



# California State Trauma System Trauma Performance Improvement & Patient Safety Plan 2016

Emergency Medical Services Authority  
California Health and Human Services Agency





# California State Trauma System Trauma Performance Improvement & Patient Safety Plan 2016

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# CALIFORNIA STATE TRAUMA SYSTEM PERFORMANCE IMPROVEMENT & PATIENT SAFETY PLAN

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## AUTHORITY

Local Emergency Medical Services Agencies (LEMSAs) have the authority to implement a local trauma system and designate Trauma Centers. Each system must meet the minimum standards set forth in California Code of Regulations, Title 22, Chapter 7 (regulations) and the local Trauma Plan must be approved by the EMS Authority (EMSA). Included in this authority are the components of Trauma Center oversight and local system performance improvement across the continuum of care from prehospital through rehabilitation.

The authority for system evaluation is provided through Health and Safety Code, Division 2.5 provisions (Appendix A):

*1798.161 (EMSA Required to Establish Regulations)*

*The Authority shall submit draft regulations specifying minimum standards for the implementation of trauma care systems ... These regulations shall be adopted ...and shall include, but not be limited to, all of the following:*

*(7) Periodic performance evaluation of the trauma system and its components.*

*1797.174. (Continuing Education & Quality Improvement Programs)*

*In consultation with the commission, the Emergency Medical Directors Association of California, and other affected constituencies, the authority shall develop statewide guidelines for continuing education courses and approval of continuing education courses for EMT-Ps and for quality improvement systems which monitor and promote improvement in the quality of care provided by EMT-Ps throughout the state.*

*1797.103. (System Guidelines)*

*The authority shall develop planning and implementation guidelines for emergency medical services systems which address the following components:*

*(f) Data collection and evaluation.*

Regulations (Appendix B) specific to LEMSA and Trauma Center performance improvement are found in the California Code of Regulations, Title 22, Division 9, Chapter 7 Trauma Care Systems:

1       **§100255 Policy Development**

2       *A local EMS agency planning to implement a trauma system shall develop policies*  
3       *which provide a clear understanding of the structure of the trauma system and the*  
4       *manner in which it utilizes the resources available to it. The trauma system policies*  
5       *shall address at least the following:*

6       *(o) quality improvement and system evaluation to include responsibilities of the*  
7       *multidisciplinary trauma peer review committee.*

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9       **§100258 Trauma System Evaluation**

10       *(a) The local EMS agency shall be responsible for the development and ongoing*  
11       *evaluation of the trauma system.*

12       *(c) The local EMS agency shall be responsible for periodic performance evaluation*  
13       *of the trauma system, which shall be conducted at least every two (2) years.*

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15       **§100265 Quality Improvement**

16       *Trauma Centers of all levels shall have a quality improvement process ...*

17       *(c) Participation in the local EMS agency trauma evaluation committee*  
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19       **PURPOSE**

20       The purpose of the State Trauma System Performance Improvement & Patient Safety  
21       (PIPS) Program is to define, measure, evaluate, and improve the process,  
22       accountability, efficiency, effectiveness, and reliability of the State Trauma System of  
23       care. The Trauma System delivery begins with prevention and includes access through  
24       the continuum of care. The State Trauma System PIPS Plan establishes lines of  
25       communication for monitoring aspects of care and defines guidelines to measure the  
26       quality and outcome of care. The goal of the State Trauma System PIPS Plan is to  
27       assure that trauma care is of high quality and variations in the standard of care are  
28       minimal.

29       **STRUCTURE**

30       **Lead Agency**

31       EMSA is the lead agency for the organizational structure and oversight of the State  
32       Trauma System PIPS Program.

33       **State Trauma System PIPS Subcommittee**

34       The State Trauma System PIPS Subcommittee reports to the State Trauma Advisory  
35       Committee (STAC). The STAC is a multi-disciplinary committee advisory to the EMSA  
36       Director on trauma system related issues. The Trauma PIPS Subcommittee manages  
37       the Trauma PIPS Program and implements the Trauma PIPS Plan with the goal of risk-  
38       adjusted outcomes measurement, benchmarking, identification of best practices, and  
39       the development/analysis of core measures with State Trauma System implications.

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2 The Trauma PIPS Subcommittee membership ensures a broad representation from  
3 EMS/trauma stakeholders with performance improvement expertise. The Chair of the  
4 Subcommittee shall be a member of STAC.

5 **Membership (13): Member**

6 **AdHoc Member**

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- **Chair (member of STAC)**
- **Representative from EMSAAC**
- **Representative from TMAC**
- **Representative from EMDAC**
- **Representative from each RTCC (5)**
- **Representative from Air Medical Services**
- **Representative from EMSC PIPS Subcommittee**
- **Representative from California Fire Chief's EMS Section**
- **Representative from California Ambulance Association**

18 **EMS Authority Staff**

- EMS Authority's Trauma System Coordinator
- **EMS Authority's Epidemiologist**
- **Representative from the Data Technical Assistance Committee**

23 Individuals participating on the Trauma PIPS Subcommittee are active providers in the  
24 system and are approved by the EMSA Director under advisement of the STAC Chair.  
25 This subcommittee meets bi-annually.

26 **PROCEDURES**

27 The State Trauma System PIPS Program platform consists of ongoing and systematic  
28 monitoring, and evaluation of State Trauma System performance. In 2012, the Public  
29 Health Foundation revised the Performance Management Framework<sup>1</sup> which was  
30 modified slightly by the Trauma PIPS Subcommittee to meet the needs of California's  
31 Trauma PIPS Program. The following depicts the practices by which the elements of the  
32 Trauma PIPS Program can be achieved. Continuous integration of these practices into  
33 the core operations of the State Trauma System enables the Trauma PIPS Program to  
34 produce long lasting benefits.

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<sup>1</sup> *Public Health Foundation (PHF), a private, non-profit, 501(c)3 organization based in Washington, DC;  
2013 Performance Management Toolkit*

PUBLIC HEALTH PERFORMANCE MANAGEMENT SYSTEM



**Visible Leadership** is the commitment of senior management to a culture of quality that aligns performance management practices with the EMS System's mission and enables transparency about performance between leadership and trauma system partners.

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PUBLIC HEALTH PERFORMANCE MANAGEMENT SYSTEM



**Performance Standards** are the establishment of system standards, and goals to improve trauma system practices. Standards may be set based on national or state guidelines or benchmarked against similar systems.

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PUBLIC HEALTH PERFORMANCE MANAGEMENT SYSTEM

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**Performance Measurement** is the development, application, and use of objective data or information to assess achievement of performance standards

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PUBLIC HEALTH PERFORMANCE MANAGEMENT SYSTEM

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**Reporting progress** is the documentation and evaluation of how standards are met and the sharing of such information through appropriate feedback channels.

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## PUBLIC HEALTH PERFORMANCE MANAGEMENT SYSTEM



**Quality Improvement** is the establishment of a program or process to manage change and to provide better care through system policies, programs, or infrastructure based on performance standards, measures, and reports.

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This process is supported by a valid and objective method of data collection and analysis. The development of system guidelines from evidence based practice, consensus regarding aspects of care and statutory and regulatory system requirements are components of the review process. Defined outcome measures and quality indicators are developed, tracked, and monitored through this process. Trauma Centers are encouraged to participate in the American College of Surgeons Trauma Quality Improvement Program (TQIP) allowing for national benchmarking. A collaborative approach can provide data, give feedback on relative performance, and share best practices.

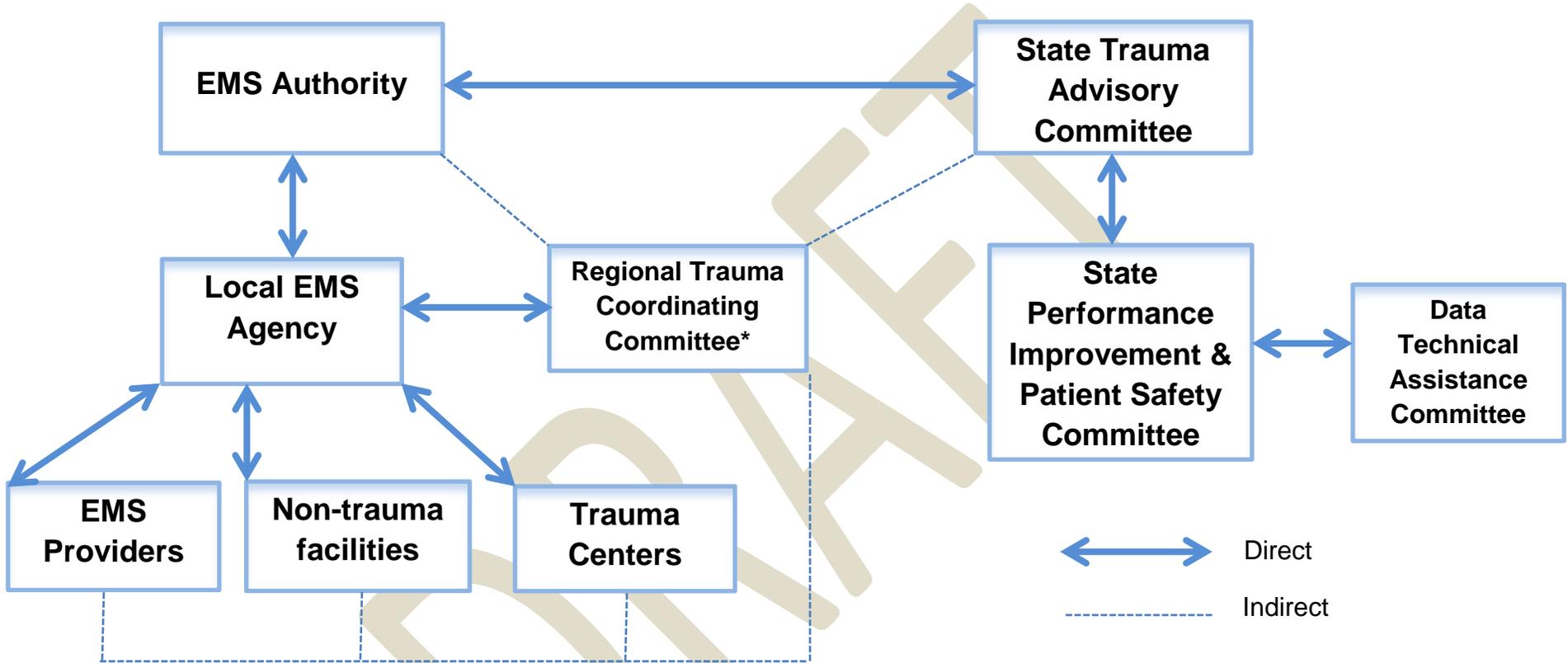
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Any California State Trauma System participant may identify trauma system processes in need of improvement bringing them to the attention of the LEMSA who determines the need to forward the issue to EMSA for review by the STAC. A Regional Trauma Coordinating Committee (RTCC) may facilitate discussions related to trauma care challenges within its region working towards resolution to minimize unnecessary variations in practice. The RTCC or LEMSA may forward regional trauma care issues to the EMSA Director who may request assistance from the STAC with the review process. Resolution of any given issue shall be the responsibility of the LEMSA.

1 The Trauma PIPS subcommittee has access to data from the California EMS  
2 information System (CEMSIS) with assistance from the Data Technical Assistance  
3 Committee following the appropriate confidentiality rules. The Trauma PIPS  
4 Subcommittee reviews data to determine the effectiveness of the State Trauma System  
5 in meeting its stated core measures and benchmarks. The subcommittee makes  
6 recommendations and develops action plans for each identified opportunity for system  
7 improvement and provides a quarterly report to the STAC. The STAC forwards its  
8 recommendations for performance improvement to the EMSA Director for consideration.

DRAFT

## State Performance Improvement & Patient Safety Flow Chart



This flow chart represents how a performance issue that has statewide implications may be generated by numerous system participants showing direct and indirect reporting. Feedback is sent back to the reporting parties.

\* RTCC may approach issues that involve multiple LEMSAs/RTCCs with final resolution at the LEMSA level.

## ASPECTS OF REVIEW

The Trauma PIPS Subcommittee and the STAC utilize the State Trauma Plan (Appendix C - System Evaluation and Performance Improvement section) and the HRSA 300 series benchmarks (Appendix D) from the 2006 Model Trauma System Plan to define their annual goals and objectives. These goals and objectives are monitored and evaluated by EMSA in consultation with the STAC Chair and the Trauma PIPS Subcommittee Chair.

The principle goal of the Trauma PIPS Program is to reduce variances in standards of care provided within the State Trauma System. Through the STAC and EMSA, the Trauma PIPS Subcommittee works collaboratively with the LEMSAs and RTCCs to develop, measure, and analyze State Trauma System process, and outcome core measures. This process requires reliable and accurate data from all system providers. Missing data can have significant implications when analyzing reports. The extent of missing data will be reviewed and a determination will be made if the measure is valid. Data accuracy and completion concerns will be forwarded to the Data Technical Assistance Committee for review.

Selected State Trauma System core measures will be used to identify processes that may warrant further review and are the basis to trend and/or benchmark performance. The subcommittee will define system expectations that are objective, easily defined, and amenable to data collection. Opportunities for improvement identified with the core measures will have an action plan to define strategies to improve the system of care.

The following process and outcome measures were deemed a priority by the PIPS Subcommittee:

### Process Measures

- TR 1 State Core Measure: Period (in minutes) from point in time ground ambulance arrives at the scene until the time ambulance departs from the scene for Trauma patients meeting criteria for transport to a trauma center who received transport by ground ambulance to a hospital by EMS personnel (EMT, AEMT, and Paramedic).
  - What is the 90<sup>th</sup> percentile for on scene time value for trauma patients (as defined by the physiological criteria found in the *CDC/ACS 2011 Guidelines for Field Triage of Injured Patients* who were transported from the scene by ground ambulance?
- TR 2 State Core Measure: What is the percentage of trauma patients (as defined by the physiological criteria found in the *CDC/ACS 2011 Guidelines for Field*

*Triage of Injured Patients* who were directly transported to a trauma center from the scene by ground ambulance.

- Timeliness of re-triage process (time from receipt of patient at initial destination to release of patient for transport to higher level of care, to arrival at definitive care facility)

## **Outcome Measures**

- Proportion of patients with injury more severe than a predefined injury severity threshold (i.e. ISS >15) who receive definitive care at a facility other than a Level I or Level II Trauma Center.
- Statewide mortality statistics

## **Future Measures**

- Field under triage and over triage
- Air transport utilization (field and re-triage) based on patient's clinical condition
- Field C-spine immobilization – measure variations in care based on differences with LEMSA policies and procedures. Review outcomes for actual c-spine injury (vertebral and/or spinal cord) with comparative report on field c-spine immobilization and LEMSA policy utilized
- Mass Casualty Incidents involving >1 LEMSA; (LEMSA to provide summary of after action report with opportunities for improvement identified)
- ACS Trauma Quality Improvement Program (TQIP) State Collaborative: TQIP Trauma Centers to benchmark against other states and California Trauma Centers; measures to be recommended by California TQIP Trauma Centers and State PIPS Subcommittee of the State Trauma Advisory Committee

## **ANNUAL REPORT**

EMSA, with assistance from the STAC, will produce an annual State Trauma System Report that reflects California Trauma System accomplishments. The Trauma PIPS Subcommittee will provide select data reports representing performance improvement activities. The annual report will be posted on the EMS Authority's website [www.emsa.ca.gov](http://www.emsa.ca.gov) and presented to the Commission on EMS.

## **DOCUMENTATION**

Effective January 2016, Health and Safety Code, Division 2.5, Chapter 3, Article 2, permits the release of patient-identifiable medical record information to an EMS provider, LEMSA and EMSA for quality assessment and improvement purposes.

*1797.122. (Sharing of Patient-Identifiable Data)*

*(a) Notwithstanding any other law, a health facility as defined in subdivision*

*(a) or (b) of Section 1250 may release patient-identifiable medical*

*information under the following circumstances:*

*(1) To an EMS provider, information regarding a patient who was treated, or transported to the hospital by, that EMS provider, to the extent that specific data elements are requested for quality assessment and improvement purposes.*

*(2) To the authority or the local EMS agency, to the extent that specific data elements are requested for quality assessment and improvement purposes.*

*(b) An EMS provider, local EMS agency, and the authority shall request only those data elements that are minimally necessary in compliance with Section 164.502 (b) and Section 164.514 (d) of Title 45 of the Code of Federal Regulations.*

All documents generated by the PIPS Program will be labeled as Performance Improvement with appropriate confidentiality statements. Procedures will be adhered to ensuring confidentiality and statutory/regulatory compliance. All proceedings, documents and discussions of the Committee will be confidential and are covered under Section 56.10 (c) of the Civil Code.

Civil Code Section 56.10 (c) A provider of health care or a health care service plan may disclose medical information as follows (emphasis added):

*4) The information may be disclosed to organized committees and agents of professional societies or of medical staffs of licensed hospitals, licensed health care service plans, professional standards review organizations, independent medical review organizations and their selected reviewers, utilization and quality control peer review organizations as established by Congress in Public Law 97-248 in 1982, contractors, or persons or organizations insuring, responsible for, or defending professional liability that a provider may incur, if the committees, agents, health care service plans, organizations, reviewers, contractors, or persons are engaged in reviewing the competence or qualifications of health care professionals or in reviewing health care services with respect to medical necessity, level of care, quality of care, or justification of charges.*

All members will sign a confidentiality agreement which will be kept on file at EMSA. All meeting attendees will sign a meeting roster that, in addition to documenting meeting attendance, will serve to affirm their agreement to uphold their confidentiality agreement.

# APPENDIX A

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## STATE OF CALIFORNIA HEALTH AND SAFETY CODE DIVISION 2.5

### Article 2.5 Regional Trauma Systems [Added by SB 534 (CH 1067) 1983.] Trauma System Performance Improvement references

**1798.161.** (a) The authority shall submit draft regulations specifying minimum standards for the implementation of regional trauma systems to the commission on or before July 1, 1984, and shall adopt the regulations on or before July 1, 1985. These regulations shall provide specific requirements for the care of trauma cases and shall ensure that the trauma care system is fully coordinated with all elements of the existing emergency medical services system. The regulations shall be adopted as provided in Section 1799.50, and shall include, but not be limited to, all of the following:

- (1) Prehospital care management guidelines for triage and transportation of trauma cases.
  - (2) Flow patterns of trauma cases and geographic boundaries regarding trauma and non-trauma cases.
  - (3) The number of trauma cases necessary to assure that trauma facilities will provide quality care to trauma cases referred to them.
  - (4) The resources and equipment needed by trauma facilities to treat trauma cases.
  - (5) The availability and qualifications of the health care personnel, including physicians and surgeons, treating trauma cases with a trauma facility.
  - (6) Data collection regarding system operation and patient outcome.
  - (7) Periodic performance evaluation of the trauma system and its components.
- (b) The authority may grant an exception to a portion of the regulations adopted pursuant to subdivision (a) upon substantiation of need by a local EMS agency that, as defined in the regulations, compliance with the requirement would not be in the best interests of the persons served within the affected local EMS area.

**1798.162.** (a) A local emergency medical services agency may implement a trauma care system only if the system meets the minimum standards set forth in the regulations for implementation established by the authority and the plan required by Section 1797.257 has been submitted to, and approved by, the authority...

**1798.163.** A local emergency medical services agency implementing a trauma care system shall establish policies and procedures which are concordant and consistent with the minimum standards set forth in the regulations adopted by the authority. This section does not preclude a local EMS agency from adopting trauma care system standards which are more stringent than those established by the regulations.

**1798.165.** (a) Local emergency medical services agencies may designate trauma facilities as part of their trauma care system pursuant to the regulations promulgated by the authority.

(b) The health facility shall only be designated to provide the level of trauma care and service for which it is qualified and which is included within the system implemented by

the agency.

**1798.166.** A local emergency medical services agency which elects to implement a trauma care system on or after January 1, 1984, shall develop and submit a plan to the authority according to the regulations established prior to the implementation.

**1797.198.** The Legislature finds and declares all of the following:

(a) Trauma care is an essential public service. It is as vital to the safety of the public as the services provided by law enforcement and fire departments. In communities with access to trauma centers, mortality and morbidity rates from traumatic injuries are significantly reduced. For the same reasons that each community in California needs timely access to the services of skilled police, paramedics, and fire personnel, each community needs access to the services provided by certified trauma centers.

(b) Trauma centers save lives by providing immediate coordination of highly specialized care for the most life-threatening injuries.

(c) Trauma centers save lives, and also save money, because access to trauma care can mean the difference between full recovery from a traumatic injury, and serious disability necessitating expensive long-term care.

(d) Trauma centers do their job most effectively as part of a system that includes a local plan with a means of immediately identifying trauma cases and transporting those patients to the nearest trauma center.

(e) It is essential for persons in need of trauma care to receive that care within the 60-minute period immediately following injury. It is during this period, referred to as the "golden hour," when the potential for survival is greatest, and the need for treatment for shock or injury is most critical...

# APPENDIX B

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**California Code of Regulations  
TITLE 22. SOCIAL SECURITY  
DIVISION 9. PREHOSPITAL EMERGENCY MEDICAL SERVICES  
CHAPTER 7. TRAUMA CARE SYSTEMS**

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## **TRAUMA SYSTEM PERFORMANCE IMPROVEMENT REFERENCES**

### **ARTICLE 1. DEFINITIONS**

#### **§ 100238. Implementation**

“Implementation” or “implemented” or “has implemented” means the development and activation of a trauma care system plan by a local EMS agency, including the actual triage, transport, and treatment of trauma patients in accordance with the plan.

#### **§ 100243. Receiving Hospital**

“Receiving hospital” means a licensed general acute care hospital with a special permit for basic or comprehensive emergency service, which has not been designated as a trauma center according to this Chapter, but which has been formally assigned a role in the trauma care system by the local EMS agency. In rural areas, the local EMS agency may approve standby emergency service if basic or comprehensive services are not available.

#### **§ 100247. Trauma Care System**

“Trauma care system” or “trauma system” or “inclusive trauma care system” means a system that is designed to meet the needs of all injured patients. The system shall be defined by the local EMS agency in its trauma care system plan as described in Section 100256 of this Chapter.

#### **§ 100248. Trauma Center**

“Trauma center” or “designated trauma center” means a licensed hospital, accredited by the Joint Commission on Accreditation of Healthcare Organizations, which has been designated as a Level I, II, III, or IV trauma center and/or Level I or II pediatric trauma center by the local EMS agency, in accordance with Articles 2 through 5 of this Chapter.

#### **§ 100250. Trauma Service**

A “trauma service” is a clinical service established by the organized medical staff of a trauma center that has oversight and responsibility of the care of the trauma patient. It includes, but is not limited to, direct patient care services, administration, and as needed, support functions to provide medical care to injured persons.

### **§ 100252. Triage Criteria.**

“Triage criteria” means a measure or method of assessing the severity of a person's injuries that is used for patient evaluation and that utilizes anatomic considerations, physiologic and/or mechanism of injury.

## **ARTICLE 2. LOCAL EMS AGENCY TRAUMA SYSTEM REQUIREMENTS**

### **§ 100253. Application of Chapter**

(a) A local EMS agency which has implemented or plans to implement a trauma care system shall develop a written trauma care system plan that includes policies and/or procedures to assure compliance of the trauma system with the provisions of this Chapter.

(c) A local EMS agency that implements a trauma care system on or after the effective date of this Chapter shall submit its trauma system plan to the EMS Authority and have it approved prior to implementation.

(d) A local EMS agency that has implemented a trauma system prior to the effective date of the revisions to this Chapter shall submit its updated trauma system plan to the EMS Authority within two (2) years of the effective date of the revisions to this Chapter, which is August 12, 1999.

(i) After approval of a trauma system plan, the local EMS agency shall submit to the EMS Authority for approval any significant changes to that trauma system plan prior to the implementation of the changes. In those instances where a delay in approval would adversely impact the current level of trauma care, the local EMS agency may institute the changes and then submit the changes to the EMS Authority for approval within thirty (30) days of their implementation.

(j) The local EMS agency shall submit a trauma system status report as part of its annual EMS Plan update. The report shall address, at a minimum, the status of trauma plan goals and objectives.

### **§ 100254. Trauma System Criteria**

(a) A local EMS agency that plans to implement or modify a trauma system shall include with the trauma plan, a description of the rationale used for trauma system design planning for number and location of trauma centers including:

(d) All prehospital emergency medical care personnel rendering trauma patient care within an organized trauma system shall be trained in the local trauma triage and patient care methodology.

(f) All prehospital providers shall have a policy approved by the local EMS agency for the early notification of trauma centers of the impending arrival of a trauma patient.

### **§ 100255. Policy Development**

A local EMS agency planning to implement a trauma system shall develop policies which provide a clear understanding of the structure of the trauma system and the

manner in which it utilizes the resources available to it. The trauma system policies shall address at least the following:

- (a) system organization and management;
- (b) trauma care coordination within the trauma system;
- (c) trauma care coordination with neighboring jurisdictions, including EMS agency/system agreements;
- (d) data collection and management;
- (g) trauma center designation/redesignation process to include a written agreement between the local EMS agency and the trauma center;
- (h) coordination with all health care organizations within the trauma system to facilitate the transfer of an organization member in accordance with the criteria set forth in Article 5 of this Chapter;
- (i) coordination of EMS and trauma system for transportation including intertrauma center transfer and transfers from a receiving hospital to a trauma center;
- (j) the integration of pediatric hospitals, if applicable;
- (l) ensuring the availability of trauma team personnel;
- (m) criteria for activation of trauma team;
- (n) mechanism for prompt availability of specialists;
- (o) quality improvement and system evaluation to include responsibilities of the multidisciplinary trauma peer review committee;
- (p) criteria for pediatric and adult trauma triage, including destination;
- (q) training of prehospital EMS personnel to include trauma triage;
- (r) public information and education about the trauma system;

#### **§ 100256. Trauma Plan Development**

(a) The initial plan for a trauma care system that is submitted to the EMS Authority shall be comprehensive with objectives that shall be clearly stated. The initial trauma care system plan shall contain at least the following:

(5) documentation that any intercounty trauma center agreements have been approved by the EMS agencies of both counties;

(6) objectives;

(b) The system design shall address the operational implementation of the policies developed pursuant to Section 100255 and the following aspects of hospital service delivery:

(1) Critical care capability including but not limited to burns, spinal cord injury, rehabilitation and pediatrics;

(3) quality improvement.

#### **§ 100257. Data Collection**

(a) The local EMS agency shall develop and implement a standardized data collection instrument and implement a data management system for trauma care.

- (1) The system shall include the collection of both prehospital and hospital patient care data, as determined by the local EMS agency;
  - (2) trauma data shall be integrated into the local EMS agency and State EMS Authority data management system; and
  - (3) all hospitals that receive trauma patients shall participate in the local EMS agency data collection effort in accordance with local EMS agencies policies and procedures.
- (b) The prehospital data shall include at least those data elements required on the EMT-II or EMT-P patient care record, as specified in Section 100129 of the EMT-II regulations and Section 100176 of the EMT-P regulations.
  - (c) The hospital data shall include at least the following, when applicable:
    - (1) Time of arrival and patient treatment in:
      - (A) Emergency department or trauma receiving area; and
      - (B) operating room.
    - (2) Dates for:
      - (A) Initial admission;
      - (B) intensive care; and
      - (C) discharge.
    - (3) Discharge data, including:
      - (A) Total hospital charges (aggregate dollars only);
      - (B) patient destination; and
      - (C) discharge diagnosis.
  - (4) The local EMS agency shall provide periodic reports to all hospitals participating in the trauma system.

#### **§ 100258. Trauma System Evaluation**

- (a) The local EMS agency shall be responsible for the development and ongoing evaluation of the trauma system.
- (b) The local EMS agency shall be responsible for the development of a process to receive information from EMS providers, participating hospitals and the local medical community on the evaluation of the trauma system, including but not limited to:
  - (1) trauma plan;
  - (2) triage criteria;
  - (3) activation of trauma team; and
  - (4) notification of specialists.
- (c) The local EMS agency shall be responsible for periodic performance evaluation of the trauma system, which shall be conducted at least every two (2) years. Results of the trauma system evaluation shall be made available to system participants.
- (d) The local EMS agency shall be responsible for ensuring that trauma centers and other hospitals that treat trauma patients participate in the quality improvement process contained in Section 100265.

Note: Authority cited: Sections 1797.107 and 1798.161, Health and Safety Code.  
Reference: Section 1798.161, Health and Safety Code.

### **ARTICLE 3. TRAUMA CENTER REQUIREMENTS**

#### **§ 100259. Level I and Level II Trauma Centers.**

(a) A Level I or II trauma center is a licensed hospital which has been designated as a Level I or II trauma center by the local EMS agency. While both Level I and II trauma centers are similar, a Level I trauma center is required to have staff and resources not required of a Level II trauma center. The additional Level I requirements are located in Section 100260. Level I and II trauma centers shall have appropriate pediatric equipment and supplies and be capable of initial evaluation and treatment of pediatric trauma patients. Trauma centers without a pediatric intensive care unit, as outlined in (e)(1) of this section, shall establish and utilize written criteria for consultation and transfer of pediatric patients needing intensive care. A Level I or Level II trauma center shall have at least the following:

- (1) A trauma program medical director who is a board-certified surgeon, whose responsibilities include, but are not limited to, factors that affect all aspects of trauma care such as:
  - (F) having authority and accountability for the quality improvement peer review process;
  - (G) correcting deficiencies in trauma care or excluding from trauma call those trauma team members who no longer meet standards;
  - (H) coordinating pediatric trauma care with other hospital and professional services;
  - (I) coordinating with local and State EMS agencies;
- (2) A trauma nurse coordinator/manager who is a registered nurse with qualifications including evidence of educational preparation and clinical experience in the care of the adult and/or pediatric trauma patient, administrative ability, and responsibilities that include but are not limited to:
  - (B) coordinating day-to-day clinical process and performance improvement as it pertains to nursing and ancillary personnel; and
  - (C) collaborating with the trauma program medical director in carrying out the educational, clinical, research, administrative and outreach activities of the trauma program.

#### **§ 100261. Level I and Level II Pediatric Trauma Centers.**

(a) A Level I or II pediatric trauma center is a licensed hospital which has been designated as a Level I or II pediatric trauma center by the local EMS agency. While both Level I and II pediatric trauma centers are similar, a Level I pediatric trauma center is required to have staff and resources not required of a Level II pediatric trauma center. The additional Level I requirements for pediatric trauma centers are located in Section 100262. A Level I or Level II pediatric trauma center shall have at least the following:

(1) A pediatric trauma program medical director who is a board-certified surgeon with experience in pediatric trauma care (may also be trauma program medical director for adult trauma services), whose responsibilities include, but are not limited to, factors that affect all aspects of pediatric trauma care such as:

(F) having authority and accountability for the pediatric trauma quality improvement peer review process;

(G) correcting deficiencies in pediatric trauma care or excluding from trauma call those trauma team members who no longer meet standards;

(H) coordinating pediatric trauma care with other hospital and professional services;

(I) coordinating with local and State EMS agencies;

(2) A pediatric trauma nurse coordinator/manager who is a registered nurse with qualifications (may also be trauma nurse coordinator/manager for adult trauma services) including evidence of educational preparation and clinical experience in the care of pediatric trauma patients, administrative ability, and responsibilities that include but are not limited to factors that affect all aspects of pediatric trauma care, including:

(B) coordinating day-to-day clinical process and performance improvement as it pertains to pediatric trauma nursing and ancillary personnel; and

(C) collaborating with the pediatric trauma program medical director in carrying out the educational, clinical, research, administrative and outreach activities of the pediatric trauma program.

### **§ 100263. Level III Trauma Centers**

A Level III trauma center is a licensed hospital which has been designated as a Level III trauma center by the local EMS agency. A Level III trauma center shall include equipment and resources necessary for initial stabilization and personnel knowledgeable in the treatment of adult and pediatric trauma. A Level III trauma center shall have at least the following:

(a) A trauma program medical director who is a qualified surgical specialist, whose responsibilities include, but are not limited to, factors that affect all aspects of trauma care such as:

(4) having authority and accountability for the quality improvement peer review process;

(5) correcting deficiencies in trauma care or excluding from trauma call those trauma team members who no longer meet the standards of the quality improvement program; and

(b) A trauma nurse coordinator/manager who is a registered nurse with qualifications including evidence of educational preparation and clinical experience in the care of adult and/or pediatric trauma patients, administrative ability, and responsibilities that include, but are not limited to:

(2) coordinating day-to-day clinical process and performance improvement as pertains to nursing and ancillary personnel, and

(3) collaborating with the trauma program medical director in carrying out the educational, clinical, research, administrative and outreach activities of the trauma program.

**§ 100264. Level IV Trauma Center.**

A Level IV trauma center is a licensed hospital which has been designated as a Level IV trauma center by the local EMS agency. A Level IV trauma center shall include equipment and resources necessary for initial stabilization and personnel knowledgeable in the treatment of adult and pediatric trauma. A Level IV trauma center shall have at least the following:

(a) A trauma program medical director who is a qualified specialist whose responsibilities include, but are not limited to, factors that affect all aspects of trauma care, including pediatric trauma care, such as:

(4) having authority and accountability for the quality improvement peer review process;

(5) correcting deficiencies in trauma care or excluding from trauma call those trauma team members who no longer meet the standards of the quality improvement program; and

(b) A trauma nurse coordinator/manager who is a registered nurse with qualifications including evidence of educational preparation and clinical experience in the care of adult and/or pediatric trauma patients, administrative ability, and responsibilities that include, but are not limited to:

(2) coordinating day-to-day clinical process and performance improvement as it pertains to nursing and ancillary personnel; and

(3) collaborating with the trauma program medical director in carrying out the educational, clinical, research, administrative and outreach activities of the trauma program.

**ARTICLE 4. QUALITY IMPROVEMENT**

**§ 100265. Quality Improvement**

Trauma centers of all levels shall have a quality improvement process to include structure, process, and outcome evaluations which focus on improvement efforts to identify root causes of problems, intervene to reduce or eliminate these causes, and take steps to correct the process. In addition the process shall include:

(a) A detailed audit of all trauma-related deaths, major complications and transfers (including interfacility transfer);

(b) A multidisciplinary trauma peer review committee that includes all members of the trauma team;

(c) Participation in the trauma system data management system;

(d) Participation in the local EMS agency trauma evaluation committee; and

(e) Each trauma center shall have a written system in place for patients, parents of minor children who are patients, legal guardian(s) of children who are patients, and/or

primary caretaker(s) of children who are patients to provide input and feedback to hospital staff regarding the care provided to the child.

(f) Following of applicable provisions of Evidence Code Section 1157.7 to ensure confidentiality.

Note: Authority cited: Sections 1797.107 and 1798.161, Health and Safety Code.

Reference: Section 1798.161, Health and Safety Code.

## **ARTICLE 5. TRANSFER OF TRAUMA PATIENTS**

### **§ 100266. Interfacility Transfer of Trauma Patients**

(a) Patients may be transferred between and from trauma centers providing that:

(1) any transfer shall be, as determined by the trauma center surgeon of record, medically prudent; and

(2) in accordance with local EMS agency interfacility transfer policies.

(b) Hospitals shall have written transfer agreements with trauma centers. Hospitals shall develop written criteria for consultation and transfer of patients needing a higher level of care.

(c) Hospitals which have repatriated trauma patients from a designated trauma center shall provide the information required by the system trauma registry, as specified by local EMS agency policies, to the transferring trauma center for inclusion in the system trauma registry.

(d) Hospitals receiving trauma patients shall participate in system and trauma center quality improvement activities for those trauma patients which have been transferred.

# APPENDIX C

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## CALIFORNIA STATE TRAUMA PLAN

### Component 11 -- System Evaluation and Performance Improvement

#### ***Background and Current Status***

The purpose of a state Performance Improvement and Patient Safety (PIPS) Program ensures that injured patients receive quality care throughout the continuum. This requires monitoring care processes, structures and outcomes, identifying areas for improvement, developing and carrying out corrective action plans, and verifying that these corrective action plans result in desired improvements in outcome. The ideal PIPS Program requires accurate local, regional, and state prehospital and hospital clinical databases. Other components include identification of risk factors and best practices, accurate, standardized measurement of complications, risk-adjusted outcomes measurement, benchmarking, and appropriate feedback of benchmarking results.

The EMS Authority is responsible for developing and implementing a state-wide EMS PIPS Program with the LEMSA Trauma System Coordinators in collaboration with EMS Medical Directors. Regional Trauma Coordinating Committees may assist in case review if it crosses jurisdictional lines within the region. Trauma Centers are required to have a PIPS Program for improving care. In most cases, the PIPS program is linked to the hospital PI department and overall hospital PI Plan. Performance Improvement standards are developed to assist with monitoring care relative to standards of care.

California Code of Regulation Title 22, Division 9, Chapter 12 EMS System Quality Improvement requires that EMS provider agencies and Base Hospitals develop a PIPS Program with an associated Plan to be approved by the LEMSA. The LEMSA PIPS Plan is approved by the EMS Authority. The regulations do not itemize trauma-specific components of the LEMSA PIPS Plan.

#### ***Planned Development***

In order to evaluate the State Trauma System, the continuum of care from dispatch to pre-hospital to hospital disposition must be connected through a data system. Only in this way, can we begin to understand how care provided translates to improved outcomes and system effectiveness.

#### **State EMS Authority**

A program should be developed by the EMS Authority in collaboration with the LEMSAs and RTCCs to evaluate statewide trauma system performance. This should include:

- 1.1 Develop a statewide comprehensive Trauma PIPS Plan consistent with the elements of this State Plan
  - 1.1.1 Identify additional staffing resources to assume responsibility for the overall implementation of the state PIPS program to ensure

- integration with regional and LEMSA trauma system plans and other relevant state plans.
  - 1.1.2 Utilize existing educational forums to provide information on the state PIPS plan, with an emphasis on the PIPS structure, process and metrics.
- 1.2 Create a multidisciplinary State Trauma PIPS committee as a subcommittee of the STAC taking into consideration the urban, suburban and rural clusters of trauma centers, regions, hospital network affiliations, and Committee on Trauma representation.
  - 1.2.1 Solidify the state core trauma performance improvement measures within the State PIPS plan to include structure, process, outcome and patient safety metrics.
    - 1.2.1.1 Assure that the performance improvement process is protected from discovery, when conducted at all levels of the trauma system, including the Regional Trauma Coordinating Committees.
  - 1.2.1 Query the databases to help answer specific performance improvement questions of interest, such as rates of over- and under-triage, and timeliness of re-triage and address trends in deviation of care through the PIPS plan process.
  - 1.2.2 Consider incorporating the best practices, processes and metrics identified from LEMSAs with well-established PIPS plans.
- 1.3 Perform a comprehensive statewide assessment of the State Trauma System based on national standards and California-specific resources
- 1.4 Evaluate state data and identify regional opportunities for improvement, determining if similar opportunities are occurring in other regions and explore mechanisms for shared resolution
  - 1.4.1 Develop specific database queries
  - 1.4.2 Create definition for system sentinel event and monitor such events
  - 1.4.3 Facilitate issue resolution by assisting other system performance improvement committees
  - 1.4.4 Develop and implement standards for system-wide performance improvement
- 1.5 Create a recommended minimal data set of information to be submitted to LEMSA system trauma registries from non-trauma facilities to track and trend outcomes of traumatically injured patients retained in non-trauma receiving facilities
- 1.6 Direct cross-regional issues to specific PI Project Work Groups for study and recommended resolution
- 1.7 Develop and institute a mechanism for providing data and feedback to LEMSAs to assist in optimizing local PIPS processes
- 1.8 Explore participation in the American College of Surgeons National Trauma Performance Improvement Project (TQIP) as a state, including a cost-benefit analysis
  - 1.8.1 Seek funding to support a California State Collaborative to provide risk-adjusted benchmarking outcomes.

- 1.9 Create a policy regarding the sharing of data for the PI process, recognizing hospital confidentiality and HIPPA regulations.
- 1.10 Explore the development of a HIPPA compliant universal identifier (e.g. PCR# from prehospital patient care report) that allows individual patient data to be tracked throughout the entire spectrum of care including post care outcomes
- 1.11 Ensure recommended minimum data that set allows for risk adjustment of individual patients so that benchmarking can be carried out
- 1.12 Develop a process to periodically collect data elements designed to focus on specific patient populations and processes that are deemed to be the most important at any given time; these focused projects may be directed from the State, Region or LEMSA
- 1.13 Periodically benchmark individual systems, hospitals, LEMSAs and RTCCs to the group as a whole and to an outside standard such as the HRSA “Benchmarks, Indicators, Scoring” tool
  - 1.13.1 Encourage utilization of the BIS by the LEMSAs.
  - 1.13.2 Train facilitators to conduct the BIS for LEMSAs

#### Local EMS Agency

- 2.1 Develop risk-adjusted standardized reports and based on nationally recognized formula
- 2.2 Show overall progress in achieving goals for significant injury and patient categories
- 2.3 Ensure that all LEMSA medical directors report their clinical performance improvement initiatives to the EMS Authority.
- 2.3 Create a local/regional Performance Improvement Program (may be integrated into EMS PI Program for small systems) to:
  - 2.3.1 Develop specific database queries
  - 2.3.2 Create definition and monitor system sentinel events
  - 2.3.3 Work with local Medical Examiner on guidelines for trauma post-mortem exams
  - 2.3.4 Facilitate issue resolution by individual performance improvement committees
  - 2.3.5 Incorporate the state PIPS trauma performance measures as a minimum into their trauma plans.
- 2.4 Represent LEMSA at regional and state Performance Improvement Committees

#### Regional Trauma Coordinating Committee

- 3.1 Identify regional system issues and work with member LEMSAs on resolution of these issues
- 3.2 Support regional collaboration to enhance system integration and performance improvement
- 3.3 Recommend audit filters based on the region’s population traits, available resources and geography

- 3.4 Explore tools to identify variations in care and outcomes across respective regions and determine possible ways to reduce detrimental variations in regional structures and care processes that may result in negative outcomes
- 3.5 Prioritize system issues identified for resolution
- 3.6 Work collaboratively with each member LEMSA to ensure standardized and accurate data collection and CEMSIS participation

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# APPENDIX D

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HRSA 2006 Model Trauma System Plan (benchmark, indicator, and scoring tool [BIS]) specific to performance improvement and trauma management information system (CEMSIS for California):

## **101**

Death certificate data, by E-code, are used as part of the overall assessment of trauma care in a State or sub-State, including statewide rural and urban preventable mortality studies. Multiple population-based and clinical data sources (e.g., trauma registry, ED data, and others) are electronically linked and used to describe injury within the jurisdiction. The public health epidemiologist, along with EMS and trauma system leaders, is involved in the development of injury reports. There is clear evidence of data sharing, data linkage, and well-defined reporting roles and responsibilities

## **205**

The lead agency, in cooperation with the trauma-specific statewide multidisciplinary, multi-agency advisory committee, uses compliance data from trauma, EMS, public safety, and other sources to improve system design changes or to make other system refinements. There is routine and consistent feedback to all system providers to ensure that data identified deficiencies are corrected. Trauma MIS reports are used extensively to improve and report on system performance. The lead agency issues regular and routine reports to providers. Trauma leaders assess reports to determine system deficiencies and to allocate resources to areas of greatest need. System performance and standard compliance are assessed and reported.

## **206**

Regularly scheduled reports are generated from trauma system data and are used by the stakeholder groups to evaluate and improve system performance effectiveness. The trauma-specific statewide multidisciplinary, multiagency advisory committee and related stakeholder groups meet regularly and review trauma data reports to assess system performance over time, looking for ways to improve system effectiveness and patient outcomes.

## **301**

Hospital trauma registry data are routinely submitted to the lead trauma authority, are aggregated, and are used to evaluate overall system performance. Individual prehospital agency data are electronically submitted to the lead trauma authority, are aggregated with other prehospital agency data, and are used to evaluate overall trauma system performance. There is an integrated management information system that includes, at a minimum, trauma, ED, prehospital, 9-1-1 dispatch, and rehabilitation

databases that are regularly used by the lead trauma authority and system provider agencies to monitor trauma system performance.

### **302.5**

The retrospective medical oversight of the EMS system for trauma triage, communications, treatment, and transport is closely coordinated with the established performance improvement processes of the trauma system.

### **303.3**

The trauma lead authority ensures that trauma facility patient outcomes and quality of care are monitored. Deficiencies are recognized and corrective action is implemented. Variations in standards of care are minimized, and improvements are made routinely.

### **304.1**

The lead agency, along with partner organizations, prepares annual reports on the status of injury prevention and trauma care in State, regional, or local areas.

### **304.2**

The trauma system MIS database is available for routine public health surveillance. There is concurrent access to the databases (emergency department, trauma, prehospital medical examiner, and public health epidemiology) for the purpose of routine surveillance and monitoring of health status that occurs regularly and is a shared responsibility.

### **307.2**

The trauma system implements and regularly reviews a standardized report on patient care outcomes as measured against national norms.

### **308.2**

Rehabilitation centers and out-patient rehabilitation services provide data on trauma patients to the central trauma system registry that include final disposition, functional outcome, and rehabilitation costs and also participate in performance improvement processes.

### **309.3**

Cost, charge, collection, and reimbursement data are aggregated with other data sources including insurers and data system costs and are included in annual trauma system reports.

### **309.4**

Financial data are combined with other cost, outcome, or surrogate measures, for example, years of potential life (YPLL), quality—adjusted life years (QALY), and disability—adjusted life years (DALY); length of stay; length of Intensive Care Unit (ICU)

stay; number of ventilator days; and others, to estimate and track true system costs and cost-benefits.

**310.9**

Conduct at least one multidisciplinary trauma conference annually that encourages system and team approaches to trauma care.

**311.4**

Laws, rules, and regulations are routinely reviewed and revised to continually strengthen and improve the trauma system.

**311.5**

The lead agency routinely evaluates all system components to ensure compliance with various laws, rules, and regulations pertaining to their role and performance within the trauma system.

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