:

- (1) The type of healthcare services provided at the facility;
- (2) That 24/7 registered nurse supervision is available, except for facilities with swing beds; and
- (3) Transfer protocols are in place for trauma patients.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:05. Failure to maintain designation as a trauma hospital. A hospital that fails to maintain the criteria established pursuant to SDCL 34-12-52 to 34-12-55, inclusive, and this article shall submit a plan of correction to the department for approval. Once the plan is approved, the hospital shall complete the plan of correction within the timeframe outlined in the plan. The department may reinstate the trauma hospital as a designated trauma hospital upon completion of the plan of correction. Failure to follow an approved plan of correction or failure of a hospital to meet one of the six designation levels shall result in notification to the secretary of the department that the hospital has failed to comply with all applicable laws and regulations.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:06. Recognition of out-of-state trauma hospitals. The department may recognize any out-of-state hospital that has been designated as a trauma hospital pursuant to the applicable laws and regulations of the hospital's home state.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:07. Designation criteria for Level IV community trauma hospitals. A Level IV community trauma hospital shall meet the following criteria:

(1) The hospital organization shall have:

- (a) A trauma program recognized by the hospital, including a physician medical director and trauma nurse leader;
- (b) A hospital-specific definition of a trauma team alert patient;
- (c) A multidisciplinary operational and performance improvement review committee with a defined purpose and meeting format. The committee may be combined with another performance improvement committee established by the hospital;
- (d) Defined trauma team roles and responsibility;
- (e) Defined trauma team activation guidelines; and
- (f) Defined trauma transfer protocols;

(2) The hospital's medical capabilities shall include:

- (a) Anesthesia services, which includes coverage by a licensed anesthesia provider pursuant to SDCL chapter 36-9A and SDCL chapter 36-4; and

(b) Trauma or general surgeon coverage to the emergency department at least 292 days each calendar year. If the trauma or general surgeon is on-call, the surgeon shall arrive within 30 minutes of patient arrival at least 85 percent of the time. The hospital shall have referral protocols in place for those times no surgeon is available;

(3) The hospital's emergency department shall include the following capabilities and equipment:

- (a) Twenty-four hours a day, seven days a week operation;
- (b) A designated medical director;
- (c) Physician coverage of the emergency department for all trauma team activations 24 hours a day, seven days a week. If physician is on-call, the physician shall arrive within 15 minutes of patient arrival 85 percent of the time;
- (d) A registered nurse available in the hospital and promptly available to the emergency department;
- (e) Airway control and ventilation equipment including laryngoscope and endotracheal tubes of all sizes, other invasive airway adjuncts, bag-mask resuscitator, pocket masks, and oxygen;
- (f) Pulse oximetry;
- (g) End-tidal carbon dioxide detectors;
- (h) Suction devices;
- (i) Electrocardiograph-oscilloscope-defibrillator;
- (j) Pediatric resuscitation equipment;
- (k) Standard intravenous fluids and administration devices, including large bore intravenous catheters;
- (l) Sterile surgical sets, including:
 - (i) Airway control, cricothyrotomy, tracheostomy trays, or thoracotomy;
 - (ii) Vascular access; and
 - (iii) Needle decompression or chest tubes (various sizes);
- (m) Gastric decompression or nasal gastric tubes;
- (n) X-ray availability 24 hours a day, seven days a week;
- (o) Two-way communication with vehicles of emergency transport;
- (p) Thermal control equipment for patients, as well as for blood and fluids; and
- (q) Vascular Doppler;

(4) The hospital's surgical services shall include:

- (a) An operating room team on-call with a maximum 30 minute response time, 85 percent of the time. The response time for the operating room team shall be documented and monitored;
- (b) Thermal control equipment for patients, as well as for blood and fluids; and
- (c) Rapid infuser system which may include pressure bags;

(5) The hospital's postanesthesia care unit services shall include:

- (a) A registered nurse available 24 hours a day, seven days a week. On-call availability is acceptable. Times shall be documented and monitored;
- (b) Pulse oximetry;
- (c) End-tidal carbon dioxide detection; and
- (d) Patient re-warming and thermal control monitoring;

(6) The hospital's intensive care unit services shall include:

- (a) Trauma surgeon director or co-director;

- (b) Pulse oximetry;
- (c) End-tidal carbon dioxide detection; and
- (d) Patient re-warming and thermal control monitoring;

(7) The hospital's radiology services shall include:

- (a) A radiology technologist on-call with a maximum 30 minute response time. Response times shall be documented and monitored; and
- (b) Conventional radiography;

(8) The hospital's laboratory services and capabilities shall include:

- (a) A clinical laboratory available 24 hours a day, seven days a week;
- (b) Standard analysis of blood, urine, and other body fluids;
- (c) An O-negative blood supply;
- (d) Coagulation studies; and
- (e) Blood gas and pH determination;

(9) The hospital's support services shall include:

- (a) Respiratory services; and
- (b) Acute hemodialysis capability, either available on-site or via a transfer agreement;

(10) The hospital's trauma prevention and outreach shall include injury prevention and public awareness activities;

(11) The hospital's performance improvement and patient safety shall include:

- (a) An organized and structured performance improvement program;
- (b) A multidisciplinary performance improvement review committee. The committee may be combined with another performance improvement committee established by the hospital;
- (c) The collection and submission of trauma data pursuant to chapter 44:68:04;
- (d) A hospital and pre-hospital trauma care performance improvement review;
- (e) A quarterly mortality and morbidity case review;
- (f) An operation performance improvement review program including notification and arrival times for the following team members:

- (i) A trauma surgeon;
 - (ii) An anesthesiologist or certified registered nurse anesthetist;
 - (iii) A radiology technologist;
 - (iv) A laboratory technician;
 - (v) A surgery team;
 - (vi) A post anesthesia recovery team; and
 - (vii) A respiratory therapist, if part of the trauma team;
- (g) A published on-call schedule for trauma team members; and
 - (h) A collaborative involvement in pre-hospital care protocols; and

(12) The hospital's staff educational requirements shall be as follows:

- (a) The physician medical director shall have current certification in ATLS education;

- (b) The surgeon shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years;
- (c) The physician covering the emergency department shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years;
- (d) The physician assistant or nurse practitioner covering the emergency department shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years;
- (e) The trauma coordinator shall be current in TNCC education; and
- (f) Each emergency department nurse shall be current in TNCC education.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:02:08. Designation criteria for Level V trauma receiving hospitals. A Level V trauma receiving hospital shall meet the following criteria:

- (1) The hospital organization shall have:
 - (a) A trauma program recognized by the hospital, including a physician medical director and trauma nurse leader;
 - (b) A hospital-specific definition of a trauma team alert patient;
 - (c) A multidisciplinary operational and performance improvement review committee with a defined purpose and meeting format. The committee may be combined with another performance improvement committee established by the hospital;
 - (d) Defined trauma team roles and responsibility;
 - (e) Defined trauma team activation guidelines; and
 - (f) Defined trauma transfer protocols;
- (2) The hospital's emergency department shall include the following capabilities and equipment:
 - (a) Twenty-four hours a day, seven days a week operation;
 - (b) A designated medical director;
 - (c) Physician, physician assistant, or nurse practitioner on-call coverage with a maximum 30 minute response time. Response time shall be documented and monitored;
 - (d) A registered nurse available in the hospital and promptly available to the emergency department;
 - (e) Airway control and ventilation equipment including laryngoscope and endotracheal tubes of all sizes, other invasive airway adjuncts, bag-mask resuscitator, pocket masks, and oxygen;
 - (f) Pulse oximetry;
 - (g) End-tidal carbon dioxide detectors;

- (h) Suction devices;
- (i) Electrocardiograph-oscilloscope-defibrillator;
- (j) Pediatric resuscitation equipment;
- (k) Standard intravenous fluids and administration devices, including large bore intravenous catheters;
- (l) Sterile surgical sets, including:

- (i) Airway control, cricothyrotomy, tracheostomy trays, or thoracotomy;
- (ii) Vascular access; and
- (iii) Needle decompression or chest tubes (various sizes);

- (m) Gastric decompression or nasal gastric tubes;
- (n) X-ray availability 24 hours a day, seven days a week;
- (o) Two-way communication with vehicles of emergency transport;
- (p) Thermal control equipment for patients; and
- (q) Vascular Doppler;

(3) The hospital's radiology services shall include:

- (a) A radiology technologist on-call with a maximum 30 minute response time. Response times shall be documented and monitored; and
- (b) Conventional radiography;

(4) The hospital's laboratory services and capabilities shall include:

- (a) A clinical laboratory available 24 hours a day, seven days a week;
- (b) Standard analysis of blood, urine, and other body fluids;
- (c) An O-negative blood supply; and
- (d) Coagulation studies;

(5) The hospital shall have respiratory services available;

(6) The hospital's trauma prevention and outreach shall include injury prevention and public awareness activities;

(7) The hospital's performance improvement and patient safety shall include:

- (a) An organized and structured performance improvement program;
- (b) A multidisciplinary performance improvement review committee. The committee may be combined with another performance improvement committee established by the hospital;
- (c) The collection and submission of trauma data pursuant to chapter 44:68:04;
- (d) A hospital and pre-hospital trauma care performance improvement review;
- (e) A quarterly mortality and morbidity case review;
- (f) An operation performance improvement review program including notification and arrival times for the following team members:

- (i) An on-call physician, physician assistant, or nurse practitioner;
- (ii) A radiology technologist;
- (iii) A laboratory technician; and
- (iv) A respiratory therapist, if part of the trauma team;

(g) A published on-call schedule for trauma team members; and

- (h) A collaborative involvement in pre-hospital care protocols; and
- (8) The hospital's staff educational requirements shall be as follows:
 - (a) The physician medical director shall have current certification in ATLS education;
 - (b) The surgeon, if on staff, shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years;
 - (c) The physician covering the emergency department shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years;
 - (d) The physician assistant or nurse practitioner covering the emergency department shall:
 - (i) Have current certification in ATLS education; or
 - (ii) Have documentation indicating successful completion of ATLS education at least once and a minimum of 16 hours of trauma continuing medical education credits every four years; and
 - (e) Each emergency department nurse shall be current in TNCC education.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

CHAPTER 44:68:03

PRE-HOSPITAL EMERGENCY SERVICES TRIAGE AND TREATMENT PROTOCOLS

Section

- 44:68:03:01 Local emergency medical services transport plan.
- 44:68:03:02 Content of transport plan.
- 44:68:03:03 Triage.
- 44:68:03:04 Treatment protocols.

44:68:03:01. Local emergency medical services transport plan. Each emergency medical service shall develop and implement a local emergency medical service transport plan for the transport of trauma team alert patients. The LEMSTP shall be approved by each participating health care entity named in the plan and the medical director of the emergency medical service. The final LEMSTP shall be submitted to the department for approval. The LEMSTP shall be updated and submitted to the department at least every five years, and if the LEMSTP is revised.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:03:02. Content of transport plan. The LEMSTP shall include:

- (1) The name of the ambulance service;
- (2) The city where the ambulance service is located;
- (3) Name of person completing the transport plan;
- (4) The date the transport plan was completed;
- (5) Hospital resources, including designated trauma hospitals in response area;
- (6) Other resources, including rugged and technical rescue or special rescue capability or biohazard decontamination capability;
- (7) Additional resources, including ground ambulance service, quick response units, rescue and extrication units, air medical services, and first responder groups;
- (8) A service area map;
- (9) The trauma transport protocol, by zones if applicable;
- (10) The criteria utilized to activate a trauma team alert;
- (11) The criteria utilized to activate mutual aid or ALS by ground and air; and
- (12) A signature page including the signatures of:
 - (a) The ambulance service chief officer;
 - (b) The ambulance service medical director;
 - (c) The primary receiving hospital trauma coordinator;

Source: 35 SDR 304, effective June 29, 2009; 42-SDR 97, effective January 4, 2016.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:03:03. Triage. Each emergency medical service shall adopt triage guidelines that include processes for identifying patients based on severity of injury and for prioritizing patients for treatment and transport. These guidelines shall be used for any event that places significant demand on local resources, be it equipment or personnel.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

44:68:03:04. Treatment protocols. Each emergency medical service shall adopt trauma patient treatment protocols that have been reviewed and approved by the service medical director. These protocols shall meet the most recent edition of the South Dakota Department of Health EMS Pre-Hospital Treatment Guidelines, 3rd Edition, 2010.

Source: 35 SDR 304, effective June 29, 2009; 42 SDR 97, effective January 4, 2016.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

Reference: South Dakota Department of Health EMT Pre-Hospital Treatment Guidelines, 3rd Edition, 2010. Copies may be obtained at no cost from the South Dakota Department of Health, 600 East Capitol Avenue, Pierre, SD 57501 or online at <http://doh.sd.gov/documents/ems/emt/BasicGuidelinespdf>.

CHAPTER 44:68:04

STATEWIDE TRAUMA REGISTRY

Section

- 44:68:04:01 Reporting.
44:68:04:02 Confidentiality of trauma registry data.

44:68:04:01. Reporting. The department shall establish a trauma registry. Level I, II, III, IV, and V trauma hospitals shall report to the department regarding any patient that meets the local hospital criteria for trauma team activation, or any patient that has a hospital admission of greater than 48 hours with at least one injury, an International Classification of Diseases, 9th revision ICD-9 diagnosis code between 800.00 and 959.9, including 940-949 (burns), excluding 905-909 (late effects of injuries), 910-924 (blisters, contusions, abrasions, and insect bites), 930-939 (foreign bodies), and isolated hip fractures resulting from a same level fall unrelated to a traumatic event, and also meet at least one of the following criteria:

- (1) The patient's outcome was death due to trauma;
- (2) The patient was admitted to the intensive care unit and/or operating room; or
- (3) The patient was transferred either into or out of the hospital.

Reporting may occur electronically, through completion of the paper form, or another method approved by the department.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

Reference: International Classification of Diseases, 9th revision, 2009. Copies may be obtained from Ingenix, PO Box 27116, Salt Lake City, UT 84127-0116. Cost: \$94.95 or order online at http://www.shopingenix.com/modules/catalog/catalog_product.asp?ProductID=28934&CategoryID=100093&MarketType=.

44:68:04:02. Confidentiality of trauma registry data. Any report required to be submitted to the statewide trauma registry is strictly confidential medical information. No report may be released, shared with any agency or institution, or made public, upon subpoena, search warrant, discovery proceedings, or otherwise. No report is admissible as evidence in any action of any kind in any court or before any tribunal, board, agency, or person. However, the department may release data for statistical purposes in such a manner that no person, hospital, or emergency medical service can be identified.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL 34-12-54.

Law Implemented: SDCL 34-12-53, 34-12-54.

Injury Prevention

Injury Prevention

As the first component of the continuum of care model, injury prevention plays an instrumental role in the reduction of morbidity and mortality. Adequate resources should be committed to injury prevention activities for both internal and external value.

Injury prevention is multidisciplinary; therefore, trauma hospitals should work alongside local Emergency Medical Service agencies to develop prevention strategies specific to community needs. Data resources such as the trauma registry for hospitals and EMStat5 for pre-hospital providers yield statistical data commensurate for building such strategies. The Office of Highway Safety Accident Records, which incorporates injury prevention, provides crash data allowing for another layer of data and prevention ideas. Since many patients die without transport to trauma hospitals, these resources should be included for statistical analysis.

Local law enforcement, local fire departments, and state Department of Transportation agencies; in addition, to local businesses should all be part of the multidisciplinary team with a vision to reduce morbidity and mortality.

As a first priority, injury prevention should focus on provider safety ensuring Emergency Medical Services and hospital personnel are routinely protected from infectious disease and scene safety.

Prevention activities should change with the seasons; especially, in South Dakota. Walk like a penguin, which reinforces careful movement across icy conditions for elderly populations, have been successful in reducing hip and pelvic fractures. Pool safety clinics bring a greater awareness to business owners and partakers on the safety and dangers of pools. Farm safety clinics increase awareness to safety practices and potential dangers while working on the farm. And the list goes on and on. The caveat to injury prevention is choosing the right activity at the right time for the right population that will have the greatest impact.

The Haddon matrix, as one example, identifies three factors influencing injury: the host, agent, and environment and comparing to the second dimension of injury phase: pre-event, event, and post-event. Careful analysis of injury patterns and injury phases can contribute to preventable strategies.

Sleet, David A., et al. "Injury Prevention, Violence Prevention, and Trauma Care: Building the Scientific Base." *Morbidity and Mortality Weekly Report (MMWR)* 60(04); (2011): 78-85. Web. 13 July. 2012.

Sample Activities

Car Seat Safety	Bike Safety	Pool/Water Safety
Farm Safety	ATV Safety	Walk like a Penguin
Poison Control	Fire Safety	Home Safety
Pedestrian Safety	Playground Safety	Booster Seat Safety
Weather Safety	Road Safety	Toy Safety
Children in Vehicle Safety	Fall Prevention	Distracted Driving Safety
Sun Safety	Sports Safety	Roadway Safety

Injury Prevention Websites

Safe Kids USA www.safekids.org

Safe States <http://safestates.org/>

Centers for Disease Control and Prevention <http://www.cdc.gov/injury/index.html>

National Highway Traffic Safety Administration <http://www.nhtsa.gov/>

Healthy Children <http://www.healthychildren.org/English/safety-prevention/Pages/default.aspx>

Children's Safety Network <http://www.childrenssafetynetwork.org/>

Poison Help 1-800-222-1222 <http://poisonhelp.hrsa.gov/>

My Safe Home <http://www.mysafehome.net/>

U.S. Fire Administration for Kids <http://www.usfa.fema.gov/index.html>

Emergency Medical Services

Emergency Medical Services

The Office of Emergency Medical Services (OEMS), within the Department of Health, regulates ambulance service licensure and Emergency Medical Technician (EMT) certification, among other responsibilities. The OEMS works in conjunction with the South Dakota Board of Medical and Osteopathic Examiners (SDBMOE) who licenses Advanced Life Support (ALS) providers.

EMS is an intricate part of the trauma system and is often the first response to an injured patient. Of the sixty-six counties in South Dakota, only two are considered Rural with the remaining Frontier. Due to this geographical makeup, some ambulance services may have response times greater than one hour with equal or greater transport times. Even with four ALS aeromedical services, time is one of the greatest impedances of transportation.

EMS CERTIFICATION AND LICENSURE

EMTs in South Dakota must be certified; therefore, EMTs must complete an entry examination through the National Registry of Emergency Medical Technicians (NREMT) or have previous NREMT certification and maintain current credentials from another state. This examination consists of two parts: cognitive and psychomotor. After successful completion of the NREMT examination, EMTs are granted reciprocity; then, certification. Pre-hospital providers functioning at the ALS level must seek licensure through the SDBMOE.

For decades, the OEMS has certified four levels of pre-hospital providers: EMT-Basic, EMT-Intermediate/85, EMT-Intermediate/99, and EMT-Paramedic. Through the EMS Agenda for the Future: A Systems Approach, EMS education and skill sets used by pre-hospital providers are evolving.

The EMS Agenda for the Future: A Systems Approach consists of five components:

- National EMS Core Content
- National EMS Scope of Practice
- National EMS Education Standards
- National EMS Education Program Accreditation
- National EMS Certification

With the adoption of the EMS Agenda for the Future: A Systems Approach, the OEMS has adopted new provider levels commensurate to The Agenda. The new levels include:

- EMT (Replaces EMT-Basic)
- AEMT (Combines EMT-Intermediate/85 and /99 levels into one)
- Paramedic (Replaces EMT-Paramedic)
- EMT-Intermediate/85 (Grandfather)
- EMT-Intermediate/99 (Grandfather)

The transition above denotes new depth and breadth of education for pre-hospital providers; consequently, new skill sets have been implemented. All EMS providers are required to take a transition course as part of this Agenda. It is important to note the Intermediate/85 and /99 levels will remain in South Dakota but will be grandfathered. Additional information regarding the EMS Agenda for the Future: A Systems Approach can be found at www.ems.gov.

AMBULANCE LICENSURE

The EMS Program licenses 124 ground ambulance services and 4 in-state air services inclusive to South Dakota. Since there are no statutes requiring ambulance services to license as Advanced Life Support (ALS) or Basic Life Support (BLS), it remains difficult to decipher what populations exist in either group. Approximately 86% of ambulance services in South Dakota are volunteer and function at the BLS level.

Although there are no definitive levels of ambulance licensure, all services are required to carry, either printed or electronic, BLS protocols approved by the EMS Program. The most recent version can be found under events and information at ems.sd.gov. Ambulance Services offering ALS must have protocols approved by local medical direction.

AMBULANCE PERSONNEL

According to a 2012 report from the EMS Program, there are approximately 3405 EMS providers in South Dakota; 2666 are EMTs; 233 are Intermediate/85s; 9 are Intermediate/99s; one is an AEMT; and 496 are Paramedics. The EMS Program does not currently recognize Emergency Medical Responders (EMR) which is the most basic level of pre-hospital providers.

MEDICAL DIRECTION

All ambulance services are required to have medical direction. A service medical director is responsible for protocol review and development, quality assurance, and general medical direction oversight.

An introduction to Rural EMS Medical Direction in South Dakota, developed by Safetech Solutions, LLP, and funded through the Office of Rural Health, was created to assist rural medical directors with knowledge and tools for effective medical direction.

STANDARD EQUIPMENT

The EMS Program requires all ambulances to carry standard equipment. ALS services must maintain the minimum standards; in addition, to equipment and supplies mandated by medical direction or oversight board. An equipment checklist can be found in Appendix H.

EMS LAWS

Laws applicable to EMS can be found at ems.sd.gov, under ambulance service information.

Intermedix PATIENT CARE REPORTS

Ambulance services use Intermedix, a Patient Care Reporting (PCR) software, for data collection. Intermedix is a National Emergency Medical Service Information System (NEMSIS) compliant software vendor.

Intermedix has a Hospital Access platform allowing receiving facilities access to PCRs.

For Intermedix Technical Support, contact 1-888-735-9559. Inquiries can also be made through the EMS Program at 605-773-4031.

Trauma Hospitals

Trauma Hospitals

The Trauma System required each hospital to meet requirements of one of the designated levels of trauma hospitals by January 1, 2012. Level I, II, and III hospitals are verified through the American College of Surgeons-Committee on Trauma (ACS-COT) verification team whereas the Level IV and V hospitals are designated through a state site review team. A facility's verification/designation classification is based on national standards from the ACS-COT. Trauma Hospital designation in South Dakota does not constitute an inferior/superior quality of care; more so, designation is based on resource capabilities. Therefore it is an expectation that each trauma hospital provide the highest quality of care regardless of designation.

Designation Levels

Designation levels follow criteria established by American College of Surgeons. South Dakota trauma hospitals are delineated into six categories.

TTH-Regional Trauma Hospital-ACS II

- Currently verified American College of Surgeons Level I Trauma Center

RTH-Regional Trauma Hospital-ACS II

- Currently verified American College of Surgeons Level II Trauma Center
- Trauma surgeon at all trauma team activations
- Neurosurgery continuously and promptly available

ATH-Area Trauma Hospital –ACS III

- Currently verified American College of Surgeons Level III Trauma Center
- Continuous surgical coverage of emergency department
- 24/7 in-house physician coverage of emergency department
- Orthopedic surgery on-call 24/7

CTH-Community Trauma Hospital-SD IV

- Surgical coverage of emergency department for all trauma team activations 80% of calendar year, minimum
- Trauma transfer guidelines in place when surgery not available
- 24/7 physician coverage of emergency department

TRH-Trauma Receiving Hospital-SD V

- 24/7 emergency department coverage by physician, physician assistant or nurse practitioner
- No surgical services required

NTH-Non-Trauma Hospital-SD VI

- Licensed specialty hospitals only
- Trauma transfer protocols in place in the event a trauma is received

Level I, II, and III Trauma Hospitals

Level I, II, and III trauma hospitals are verified through the American College of Surgeons. Standards such as, but not limited to, hospital organization, clinical functions, performance improvement and patient safety, outreach and education, research, to prevention and rehabilitation are assessed during this process. Hospitals applying for Level I, II, or III trauma hospital designation in South Dakota shall provide evidence of current trauma hospital verification from the American College of Surgeons. Designation of Level I, II, or III will be granted after submission of state application and evidence of ACS verification. The department shall issue a certificate of designation with an expiration date consistent with the American College of Surgeons verification expiration date.

Level IV and V Trauma Hospitals

Level IV and V trauma hospitals are not verified through the ACS; they are designated through a state review process. Standards for Level IV and V Trauma Hospitals are described in Administrative Rule 44:68:02:07 and 44:68:02:08, respectively. Hospitals applying for Level IV or V trauma designation shall submit an application to the department. An on-site visit will then be conducted to verify the contents of the application along with a comprehensive review of the facility's trauma system. Facilities compliant with acceptable standards will be issued a certificate of designation to expire three years from the date of issuance.

Level VI Non-Trauma Hospitals

Level VI Trauma Hospitals, or specialty hospitals, shall submit an application to the department including: The type of healthcare services provided at the facility; that 24/7 registered nurse supervision is available, except for facilities with swing beds; and Transfer protocols are in place for trauma patients. Following submission of the above criteria, NTH will be issued a certificate of designation expiring three years from the date of issuance.

Failure to maintain designation as a trauma hospital

A hospital that fails to maintain the criteria established pursuant to SDCL 34-12-52 to 34-12-55, inclusive, and this article shall submit a plan of correction to the department for approval. Once the plan is approved, the hospital shall complete the plan of correction within the timeframe outlined in the plan. The department may reinstate the trauma hospital as a designated trauma hospital upon completion of the plan of correction. Failure

to follow an approved plan of correction or failure of a hospital to meet one of the six designation levels shall result in notification to the secretary of the department that the hospital has failed to comply with all applicable laws and regulations.

Designation Process

Designation Process

LEVEL I, II, AND III TRAUMA HOSPITALS

Following the ACS-COT verification, the facility will be issued a verification or a deficiency letter. Level I, II, and III facilities seeking state designation must receive official verification results from the College. State designation may be granted after successful completion of a department approved application and letter of verification from the College. The department shall issue a certificate of designation with an expiration date consistent with the American College of Surgeons verification expiration date.

Verification

Level I, II, and III trauma hospitals are verified through the American College of Surgeons. The ACS-COT will conduct an on-site verification, typically 6-8 hours in length over two days. Verification may consist of the following:

Review of:

- Emergency Department
- Operating Room/PACU
- ICU
- Radiology
- Blood Bank/Laboratories
- Rehabilitation

Potential Interviews:

- Hospital Administration
- Trauma medical director
- Neurosurgeon
- Orthopedic surgeon
- Trauma coordinator and registrar
- Chief of staff

Chart Reviews:

- Quality Improvement
- Review medical records

Additional items that should be available include:

- Call schedules
- CME and credentialing
- Trauma nurse credentialing
- Quality improvement processes
- Quality improvement record review

Designation Process-- Level IV and V Trauma Hospitals

Level IV and V hospitals are designated through a state site review team. Teams consist of the state trauma program manager, an RN consultant, and for Level IV facilities, a trauma surgeon consultant. Trauma hospital designation must be renewed every three years per Administrative Rule. The following section will assist facilities in preparation for this process.

Application process:

The Department of Health will notify Level IV and V trauma hospitals prior to the expiration date noted on the certificate of designation. An agenda noting the date of the site visit will be mailed to the trauma hospital three months prior to the visit. The trauma coordinator or designee must complete an application provided by the department and submit all required materials no less than three months prior to the scheduled site visit. All applications will be reviewed for accuracy. If further information or clarification is needed, the trauma program manager will communicate with the designated contact.

Site review preparation:

Site visits are conducted during one business day and last typically four to six hours. The site review team will consist of the state trauma program manager and an RN consultant for Level V trauma hospitals and the state trauma program manager, RN consultant, and surgeon reviewer for Level IV trauma hospitals. At the conclusion of the site visit, an exit interview providing preliminary findings will be made. An official designation report denoting the trauma hospitals strengths, opportunities for improvement, and recommendations will be mailed within 30-60 days. Trauma hospitals in compliance will be issued a certificate of designation to expire three years from issuance. Trauma hospitals who have not successfully met compliance will be required to submit a corrective action plan to the department. Once the plan is approved, the hospital shall complete the plan of correction within the timeframe outlined in the plan.

The purpose of the site review is to verify a hospital's compliance with state regulation. Since site reviews typically last only four to six hours, we ask trauma personnel to carefully prepare by having all documents and medical records available to the site review team. The site review team may ask for additional information during the review.

A typical review will consist of, but not be limited to the following:

- Opening meeting
 - Overview of designation process
 - Review of trauma hospital application and included documentation
 - Interview EMS Personnel
 - Short presentation overviewing the community, facility resources, and trauma program development including injury prevention.
- Ambulance Entrance/Emergency Room
 - Review of department, resuscitation area, equipment, protocols, staffing and trauma call

- Interview essential personnel
- Review pre-hospital interaction and performance improvement feedback mechanism
- Operating Room/PACU (if applicable)
 - Review of department and equipment
 - Interview essential personnel
 - Check operating room schedule
 - Determine how a trauma operating room suite is opened STAT
- ICU (if applicable)
 - Inspect facility and review equipment
 - Interview essential personnel
 - Discuss patient triage and bed availability
- Radiology
 - Inspect facility and review equipment
 - Interview essential personnel
 - Discuss patient triage
 - Determine patient monitoring policy
- Laboratory/Blood Bank
 - Inspect facility
 - Interview essential personnel
 - Determine availability of blood products and massive transfusion protocols
- Medical Records Review
 - Review medical records for patients meeting trauma registry criteria for designated year on application including all trauma deaths, inter-facility transfers for trauma, stays in your facility for greater than 48 hours, and any others that meet trauma team alert criteria
 - Performance improvement activities including trauma committee meeting minutes
 - Trauma policies or guidelines, transfer agreements, trauma education records of medical and nursing staff, trauma team call schedules, and injury prevention will also be reviewed
 - EMS run sheet within patient chart
 - Review of trauma education for medical and nursing staff
 - Review multidisciplinary trauma committee minutes
 - Review other documents as necessary

Being prepared for and providing evidence supporting each topic area will contribute to a successful review.

Trauma Registry

Trauma Registry

The Trauma System requires all trauma hospitals to submit data to the Trauma Registry with the exception for Level VI facilities. The Trauma Registry collects and allows for the analysis of trauma specific data statewide. Trauma hospitals have the ability to run standard reports through Report Runner, a subset of the Trauma

Registry, allowing for data analysis at the facility level. The Report Runner feature should be used as a component for performance improvement.

44:68:04:01. Reporting. The department shall establish a trauma registry. Level I, II, III, IV, and V trauma hospitals shall report to the department regarding any patient that meets the local hospital criteria for trauma team activation, or any patient that has a hospital admission of greater than 48 hours with at least one injury, an International Classification of Diseases, 10th revision ICD-10 diagnosis code between S00 – S99 with 7th character of A, T07, T14, T20 – T28 with 7th character of A, T30 – T32 (burns, frostbite), T33 – T34 with 7th character of A (burns, frostbite), T59.81 with 7th character of A (smoke inhalation), T71 with 7th character of A (asphyxiation), T75.0 with 7th character of A (lightning), T75.1 with 7th character of A (drowning), T75.4 with 7th character of A (electrocution) or, T79 with 7th character of A (early complications from trauma), and also meet at least one of the following criteria:

- (1) The patient's outcome was death due to trauma;
- (2) The patient was admitted to the intensive care unit and/or operating room; or
- (3) The patient was transferred either into or out of the hospital.

Reporting may occur electronically, through completion of the paper form, or another method approved by the department.

Source: 35 SDR 304, effective June 29, 2009.

General Authority: SDCL [34-12-54](#).

Law Implemented: SDCL [34-12-53](#), [34-12-54](#).

Reference: International Classification of Diseases, 9th revision, 2009. Copies may be obtained from Ingenix, PO Box 27116, Salt Lake City, UT 84127-0116. Cost: \$94.95 or order online at

http://www.shoppingenix.com/modules/catalog/catalog_product.asp?ProductID=28934&CategoryID=100093&MarketType=.

Performance Improvement

Performance Improvement

Performance Improvement (PI) is a continuous evaluation of a trauma system. PI evaluates the care of an injured patient through a structured process. PI is not intended to be punitive in nature; rather, it is intended to improve outcomes. It is important to know there is not an exact prescription for PI programs. That being said, one hospital's PI program may look despairingly different from another, yet the outcomes should all be similar; find an opportunity for improvement, create an action plan for improving the process, gather the necessary personnel to address the process, and finally, provide loop closure.

It is also important to know PI programs should be led by the trauma medical director and the program should be multidisciplinary. Finally, administrative involvement is essential for a PI plan to be effective and results driven.

SD Trauma System Performance Improvement Plan

Purpose:

- To measure, evaluate and improve processes and outcome of care from 9-1-1 dispatch through rehabilitation.

Goals:

- Decrease mortality and Morbidity
- Reduce inappropriate variations in care
- Promote optimal trauma care
- Implement process improvement initiatives based on best practice

Quarterly PI Webinars:

- Case Reviews conducted quarterly for each region
- Confidentiality agreement must be signed
- Reviews conducted via conference call and/or webinar
- Non-punitive discussion platform

Lead Agency

The South Dakota Department of Health is the lead government agency authorized by law to develop and oversee a comprehensive, statewide trauma system PI program. The South Dakota Department of Health has legal authority to monitor, evaluate and improve processes of trauma care and outcomes throughout the state.

Structure: Multidisciplinary

- Internal: local hospital, ambulance service or agency
- External: state system

State Trauma PI Committee

- Monitor – analyze statewide PI data for patterns or trends in care processes, evaluate outcome and recommend improvement initiatives
- Establish pre-defined measure, expectation, or indicators.

Data Collection:

- Specific, uniform data includes
 - ◆ Injury incident
 - ◆ Demographics
 - ◆ Pre-hospital information

- ◆ Diagnosis
- ◆ Treatment
- ◆ Outcomes
- Reliable, valid & objective data

Information Source

- South Dakota standardized definitions
- Data definitions consistent with NTDB

Scope of Review

- Entire spectrum of care from access (9-1-1), pre-hospital, acute care hospital, and rehab
- Inclusive of adult and pediatric performance expectation

Confidentiality

- South Dakota Department of Health responsible for ensuring state law adequately protects PI efforts and action from discovery
- Individual agencies and/or institutions responsible for protecting internal PI activities and actions

Scope of Review

1. Statewide system

- Objectively review variations in processes and outcome of groups of patients.

2. Hospital & EMS Agencies

- Effectively monitor compliance with system standards, track variability and document improvements
- Process indicators
- Performance indicators
- Clinical indicators
- System indicators
- Example of PI Indicators (Audit Filters)
 - ◆ Provider response times (ED)
 - ◆ Timeliness of care (ED)
 - ◆ Undertriage (patient met trauma alert criteria and activation did not occur) (ED & EMS)
 - ◆ Overtriage (patient did not meet criteria but activation did occur) (ED & EMS)
 - ◆ Readmission
 - ◆ Missed or delayed diagnosis (ED)
 - ◆ Decision to transfer > 1 hour of patient's arrival (ED)
 - ◆ Deaths (ED & EMS)
 - ◆ Deviation from assessment and transfer protocols (EMS & ED)
 - ◆ Availability of pre-hospital trip reports at hospital (EMS)
 - ◆ Scene time > 20 minutes, i.e. measured as time EMS personnel "touch" patients to load into ambulance (EMS)

- ◆ Prolonged extrication (EMS)
- ◆ Lack of appropriate warming devices (ED)
- ◆ Complications (ED)
- ◆ ED LOS > 2 hours

3. Monitoring process

- Rate based
 - ◆ Frequency of occurrence/total of trauma cases
 - ◆ trending
- Sentinel event or single event
 - ◆ An event that resulted in an unanticipated death or major permanent loss of function not expected or related to the patient's course of care

4. Levels of Review

- Primary Review: find issue via concurrent and retrospective monitoring → validate → immediate resolution and feedback or refer to next level
- Secondary Review
 - ◆ Review by Trauma Medical Director and Trauma Program Manager
 - ◆ Investigation and validation
 - ◆ Refer to multidisciplinary committee (Trauma M&M)
 - ◆ Define action warranted
 - Education
 - Protocol revision or development
 - Equipment purchase or re-education
 - Disciplinary action if warranted
- Loop closure
 - ◆ Continued assessment/monitoring

5. Trauma Patient Population & Registry Inclusion

- South Dakota Inclusion Criteria: ICD-9 – E800-E959.9
- Excludes:
 - ◆ Late effects of injury (905-909.9)
 - ◆ Superficial injuries (910-924.9)
 - ◆ Foreign bodies (930-939.9)
 - ◆ Elderly patients who fall with isolated hip fractures
- Includes:
 - ◆ All patients designated as trauma alerts or trauma team
 - ◆ Deaths
 - ◆ Transferred to higher level of care
 - ◆ Admission to ICU
 - ◆ Hospitalization > 48 hours

Appendixes

Appendix A.....	State Designated Trauma Hospitals
Appendix B.....	Trauma Team Alert Patient Criteria
Appendix C.....	Level I, II, and III Trauma Hospital Application
Appendix D.....	Level IV and V Trauma Hospital Application
Appendix E.....	Level VI Trauma Hospital Application
Appendix F.....	EMS Trauma Transportation Plan
Appendix G.....	EMS Maps—Density and Staff
Appendix H.....	EMS Equipment Checklist
Appendix I.....	Rural EMS Medical Direction in SD
Appendix J.....	Hospital Access Manual
Appendix K.....	Trauma Hospitals Map
Appendix L.....	Trauma Education Contacts
Appendix M.....	State Trauma Coordinator/Registrar Contacts
Appendix N.....	Performance Improvement Forms
Appendix O.....	Performance Improvement Dictionary
Appendix P.....	Sample PI indicators

Appendix A

State Designated Trauma Hospitals

Designated Regional Trauma Hospital (RTH-Level II)

- *Currently verified American College of Surgeons Level II Trauma Center*
- *Trauma surgeon at all trauma team activations*
- *Neurosurgery continuously and promptly available*

Avera McKennan Hospital and University Health Center – Sioux Falls

Rapid City Regional Hospital – Rapid City

Sanford USD Medical Center – Sioux Falls

Designated Area Trauma Hospital (ATH-Level III)

- *Currently verified American College of Surgeons Level III Trauma Center*
- *Continuous surgical coverage of emergency department*
- *24/7 in-house physician coverage of emergency department*
- *Orthopedic surgery on-call 24/7*

Avera St. Luke's Hospital – Aberdeen

Avera Sacred Heart Hospital – Yankton

Sanford Hospital-Aberdeen

Designated Community Trauma Hospital (CTH-Level IV)

- *Surgical coverage of emergency department for all trauma team activations 80% of calendar year, minimum*
- *Trauma transfer guidelines in place when surgery not available*
- *24/7 physician coverage of emergency department*

Huron Regional Medical Center – Huron

Madison Community Hospital – Madison

Mobridge Regional Hospital – Mobridge

St. Mary's Healthcare Center – Pierre

Prairie Lakes Hospital – Watertown

Spearfish Regional Hospital – Spearfish

Avera Queen of Peace Hospital – Mitchell

Winner Regional Healthcare Center Winner

Designated Trauma Receiving Hospital (TRH-Level V)

- *24/7 emergency department coverage by physician, physician assistant or nurse practitioner*
- *No surgical services required*

Douglas County Memorial Hospital – Armour
Bowdle Hospital – Bowdle
Marshall County Healthcare Center– Britton
Brookings Hospital – Brookings
Community Memorial Hospital – Burke
Sanford Canton-Inwood Medical Center – Canton
Sanford Health - Medical Center – Chamberlain
Sanford Medical Center Clear Lake – Clear Lake
Custer Regional Hospital – Custer
Lead-Deadwood Regional Hospital – Deadwood
Avera Dells Area Health Care Center – Dell Rapids
Avera DeSmet Memorial Hospital – DeSmet
Eureka Community Hospital – Eureka
Faulkton Area Medical Center – Faulkton
Avera Flandreau Medical Center – Flandreau
Freeman Regional Health Services – Freeman
Gettysburg Medical Center – Gettysburg
Avera Gregory Healthcare Center – Gregory
Fall River Health Services – Hot Springs
Milbank Area Hospital Avera Health – Milbank
Avera Hand County Memorial Hospital – Miller
Avera St. Benedict Health Center – Parkston
Hans P. Peterson Memorial Hospital – Philip
Platte Health Center Avera – Platte
Community Memorial Hospital – Redfield
Landmann-Jungman Memorial Hospital – Scotland
Coteau Des Prairies Hospital – Sisseton
Sturgis Regional Hospital – Sturgis
St. Michael's Hospital – Tyndall
Sanford Vermillion Medical Center – Vermillion
Pioneer Memorial Hospital – Viborg
Wagner Community Memorial Hospital – Wagner
Avera Wesskota Memorial Medical Center – Wessington Springs
Sanford Hospital Webster – Webster

Designated Non-Trauma Hospital (NTH-Level VI)

- *Licensed specialty hospitals only*
- *Trauma transfer protocols in place in the event a trauma is received*

Avera Heart Hospital of South Dakota – Sioux Falls
Black Hills Surgical Hospital – Rapid City
Children's Care Hospital and School – Sioux Falls
Dakota Plains Surgical Center – Aberdeen
Lewis and Clark Specialty Hospital – Yankton
Sioux Falls Surgical Hospital – Sioux Falls

Siouxland Surgery Center – Dakota Dunes
South Dakota Human Services Center – Yankton
Spearfish Regional Surgery Center – Spearfish

Appendix B

Trauma Team Alert Patient Criteria

For a pdf of the SD Trauma Team Alert Patient Criteria please follow the following link...

<https://doh.sd.gov/media/5jvnwfuh/definitiontraumateamalertpatient.pdf>

Appendix C

Level I, II, and III Trauma Hospital Application

For the complete Tertiary Trauma Hospital (TTH)/Regional Trauma Hospital (RTH)/Area Trauma Hospital (ATH) application please visit...

<http://doh.sd.gov/documents/Providers/Trauma/ApplicationSDRTHATH.pdf>

Appendix D

Level IV and V Trauma Hospital Application

For the complete Community Trauma Hospital (CTH)/Trauma Receiving Hospital (TRH) application please visit...

<http://doh.sd.gov/documents/Providers/Trauma/ApplicationSD.pdf>

Appendix E

Level VI Trauma Hospital Application

For the complete Non-Trauma Hospital (NTH) application please visit...

<http://doh.sd.gov/documents/Providers/Trauma/ApplicationSDNTH.pdf>

Appendix F

EMS Trauma Transportation Plan

For a pdf of the SD EMS Trauma Transportation Plan please follow the following link...

<http://doh.sd.gov/documents/Providers/Trauma/TraumaTransportPlan.pdf>

Appendix G

EMS Maps—Density and Staff

For a pdf of the SD EMS Program Specialist Coverage Area Map, please follow the following link...

<http://doh.sd.gov/documents/EMS/CoverageMap.pdf>

Appendix H

EMS Equipment Checklist

For a pdf of the SD EMS Equipment Checklist please follow the following link...

<http://doh.sd.gov/documents/EMS/GroundServiceEquipList.pdf>

Appendix I

Rural EMS Medical Direction

An Introduction to RURAL EMS MEDICAL DIRECTION IN SOUTH DAKOTA GUIDE can be found on the South Dakota Department of Health Website by following the link below...

<http://doh.sd.gov/documents/EMS/MedDirGuide.pdf>

EMS Medical Director Position Description

The EMS Medical Director is responsible for the overall training, supervision and credentialing of all licensed EMS personnel functioning within the system. The Medical Director also develops and oversees the system quality assurance program and initiatives.

This is a part-time position that is expected to take 10–20 hours per month to fulfill the goals and responsibilities of the position.

Reports to: EMS Agency Administrator/Political Body

Requirements:

Maintain current South Dakota medical license.

General knowledge of EMS with specific knowledge of licensure levels, scopes of practice, and EMS skills and procedures.

Completion of formal Medical Director Training Course (preferred).

Duties:

Development of credentialing process to ensure provider competency in education and skills.

Develop and oversee quality assurance program, including state-required chart reviews and other initiatives pertinent to the agency.

Participate in:

- Chart review.
- Continuing education programs.
- Disciplinary proceedings.

Development and adoption of patient treatment protocols.

Liaison with online medical control physicians and general medical community.

Participate in regional and state EMS activities and initiatives, including advisory committees.

Hospital Access Manual



Hospital Access

User Manual

This User Manual will only focus on the steps needed to access, and use the Intermedix Hospital Access portion of WebCUR™. Please refer to the Intermedix EMStat™ User Manual for all other WebCUR™ functions.

The Hospital Access feature in WebCUR™, gives Hospitals the ability to gain access to patient care reports (PCR's) who were transported to their facility. Once PCR's are saved by services using the Intermedix EMStat™ application, the report will then display in the WebCUR™ repository.

Authorized hospital users of the system can log in and download trips after permission has been granted by the EMS organization. The hospital only sees PCR's on which they are marked as the "Receiving Facility".

The EMS organization maintains access control to the hospitals. The WebCUR™ Hospital Access system electronically tracks users as they access the record.

Disclosure: The information in this manual is Confidential Information and is to be considered confidential and proprietary to Owner and Recipient shall hold the same in confidence, shall not use the Confidential Information other than for the purposes of its business with Owner, and shall disclose it only to its officers, directors, or employees with a specific need to know. Recipient will not disclose, publish or otherwise reveal any Confidential Information received from Owner to any other party whatsoever except with the specific prior authorization of Med-Media, Inc.

Your **WebCUR Login** Information is displayed below.



WebCUR Login and PCR Access

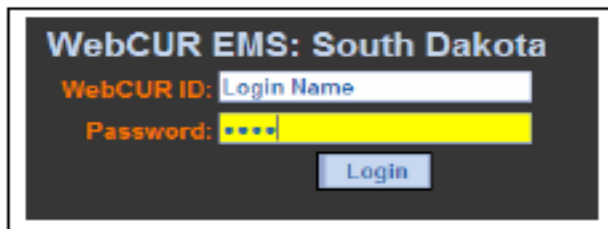
Please follow the steps below to access your Hospital page on WebCUR™.

1. Open an Internet web browser and go to your States WebCUR website.

Example; for South Dakota (SD) go to "SD.WebCUR.com" (no need for "www.")

2. Once on your website, a Login box will display to the screen. Simply enter your **WebCUR™ ID** (Login Name) and **Password** (Case-Sensitive) in the boxes provided. Select the **Login** button to access your Hospital page.

The **WebCUR™ Login** box is displayed below.



WebCUR EMS: South Dakota

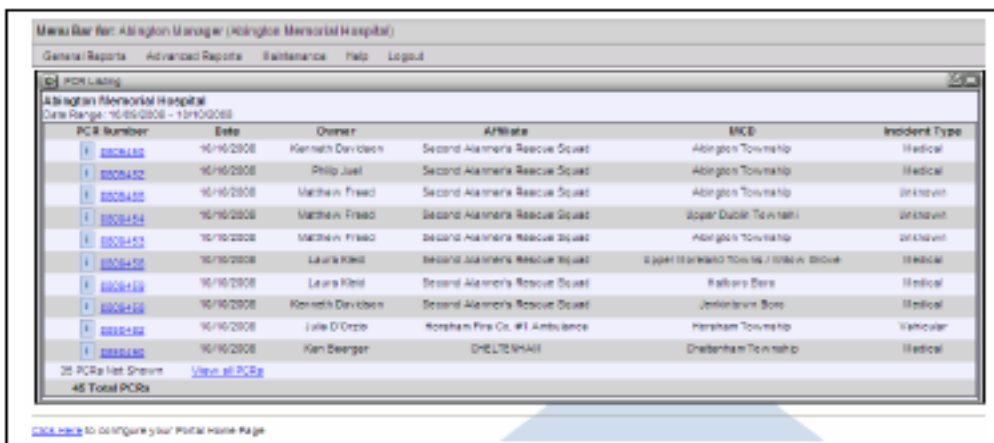
WebCUR ID:

Password:

3. Once the user is logged into WebCUR™, the **PCR Listing grid** displays to the screen. This window also contains the Menu bar and Portal Page setup. *Please refer to the Intermedix EMStat™ User Manual for a detailed description about these menu items.*

The Grid contains the **PCR Number**, **Date** of call, **Owner** of PCR, **Affiliate Name**, **MCD** and **Incident Type**.

The **PCR Listing** grid is displayed below.



Menu Bar for: Abington Manager (Abington Memorial Hospital)

General Reports | Advanced Reports | Maintenance | Help | Logout

PCR Listing

Abington Memorial Hospital
Date Range: 10/05/2008 - 10/10/2008

PCR Number	Date	Owner	Affiliate	MCD	Incident Type
10004100	10/10/2008	Kenneth Devichen	Second Alarmers Rescue Squad	Abington Township	Medical
10004102	10/10/2008	Philip Juel	Second Alarmers Rescue Squad	Abington Township	Medical
10004103	10/10/2008	Matthew Fried	Second Alarmers Rescue Squad	Abington Township	Unknown
10004104	10/10/2008	Matthew Fried	Second Alarmers Rescue Squad	Upper Dublin Township	Unknown
10004105	10/10/2008	Matthew Fried	Second Alarmers Rescue Squad	Abington Township	Unknown
10004106	10/10/2008	Laura Kline	Second Alarmers Rescue Squad	Upper Merion Township / Willow Grove	Medical
10004108	10/10/2008	Laura Kline	Second Alarmers Rescue Squad	Halfway Barn	Medical
10004109	10/10/2008	Kenneth Devichen	Second Alarmers Rescue Squad	Jenkintown Boro	Medical
10004102	10/10/2008	Lyle D'Orso	Northham Fire Co. #1 Ambulance	Northham Township	Vascular
10004100	10/10/2008	Ken Deinger	DHEALTHALL	Drexelham Township	Medical

10 PCR's Not Shown [View all PCR's](#)

48 Total PCR's

[Click here](#) to configure your Portal Home Page

- The PCR Listings display will show the last 24-Hours of activity. To search for a specific date and time, simply select the **General Report-PCR Listing** menu. When this sub menu is selected, a **Date Range** box will display to the screen. Select the desired **Starting Date**, the **Ending Date** and then select the **Run Report** button. All activity for that date range will now display in the PCR Listing grid.

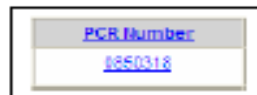
The **Date Range** box is displayed below.



A screenshot of a web form for selecting a date range. It features two date pickers: 'Start Date' and 'End Date'. The 'Start Date' is set to October 9, 2008, and the 'End Date' is set to October 18, 2008. To the right of the date pickers is a button labeled 'Run Report'.

- In the PCR Listings grid, select the desired **PCR Number** to open the record. The user has the option to print the record from the screen.

The **PCR Number** is displayed below.



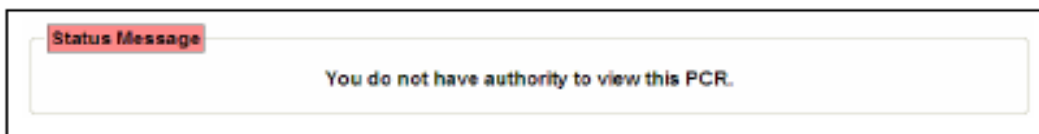
A screenshot of a button labeled 'PCR Number' with a blue underline. Below the button, the number '8850318' is displayed in blue text, indicating it is a clickable link.

Warning: If the PCR is being view in a public area or if the record is printed out, the **LOGIN** assumes all responsibility for patient confidentiality as outlined by the Health Insurance Portability an Accountability Act (HIPPA) of 1996.

Getting Agency approval for PCR access

When the login selects the desired PCR for an Agency that has **NOT** given permission for PCR access, they will receive a message stating that they do not have authority.

The **Status Message** is displayed below.



A screenshot of a 'Status Message' box. The box has a red header with the text 'Status Message'. The main content area contains the message: 'You do not have authority to view this PCR.'

If you would like to view to this PCR, the login will need to request access from this Agency. Select the "Click her to create the access request" button, located in the Informational Message area.

The **Create Access Request** box is displayed below.



When the provider selects the *Request Access* button, a **Managing PCR Access** window will display to the screen.

This area allows you to add/update/delete PCR Access information for the WebCUR™ system. You can grant other individuals/organizations access to your organizations PCR's as well as request access to other organizations PCR's via this feature.

Warning: If you enable access to your organization's PCR's you are assuming all responsibility for patient confidentiality as outlined by the Health Insurance Portability and Accountability Act (HIPAA) of 1996.

The **Managing PCR Access** window is displayed below.

Affiliates with Access to Abington Memorial Hospital PCR's

Disable	ID	Affiliate with Access	Affiliate Can View	Managers Only	View Demographics	View Narrative	Granted By	Granted On	Requested By	Requested On
No Rules Found										

Request Access to Another Organization's PCR's
(Note: Only managers and S.A. personnel from your organization will have access to the PCR's)

Organization: PCR's to View:

View Demographics: View Narrative:

Open Requests to View Abington Memorial Hospital PCR's

Accept/Reject	ID	Requesting Affiliate	Requesting to View PCR's	Managers Only	View Demographics	View Narrative	Requested By	Requested On
No Open Requests Found								

Open Abington Memorial Hospital Requests to View Other Affiliate's PCR's

ID	Target Affiliate	Requesting to View PCR's	Managers Only	View Demographics	View Narrative	Requested By	Requested On
205	Whitemarsh Ambulance	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-10 09:43:30
206	Springfield Ambulance Association	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-10 09:43:51
208	Plymouth Ambulance	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-10 09:45:19
209	Hanoverville Area EMS Inc.	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-10 09:46:36
218	Community Ambulance Association of Ambler	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-10 09:49:36
217	Community Ambulance Association of Ambler	Where Receiving Facility is Abington Memorial Hospital	Yes	Yes	Yes	Abington Manager	2008-10-14 16:34:17

Affiliates with Access to your facility

This area will not pertain to Hospital Access facilities. The area is used by EMS Organizations using the Med-Media EMStat™ application to track which facilities/affiliates are viewing their PCR's.

Request Access to Another Organization's PCR's

This area will be used by Hospital's requesting access to Ambulance Services. When the login selects a specific PCR to view, and is denied, that organizations **Name** will display in the **Organization** box. Simply select the items you want to view in the PCR from the check boxes available and **Post** the request. When the login *Posts* the request, the manager of that Ambulance organization will be emailed the request for your access. The manager of that organization has the ability to reject your request as well as limit what specifically you have the ability to view.

The login also has the ability to request several organizational access requests from this area at once.

Open Request to View your facility

This area will not pertain to Hospital Access facilities. This area is used by EMS Organizations using the Med-Media EMStat™ application to track which requests for access are still pending.

Open Agency Requests to View Other Affiliate's PCR's

This area will display all the Hospital's requests to access the Ambulance Services. The grid will display all organizations allowing access for PCR to your facility. This grid will also display what is allowed to be view, the person requesting the access and the date the request was posted.

Return Home

Select this button to return to the Home Page of WebCUR.

Appendix K

Trauma Hospitals Map

For a pdf of the SD Trauma Hospital Region Map please follow the following link...

<http://doh.sd.gov/documents/Providers/Trauma/RegionsMap.pdf>

Appendix L

Trauma Education Contacts

Course Name:	Contacts:
ATLS	Tami Schnetter, RN, SD ATLS Task Force averaATLS@avera.org Phone: 605-322-1319
TNCC	Linda March, Avera McKennan linda.march@avera.org or Becky MacManus-Hexum Becky.macmanus-hexum@avera.org Phone: 605-322-1319
	Karen Kaskie, RN, Sanford Health Karen.kaskie@sanfordhealth.org Phone: 605-333-6688
	Regional Health Education Department !EDUCATION@regionalhealth.com Phone: 605-755-8015
	Shannon Stuwe, RN, Mobridge Regional Health sstuwe@primecare.org Phone: 605-845-8118
	Hope Larson at Bowdle hlarson@bowdlehc.com Phone: 605-285-6146
	Or visit www.ena.org for the course directory

RTTDC

Tami Schnetter BSN, RN, SD ATLS Task Force
averaATLS@avera.org
Phone: 605-322-1319

PHTLS

Larry Richmond, SD State PHTLS Coordinator
larry.richmond@ihs.gov
Phone: 605-355-2435

Or visit <http://www.naemt.org/education/CourseDirectory.aspx>

SIM-SD

SD Department of Health
Office of Rural Health
<http://www.sim.sd.gov/>

Appendix M

State Trauma Coordinator/Registrar Contacts

For a complete list of trauma contacts for South Dakota Hospitals, please see the SD Department of Health Trauma System website...

<http://doh.sd.gov/documents/Providers/Trauma/HospitalContactList.pdf>

Appendix N

Performance Improvement Forms

For a pdf of the Trauma Performance Improvement Tracking Form visit the following link...

<http://doh.sd.gov/documents/Providers/Trauma/PI-Tracking-Form.pdf>

If you would like pdf's of the completed PI Tracking Forms e-mailed to you, please contact your State Trauma Program Manager:

Rebecca Baird, RN, BSN

605-367-8371

Rebecca.baird@state.sd.us

Appendix O

Performance Improvement Dictionary

Trauma Performance Improvement Form Dictionary

PI forms shall be completed by Community and Trauma Receiving Hospitals and worksheet data should be submitted to the state quarterly.

Performance improvement documentation is considered “Privileged Peer Review Information. Confidential and Not Subject to Discovery.” Therefore, as a trauma coordinator, it is your responsibility to ensure all PI documentation is secured under lock and key within your institution. PI information should not be filed within patient charts.

This dictionary should be used as a reference to the trauma PI tracking form and worksheet. Remember, all trauma cases involving trauma registry inclusion criteria, trauma team activation, admissions, transfers, or deaths should have at least primary PI review.

Levels of Involvement (LOI)

System Related (SR)—SR LOI correlate to issues affecting the trauma system overall and that are not isolated to a particular disease or provider. Examples include performance improvement cases that reveal insufficient chest tube sizes, RSI medications located outside the ER and not immediately available or temperatures not being recorded resulting in unwanted hypothermia.

Disease Related (DR)—DR LOI correlate to co-morbidities a patient has that ultimately affect patients outcome. Examples include performance improvement cases that reveal trauma patients with underlying COPD, cancer, or patients on Coumadin, just to name a few.

Provider Related (PR)—PR LOI correlate to issues specific to providers, this can include both pre-hospital and hospital providers. Examples include performance improvement cases that reveal a provider who orders film studies on a critical patient delaying transport.

Preventability of Mortality (POM) with/without Opportunity for Improvement (OFI)

Unanticipated Mortality with OFI (UM)—UM POM correlates to cases where a patient's death was unanticipated. Examples include performance improvement cases that reveal mortality due to isolated thoracic injury with tension pneumothorax that was not appropriately and expeditiously decompressed via chest tube insertion. In essence, this patient should have survived with proper treatment.

Anticipated Mortality with OFI (AM)—AM POM correlates to cases where a patient's death was anticipated. Examples include performance improvement cases that reveal multisystem trauma such an open vault injury with associated crush injuries to the thoracic, abdominal, and pelvic regions. Even though mortality is anticipated, an opportunity for improvement in this case would be rapid transport to tertiary facility instead of delays for a head CT.

Mortality without OFI (M)—M POM correlates to cases where a patient dies and there is no opportunity for improvement. Examples include performance improvement cases that reveal penetrating injuries to the chest with no palpable pulses and no cardiac rhythm.

Contributing Factors/Determination (CF/D)

There is opportunity for each case to have a (CF/D). Many of these statements are objective in nature; although, some subjectivity can exist.

Performance Improvement Actions (PIA)

Any case review that results in performance improvement opportunities must have an associated action.

None Required—an example for this selection would be scene time of 35 minutes due to weather delay.

Guideline or Protocol—an example for this selection would be a revision or addition to current standards i.e. policy for Emergency Release of Uncross-matched Blood (ERUB) where the provider can request blood without having to stop treatment and sign a consent. Obtaining ERUB policy would be considered loop closure with effective education and monitoring.

Education-Specify—an example for this selection would be educating all ER staff on trauma team activations. Used if pre-hospital staff report requests trauma team activation, but ER staff did not activate.

Morbidity and Mortality Peer Review (M&M Peer Review)—an example for this selection would be a provider related level of involvement where the trauma medical director sits down and discusses a case with another provider. This can be multidisciplinary, but is most commonly one on one.

Process Improvement—an example for this section would be ensuring all chest tube supplies are grouped together or all RSI medications are in or just outside the ER and that all ER personnel have ready access with dosages and procedure steps written out.

Trend—Trending would be when any performance improvement action needs continued review. An example would be monitoring temps are recorded for six months until satisfactory percentages are obtained i.e. obtain temps on admission 96% of the time within the first 30 minutes.

Letter with F/U Required—an example for this section would be the trauma medical director requesting a colleague review a case involving a transfer delay due to CT studies. This letter would require a follow up meeting ensuring the issue was addressed and an action plan was instituted.

Counseling—an example for this section would be either the trauma nurse coordinator or the trauma medical director provide direction, guidance, or instruction to colleagues on applicable protocols or standards.

Resource Enhancement—an example for this selection would be the purchase of a rapid fluid infuser, a glide scope, or any other therapeutic device to add in patient care.

Pre-Hospital Performance Improvement Filters—should only be valued if patient was transferred via ambulance. If Personally Owned Vehicle (POV), do not complete this section.

(Pre-hospital Patient Care Reports, PCR, lacking sufficient documentation should be flagged for PI)

- EMS Trip Ticket in Patient's chart
 - Mark Yes, if at the time of trauma registry entry, an electronic or paper PCR is available
 - Mark No, if at the time of trauma registry entry, an electronic or paper PCR is unavailable
- Scene Time < 20 minutes
 - Value calculated by "Arrival at Patient" and "Depart Scene" in PCR. If scene delay is marked, use (CF/D) "Scene Delay"
- Appropriate Airway Maintenance
 - Mark Yes if airway was maintained appropriately upon arrival to ED
 - Mark No if airway was not maintained appropriately upon arrival to ED
 - Value should consider level of service: Basic Life Support (BLS) or Advanced Life Support (ALS)
- Appropriate Spinal Immobilization (Backboard and Collar)
 - Mark Yes if appropriate spinal immobilization was maintained upon arrival to ED
 - Mark No if appropriate spinal immobilization was not maintained upon arrival to ED
- Patient Met Physiological and/or Anatomical Absolute Criteria—Yes/No only
 - Mark Yes if Absolute Criteria was met (This does not include high degree of suspicion or co-morbidities)
 - Mark No if Absolute Criteria was not met
- Trauma Team Requested by EMS—Yes/No

Hospital Performance Improvement Filters

- Patient Met Physiological and/or Anatomical Absolute Criteria—Yes/No only
 - Mark Yes if Absolute Criteria was met (This does not include high degree of suspicion or co-morbidities)
 - Mark No if Absolute Criteria was not met
- Trauma Team Activated by ER Staff—Yes/No
- Trauma Team response times < defined criteria (30 minutes)
 - This is only applicable to trauma team activations yet involves all respondents (providers, radiology, laboratory)
- Patient Transferred with ER LOS < 2 hours
 - Calculated by ER Departure minus ER Arrival (Does not evaluate "Call to transfer" but patients physical presence in ER)
- GCS < 8 and airway established
- Complete VS documentation including GCS (x2 minimum)
- Required/appropriately sized equipment immediately available
- Appropriate warming measures (blankets, warmed IV Fluids)
 - Mark Yes if temp was below 96 degrees and warming measures were initiated and documented
 - Mark No if temp was below 96 degrees and warming measures were not initiated or documented

For a pdf of the Trauma Performance Improvement Dictionary visit the following link...

<http://doh.sd.gov/documents/Providers/Trauma/PI-Dictionary.pdf>

Appendix P

Sample PI Indicators

Sample Trauma Performance Standards from the Minnesota Trauma System

Please note, this is a fairly comprehensive sample list. Choose and manipulate it to create an appropriate number of PI goals, activities, and education for your facility.

- Emergency department physician arrival >15 minutes after EMS notification
- Emergency department provider arrival >30 minutes after EMS notification
- Emergency department provider not present upon patient arrival
- General surgeon arrival >30 minutes after patient arrival
- General surgeon not present upon patient arrival
- Trauma care provided by non-ATLS/CALS provider
- Trauma care provided by mid-level practitioner
- Admitted by a non-surgeon
- Under-triaged/trauma team not activated when criteria met
- Over-triaged/trauma team activated unnecessarily
- Blunt chest or abdominal, multi system or high-energy trauma admitted with no general surgeon evaluation
- GCS <13 and no neurosurgical consultation
- Response times incomplete/missing
- Emergency department provider response time incomplete/missing
- Trauma surgeon response time incomplete/missing
- GCS ≤8 and no endotracheal tube or surgical airway
- GCS ≤10 and no endotracheal tube or surgical airway
- GCS ≤8 and no endotracheal tube or surgical airway within 15 minutes of arrival
- Unrecognized misplaced endotracheal tube
- Re-intubated within 24 hours of extubation
- Intubated and no orogastric or nasogastric tube placed
- Head injury and BP not maintained above 90 systolic
- Head injury and pCO₂ maintained <35 or >40
- Pneumothorax or hemothorax and no chest tube placed within 15 minutes of diagnosis
- No chest tube placed for pneumothorax or hemothorax before transfer
- Chest tube <36 Fr.
- Pneumothorax w/ hemodynamic and/or respiratory compromise and no chest decompression
- Over-ventilation within the first 12 hours/pCO₂ <32
- Under-ventilation within the first 12 hours/pCO₂ > 50
- GCS <14 and no head CT
- GCS <14 and head CT >2 hours after admission
- Spinal immobilization indicated and arrived via EMS without spinal immobilization

- Spinal immobilization not maintained until cleared
- C spine cleared without radiography in patient w/ altered LOC or distracting injury
- C spine injury missed on initial evaluation
- >65, fall w/ head injury and no C collar
- Spine injury missed on initial evaluation
- Spine board removal >30 minutes after arrival
- Admitted to the OR >60 minutes after arrival in ED
- Abdominal injuries, systolic blood pressure <90 and admitted to OR >1 hour
- Abdominal, thoracic or vascular surgery >24 hours
- Fewer than two IV lines
- IV fluids not warmed
- IV lines smaller than 16 Ga.
- Unstable vitals/hemodynamic compromise and unable to obtain vascular access
- IV placement difficult/delayed and no IO attempted
- Pediatric patient received >50ml/kg crystalloid solution w/in first two hours
- Persistent hypotension and no blood product administered after 2 liters of crystalloid
- Blood pressure <70 systolic for >2 hours without definitive intervention
- External bleeding not controlled
- Long bone fracture and no traction or splint applied
- Extremity fracture/dislocation w/o distal pulse and no attempt to reduce
- Hip dislocation and no attempt to reduce w/in 6 hours
- Open fracture and surgery >8 hours after admission
- Hip fracture and no DVT prophylaxis
- Non-fixation of femoral diaphyseal fracture in adult
- Core temperature <36oC and IV fluids/blood not warmed
- Core temperature <36oC and no re-warming measures
- Open fracture and antibiotics not administered w/in 1 hour of arrival
- Missed injury/injury diagnosed >24H after an initial traumatic event
- Failure to diagnose major vascular injury w/in 6 hours of admission
- Readmitted to hospital for care of injuries from same event
- 10/2011
- Unplanned return to the OR
- Transfer out after > [INSERT OPTIMAL LENGTH OF STAY] minutes in the ED
- Transferred after admission to floor or ICU
- Unplanned readmission
- Unplanned transfer to the ICU
- No Foley catheter placed before transfer
- No rectal exam prior to Foley insertion in male patient
- Absent hourly charting
- Vital signs not recorded every 15 minutes
- Pain assessment not recorded hourly
- Pain not re-assessed after analgesic administration
- Pain level persistently >5
- No initial GCS recorded

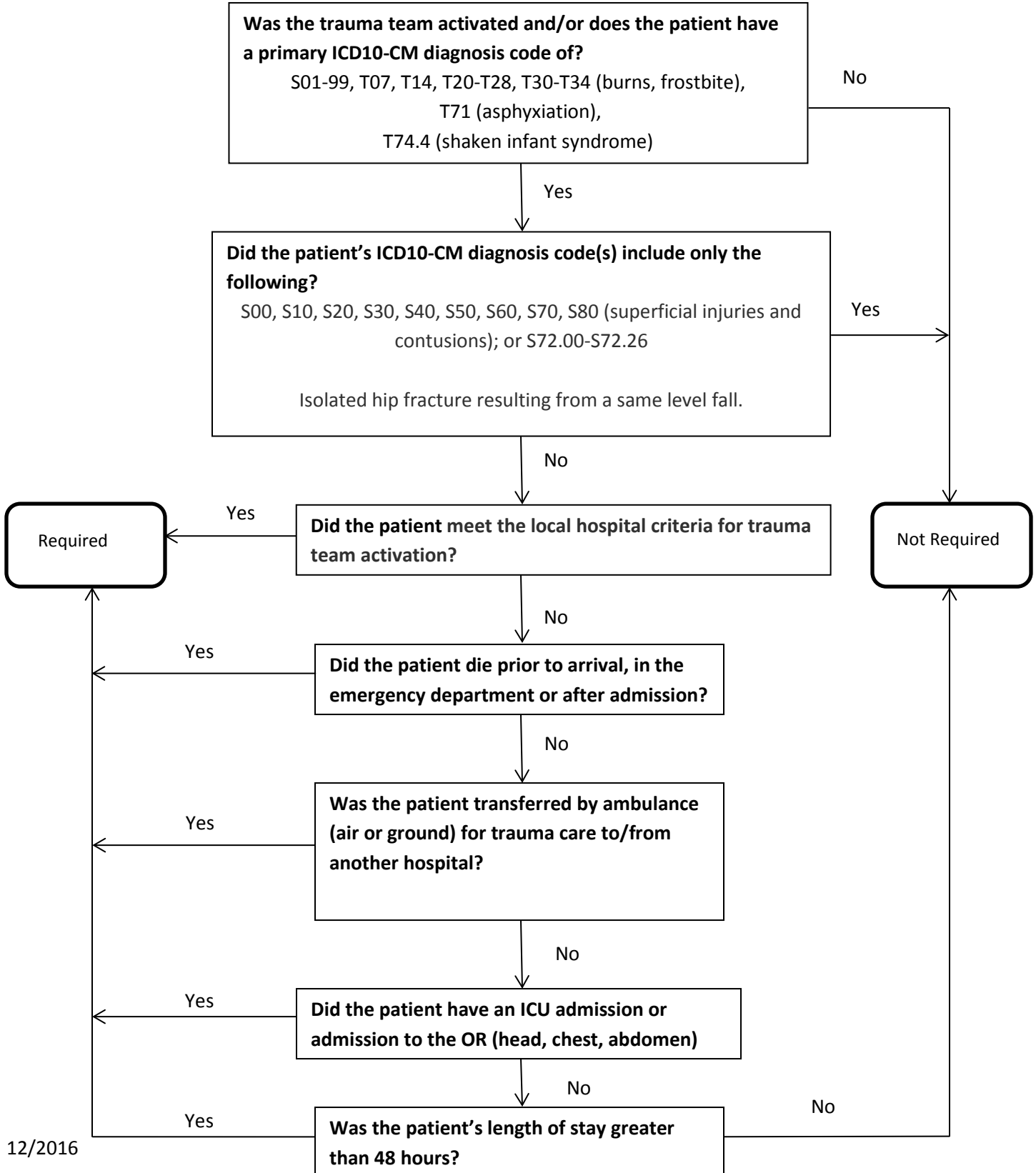
- Volume of infused fluids not documented
- No initial temperature recorded
- No temperature recorded in patient <12 years old
- Complete initial vital signs not recorded (HR, BP, RR, temp., GCS, SaO2)
- EMS report not in patient chart
- EMS times incomplete/missing
- EMS en route time >4 minutes (time called to time en route)
- EMS scene time >15 minutes (arrive scene to leave scene)
- 10/2011

Sample Trauma Populations Identified for Further Review—Samples from Minnesota Trauma System

- Sample Trauma Populations
- Identified for Further Review
- Trauma death
- Transferred out
- Transferred in
- Massive blood transfusion (>3 units)
- Preexisting cardiovascular disease
- Preexisting COPD
- Insulin-dependent diabetes
- Obese
- Pregnancy
- <5 years old or >55 years old

Appendix Q

South Dakota Trauma System Inclusion Criteria 44:68:04:01



Enter Patients into Trauma Registry who:

- Met local hospital criteria for trauma team activation, and/or
- Have a primary ICD10-CM diagnosis code S01-99, T07, T14, T20-T28, T30-T34 (burns, frost bite), T71 (asphyxiation), T74.4 (shaken infant syndrome)
- Died prior to arrival, in the emergency department, or after hospital admission, and/or
- Were transferred into or out of the hospital, and/or
- Have an ICU admission or admission to the OR (head, chest, abdomen), and/or
- Had a hospital admission > 48 hours

Examples

- A fall patient who breaks their wrist or ankle, undergoes surgery, and is admitted for > 48 should be entered in the registry.
- A MVC patient with a GCS < 8 in which the trauma team was activated should be entered into the registry.
- A patient whom fell from a 12ft building and suffered an open vault injury following a bee sting should be entered into the registry. Even though the bee sting meets exclusion criteria, the open vault injury and subsequent transfer meet primary inclusion criteria.

Examples of Patients to Exclude

- A fall patient who breaks their wrist or ankle, undergoes surgery, and is discharged within 24 hours should not be included in the registry. If this same patient, however, has a hospital stay > 48 hours after surgery, they should be included in the registry.
- A patient suffering an isolated hip fracture following a fall on the ice should not be entered into the registry.