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2 **Appendix D: Statewide Trauma System Components and Assessment**  
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4 Organized approaches within single facilities to care for victims of severe injury have  
5 repeatedly demonstrated improved outcomes, an observation that has led to the  
6 development of the trauma center designation process. In addition, regionalized trauma  
7 systems should have a process for triaging patients, ensuring that a patient gets to the  
8 level of trauma care that matches his or her injury severity and resulting in improved  
9 outcomes. Moreover, using a rigorous disease management approach to injury across  
10 the entire spectrum, from prevention to rehabilitation, has shown improved  
11 outcomes. The needs of all injured patients need to be addressed wherever they are injured  
12 and wherever they receive care. This requires the development of a trauma system of  
13 care instead of simply developing Trauma Centers. An ideal trauma system would  
14 include all the components identified with optimal trauma care, such as prevention,  
15 access, acute hospital care, rehabilitation, and research activities.<sup>1</sup>  
16

17 A broad approach to policy development through laws and regulations should include  
18 the building of system infrastructure that can ensure system oversight and future  
19 development, enforcement, and routine monitoring of system performance, the updating  
20 of laws, regulation, policies and procedures, and the establishment of standard  
21 operating methods across all phases of intervention.<sup>2</sup>  
22

23 The State Trauma Plan depends on the exercise of regulatory authority by the local  
24 EMS agencies (LEMSA), and is not designed to interfere with or compromise this  
25 authority. The Plan also relies on the activities of the Regional Trauma Coordinating  
26 Committees (RTCCs) and the State Trauma Advisory Committee (STAC) to provide  
27 expertise, support, and technical assistance to both the LEMSAs and the State EMS  
28 Authority in matters pertaining to state and regional trauma care and trauma system  
29 development.  
30

31 As described by the American College of Surgeons' *Regional Trauma Systems: Optimal*  
32 *Elements, Integration, and Assessment* the functional components of a State Trauma  
33 System are divided into 13 parts:

- 34 1. Trauma System Leadership  
35 2. System Development Operations  
36 3. Trauma System Finance  
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<sup>1</sup> *Resources for Optimal Care of the Injured Patient 2006-2014*, Committee on Trauma American College of Surgeons

<sup>2</sup> *Regional Trauma Systems: Optimal Elements, Integration, and Assessment*, American College of Surgeons Committee on Trauma, 2007

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2 4. EMS System: Prehospital Care

3 5. EMS System; Ambulance and Non-Transporting Medical Units;

4 ~~4.6.~~ and EMS System: Communications

5 ~~5.~~ Definitive Care Facilities: Acute Care Facilities, Re-Triage/Interfacility Transfer,  
6 and Rehabilitation

7 ~~6.7.~~ Inter-Facility Transfer and Re-Triage

8 ~~7.8.~~ Rehabilitation and Trauma Recovery

9 ~~8.9.~~ Information Systems

10 ~~9.10.~~ System Evaluation and Performance Improvement

11 ~~10.11.~~ Education & Training

12 ~~11.12.~~ Trauma System Research

13 ~~12.13.~~ Injury Prevention

14 ~~13.14.~~ Emergency/Disaster Preparedness

15  
16 Each component contains two parts: 1) Background and Current Status with a brief  
17 description of the existing component and 2) Planned Development with a listing of  
18 objectives outlining how the component is expected to develop over the next 3-5 years  
19 and assigned responsibility.

20 It is understood that many objectives require resources (human and capital) that may  
21 not be available. These objectives are made for long-term goals and suggested  
22 prioritization.

23 At the end of the Assessment there is a matrix summary of objectives per component  
24 and assigned responsibility.

## 25 **~~Component 1 -- Trauma System Leadership~~**

### 26 **~~Background and Current Status~~**

27 ~~Unlike other states, the responsibility and authority for administration of local trauma~~  
28 ~~systems rests with the local EMS agencies. While this local model permits flexibility and~~  
29 ~~the tailoring of EMS practices to local needs, it has also led to some variability in the~~  
30 ~~administration of a trauma system in some areas of the state.~~

### 31 **State EMS Authority**

32 The State EMS Authority was established in 1980 through the Emergency Medical  
33 Services System and Prehospital Emergency Care Personnel Act (SB 125). The EMS  
34 authority is one of 13 departments within the State of California Health & Human  
35 Services Agency and has statutory responsibility (Health and Safety Code §1797.103)  
36 for:

- 1
- 2 • Manpower and training
- 3 • Communications
- 4 • Transportation
- 5 • Assessment of hospitals and critical care centers
- 6 • System organization and management
- 7 • Data collection and evaluation
- 8 • Public information and education
- 9 • Disaster response

10  
11 Specific to Trauma Programs, the EMS Authority:

- 12 • 1798.161 Required to Establish Regulations
- 13 • 1797.199 Trauma Care Fund Distribution
- 14 • 1798.166 Approval of local Trauma Plans in Accordance with Regulations

15  
16 **Local EMS Agency**

17 There are currently 33 Local EMS Agencies (LEMSA) within the State of California, 26  
18 are a single county and 7 have a multi-county jurisdiction. The EMS agency has  
19 statutory responsibility to plan, implement, and evaluate an emergency medical services  
20 system in accordance (in part) with:

- 21 • 1797.206/1797.218 Implementation and Approval of ALS & LALS Systems
- 22 • 1797.208 Compliance of EMT Training Programs
- 23 • 1797.214 Additional Training Requirements
- 24 • 1797.220 Local Medical Control Policies & Procedures
- 25 • 1797.252 EMS System Coordination
- 26 • 1797.100 Designation of Base Hospitals
- 27 • 1798.163 Trauma Care System Policies & Procedures
- 28 • 1797.151 Coordination of Disaster Preparedness

29 |  
30 The LEMSA is charged with implementing statues (1798.162, 1798.163), regulations  
31 and local policy for trauma services in their area of jurisdiction including designation of  
32 Trauma Centers. Using State trauma guidelines, LEMSAs design trauma systems that  
33 meet minimum State standards and regulations, which provide a level of consistency  
34 between counties. The LEMSA ensures the system components operate in a **seamless**  
35 **consistent** manner throughout the continuum of care.

36 **State Trauma Advisory Committee**

37 The State Trauma Advisory Committee (STAC) is comprised of physicians, nurses,  
38 administrators and other EMS providers and personnel for the purpose of advising the  
39 State EMS Authority Director on matters pertaining to the planning, development, and  
40 implementation of the State Trauma System.

## 1 2 **Regional Trauma Coordinating Committee**

3 As the result of recommendations made by the STAC and the 2006 California Statewide  
4 Trauma Planning, Assessment and Future Direction document, five (5) trauma regions  
5 were defined by the EMS Authority and corresponding Regional Trauma Coordinating  
6 Committees were created in 2008. These committees are composed of trauma system  
7 providers, local EMS agency staff, and trauma system stakeholders from within each  
8 region for the purpose of ~~assessing regional trauma resources, reviewing trauma-~~  
9 ~~related policies and procedures, developing trauma-related guidelines, collecting and~~  
10 ~~analyzing regional data, and examining quality improvement issues within the region~~  
11 promoting regional cooperation, enhancinge and developing best practices, assisting in  
12 the analysis of regional data, and working collaboratively with the State and LEMSAs ~~to~~  
13 ~~develop regional policies and protocols~~ in support of a state trauma system.

## 14 15 **Trauma Centers**

16 Trauma Centers are a key element in a trauma system and the focal point for trauma  
17 care. Lead Trauma Centers (Level I and II) contribute administrative and medical  
18 leadership and academic expertise to the system. These lead Trauma Centers, in  
19 collaboration with the local EMS agency, engage all other Trauma Centers (Level III and  
20 IV) and other non-trauma acute care facilities in the performance improvement process.  
21 Many Trauma Centers participate in state and regional trauma system planning and  
22 development.

## 23 24 **Planned Development**

25 LEMSA and State EMS Authority leadership remain critical to the overall success of the  
26 State Trauma System. The creation and development of Regional Trauma Coordinating  
27 Committees (RTCCs) represent a principal change in the inclusion of expertise and  
28 participants of the trauma system, including the composition of the State Trauma  
29 Advisory Committee (STAC), which now includes regional representatives from each  
30 RTCC.

## 31 32 **State EMS Authority**

33 As part of the State EMS Authority's responsibility to coordinate the planning,  
34 development and implementation of the State Trauma System, the EMS Authority, with  
35 advisement from the STAC, should work to provide coordination, guidance, and  
36 assistance to the LEMSAs and RTCCs with the goal of enhancing the consistency of  
37 trauma-related standards and guidelines throughout the state and improving the overall  
38 quality of trauma care.

39  
40 The EMS Authority's objectives include:

- 41 1.1 Develop policy to facilitate communication among the LEMSAs, RTCCs, and STAC  
42 for purposes of system development
- 43 1.2 Facilitate the utilization of CEMSIS data by LEMSAs and RTCCs
- 44 1.3 Coordinate the development and activities of ad hoc working groups for system  
45 development projects such as data utilization, performance improvement, and  
46 regional transfer network guideline development, etc.

- 1 1.4 Develop a compendium of trauma-related policies, procedures, and clinical  
2 | guidelines that may be ~~adopted~~ shared throughout the state
- 3 1.5 Receive information and advice from the State Trauma Advisory Committee  
4 | pertaining to the further development, monitoring, and operation of the State  
5 Trauma System
- 6 1.6 Convene a statewide forum to brief stakeholders and receive feedback on system-  
7 | wide developments and review the overall operation and performance of the State  
8 Trauma System

### 9 10 **State Trauma Advisory Committee**

11 Membership on the State Trauma Advisory Committee (STAC) is determined by the  
12 EMS Authority Director, and includes broad representation from trauma system  
13 stakeholders, including representatives from each of the RTCCs. The Chair of the  
14 STAC should be a nationally recognized trauma surgeon with experience and  
15 demonstrated expertise in Trauma Center evaluation and trauma system planning. The  
16 Vice-Chair of the STAC should ideally be a LEMSA medical director or LEMSA  
17 administrator.

18  
19 The STAC advises the EMS Authority in matters pertaining to the development,  
20 monitoring, and operation of the State Trauma System to include the following:

- 21 | 2.1 Assist the EMS Authority in facilitating the activities of the RTCCs, ~~including the~~  
22 | ~~—development of ad hoc, state-wide work groups as needed~~
- 23 2.2 Set priorities for specific guideline, protocol, and policy development / review for the  
24 | ~~RTCCs and~~ state-wide work groups
- 25 2.3 Receive periodic reports on LEMSA trauma plans and make related  
26 | recommendations to the EMS Authority Director
- 27 2.4 Make recommendations to the EMS Authority Director in regards to modification to  
28 | existing regulations pertaining to trauma systems
- 29 2.5 Respond to requests from the EMS Authority Director to assess trauma-related  
30 | policies, procedures, regulations, or guidelines proposed by other groups or  
31 committees
- 32 2.6 Receive and analyze reports from the RTCCs, making specific recommendations to  
33 | the EMS Authority Director as needed
- 34 2.7 Work with EMS Authority in conducting periodic (every 3-5 years) assessment and  
35 | modifications to the California State Trauma Plan

### 36 37 **Local EMS Agencies**

38 The authority and responsibility of the local EMS agencies in implementing and  
39 monitoring local/regional trauma systems remains unchanged. The specific  
40 responsibilities of each LEMSA, with respect to the future direction of the State Trauma  
41 | System, ~~to~~ should include the following:

- 42 3.1 Participate in the RTCC with LEMSA Medical Director, Administrator, and/or  
43 | Trauma System Coordinator
- 44 3.2 Utilize the expertise, resources, and technical assistance of the RTCCs to assist  
45 | with regional trauma ~~system development care issues, monitoring and operation.~~  
46 | This may include:

- 1
- 2 | 3.2.1 ~~Work with~~Encourage all hospitals to participate in build and improveing the
- 3 | local-regional trauma care. system and meet objectives
- 4 | 3.2.2 Identify and promote clinical guideline development
- 5 | 3.2.3 Implement a system-based Performance Improvement and Patient Safety
- 6 | (PIPS) program
- 7 | 3.2.4 Review and modify trauma-related policies within the region
- 8 | 3.2.5 Review local trauma plans in the context of regional trauma care, with input
- 9 | from Trauma Centers
- 10 | 3.3 Implement data collection by non-trauma receiving facilities
- 11 | 3.4 Share pre-hospital and trauma registry data via submission to CEMISIS
- 12 | 3.5 Assess Trauma Center compliance with Title 22 regulations

### 13

### 14 **Regional Trauma Coordinating Committees**

15 RTCCs are a key component of the California State Trauma System and were created  
16 for the purpose of utilizing a broad range of expertise within the five regions to enhance  
17 collaboration, share and support best practices, provide requested technical assistance  
18 to the local EMS agencies and to the State EMS Authority related to the ongoing  
19 development and operation of a system of trauma care for the State of California. The  
20 RTCCs function as a conduit between the regions and the EMSA/STAC to aid in the  
21 overall Trauma System development and standardization. Regional roles include the  
22 establishment of regular communication and collaboration within and between  
23 regions. Examples of regional activities include regular meetings, sharing best  
24 practices, exploring common issues and themes and working towards resolutions to  
25 minimize variations in practice within the region and ultimately the state. State level  
26 activity includes representation on the STAC, (acting as a subcommittee for the STAC)  
27 reporting regional activities and issues, sharing regional work products, relaying STAC  
28 information and decisions back to the region. The five Regional Trauma Coordinating  
29 Committees (RTCCs) are a key component of the California State Trauma System and  
30 were created for the purpose of utilizing a broad range of expertise within the five  
31 regions to provide advice and technical assistance to the local EMS agencies and to the  
32 State EMS Authority related to the ongoing development and operation of a system of  
33 trauma care for the State of California. The principal role of the RTCCs is to advise and  
34 assist the LEMSAs and the EMS Authority, (through the STAC) to improve the operation  
35 and collaboration of the local trauma systems as it affects regional care. The scope of  
36 RTCC activity is discussed in greater detail in the Systems Development section.

### 37

### 38 **Trauma Center**

39 Each designated Trauma Center should have its own trauma program leadership to:

- 40 | 5.1 Participate on their respective LEMSA and RTCC committees, including
- 41 | Performance Improvement
- 42 | 5.2 Provide expertise to the LEMSA in the development and ongoing updates of the
- 43 | local Trauma Plan
- 44 | 5.3 Minimum Gcompliancey with CEMISIS data standards and inclusion criteria

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## **Component 2 -- System Development Operations**

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

California is unique insofar as its systems of trauma care are administered at the local EMS level. Currently 33 local EMS agencies (LEMSAs) administrate trauma care in California's 58 counties. Of these LEMSA jurisdictions, 26~~5~~ have at least one designated Trauma Center, and 7~~8~~ do not. There is no statutory or regulatory requirement for a regional or county trauma system, making all local systems essentially voluntary. However, all LEMSA have an approved trauma system plan.

LEMSAs plan, implement and manage local trauma systems based upon state regulations. Local Trauma Plans are submitted to the EMS Authority for review and approval. The plans outline local trauma systems but do not necessarily address inter-county needs. The LEMSA are responsible for designating Trauma Centers within their jurisdiction that meet state trauma regulation requirements as stipulated in CCR Title 22 Chapter 7.

Since trauma system development is optional and locally based, there is a wide range of trauma system models in California. The variance runs from LEMSA with well established, ~~codified, and operated~~ trauma systems with designated Trauma Centers at various levels, to LEMSA that have limited implementation of the plan and/or no designated Trauma Centers.

### ***Planned Development***

The vision for California is to develop an inclusive state trauma system that assures timely access to an appropriate level of care for all individuals following major injury.

The system should focus on prevention, quality care improvements and rehabilitation and be informed by a robust system for data collection and analysis.

### **State EMS Authority**

The State EMS Authority, advised by its State Trauma Advisory Committee, to strengthen state trauma resources by:

- 1.1 Providing medical oversight for trauma system activities by a clinically active trauma surgeon experienced in trauma systems to act as the Chair of the State Trauma Advisory Committee
- 1.2 Facilitating participation in and utilization of the state trauma registry
- 1.3 Collaborating with the Department of Public Health in a comprehensive analysis of injury throughout the State of California utilizing existing databases (EPIC, SWITRS, CEMIS and OSHPD)
- 1.4 Working with the ~~RTCCs-LEMSAs~~ to conduct a comprehensive analysis of trauma resources throughout the state including access-to-care at:
  - 1.4.1 Non trauma facilities with emergency departments
  - 1.4.2 Trauma Centers and their specific (sub-specialty) capabilities, e.g. Neurosurgical Interventional Radiology, re-implantations, etc.)

- 1
- 2 1.4.3 Re-habilitation facilities and their specific capabilities (e.g. neurological-
- 3 cognitive rehabilitation)
- 4 1.5 Facilitating communication and information transfer among the RTCCs, LEMSAs,
- 5 and EMS authority through:
- 6 1.5.1 Existing website resources
- 7 1.5.2 Phone conferencing
- 8 1.5.3 Video-conferencing
- 9 1.6 Working through the STAC to provide guidance and coordination for specific RTCC
- 10 activities and projects with statewide implications
- 11 1.7 Developing statewide working groups for high priority projects that might include:
- 12 1.7.1 Performance Improvement & Patient Safety programs
- 13 1.7.2 System-wide trauma data procurement and analysis
- 14 1.7.3 Regional Network for re-triage and interfacility transfers
- 15

### 16 **State Trauma Advisory Committee**

17 The STAC to provide expertise, advice and guidance to the State EMS Authority,  
18 LEMSAs and RTCCs to include:

- 19 2.1 Prioritize the needs of the state system, identifying related issues or problems,
- 20 and assist the EMS Authority in coordinating efforts to address these specific issues
- 21 and problems
- 22 2.2 Review and make recommendations to the EMS Authority Director for revisions to
- 23 the State Trauma Plan
- 24 2.3 Review reports from the RTCCs and make recommendations for statewide
- 25 policy
- 26 2.4 Advise the Authority on applications for trauma-related prehospital clinical studies
- 27 2.5 Develop guidance for consistent and periodic assessment of Title 22
- 28 compliance for designated Trauma Centers throughout the state
- 29 2.6 Make recommendations regarding revisions to Title 22 regulations
- 30 2.7 Make recommendations, as requested by a LEMSA, regarding the number,
- 31 level, location, and capacity of Trauma Centers in regions throughout the state
- 32 2.8 Prioritize the development of state-wide protocols and guidelines that may be
- 33 adapted to local needs by LEMSAs throughout the state
- 34 2.9 Develop processes and mechanisms for ensuring optimal access and care to
- 35 special populations specifically including pediatric ~~and geriatric~~ populations.
- 36 2.10 Develop guidance for re-triage and interfacility transfer of trauma patients
- 37 regionally.
- 38 2.11 Identify high priority areas for system-wide research projects.
- 39

### 40 **Local EMS Agency**

41 The LEMSAs will maintain the authority and responsibilities as outlined in statute and  
42 regulations. In addition, LEMSA activities to include:

- 43 3.1 Conduct a review of local trauma plan in the context of this State Trauma Plan and
- 44 the structures and processes it outlines
- 45
- 46

1  
2 3.2 Utilize the expertise of the RTCC to provide technical assistance for the review of  
3 local trauma plans as needed  
4

### 5 **Regional Trauma Coordinating Committees**

6 The RTCCs, by providing a broad range of expertise and experience, are instrumental  
7 in assisting the LEMSAs and EMS Authority in ongoing system development and  
8 assisting with the implementation of the State Trauma Plan. The role of the RTCCs to  
9 include the following:

10 4.1 ~~Conduct assessments~~Assist with gap analysis of regional resources including  
11 acute care facilities, rehabilitation facilities, prevention programs, prehospital  
12 components, etc.

13 4.2 ~~Conduct an assessment of~~Assist the LEMSA with Trauma Plans upon request  
14 ~~within the region and provide system development advice~~ as it relates to regional  
15 trauma care

16 4.3 ~~Participate in the Dd~~development and implementation of a regional process for  
17 ongoing Performance Improvement (as outlined in the “Evaluation” section) that  
18 includes data and case-based analyses

19 4.4 ~~Assist in the Dd~~development of and monitor system-wide regional standards for  
20 performance improvement ~~specifically including pediatric and geriatric~~  
21 ~~populations~~

22 4.5 Work collaboratively with the ~~EMS Authority~~LEMSA to perform regional analyses of  
23 trauma-related data

24 4.6 Make recommendations to the ~~EMS Authority and~~ STAC regarding revisions to  
25 state-wide policies and regulations

26 4.7 With guidance from the LEMSA, ~~STAC, and EMS Authority,~~ contribute to the  
27 development of system-wide state and regional protocols and guidelines; ~~including~~  
28 ~~those for pediatric and geriatric populations~~

29 4.8 Assist in the development of regional trauma-related educational programs or  
30 offerings

31 4.9 Evaluate and/or collaborate with regional partners on trauma-related research  
32 projects

33 4.10 Provide technical assistance to the LEMSAs as needed for:

34 4.10.1 Assessment and modification of existing trauma-related  
35 policies/guidelines/protocols, and the development of new trauma-related  
36 policies/guidelines/protocols as needed as they relate to regional trauma care

37 4.10.2 Identification of system Performance Improvement issues and solutions as  
38 they relate to regional trauma care

39 4.10.3 Identification of regional resource issues and solutions

40 4.10.4 ~~Assessment of Trauma Center’s compliance with state regulation (Title 22),~~  
41 ~~including, as needed,~~ Assist with the creation of Trauma Center survey teams to  
42 work with the LEMSA ~~in accomplishing this task~~upon request

43 4.10.5 Respond to ad hoc requests from LEMSAs for other types of technical  
44 assistance

45 4.11 Submit or present reports to STAC that include:

46 4.11.1 Assessment of RTCC meetings and attendance

1  
2 4.11.2 Regional trauma system development & configuration

3 4.11.3 Regional Performance Improvement activity ~~including data analysis,~~  
4 ~~Performance Improvement projects, sentinel case-based events~~

5 ~~4.11.4 Recommendations for statewide clinical guideline and protocol development~~  
6

### 7 **Component 3 -- Trauma System Finance**

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

9 Funding for improving outcomes from trauma should be considered to be in one of two  
10 mutually exclusive categories: reimbursement for direct patient care, and funding to  
11 support the successful oversight of a statewide trauma system. Most of the effort in  
12 improving trauma funding has focused on the direct reimbursement for patient care.  
13 Fewer financial resources are required to support development, oversight, and quality of  
14 a state trauma system (including governance, planning, a statewide trauma registry,  
15 and performance improvement efforts).  
16

#### 17 **Funding of Trauma Care**

18 An ongoing and stable source of funding is critical to the success of any statewide  
19 program. California remains without a statewide coordinated State Trauma System due  
20 to insufficient funding for the system infrastructure, Trauma Centers, and physician  
21 readiness.  
22

#### 23 **State Funding**

24 The California State legislature memorialized its financial support for trauma care  
25 through the passing of Senate Bill (SB) 12/612 the Maddy Fund in 1987, Proposition 99  
26 (Tobacco Tax) in 1990, and Assembly Bill (AB) 430 in 2001 establishing the Trauma  
27 Care Fund for the State.  
28

#### 29 **Maddy Fund**

30 Many local EMS agencies utilize the Maddy Fund to compensate hospitals and  
31 physicians for uninsured and under-compensated emergency services, including  
32 trauma services for adults and children. In 2007, SB 1773 amended the statute to  
33 increase the amount of the penalty from \$2 per \$10 to \$4 per \$10 penalty. A  
34 subsection of SB 1773, known as Richie's Fund, sets 15 percent of the total  
35 funds collected to be utilized for all Pediatric Trauma Centers throughout the  
36 county. It further defines the expenditure of money with the intent for augmenting  
37 pediatric trauma care. SB 1773 will sunset as of January 1, 2017.  
38

#### 39 **Tobacco Tax**

40 Revenues from tobacco taxes were earmarked in part for programs to provide  
41 health care services to indigent patients. Over the years Proposition 99 dollars  
42 have dwindled because of a decrease in the number of smokers and diversion of  
43 funds away from health care to other State programs.

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### **Trauma Care Fund**

The Trauma Care Fund was established to provide designated Trauma Centers funding for trauma care to uninsured patients. The funds were passed through the local EMS agency for distribution through a competitive grant-based system. The Trauma Care Fund only allocated funds for three years including \$2.5 million provided to local EMS agencies for the planning and implementation of new local trauma systems. Trauma Care funds have not been allocated since FY 2005-06.

### **Local Funding**

Only two counties, Los Angeles and Alameda have developed creative funding for trauma care through earmarked assessments on property value. Another source for funding local trauma systems is paid by the Trauma Centers to the designating agency for costs associated with audits and in some cases, review by the American College of Surgeons. The fees are also used for data collection and system management.

### **Planned Development**

There is a need to align the elements of the California’s State Trauma System with the anticipated requirements for federal trauma funding under the Patient Protection and Affordable Care Act. The Act includes language for grant or contract funding of regional trauma systems.

In addition, establishing health insurance programs for all citizens is expected to have a positive effect on Trauma Center financing. It is unclear how healthcare reform policies will affect the payment for trauma care – specifically the relationship between the percentages covered by the private and public payers.

### **State EMS Authority/State Trauma Advisory Committee**

- 1.1 Explore the feasibility of a State Trauma System Business Plan to:
  - 1.1.1 Research and identify the system’s current financial status
  - 1.1.2 Perform a needs assessment to include the identification of specific aspects of the system that need funding, i.e. trauma care, infrastructure, data systems, performance improvement programs, rehabilitation, etc.
- 1.2 Establish relationships with University Business/Financial/Public Policy schools to work ~~with RTCCs~~ on projects of interest ~~to the region and of benefit to~~ the state system to include:
  - 1.2.1 Identify critical Trauma System components (including local and State data systems, local EMS agency system oversight, and RTCC activities) and the cost to develop and maintain
  - 1.2.2 Research appropriate funding opportunities for identified critical trauma system components
  - 1.2.3 Work with researchers and hospitals to establish the basis for estimating the actual cost for trauma care in California

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## **Local EMS Agency**

2.1 ~~Provide information regarding~~ **Research** the cost and cost savings of quality trauma care to educate the public and local legislature

## **Regional Trauma Coordinating Committee**

3.1 Identify sustainable funding to support regional ~~infrastructure and planning activities~~  
3.2 Make recommendations to the STAC regarding potential sources of revenue for funding the trauma system infrastructure

## **Component 46 -- EMS System: Prehospital Care, ~~Ambulance & Non-Transporting Medical Units, and Communication Systems~~**

### **Prehospital Care**

#### ***Background and Current status***

In California, the EMS Authority has overall statutory authority for the development of prehospital care program regulations. The LEMSA has local responsibility and oversight of these programs at county and regional government levels. The medical direction and management of EMS is under the medical control of the Medical Director of the LEMSA. This medical control is in accordance with standards established by the EMS Authority. The LEMSA is responsible for trauma system management including the development of local EMS trauma triage criteria, destination policy, and accreditation of local paramedics and EMTs to include assurance of knowledge of the local trauma system.

Trauma education for prehospital providers is incorporated into prehospital training programs as a standard part of the U.S. Department of Transportation EMS curriculums. Multidisciplinary continuing education programs for trauma are available to prehospital personnel through local Trauma Centers, LEMSAs, and continuing education providers. At present, there is no specific trauma continuing education hours considered to be a minimum for prehospital personnel.

#### **Triage, Destination Policies for Trauma**

Trauma triage and destination policies often reflect the availability of trauma services within a specific community. The national standards for trauma triage have been adopted by many of the LEMSAs both locally and regionally through RTCC collaboration. While there is still a need for local variation, these guidelines are, for the most part, becoming accepted as the minimum trauma triage standards for all of California.

#### **Medical Direction**

The LEMSA, using state minimum standards, establishes policies and procedures including dispatch, patient destination, patient care guidelines, and quality improvement requirements. For trauma systems, medical direction is commonly accomplished by two complimentary methods:

- Trauma system policies and procedures in written form and accepted as valid by and for the trauma community to which they apply
- Policies such as equipment required for field stabilization of trauma victims

### ***Planned Development***

While the prehospital component of the State Trauma System is well defined and been functioning as a key partner, there are opportunities for improvement as the system matures.

### **State EMS Authority**

1.1 Support the current national standards for prehospital Trauma Triage Guidelines as the minimum statewide standard.

1.2 Through its State Trauma Advisory Committee, develop definitions and study over and under triage with a mechanism to track on a regional basis

- 1.2.1 Work with OSHPD in obtaining specified data from non-trauma facilities on trauma patients transported to the facility and not transferred

### **Local EMS Agency**

As part of the local Trauma Plan, LEMSAs to:

2.1 Establish a Trauma System Manager/Coordinator position with appropriate qualifications

2.2 Ensure prehospital care reports are part of the medical record for all trauma victims

2.3 Develop policy to ensure prehospital resources are available for re-triage including roles and responsibilities of prehospital personnel

2.4 Adopt the current national standards for prehospital Trauma Triage Guidelines tailored to local needs and resources, incorporating the needs of pediatric and geriatric populations

### **Regional Trauma Coordinating Committee**

3.1 Assist the LEMSAs in developing California Trauma System-specific continuing education programs for the training of 1st Responders, EMTs, paramedics and MICN's in the region

3.2 Assist the LEMSAs in developing, in collaboration with the LEMSAs pediatric and geriatric specific field trauma triage criteria for regional standardization

3.3 Assist LEMSAs in Analyzing regional over and under triage

### **Component 5 - - Ambulance and Non-Transporting Medical Units**

#### ***Background and Current status***

Non-transporting prehospital medical units are configured in various ways throughout California. In urban regions, it's common for non-transporting units to be fire apparatus staffed by either EMT or paramedic level personnel. Rural areas (including state and federal parks, ~~and forests,~~ and beaches) may have staff cars or rescue units in various configurations and capabilities staffed with trained first responders, EMTs, or in some

1  
2 cases paramedics. Organized search and rescue teams also fit into the category of  
3 non-transporting EMS units.

4  
5 Transport units, ground and air, are regulated and meet policies of the jurisdictional  
6 LEMSA and applicable state and federal laws and regulations. EMS transport agencies  
7 are managed by public, private and law enforcement agencies. The EMS Authority  
8 enforces EMS Aircraft regulations that are outside of FAA and publishes statewide  
9 Prehospital EMS Aircraft Guidelines.

10  
11 Minimum ground ambulance equipment standards are established by the California  
12 Highway Patrol for basic life support supplies and equipment. Equipment standards to  
13 support the scope of practice, are established by the LEMSA, and vary between non-  
14 transporting and transporting units. Recommendations for national standards for  
15 equipment inventories for EMS resources have been developed by Commission on  
16 Accreditation of Ambulance Services, Commission on Accreditation of Medical  
17 Transport Services and California EMS for Children Program.

### 18 19 ***Planned Development***

20 California has a complex EMS transport system utilized to expeditiously transport the  
21 critically injured patient to the most appropriate facility. As the system expands to  
22 provide universal access to trauma care, transport decisions become more multifaceted,  
23 coordinating both ground and air resources in a safe manner.

### 24 25 **EMS Authority/State Trauma Advisory Committee**

- 26 1.1 Recommend triage guidance for EMS Dispatch Agencies receiving automated  
27 vehicular telemetry data (AACN)  
28 1.2 Develop minimum prehospital equipment inventory guidance for non-  
29 transport/transport EMS units specific to trauma needs  
30 1.3 Develop guidance for EMS Provider Agencies in providing for or allowing scene  
31 photography to aid in the assessment of mechanism of injury and its effect on injury  
32

### 33 **Regional Trauma Coordinating Committee**

- 34 2.1 Assist in the development of ~~inter-county and~~ inter-regional agreements for  
35 management and transport of mass casualty victims  
36 2.2 Assist the LEMSA in the development of re-triage guidelines and transfer  
37 processes including necessary prehospital resources for the rapid transport of  
38 patients from non-trauma facilities to Trauma Centers that cross LEMSA  
39 jurisdictional lines within the region  
40 2.3 Recommend air transport utilization guidelines applicable to regional trauma care  
41 issues and state-wide that may consider auto-dispatch for rural areas of the state

1  
2 | **Component 6 - - Communications Systems**

3  
4 ***Background and Current status***

5 The computer aided E911 access system is standard in California. Unfortunately, the  
6 911 system is challenged by changing technology such as expanding cell phone and  
7 voice or internet protocol (VOIP) usage. Cellular telephone and VOIP communication  
8 systems do not easily fit into current computer aided 911 dispatch systems that allow for  
9 immediate identification of the location of a caller.

10  
11 The current state and local 911 alert system has failed to advance with communication  
12 technology and does not integrate cell phones or Internet-based communication  
13 methods. This often results in a delayed response of first responders to the scene of a  
14 trauma event.

15  
16 In large urban California systems, it is common for priority dispatch to be employed.  
17 Pre-arrival instructions and protocols are often used. Many small dispatch centers and  
18 rural regions are without priority dispatch or protocols.

19  
20 A standard public safety radio frequency has been identified for use in California for  
21 communication between all air and ground units.

22  
23 Some LEMSAs maintain computer logging systems that provide diversion data to  
24 hospitals in the region. Some LEMSAs have developed on-line computer  
25 communication systems for inter-hospital communication.

26  
27 ***Planned Development***

28 Standardized communications should be coordinated between all EMS systems on a  
29 given incident, utilizing current technology, to notify the trauma care team of essential  
30 information on the injured patient and ensure appropriate destination decisions are  
31 made.

32  
33 **State EMS Authority/State Trauma Advisory Committee**

34 | 1.1 **Develop-Explore** an integrated prehospital-base hospital-receiving hospital  
35 communication system to aid in communication during mass casualty and disaster  
36 events.

37 1.2 Promote statewide usage of common communication frequencies between ground  
38 and air transport units.

39  
40 **Local EMS Agency**

41 2.1 Continue to advance efforts to develop priority dispatch for trauma and investigate  
42 process changes that improve dispatch effectiveness while improving outcomes

43 2.2 Participate in statewide gap analysis to determine ambulance to ambulance  
44 communication capability and formats with identification of short falls.

1  
2 **Regional Trauma Coordinating Committee**

3 3.1 Study the statewide and regional hospital alert systems currently in place to identify  
4 hospital capability, capacity, and specialty care availability (e.g. burns, pediatrics, etc.)  
5 and ~~complete a~~ assist the LEMSA in a gap analysis.

6  
7 **Component ~~5-7~~ -- Definitive Care Facilities: Acute Care Facilities, ~~Re-~~**  
8 **~~Triage/Interfacility Transfer, and Rehabilitation~~**

9  
10 **Acute Care Facilities**

11 ***Background and Current Status***

12 The mainstay of a trauma system is its network of specially designated acute care  
13 hospitals that have the resources and personnel capable of providing timely care to  
14 victims of serious injury. The current characteristics of local trauma systems, with  
15 respect to its acute care facilities, include the following:

- 16  
17 • An existing network of designated Trauma Centers that have demonstrated  
18 compliance with established standards and regulations for Trauma Center  
19 resources, personnel, and processes of care  
20 • The number of Trauma Centers within a system is restricted to allow volume  
21 performance by the highest level centers  
22 • An inclusive system of higher and lower level centers providing care to patients  
23 with higher and lower injury severity respectively. In the more mature systems,  
24 the LEMSA defines a role for all acute care facilities as participants in the  
25 delivery of trauma care. Markers for participation include a structured institutional  
26 and system performance improvement program, data submission to regional  
27 registries, educational outreach, injury prevention, and operational agreements  
28 between sending and receiving hospitals within the system

29  
30 Given the diversity of population density, geography, economics and other factors,  
31 California presents unique challenges to the creation of optimally located, appropriately  
32 resourced network of acute care facilities. There are currently 345 acute care facilities  
33 with emergency departments in the state of California. Of these, 76 are designated  
34 Trauma Centers **Appendix E**. Twenty-two California counties currently have no  
35 designated Trauma Centers within county lines. ~~Based on hospital discharge data and~~  
36 ~~assessments of injury severity, Doctors Staudenmeyer and Hsia's research study~~  
37 ~~showed that approximately 35% of severely injured trauma victims in the state~~  
38 ~~of California with potentially life threatening injuries do not receive care at~~  
39 ~~designated level I and II Trauma Centers.~~

40  
41 Recognizing that under-triage will inevitably occur and that patients with significant  
42 injuries will inevitably present to hospitals not specifically equipped or designated, non-  
43 trauma facilities play a critical role in the care of trauma patients. With some of the  
44 mature local trauma systems, these facilities are integrated into the regional trauma  
45 system with their roles specifically defined and codified in the local Trauma Plan. The

1  
2 “inclusivity” of counties and regions within the state with respect to the spectrum of  
3 Trauma Center levels (I-IV and non-trauma facilities) varies from those counties served  
4 by a sole Level I Trauma Center (San Francisco), to those areas served by a greater  
5 number and wider variety of designated centers (Los Angeles).

### 6 7 **Planned Development**

8 The primary goals for the statewide system of trauma care with respect to its acute care  
9 facilities is to help guarantee timely access to basic trauma care throughout the state, to  
10 ensure timely access to definitive care regardless of the type and severity of injury, to  
11 ensure that designated centers maintain capabilities commensurate with their level of  
12 designation, and to improve the consistency of processes related to initial and recurring  
13 designation. The further development of the network of acute care facilities should  
14 involve the following aims:

### 15 16 **EMS Authority**

17 1.1 Periodically assess the number and level of Trauma Centers within the state by  
18 region to evaluate access to trauma care and ~~to~~ work with LEMSA to identify areas  
19 of insufficient coverage

20 1.2 Identify members of the trauma community (surgeons, EM physicians, trauma  
21 program managers) within the state with the expertise, experience & willingness to  
22 serve as site surveyors under Title 22 to be provided to LEMSA upon request

### 23 24 **State Trauma Advisory Committee**

25 2.1 Develop template for ‘operational’ agreement between sending (non-trauma facility /  
26 lower level TC) and receiving (LII, LI) centers

27 2.2 Develop ~~guidelines guidance document comparing Title 22 requirements with~~  
28 current ACS verification requirements to assist the LEMSAs and Trauma Centers  
29 ~~outlining a process for the assessment of Trauma Center compliance with CCR~~  
30 Title 22, Chapter 7

### 31 32 ~~Regional Trauma Coordinating Committee~~ Local EMS Agency

33 3.1 Outline the responsibilities and expected participation in the trauma system for non-  
34 designated acute care hospitals

### 35 36 **Component 8 -- Inter-Facility Transfer and Re-Triage**

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

38 Although accurate field triage and direct transport to an appropriate level of care is a  
39 goal for all trauma systems, under-triage to non-trauma facilities or lower level Trauma  
40 Centers lacking the capabilities of caring for the most seriously injured will inevitably  
41 occur. For purposes of this document, re-triage means the immediate evaluation,  
42 resuscitation and transport of a seriously injured patient from a lower level trauma  
43 facility or non-trauma facility to a designated Trauma Center at for a higher level of care.  
44 This process involves direct ED to ED transfer of patients that have not been admitted  
45 to the hospital. Interfacility transfer (IFT) refers to the transfer of an admitted patient,  
46 under the care of an admitting physician-of-record, from one facility to another.

1  
2 There is currently no mechanism for the ongoing monitoring of under-triage or the  
3 number of re-triaged or transferred patients within the state. The frequency, location,  
4 and severity of related injuries involved with re-triage and inter-facility transfer within the  
5  
6 state are largely unknown. In situations where re-triage or inter-facility transfer does  
7 occur, it may be delayed and patients may not be managed according to evidence-  
8 based practice guidelines (e.g. traumatic brain injury). Re-triage / IFT protocols have  
9 been developed in several areas of the state, but are not in widespread use and their  
10 effectiveness has just begun to be monitored.

11  
12 Obstacles to transfer & re-triage include lack of a proximally located Trauma Center,  
13 lack of knowledge regarding the capacity (e.g. diversion status) and capabilities of  
14 potential receiving centers, fear regarding EMTALA violation, local geographical &  
15 climatic obstacles to transportation (e.g. remote location, mountains, fog, etc.),  
16 transportation availability, insurance or financial status of the patient, and bed  
17 availability at receiving facilities.

### 18 19 ***Planned Development***

20 The overall goal for the state with respect to re-triage/Interfacility transfer is to develop  
21 mechanisms, processes, and guidelines that will optimize timely access to trauma care  
22 at a level commensurate with the severity of injury, regardless of geographic location.  
23 The specific elements needed to achieve this goal include the following:

### 24 25 **State EMS Authority**

- 26 1.1 Develop a process that will allow ongoing analysis of all re-triage and IFT activity  
27 within the state based on CEMIS data
- 28 1.2 Evaluate current paramedic scope of practice to enable and facilitate rapid re-  
29 triage & transport of severely injured trauma patients (i.e. TBI)
- 30 1.3 Identify receiving centers for special injuries (i.e. spinal cord, reimplantation)
- 31 1.4 Develop web-based compendium of Trauma Centers, Burn Centers, Pediatric  
32 Trauma Centers, their specialized capabilities & contact information for rapid  
33 communication when needed
- 34 1.5 Investigate integration of real-time information on California Trauma Center status:  
35 open/on-diversion/partial diversion, etc. to all receiving facilities in California ~~in~~  
36 ~~collaboration with the Department of Public Health~~
- 37 1.6 Explore development of centralized re-triage/transfer coordination within the state
- 38 1.7 Develop specific EMTALA-based guidelines for the transfer and acceptance of  
39 trauma patients within the state. These should address:
  - 40 1.7.1 The EMTALA 'non-discrimination' provision in regards to the obligation (or  
41 not) to accept non-level-of-care patients
  - 42 1.7.2 EMTALA allowance for the transfer of 'unstable' trauma patients for  
43 documented medical need to a higher level of care
- 44 ~~1.8 Explore the feasibility for 'on-line', real time, state-wide centralized trauma transfer~~  
45 ~~coordination~~

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**Local EMS Agency/Regional Trauma Coordinating Committee**

- 2.1 Identify areas in the state where timely access to Trauma Centers may be improved (needs assessment)
- 2.2 Develop specific physiological and anatomical indicators for re-triage on a level-of-care basis (e.g. Level III center to LI/LII, etc.)
- 2.3 Develop models for education and outreach that will promote timely re-triage/IFT where appropriate
- 2.4 Promote the development of regional cooperative arrangements between sending and receiving centers that will facilitate re-triage, reduce delays, and ensure that patients are re-triaged to an appropriate level of care
- 2.5 Develop clinical management guidelines for the early (re-triage phase) treatment of high risk injuries such as TBI, pelvic fractures, mangled or crushed extremity injuries, peripheral vascular injuries, etc.
- 2.6 Explore the development of clinical management guidelines that would allow lower level facilities in remote areas to manage selected types of injuries (e.g. ‘minimal’ TBI)
- 2.7 Develop structured relationships (regional cooperative agreements), including educational outreach between sending and receiving hospitals in order to facilitate the inter-facility transfer and re-triage and clinical management guidance to allow lower level facilities to keep selected patients
- 2.8 Explore and promote the use of telemedicine for trauma patients where appropriate
- 2.9 Identify & promote educational resources suitable for improving re-triage and inter-facility transfers (i.e. the ACS Rural Trauma Team Development Course)

**Component 9 -- Rehabilitation and Trauma Recovery**

***Background and Current Status***

Rehabilitation services are optimally provided along a continuum beginning with admission to a Trauma Center and continuing through community reintegration. While California regulation Title 22 for Level I/II contains requirements for PT/OT/ST, standardized early treatment guidance does not exist. Most rehabilitation facilities are independent facilities and the degree of integration into the trauma system varies considerably. In addition, the degree of access to level-of-care post-injury rehabilitation throughout the state is unknown. In many cases, the access to post-injury rehabilitation is a function of the needs of the patient but also of their insurance status and rehabilitation resources within the region.

***Planned Development***

In an effort to more effectively address the rehabilitative needs of trauma patients in the context of a statewide system of care, the following objectives are to be applied:

**State EMS Authority**

- 1.1 Develop a compendium of rehabilitation facilities throughout the state to include:

- 1  
2 1.1.1 A plan to assess the availability and capabilities of rehabilitation facilities in the  
3 state and integrate them into the regional planning and performance  
4 improvement process including:  
5 1.1.1.1 Specialized centers for Traumatic Brain Injury (TBI) & spinal cord  
6 injuries  
7 1.1.1.2 Pediatric centers  
8 1.1.1.3 Burn & other specialty recovery facilities  
9  
10 1.2 Improve the data collection for evaluation of rehabilitative needs and degree of  
11 access to rehabilitation throughout the state.  
12 1.3 Explore possible amendments to California Code of Regulations, Title 22, Chapter 7  
13 to incorporate the rehabilitation needs of the trauma patient including rehabilitation  
14 as part of the continuum of care.  
15

### 16 **State Trauma Advisory Committee**

- 17 2.1 Adopt a standardized measure of functional recovery suitable for use throughout the  
18 trauma system  
19

### 20 **Local EMS Agency/Regional Trauma Coordinating Committee**

- 21 3.1 Develop guidelines for the current incorporation of rehabilitation into the continuum  
22 of trauma care. These guidelines might include:  
23 3.1.1 A mechanism to initiate rehabilitation services and/or consultation upon patient  
24 admission  
25 3.1.2 Policies regarding coordination of transfers between acute care and  
26 rehabilitation facilities.  
27 3.1.3 A template for operational MOU's between definitive care facilities and  
28 rehabilitation centers to include:  
29 3.1.3.1 Complications and outcome follow-up  
30 3.1.3.2 Data sharing for Performance Improvement activities  
31 3.1.3.3 Educational outreach  
32

## 33 | **Component 8-10 -- Information Systems**

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

35 Data collection at the state level is dependent on the local EMS and trauma data  
36 systems managed by the local EMS agencies. The majority of the data is transmitted to  
37 CEMSIS from the local EMS agency data systems and not directly from the EMS  
38 provider or Trauma Center. CEMSIS is divided into two components: CEMSIS-EMS  
39 which contains prehospital data and CEMSIS-Trauma which contains Trauma Center  
40 data. Participation in CEMSIS is voluntary by local EMS agencies and is currently  
41 managed for EMSA through a subcontract with Inland Counties EMS Agency with  
42 ImageTrend as the vendor.  
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## **CEMSIS-EMS**

Select prehospital data elements are included in the state trauma data standards. Data is integrated into the local EMS agency's and State's data management systems. The CEMSIS-EMS data standards are in compliance with the National EMS Information System (NEMSIS) standards.

## **CEMSIS-Trauma**

Each designated Trauma Center is responsible for the collection of data on defined patients as outlined in Title 22. This minimum data set is expanded locally to meet the needs of the Trauma Center and trauma system. This data is integrated into the local EMS agency's and State's data management systems. CEMSIS-Trauma is inclusive of Trauma Center data with data standards in compliance with the National Trauma Data Standards (NTDS).

While regulations require all hospitals that receive trauma patients to participate in the local EMS agency data collection efforts, compliance with this requirement is variable as non-trauma facilities have no contractual obligation to comply. All hospitals are required to provide emergency department and hospital discharge data to the State Office of Health Planning and Development (OSHDP) with specific data standards outlined in regulations.

## **Other data systems that support CEMSIS-Trauma**

- Crash/law enforcement data is collected through the California Statewide Information Traffic Records System (SWITRS) by law enforcement personnel
- (California Highway Patrol) at the scene of a crash on state highways; other law enforcement agencies have the option of participating in SWITRS.
- Coroner data: California has a mixed system of county coroners and medical examiners with no central data repository of data apart from the reporting of data for death certificates to the state Department of Public Health. Coroners and medical examiners report data for death certificates via an electronic (web based) system. The state Department of Public Health edits and verifies the information and creates several files. The most commonly used is the Deaths Statistical Master file which contains all the information found in comparable files for other states and territories.

## ***Planned Development***

### **State EMS Authority/State Trauma Advisory Committee/CEMSIS Data Committee**

1.1 Explore feasibility of developing linkages of databases to create a complete patient record. This would include:

- 1.1.1 Develop a mechanism for deterministic/probabilistic matching of data
- 1.1.2 CEMSIS-Trauma and CEMSIS-EMS linkage
- 1.1.3 CEMSIS-EMS and Hospital Data (OSHDP) linkage
- 1.1.4 CEMSIS and Statewide Integrated Traffic Records System (SWITRS) linkage

- 1
- 2 1.2 Evaluate data validity by:
  - 3 ~~1.2.1 Performing a comparative analysis of ICD-9 mapping vs. hand coding by data~~
  - 4 ~~registrars looking at the degree of variability~~
  - 5 1.2.2 Developing a plan to monitor data completeness and accuracy including
  - 6 utilization of the state-defined inclusion criteria
- 7 1.3 Improve data compliance by:
  - 8 1.3.1 Development of standard reports provided to local EMS agencies itemizing
  - 9 Trauma Center data compliance
  - 10 1.3.2 Development of a subset of CEMSIS-Trauma to include data on pre-defined
  - 11 injured patients seen at non-trauma facilities
  - 12 1.3.3 Promotion of CEMSIS participation by all local EMS agencies through
  - 13 submission of a minimal data set from non-trauma facilities (e.g. OSHPD data)
- 14 1.4 Improve data sharing through:
  - 15 1.4.1 Development of standard aggregate reports to be publically shared on the
  - 16 EMSA website
  - 17 1.4.2 Development of a procedure for all requests for data including a data request
  - 18 form
  - 19 1.4.3 Development of a policy for data sharing in compliance with applicable patient
  - 20 confidentiality laws

## 21 **Local EMS Agency**

- 22
- 23 2.1 Develop a plan to monitor data completeness and accuracy including utilization
- 24 of the state-defined inclusion criteria prior to submission to CEMSIS
- 25 ~~2.2 Develop a subset of CEMSIS-Trauma to include data on pre-defined injured~~
- 26 ~~patients seen at non-trauma facilities~~

## 27 **Component 911 -- System Evaluation and Performance Improvement**

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

29  
30 The purpose of a state Performance Improvement and Public Safety (PIPS) Program  
31 ensures that injured patients receive quality care throughout the continuum. This  
32 requires monitoring care processes, structures and outcomes, identifying areas for  
33 improvement, developing and carrying out corrective action plans, and verifying that  
34 these corrective action plans result in desired improvements in outcome. The ideal PIPS  
35 Program requires accurate local, regional, and state prehospital and hospital clinical  
36 databases. Other components include identification of risk factors and best practices,  
37 accurate standardized measurement of complications, risk adjusted outcomes  
38 measurement, benchmarking, and appropriate feedback of benchmarking results.

39  
40  
41 The EMS Authority is responsible for developing and implementing a state-wide EMS  
42 PIPS Program with the LEMSA Trauma System Coordinators in collaboration with EMS  
43 Medical Directors. Regional Trauma Coordinating Committees may assist in case  
44 review if it crosses jurisdictional lines within the region.

45  
46 Trauma Centers are required to have a PIPS Program for improving care.

1  
2 In most cases the PIPS program is linked to the hospital PI department and overall  
3 hospital PI Plan. Performance Improvement standards are developed to assist with  
4 monitoring care relative to standards of care.

5  
6 California Code of Regulation Title 22 Chapter 12 EMS System Quality Improvement  
7 requires that EMS provider agencies and Base Hospitals develop a PIPS Program with  
8 an associated Plan to be approved by the LEMSA. The LEMSA PIPS Plan is approved  
9 by the EMS Authority. The regulations do not itemize trauma-specific components of  
10 the LEMSA PIPS Plan.

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

12  
13 In order to evaluate the State Trauma System, the continuum of care from dispatch to  
14 pre-hospital to hospital disposition must be connected through a data system. Only in  
15 this way, ~~we can~~ we begin to understand how care provided translates to improved  
16 outcomes and system effectiveness.

### 17 **State EMS Authority**

18  
19 A program should be developed by the EMS Authority in collaboration with the LEMSAs  
20 and RTCCs to evaluate statewide trauma system performance. This should include:

- 21 1.1 Develop a statewide comprehensive Trauma PIPS Plan consistent with the  
22 elements of this State Plan
  - 23 1.2 Create a State Trauma PIPS committee as a subcommittee of the STAC ~~as~~  
24 ~~follows:~~
    - 25 ~~1.2.1 Include representation from each RTCC~~
    - 26 ~~1.2.2 Receive reports from the RTCCs on regional PI activities~~
  - 27 1.3 Perform a comprehensive statewide assessment of the State Trauma System  
28 based on national standards and California-specific resources
  - 29 1.4 Evaluate state data and identify regional opportunities for improvement,  
30 determining if similar opportunities are occurring in other regions and explore  
31 mechanisms for shared resolution
    - 32 1.4.1 Develop specific database queries
    - 33 1.4.2 Create definition for system sentinel event and monitor such events
    - 34 1.4.3 Facilitate ~~loop closure~~ issue resolution by assisting other system  
35 performance improvement committees
    - 36 1.4.4 Develop and implement standards for system-wide performance  
37 improvement
  - 38 1.5 Create a recommended minimal data set of information to be submitted to LEMSA  
39 system trauma registries from non-trauma facilities to track and trend outcomes of  
40 traumatically injured patients retained in non-trauma receiving facilities
  - 41 1.6 Direct cross-regional issues to specific PI Project Work Groups for study and  
42 recommended resolution
  - 43 1.7 Develop and institute a mechanism for providing data and feedback to ~~RTCCs and~~  
44 LEMSAs to assist in optimizing local PIPS processes
- 45  
46

- 1
- 2 1.8 Explore participation in the American College of Surgeons National Trauma
- 3 Performance Improvement Project (TQIP) as a state, including a cost-benefit
- 4 analysis
- 5 1.9 Create a policy regarding the sharing of data for the PI process, recognizing
- 6 hospital confidentiality and HIPPA regulations.
- 7 1.10 Explore the development of a HIPPA compliant universal identifier (e.g. PCR# from
- 8 prehospital patient care report) that allows individual patient data to be tracked
- 9 throughout the entire spectrum of care including post care outcomes
- 10 | 1.11 Ensure recommended minimum data that set allows for risk adjustment of
- 11 individual patients so that benchmarking can be carried out
- 12 1.12 Develop a process to periodically collect data elements designed to focus on
- 13 specific patient populations and processes that are deemed to be the most
- 14 important at any given time; these focused projects may be directed from the
- 15 State, Region or LEMSA
- 16 1.13 Benchmark individual systems, hospitals, LEMSAs and RTCCs to the group as a
- 17 whole and to an outside standard
- 18

### 19 **Local EMS Agency**

- 20 | 2.1 Develop risk adjusted standardized reports ~~derived from CEMSIS data~~ and based
- 21 on nationally recognized formula
- 22 2.2 Show overall progress in achieving goals for significant injury and patient
- 23 categories
- 24 2.3 Create a local/regional Performance Improvement Program (may be integrated into
- 25 EMS PI Program for small systems) to:
- 26
- 27 2.3.1 Develop specific database queries
- 28 2.3.2 Create definition and monitor system sentinel events
- 29 2.3.3 Work with local Medical Examiner on guidelines for trauma post-mortem
- 30 exams
- 31 | 2.3.4 Facilitate loop closure issue resolution by individual performance
- 32 improvement committees
- 33 2.4 Represent LEMSA at regional and state Performance Improvement Committees
- 34

### 35 **Regional Trauma Coordinating Committee**

- 36 3.1 Identify regional system issues and work with member LEMSAs on resolution of
- 37 these issues
- 38 3.2 Determine audit filters based on the region's population traits, available resources
- 39 and geography
- 40 3.3 Explore tools to identify variations in care and outcomes across respective regions
- 41 and determine possible ways to reduce detrimental variations in regional structures
- 42 and care processes that may result in negative outcomes
- 43 | 3.4 ~~Monitor loop closure and pP~~rioritize system issues identified for resolution
- 44 3.5 Work collaboratively with each member LEMSA to ensure standardized and
- 45 accurate data collection and CEMSIS participation

1  
2 | **Component ~~10-12~~-- Education & Training**

3  
4 ***Background and Current Status***

5 Education consists of two categories: education of the public regarding trauma systems  
6 and education and training of trauma care professionals across the continuum of care.

7  
8 **Education of the Public**

9 No formal public education process exists for trauma systems. Private and public  
10 surveys indicate that the general public regards all hospitals as Trauma Centers and  
11 few can indicate where their closest Trauma Center is located; furthermore, many  
12 citizens are not aware that the EMS system is the best avenue to receive trauma care.

13  
14 **Education and Training for Trauma Care Professionals**

15 Education and training of trauma care professionals is compartmentalized into  
16 prehospital, nursing, and physician education with very limited trauma systems  
17 education. The EMS Authority in conjunction with statewide partners has sponsored  
18 | ~~four~~five State Trauma Summits providing updates on national trauma system  
19 development and clinical care along with an opportunity for local systems to present on  
20 best practices.

21  
22 Regional Trauma Coordinating Committees (RTCC) also offer regional Trauma  
23 Summits with a mix of systems and clinical topics. RTCCs partnering with the Trauma  
24 Managers Association of California (TMAC) sponsor the ACS Rural Trauma Team  
25 Development Course. Standard certification courses such as Basic Trauma Life  
26 Support (BTLS) , Prehospital Trauma Life Support (PHTLS) and Transport Nurse  
27 Advanced Trauma Course (TNATC) are available and encouraged but not required in  
28 most of areas of the State.

29  
30 While there are national continuing education standards in place for Trauma Centers  
31 they are silent in California regulations. Some education requirements are addressed  
32 through the Trauma Center designation process and monitored by the LEMSA. Various  
33 national certification programs such as Advanced Trauma Life Support (ATLS), Trauma  
34 Nurse Coordinator Course (TNCC), Advanced Trauma Care for Nurses (ATCN),  
35 Advanced Cardiac Life Support (ACLS), and Pediatric Advanced Life Support (PALS)  
36 are available; however, there is no consistency throughout the State.

37  
38 Regulations specify Trauma Center physician qualifications related to specialty board  
39 certification and Advanced Trauma Life Support certification. It is also a requirement  
40 that the Trauma Center participate in continuing education in trauma care. Education  
41 standards also exist within the Trauma Center which are met if the Trauma Center  
42 either chooses or is required to be verified by the ACS.

43  
44 ***Planned Development***

45 State, regional and local education needs should be identified, and resources readily  
46 available to meet those needs. Standard education competencies should apply

1  
2 statewide, and each region's individual educational offerings should address local  
3 needs.

4  
5 **EMS Authority**

6 1.1 Identify statewide educational needs through the Performance Improvement and  
7 Patient Safety Program in consultation with hospitals, local EMS agencies and  
8 RTCCs

9 1.2 Develop, through its State Trauma Advisory Committee, a plan for providing  
10 information to the public regarding the structure and function of the State Trauma  
11 System

12  
13 **Local EMS Agency**

14 2.1 Provide public education regarding trauma systems and injury prevention following  
15 high profile traumatic events

16 2.2 Perform a needs assessment prior to developing new or additional trauma-related  
17 educational programs

18  
19 **Regional Trauma Advisory Committee**

20 3.1 Promote regional efforts to educate the public on trauma systems and the role and  
21 effectiveness of Trauma Centers

22 3.2 Develop trauma clinical care education for regional trauma professionals

23  
24 **Trauma Centers**

25 4.1 Work with non-trauma facilities and level IV Trauma Centers in providing for the  
26 Rural Trauma Team Development Course

27 4.2 Provide for education based on PIPS Program findings

28  
29 **Component 134 -- Trauma Systems Research**

30  
31 ***Background and Current Status***

32 The majority of trauma research done in California is performed by academic research  
33 centers (Level I Trauma Center) and is required by regulation for Level I designation.  
34 Important contributions are also being made in the areas of public health, pediatrics,  
35 and prehospital. Most of these projects are being conducted by single institutions or  
36 agencies and are not utilizing the opportunities of collaborative multidisciplinary  
37 research. Currently, funding is sought by investigators and facilitated by the research  
38 institution. Statewide systems research has been limited to date and has included  
39 isolated reports from single institutions on issues such as access to care and pediatrics.

40  
41 The state trauma registry (CEMSIS-Trauma) is an important source of information and  
42 data for research. Institutional and regional databases may be used for comparative and  
43 outcomes research and large statewide databases should be used to demonstrate the  
44 effectiveness of the system. The CEMSIS-Trauma Registry was started in 2009 and  
45 currently does not have a mechanism to request data for the purposes of research. The  
46

1  
2 EMS Authority is responsible for maintaining data integrity and reliability of the state  
3 trauma registry, which is compatible with the National Trauma Data Standards (NTDS).

4  
5 Research using trauma registries may provide information about resource utilization,  
6 outcomes, and system performance. Comparative benchmarking using local, regional or  
7 statewide trauma registries can be performed by comparing local data with the National  
8 Trauma Data Bank (NTDB).

9  
10 ***Planned Development***

11 Local EMS agencies and Trauma Centers should be the basis for collaborative systems  
12 research utilizing the statewide CEMSIS database. Trauma system research involving  
13 both local and state agencies should be part of local/regional trauma systems.

14  
15 **EMS Authority**

- 16 1.1 Facilitate access to data for individual or groups of investigators through the use of  
17 CEMSIS  
18 1.2 Establish Internal policies for the request for data from CEMSIS for research  
19 purposes  
20 1.3 Identify the research expertise in the system and work collaboratively with experts  
21 in the field (e.g. Schools of Public Health, Finance and Economics)

22  
23 **State Trauma Advisory Committee**

- 24 2.1 Facilitate multidisciplinary collaboration for research  
25 2.2 Develop research agenda (possibly through a research committee) and collaborate  
26 with established investigators to conduct research projects  
27 2.3 Periodically review trauma system data derived from CEMSIS, OSHPD and other  
28 sources, and make recommendation to various system stakeholders regarding  
29 potential areas of research

30  
31 | **Component 142 -- Injury Prevention**

32  
33 ***Background and Current Status***

34 Although an integrated injury prevention system has yet to be established statewide, a  
35 number of collaborations between Trauma Centers, LEMSAs and public health  
36 departments have successfully been developed at the regional level and can be used  
37 as models for injury prevention. In keeping with the public health model, statewide injury  
38 control in California has been established primarily under the direction of the  
39 Department of Public Health; however, an assessment of the state trauma system in  
40 2006 by the EMS Authority recognized a lack of interface between these efforts and  
41 state trauma leadership.

42  
43 The EMS Authority participates in the Strategic Highway Safety Plan (SHSP) that has  
44 17 Challenge Areas focused on many injury prevention topics. The EMS Authority is  
45 the lead agency for Challenge Area 15 that has the goal of “Improving Post Crash  
46 Survivability”. The EMS Authority is actively forging relationships between EMS partners

1  
2 (local EMS agencies, Trauma Centers, and providers) and SHSP committees to  
3 increase statewide injury prevention participation.  
4

5 The Trauma Managers Association of California (TMAC) utilizes the expertise of many  
6 trauma program leaders to develop statewide coalitions for prevention. Some of the  
7 Regional Trauma Coordinating Committees (RTCC) are developing organized  
8 approaches for injury prevention.  
9

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

11 The incorporation of an integrated injury prevention system into the State Trauma Plan  
12 is a critical step in reducing the burden of injury morbidity and mortality in California. In  
13 recent years, trauma care has shifted from the medical model of treating injuries to a  
14 public health approach that defines trauma as a preventable disease. Rather than  
15 focusing on the acute care of traumatic injuries, the public health framework allows for  
16 the prevention and mitigation of injury by addressing the causes of trauma and  
17 subsequent injury.  
18

### 19 **State EMS Authority/State Trauma Advisory Committee**

20 1.1 Partner with existing agencies focusing on statewide injury prevention (e.g.  
21 EpiCenter at the California Department of Public Health) for the purpose of:

22 1.1.1 Establishing best practice recommendations for prevention programs and  
23 evaluation based on scientifically evaluated injury prevention strategies

24 ~~1.1.2 Providing technical assistance to RTCCs, Trauma Centers and local public~~  
25 ~~health departments as needed to facilitate the development of injury~~  
26 ~~prevention programs and evaluation~~

27 1.1.3 Improving coordination and utilization of public health and trauma systems  
28 injury prevention resources at the state, regional and local levels

29 1.1.4 Coordinating a statewide strategy to promote injury awareness with public,  
30 media, and elected officials  
31

### 32 **Local EMS Agency/Regional Trauma Coordinating Committee**

33 2.1 Develop a compendium of regional injury prevention programs with links provided  
34 to EMSA for posting on website

35 2.2 Implement new and support existing scientifically proven prevention programs in  
36 response to regionally specific injury data

37 2.3 Ensure ongoing program evaluation to determine effectiveness in reducing  
38 intentional and unintentional injuries

39 2.4 Collaborate with injury prevention programs to collect the necessary data for  
40 program evaluation and needs assessment

41 2.5 Create a public information and education program with consistent messaging on  
42 the preventability of injury

1  
2 | **Component 153 -- Emergency/Disaster Preparedness**

3  
4 ***Background and Current Status***

5 The role of trauma systems is a key component of the overall response system for  
6 disasters/multiple casualty events. Each LEMSA and Operational Area (county or  
7 group of counties) has a defined means of communication and coordination of patient  
8 movement. A local jurisdiction engaged in a multicasualty incident (MCI) commands and  
9 organizes a given incident using the FIRESCOPE MCI Plan. Triage, using LEMSA  
10 protocols and procedures, are conducted under a Triage Unit and patient treatment and  
11 staging prior to transport are conducted under a Treatment Unit. Using local  
12 procedures, Medcom communicates the number and acuity of survivors to the  
13 healthcare system, including Trauma Centers, which in turn communicate their capacity  
14 for receiving patients. Designated trauma and burn patients, using LEMSA criteria, are  
15 directed to trauma/burn centers. If the magnitude of the MCI begins to exceed the  
16 capacity of the local or Operational Area trauma system, patient movement may be  
17 directed to contiguous trauma systems.

18  
19 The State Operations Center (SOC) coordinates State resources to support the affected  
20 trauma systems or to coordinate state-wide patient movement through the EMS  
21 Authority and Department of Public Health. The SOC, through the Governor, can also  
22 make requests for federal medical and health resources through the FEMA Region IX  
23 and Department of Health and Human Services Region IX.

24  
25 All-hazards events routinely include situations involving natural (earthquake),  
26 unintentional (school bus crash), and intentional (terrorist explosion) trauma-producing  
27 events that test the expanded response capabilities and surge capacity of the trauma  
28 system. Funding from HRSA and FEMA is inadequate for the task of preparing Trauma  
29 Centers for the next inevitable event when they are already under economic duress.

30  
31 ***Planned Development***

32 **EMS Authority/State Trauma Advisory Committee**

- 33 1.1 Perform an assessment gap analysis of the state trauma system's emergency  
34 preparedness including Trauma Center surge capacity  
35 1.2 Integrate the State Trauma Plan with the California Public Health and Medical  
36 Emergency Operations Manual Plan for natural and manmade incidents  
37 1.3 Explore the use of existing resource monitoring systems to provide real-time  
38 trauma capacity and resources assessment  
39 1.4 Incorporate the role of the trauma system in the Public Health and Medical  
40 Emergency Operations Manual  
41 1.5 Develop a standardized inventory for trauma caches to be located at strategic  
42 locations in the event of a disaster  
43 1.6 Develop the capacity via the EMSA website for the dissemination of guidelines,  
44 protocols, programs, etc. relevant to the State Trauma System  
45

- 1  
2 | **Local EMS Agency/Regional Trauma Coordinating Committee**  
3 | 2.1 ~~Ensure~~ Explore trauma system surge capacity, ~~particularly in regions with high~~  
4 | ~~vulnerability and best practices to improve disaster response.~~  
5 | **~~Regional Trauma Advisory Committee~~**  
6 | ~~3.12.2~~ Provide leadership and active participation in the state and regional trauma care  
7 | system with lead functions for system and disaster planning  
8 | ~~3.22.3~~ Promote training to Trauma Centers and non-trauma facilities on the medical  
9 | health disaster system in the region  
10 | ~~3.32.4~~ Develop template language for MOU's between Trauma Centers to ensure a  
11 | quick process for sharing resources' (personnel, equipment and medical  
12 | supplies) to enhance surge capacity during disasters