Sierra-Sacramento Valley EMS Agency

Trauma System Status Report 2014

Trauma System Summary

The Sierra-Sacramento Valley Emergency Medical Services (S-SV EMS) Agency is a regional multi-county Joint Powers Agency that serves as the local EMS Agency, for the counties of Placer, Nevada, Sutter, Yuba, Colusa, Butte, Shasta, Siskiyou and Tehama. Complete authority for planning, development, and implementation of all EMS components, including regional trauma system planning, has been delegated to the Agency, with the exception of disaster planning, by all nine member counties. These counties encompass an area of some 20,977 square miles with a resident population of approximately 1,165,091 people. The region ranges from remote rural areas to large urban centers. Extremes of weather are characteristic of the area, which encompasses the Sierra Nevada Mountains, the Cascade Mountain range and the heat of the Sacramento Valley region. The S-SV EMS trauma care system remains a network of dedicated professionals in communications, transportation, both public and private, and a variety of trauma hospitals which serves both our urban and rural areas. The system is constantly under review and includes our Regional Trauma Continuous Quality Improvement Committee.

Changes in Trauma System

There have been no major changes regarding designation or de-designation of our trauma centers within the S-SV EMS region however; several trauma centers, at the request of S-SV EMS, have undergone the process of an American College of Surgeons (ACS) Consultative site survey. Additionally two trauma centers have acquired ACS verification. Please see attached charts for the designation levels.

System Performance Improvement

The system performance improvement is ongoing and continuous in the S-SV EMS region. Our Regional Trauma Continuous Quality Improvement Committee meets triannually in Red Bluff, CA to accommodate all participants of the nine counties. The trauma system process is an ongoing collection and review of data, analysis and reporting of data, review of trauma cases and collaboration with the medical control committees regarding the implementation of policies and protocols.

Other Issues

DATA

It was discovered that there are significant issues with trauma data collection at several of the S-SV Region trauma facilities. The reasons for this are multi-faceted, but mostly related to changes in personnel at several of the facilities:

- Three of our four Level IV trauma centers had a complete changeover in trauma program personnel, almost all of whom had no previous experience with trauma program management or trauma registries.

- Two of the four Level IV trauma centers internally reviewed their desire and commitment to being a trauma center. During this time, there were no personnel dedicated to maintaining the trauma registry.

- Three of our five Level III trauma centers experienced their first ACS survey (Consultative) by the American College of Surgeons. During these surveys, it was discovered that there are significant issues related to their data collection, including, but not limited to their knowledge of the use and maintenance the registry.

- Another Level III trauma center experienced their ACS Consultative survey in June 2013, but did not enter any data into the registry after March 2014.

- The remaining Level III trauma center is entering data, yet continues to be lagging in being up to date with their entries.

- One of the three Level II trauma centers has experienced a new Trauma Program Manager that came to the position without a background in trauma program management. Consequently, there have been inconsistencies in trauma data.

- During the early discovery phase of the trauma data issues and lack of knowledgeable Trauma educated personnel managing trauma programs at several of the trauma facilities, it was decided that rather than have incorrect usage of the trauma registry, we would meet and work with the trauma centers' representatives to work through the issues. While doing this, we asked that the centers involved not enter data in lieu of entering incorrect or bad information.

- During the most recent Level III trauma center ACS Consultative survey (November 2014), at the recommendation of the lead surveyor, the trauma center will enter their trauma data from the date of the survey forward. The previous data backlog needing entry into the registry will be done intermittently as they move forward.

With the Level III trauma center having received the above recommendation from the American College of Surgeons, we felt it would be appropriate to have the same expectation from the remaining trauma centers that are working on correcting their data and/or initially undergoing training as they are new to their facilities' trauma programs.

As indicated in this report, we have already provided one training session for the new trauma registry users and an additional class is being scheduled for January, or as soon as the vendor can accommodate our request.

Level IV Commitment

As stated in the above section (Data), it was noted that the Level IV trauma facilities' personnel were functioning with a limited amount of knowledge regarding trauma. Consequently, during the year, we began working with our Level IV trauma facilities in determining their desire and commitment to continue functioning as trauma centers. Individual meetings were held with hospital administrations and staff members, at which time discussions

were held regarding the requirements a facility must meet to continue functioning as a trauma center.

Resource information, such as California Title 22 requirements, the Orange Book and trauma data registry was provided. At this time, communications and assessments of the situations are still on-going.

S-SV EMS Trauma Center Number and Designation and Implementation

FACILITY	LEVEL	S-SV DESIGNATION EXP	ACS CONSULT COMPLETED	ACS VERIF COMPLETED	ACS VERIF DUE	LEMSA REVIEW In Conjunction With ACS
Mercy Medical Center Redding	II	2014	2012		2015	2012
Enloe Medical Center	II	2015	2012	2014	2017	2014
Sutter Roseville Medical Center	II	2017	1994	2013	2016	2013
Rideout Memorial Hospital	III	2014	2010	2014 -1 yr. Provisional	3/2015 (ACS Focus Review)	2014
St. Elizabeth Hospital	III	2014	2014		1/2018	2014
Shasta Regional Medical Center	III	2014	2014		1/2018	2014
Oroville Hospital	III	2012	2013		2016	2013
Mercy Medical Center Mt. Shasta	III	2014	2014		2018	2014
Mayers Memorial Hospital	IV	2012				Undergoing assessment
Fairchild Medical Center	IV	Pending site visit				Undergoing assessment
Orchard Hospital	IV	2012				Undergoing assessment
Colusa Regional Medical Center	IV	2012				Undergoing assessment

S-SV EMS Trauma System Goals & Objectives - 2014

Objective	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
A. To ensure optimal & accessible care for all persons sustaining injuries & ensure designated facilities have resources to meet the needs of the injured.			Rideout Hospital initial ACS Verification Site Survey. Enloe Medical Center initial ACS Verification Site Survey.					St. Elizabeth Hospital ACS Consultative Site Survey. Shasta Regional Medical Center ACS Consultative Site Survey.			Mercy Medical Center Mt. Shasta Consultative Site Survey.		
B. Improve trauma care to both urban and rural areas in our region.	Meeting with Colusa Medical Center Level IV. Attended RTCC. Attended TMAC.				Attended RTCC.	Attended TMAC.		Meeting with Orchard Hospital & Colusa Medical Center Level IVs.	Attended RTCC.	Attended TMAC.			
C. Continue quality & performance improvement as well as measuring results of morbidity & mortality.	RCQI		RCQI				RTQI RCQI				RCQI		Ongoing
D. Work to close the gaps in service delivery through policy development.	MCC	MCC	MCC	MCC		MCC Policy manual update.	MCC RTQI	MCC	MCC	MCC	MCC	MCC Policy manual update.	
E. Continue to improve the use of the trauma registry.	Meeting with Trauma Managers & Registrars.									Trauma One training with new personnel.			Ongoing always available as a resource.
RTQI – Regional Trauma Quality Improvement													
MCC – Medical Control Committee													
TMAC – Trauma Managers Association of CA													
RTCC – Regional Trauma Coordinating Committee													

SIERRA-SACRAMENTO VALLEY
EMERGENCY MEDICAL SERVICES AGENCY

SERVING THE COUNTIES OF
PLACER, NEVADA, COLUSA, BUTTE, SHASTA,
SISKIYOU, SUTTER, TEHAMA, YUBA

TRAUMA SYSTEM PLAN
2013/14

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I. Plan Summary

It is a well established fact that an organized system of care for injured persons reduces mortality and morbidity. Not only has it been shown that mortality and morbidity are reduced from such a system, injuries as a whole decrease due to organized prevention efforts. Injury is the leading cause of death in California between the ages of 1-44 years. The “golden hour” refers to the need for rapid transfer from the scene of an injury to definitive care. Evidence continues to confirm that seriously injured people are better served by a well organized, integrated system of care that provides the necessary resources needed to care for the trauma patient. The term inclusive trauma system is used for the all encompassing approach to trauma care.

The original trauma plan for the Sierra-Sacramento Valley Emergency Medical Service (S-SV EMS) region was approved by EMSA in 1994 utilizing a multi disciplinary trauma task force made up of system stakeholders. S-SV EMS received special grant funds from the State of California Emergency Medical Services Authority to develop the trauma plan. At that time with the help of consultants, an extensive needs assessment and inventory assessment of current resources was conducted documenting the current system in the S-SV EMS region and the challenge facing the region in implementing as inclusive trauma system. Because of projected volumes and population within S-SV EMS the service area the EMS Authority granted an exemption to the population requirement with the concurrence of the EMS Commission on the basis of documented local needs. Today the population of the region far exceeds the minimal number of 350,000 populations within the service area negating the necessity for a State exemption.

The intent of this plan is to provide the EMSA with a current working Trauma System Plan for Sierra-Sacramento Valley EMS Agency, in coordination with adjacent systems, with the

continued goal of reducing the mortality and morbidity of injured patients in the S-SV EMS region. S-SV EMS continues to maintain contractual agreements with each of the designated trauma centers. These agreements have undergone many revisions over the years. The fundamental components of these agreements are based on the California State Regulations for Trauma Systems. This Trauma Plan meets and or exceeds all the required State trauma regulations.

The Sierra-Sacramento Valley Emergency Medical Services (S-SV EMS) Agency is a regional multi-county Joint Powers Agency that serves as the local EMS Agency for the counties of Placer, Nevada, Sutter, Yuba, Colusa, Butte, Shasta, Siskiyou and Tehama. Complete authority for planning, development, and implementation of all EMS components, including regional trauma system planning, has been delegated to the Agency with the exception of disaster planning by all nine member counties. These counties encompass an area of some 20,977 square miles with a resident population of approximately 1,250,000 people. The region ranges from remote rural areas to large urban centers. Extremes of weather are characteristic of the area, which encompasses the Sierra Nevada Mountains, the Cascade Mountain range and the heat of the Sacramento Valley region.

A. Milestones/Accomplishments since the inception of the S-SV Regional Trauma Plan

- Development of the Statewide Trauma Task Force
- 1992 - Development of 30 minute catchment area for trauma
- 1993 - Development of the Pediatric Task Force
- 1993 - Special Projects Grant for EMScan Data Collection software to be used for prehospital care quality improvement
- 1995 - Contracted with Tri-Analytics for the implementation of the regional Collector

trauma registry system

- 1995 - Designation of Sutter Roseville Medical Center as a Level II Trauma Center
- 1996-1997- Development of Pediatric Critical Care Center designation
- 1997-Development of policies to include pediatric destination
- 1997 - Special Projects Grant for Helicopter Dispatch Coordination
- 2001 - Projected designation of Tahoe Forest Hospital and Rideout Memorial Hospital as a Level III Trauma Center
- 2001 - Development of 45 minute catchment area
- 2001 - Development of the Trauma White Paper CDC EMSA Preventative Health Care Block Grant #9056
- 2004 - Development of the Trauma Whiter Paper CDC EMSA Preventative Health Care Block Grant CA Trauma Fund Utilization: A Follow-up Report to the California Legislature "Lessons Learned and Future Needs"
- July 2004 - ACS reverified Sutter Roseville Medical Center
- December 2005 - S-SV EMS Trauma Review Team designated Rideout Memorial Hospital as a Level III Trauma Center
- January 2007 - S-SV EMS Trauma Review Team reviewed Rideout Memorial Hospital as a Level III Trauma Center
- June 2007 - ACS Re-verification of Sutter Roseville Medical Center
- July 2009 – S-SV EMS contracted with Lancet Technologies to create a statewide trauma data registry and prehospital data registry - CEMSIS
- July 2009 – S-SV EMS acquired Colusa County

- October 2009 – S-SV EMS acquired Butte County and accepted all trauma center designations from previous LEMSA.
- May 2009 – Contracted with Lancet Technology for Trauma One, trauma registry
- July 2010 – S-SV EMS acquired Shasta, Siskiyou and Tehama Counties and accepted all trauma center designations from previous LEMSA.
- July 2011 – S-SV EMS contracted with ESO Solutions for our prehospital ePCR data collection. S-SV has a nine county prehospital data repository.
- September 2012 – Mercy Medical Center-Redding completed the ACS Consultative Site Visit.
- November 2012 - Enloe Medical Center completed the ACS Consultative Site visit.
- May 2013 – Sutter Roseville Medical Center completed the ACS re-verification process.
- June 2013 – Oroville Hospital completed the ACS Consultative Site visit.

B. Current Status

The EMS system in the region consists of public and private Advanced Life Support (ALS) ambulance response. This is supported by simultaneous dispatch of Basic Life Support (BLS) and first responder fire department personnel.

The S-SV EMS region is serviced by six helicopter providers: CALSTAR, REACH, Flight Care, Care Flight, PHI and CHP. REACH and Care Flight utilize paramedics and RNs. CALSTAR utilizes RNs only. RNs work under standardized procedures developed and controlled by the medical director air provider. CHP is an ALS rescue helicopter and has one licensed paramedic on board. All paramedics are accredited in the S-SV region and follow the S-SV EMS Prehospital

Care Policy & Procedures Manual. The S-SV Region has eleven approved base hospitals, eight modified base hospitals, three Level II trauma centers, ten Level III trauma centers, four Level IV trauma centers. (See policy 505-A for table) S-SV EMS has six designated STEMI receiving centers and ten designated Stroke receiving centers in its nine counties. All base hospitals actively participate in the Continuous Quality Improvement process conducted in coordination with the Agency.

Sutter Roseville Medical Center is ACS verified; and S-SV EMS designated Level II Trauma Center. Sutter Roseville Medical Center was initially verified by the ACS in 1995 and designated that same year by S-SV EMS. ACS reverification occurred in January 2001, 2004, 2007, 2010 and 2013 with continued designation awarded. Rideout Memorial Hospital in Marysville has been designated as a Level III Trauma Center by the S-SV EMS Trauma Review Team in 2001 and re-reviewed in 2003, 2005, 2007, 2010 and 2013. S-SV EMS acquired the counties of Colusa in July 2009, Butte October 2009 and Siskiyou, Shasta and Tehama July 2010; at that time S-SV EMS accepted the designations that NORCAL EMS had designated prior to being part of S-SV EMS.

The University of California, Davis Medical Center (UCDMC) located in downtown Sacramento, was designated by the Sacramento County EMS Agency under the auspices of that Agency's approved Trauma Plan. S-SV EMS Agency has recognized this designation and through a contract with UCDMC. UCDMC provides primary trauma care and acts as a tertiary referral center for the entire region. UCDMC is an ACS verified and Sacramento County designated Pediatric Level I Trauma Center and Burn Center. Mercy San Juan Medical Center located in the city of Carmichael in Sacramento County is an ACS verified and designated by Sacramento County

EMS as a Level II Trauma Center and provides service to residents S-SV EMS region. Like UCDMC, S-SV EMS recognizes the trauma care provided by these two centers.

The extreme eastern portion of the region borders on the state of Nevada. Typical patient flow from the Truckee area is to Washoe Medical Center in Reno. The State of Nevada has designated Washoe as a Level II Trauma Center. S-SV EMS recognized the designation of Washoe Medical Center by the State of Nevada. Under the S-SV EMS Trauma Plan, the base hospital physicians for the Washoe area will retain the ability to transfer patients directly from the field to this out-of -state facility.

All facilities are required to have interfacility transfer agreements with the Level I and Level II trauma centers. Pediatric trauma care is provided by UCDMC as the Regional Trauma Center. S-SV EMS Policy #860 Trauma Triage Criteria states when ground ambulance or EMS aircraft (if utilized) transport times do not exceed 45 minutes, all children ≤ 14 years of age who meet Anatomic and/or Physiologic Trauma Triage Criteria should be transported directly to a designated pediatric trauma center. If a pediatric patient meets criteria for direct transport to a designated pediatric trauma center, but the patient's condition is so critical that any additional transport time may jeopardize the patient's life, the patient shall be transported to the closest designated trauma center.

S-SV EMS implemented a Regional Trauma Registry "Trauma One" a Lancet Technology product which is both CEMSIS and NTDB compliant, which provides the fundamental basis for trauma system evaluation, performance and system planning. All of our trauma centers use Trauma One, it is either located onsite at the trauma center or the registrar logs onto the registry which is hosted by S-SV EMS.

C. Challenges to the System

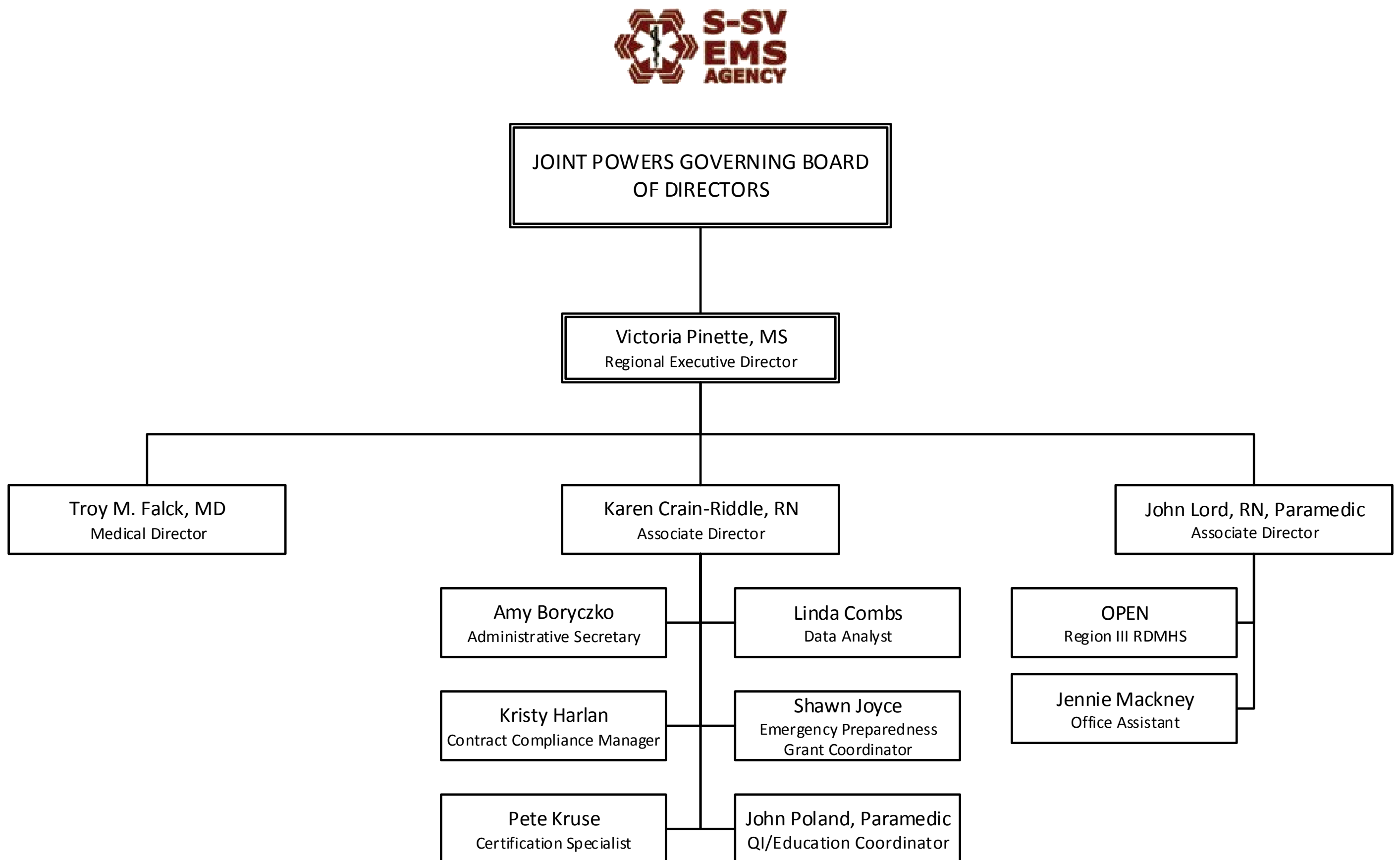
The smaller facilities within the region continue to experience concerns related to medical staff commitment and Level III designation. Tahoe Forest Hospital is experiencing issues related to availability of surgical specialists willing to support the program. Our northern counties even though they may be certainly more rural and less densely populated, they were designated trauma centers by their previous LEMSA through grant funded trauma monies. With the rural areas and wilderness areas it is sometimes difficult to create policy and procedures that are inclusive for all areas.

D. Proposed Solutions

The issue of surgical commitment at all levels of the trauma system is a national phenomenon and S-SV EMS will continue to provide technical assistance to assure successful Level III designations at each location. S-SV will continue to encourage Tahoe Forest Hospital, Sierra Nevada Hospital to become Level III trauma centers. Policies and procedures will continue to be developed to include all aspects of our region to maintain an inclusive trauma system.

II. Organizational Structure

The following information defines the organization and administration of the Sierra-Sacramento Valley EMS Agency.



A. Regional EMS Agency

The S-SV EMS Agency is a regional multi-county Joint Powers Agency that serves as the local EMS agency for the nine counties of Placer, Nevada, Sutter, Yuba, Colusa, Butte, Shasta, Siskiyou and Tehama. The nine counties have a combined resident population of 1,250,000 people and a significant transient population. Complete authority for planning, development and implementation of all EMS components, including regional trauma system planning, has been delegated to S-SV EMS by all nine member counties. The Governing Board of Directors for the Joint Powers Agency consists of a County Supervisor from each of the member counties.

B. System Management

As the Joint Powers Agency for the region, S-SV has the responsibility for planning, implementing and managing an inclusive trauma care system. The Agency Regional Executive Director and the Medical Director directs the medical and administrative aspects of the trauma system. All Agency staff, including the Regional Executive Director and the Medical Director, participates in system monitoring, evaluation and problem solving. The Associate Director and Data Analyst are involved with the oversight of the Trauma Plan, the regional trauma registry and the regional Trauma Quality Improvement Program. They play a significant role in the development of area-wide trauma system education and prevention activities.

The Agency has a strong participatory regional committee structure composed of the Medical Control, Regional Trauma Continuous Quality Improvement, STEMI Quality Improvement and Stroke Quality Improvement and EMS Aircraft Advisory Committees. These committees allow all stakeholders the opportunity to provide input into ongoing trauma planning and facilitate communication, awareness and commitment of all participants to the EMS process.

Ongoing Committees

- **Medical Control Committee (MCC)** – Consisting of stakeholders representing all prehospital provider levels, acute care facilities, trauma system. This Committee is responsible for the development of policy and procedures for the prehospital providers. This Committee is attended by Base Hospital Medical Directors, Base Hospital Coordinators, prehospital providers both public and private along with agency staff and medical director.
- **Regional Continuous Quality Improvement Committee (RCQI)** - Consisting of stakeholders representing all prehospital provider levels, acute care facilities, trauma system. This Committee is a peer review committee that studies all aspects of EMS prehospital care looking at data and trending through quality indicators and provides education that is driven by the results of these findings.
- **Regional Trauma Continuous Quality Improvement Committee (RTCQI)** - Consisting of stakeholders representing all trauma centers. This Committee is a confidential peer review committee that studies all aspects of trauma care looking at data and trending through quality indicators and provides education that is driven by the results of these findings. This Committee includes trauma physicians, trauma nurse coordinators, trauma registrars and agency staff.
- **STEMI Continuous Quality Improvement Committee (STEMI)** – This Committee works to promote region-wide standardization of STEMI patient care through continuous quality improvement. The Committee monitors, evaluates and reports on care and transportation, including compliance with laws, regulations, policies and procedures and provides recommend policy/protocol revisions and/or corrective action as necessary. The

Committee also makes recommendations specific to EMS provider, hospital and agency data collection and dissemination. Attendees include the Cardiac Catheterization Laboratory Physician Medical Directors from each STEMI Receiving Center, Cath Lab nurse managers along with S-SV EMS Agency staff and Medical Director.

- **EMS Aircraft Advisory Committee** – This Committee promotes region-wide standardization of prehospital EMS Aircraft continuous quality improvement. The group monitors, evaluates and reports on care and transportation, including compliance with laws, regulations, policies, procedures and recommend revisions as well as corrective action if necessary. The Committee will also make recommendations specific to EMS providers, hospital/agency data collection and dissemination. This committee is attended by the EMS Aircraft providers, prehospital providers both public and private, trauma physicians and ED physicians, and ED RNs along with agency staff and medical director.
- **Additional -** Our Associate Directors attend statewide Trauma Managers Association of California (TMAC) and EMS for Children (EMS-C) meetings. Our Regional Executive Director serves on and attends several statewide committees – EMS-C, EMS Administrators' Association of California (EMSAAC) and legislative committees. Our Medical Director is involved in many committees, is a board certified emergency physician who also actively works for Kaiser Permanente Hospital in Roseville and current member, CAL ACEP.

III. Needs Assessment

A. Planning Basis

A trauma system is a pre-planned, comprehensive, and coordinated injury response system that includes all facilities with the capabilities to care for the injured. It is the region's inclusiveness and pre-planned trauma center systems that allows for the care and delivery of the injured patients with different levels of care throughout our regions' rural and urban areas. Once again, the most important component of developing an effective trauma system is the role and integration of EMS coordination and communications throughout the region.

B. Distinct Service Areas

The nine counties that constitute the primary catchment area encompass an area of some 20,977 square miles with a resident population of 1,250,000 people. The secondary catchment area consists of Sacramento and El Dorado Counties. The total population of Sacramento County is 1,435,499. Sacramento County encompasses approximately 994 square miles in the middle of the 400-mile long Central Valley. El Dorado County population is 180,000. This County encompasses 1805 square miles bordered by Lake Tahoe and Nevada on the east and reaching to within 25 miles of the California capitol in Sacramento. Interstate 5, traverses Sacramento through Colusa, Tehama, Shasta and Siskiyou counties for 300 miles. This is a highly traveled interstate that runs north and south through the counties with high incidents of motor vehicle crashes. Some of the areas are densely populated and others are fairly remote with less population.

Coordination with neighboring trauma systems: S-SV region coordinates with all neighboring trauma systems in particular Sacramento County EMS, El Dorado County EMS and the State of Nevada Statewide EMS.

C. Unique Issues /Needs Assessment

The Sierra-Sacramento Valley Emergency Medical Services region has many unique issues that make the adoption of standard trauma planning unique. The region is composed of nine counties, Placer, Nevada, Sutter, Shasta, Siskiyou, Tehama, Colusa and Yuba. These counties encompass an area of some 20,977 square miles with a resident population of 1,250,000. The majority of the region is rural with pockets or centers of high population density. In 1994, local county planners estimated that the entire region would experience a 50% increase in population by the year 2010. The growth has occurred much quicker than anticipated. Therefore, any current planning must address an estimated population in 2010 of over a million residents. The geography of the region varies from the flat valleys of the highly agricultural areas to the Sierra Nevada Mountains, the Lake Tahoe area to the Cascade Mountain range in the northern counties. The region is traversed by a number of major Interstate and State Highways. Interstates include: 5, 99, and 80. Interstate 5 is the primary route north and south in California. Interstate 80 is the primary route east and west in Northern California. Not only do these major highways provide access to destinations east and north of the region, they lead to several of the state's major recreation areas, Lake Tahoe to the east and Lake Shasta to the north.

Many thousands of drivers a day traverse the regions many highways. It is important to realize these numbers reflect a tremendous population of people that are not only driving cars in the region but recreating as well. As people recreate in communities where skiing, hiking, mountain climbing, rafting, and bicycling is popular, the potential for injury is extremely high.

IV. Trauma Care System Design

A. Overview of the Trauma System

The trauma system in the S-SV EMS region is based on an inclusive trauma model and incorporates every acute care facility in the region. Currently there are seventeen hospitals within the region providing care for injured persons and three are designated Level II trauma centers providing trauma care to residents of the S-SV EMS region. UC Davis is the Level I trauma center in Sacramento County. Since the original trauma plan was submitted, S-SV has designated three Level II trauma centers: Sutter Roseville Medical Center, Enloe Medical Center and Mercy Medical Center Redding. Sutter Roseville was initially verified by the ACS in 1995 and subsequently designated that same year by S-SV EMS. Re-verification by ACS occurred in 2001, 2004, 2007, 2010 and 2013. Enloe Medical Center had previously been designated by their previous LEMSA, which S-SV EMS accepted in 2009 when S-SV EMS became the LEMSA for Butte and Colusa Counties. Enloe Medical Center went through their ACS Consultative Site Review in November 2012. In 2010, S-SV EMS acquired Shasta, Siskiyou and Tehama Counties. The previous LEMSA had designated Mercy Medical Center Redding as a Level II trauma center which S-SV EMS accepted in 2010. Mercy Medical Center Redding went through their ACS Consultative Site Review in September 2012.

S-SV EMS has five Level III trauma centers. Rideout Memorial Hospital in Marysville has been designated as a Level III trauma center by the S-SV EMS Trauma Review Team in 2001 and reviewed again in 2003, 2005 and 2007. Rideout Memorial Hospital had their ACS Consultative Site Review in September 2010. Oroville Hospital completed their ACS Consultative Site Review in 2013. Mercy Medical Center Mt. Shasta, Shasta Regional Medical Center and St. Elizabeth

Community Hospital have not had their ACS Consultative Site Reviews. S-SV EMS has four designated Level IV trauma centers – Biggs Gridley Memorial Hospital, Colusa Regional Medical Center, Fairchild Medical Center and Mayers Memorial Hospital.

Adjacent to the S-SV EMS region is Sacramento County UCDMC which provides Level I trauma care, both initial stabilization and tertiary care. Through an exclusive contract with S-SV EMS, UCDMC provides primary trauma care and acts in a tertiary capacity for the entire region.

Mercy San Juan Medical Center located in the city of Carmichael in Sacramento County is designated by Sacramento County EMS as a Level II trauma center and provides service to residents of the S-SV Region. Like UCDMC, S-SV recognizes the trauma center designation process of our neighboring jurisdiction and recognizes the support and trauma care provided by these two centers.

The extreme eastern portion of the region borders on the state of Nevada. Typical patient flow from the Truckee area is to Washoe Medical Center in Reno. The State of Nevada has designated Washoe as a Level II trauma center.

B. Trauma Center Requirements

In order to be designated as a trauma center in the S-SV region, each applicant must meet the Standards for level II and III & IV trauma centers as published in the current addition of the *Resources for The Optimal Care of the Injured Patient* published by the American College of Surgeons Committee on Trauma as well as the standards included in the State trauma regulations as stipulated in Article 3 Sections 100259 -100263. The ACS standards are very specific related to critical care capabilities, medical organization and management and quality improvement. The contract with UCDMC requires UCD to maintain trauma center designation through Sacramento

County EMS Agency. Sacramento County EMS requires the Level I and II trauma centers to comply with the currently published standards from the ACS.

S-SV has specified additional trauma center requirements for the region. All trauma centers in the region shall have written policies in place, including, but not limited to, the following requirements:

1. A written policy of non-discrimination, which includes: the fact that no patient entering under the trauma triage criteria will be denied care on the basis of race, creed, color, national origin, sex, or the ability to pay for care.
2. The trauma center shall accept the transfer of all major trauma patients from within the Region, whose clinical condition requires a higher level of care than can be provided by another facility.
3. A written transfer agreement with a trauma center of a higher level providing for the transfer of patients for specified medical conditions.
4. The Agency will charge an annual fee for trauma center designation based upon analysis of its costs to manage and operate the system. The fee structure will be reviewed and approved by the Agency Governing Board of Directors. Designation as a trauma center will be contingent on payment of an annual fee. The monies collected shall be used solely to support the trauma system, in accordance with California laws.
5. The trauma center agrees that it is in compliance with Government Code Section 8355 in matters related to a drug-free work place.
6. The trauma center will participate in the collection of data for the Regional Trauma Registry.

C. Injury Prevention

S-SV requires injury prevention activities in the contract with the trauma centers.

- **<u>Sutter Roseville Medical Center</u>**
  - Placer County Safe Kids
  - Safe Sitter Program
  - PARTY Program – risk reduction for teens
  - Every 15 Minutes – drunken driving prevention for teens
  - Helmet education and distribution
  - Fall prevention for seniors in the community
  - Equestrian safety
  - Emergency Preparedness Program
  - Substance Abuse Screening and Brief Intervention
- **<u>Enloe Medical Center</u>**
  - Think First for Kids - International injury prevention program which includes six week curriculum aimed at prevention of brain and spinal cord injuries – targets 3rd & 4th graders.
  - Every 15 Minutes - drunken driving prevention for teens Emergency Department helmet bank – helmets are provided free of charge to children presenting to ED after scooter, bicycle, skateboard injuries to ensure no lapse in helmet coverage.
  - Alcohol awareness presentations aimed at educating college students and resident advisors about the dangers of alcohol poisoning.

- Child Death Review Team – Butte County aimed at examining deaths of children to identify preventable causes (safe sleeping conditions, roadways, bike paths).

- **Mercy Medical Center Redding**
  - Bike helmet safety and education
  - Child passenger safety
  - Drug and alcohol programs for adolescents
  - Trauma injury prevention awareness
- **Rideout Memorial Hospital**
  - Bike Safety Rodeo with Yuba City Police Department
  - Snakebite article in the Appeal Democrat written by Dr. Dougherty
  - Yuba City Fire Department Code 3 clown safety show
- **Oroville Hospital**
  - Every 15 Minutes - drunken driving prevention for teens
  - Bike Safety Event
  - Oroville Hospital Health Fair
- **St. Elizabeth Community Hospital**
  - Community Health Faire
  - Emergency Department Education
  - Mobile Life Support Education

D. Prehospital Care

The region is covered by public and private ALS ambulance response supported by simultaneous dispatch of BLS and first responder fire department personnel. Prehospital providers are currently trained in trauma triage and principles of field resuscitation of injured patients and meet all of the State requirements for education. All prehospital providers follow S-SV EMS Policy #860 Trauma Triage Criteria to assure early notification of trauma centers of the impending arrival of trauma patients.

All ALS vehicles used to transport patients within the region are required to have two-way radios. ALS providers utilize cell phones in addition to mednet UHF radios. Existing policies and procedures provide for Base/Modified Base contact, standing orders and radio failure protocols that the paramedics shall follow in the event of a communication failure. All acute care facilities within the region are Base/Modified Base Hospitals and have the capability of communication with the prehospital providers in their area.

Six helicopter providers service S-SV Region (total of eight EMS Helicopters): CALSTAR one unit in Auburn, REACH one unit in Marysville and one unit in Redding, Enloe FlightCare one unit in Butte County, REMSA CareFlight one unit in Truckee, PHI one unit in Redding and the California Highway Patrol with one unit in Auburn and one unit in Redding. These flight teams work under standardized procedures developed and controlled by the air provider medical director. CHP is an ALS rescue helicopter and has one licensed paramedic on board. This paramedic is accredited in S-SV region and follows the S-SV Prehospital ALS protocols.

In September of 1999, the California Department of Forestry's Grass Valley Emergency Communications Center began to serve as the central point of coordination for all EMS helicopter

resources for the S-SV Region. S-SV obtained a grant from the EMS Authority (EMS-7039) to implement this system. This system allows the Public Service Answer Point (PSAP) to request from the Grass Valley CDF the most appropriate helicopter with a single phone call. Prior to September 1999, the dispatch of these aeromedical resources had been the responsibility of multiple PSAPs. The lack of coordinated helicopter response resulted in multiple resources being requested to the same event. In addition lack of coordination of EMS helicopters result in safety issues. No single PSAP could know the status of six helicopter providers without contacting each provider individually. ShasCom dispatches EMS aircraft in Shasta County, while Cal Fire Tehama dispatches for Tehama County and Cal Fire Yreka dispatches for Siskiyou County. This change in process has resulted in greater provider satisfaction and optimizes resources and improves the quality of patient care.

The Agency has implemented a state of the art prehospital data collection system. All prehospital ALS providers utilize an ePCR that is both CEMSIS and NEMSIS compliant.

Each of the acute care facilities in the region acts as a Base/Modified Base Hospital for the prehospital providers in their region. Base/Modified Base Hospital services are provided via contract between the facility and the Agency. Each Base/Modified Base Hospital is required to have a Medical Director and a Base Hospital Coordinator. All Base/Modified Base Hospitals are accountable to S-SV EMS Agency. Quality of care is reviewed on an on-going basis and retrospectively. The Agency maintains an advisory Medical Control Committee in which all Base/Modified Base Hospital Medical Directors and Base Hospital Coordinators actively participate in the approval process of all procedures and policies for the prehospital care setting.

E. Trauma Patient Volume 2012/13

Trauma Center	Total # Patients
Biggs Gridley Hospital	2
Colusa Regional Medical Center	6
Enloe Medical Center	406
Fairchild Medical Center	20
Mayers Memorial Hospital	33
Mercy Medical Center Mt. Shasta	34
Mercy Medical Center Redding	898
Oroville Hospital	94
Rideout Memorial Hospital	349
Shasta Regional Medical Center	68
St. Elizabeth's Community Hospital	58
Sutter Roseville Medical Center	1137
UCD Medical Center	781

F. Resources Available to Meet Staffing Requirements for Trauma Centers

By using the services of the American College of Surgeons, S-SV EMS Agency assures a third party verification of the resources necessary to meet and exceed the standards stipulated in the State trauma regulations as Article 3 Sections 100259 -100263.

G. Coordination with neighboring Agencies

A contract was executed between the Agency and UCDMC, the designated Level I Trauma Center in Sacramento County, to provide primary trauma coverage. This contract has been in effect since September 13, 1993 and updated on a periodic basis. S-SV EMS Agency Trauma Triage criteria defining trauma patients is specified in the contract. Criteria for interfacility transfer of patients needing a higher level of care are in place. UCDMC will act as a tertiary referral center for facilities that receive injured patients and need a higher level of care. S-SV has a contract with UCDMC for Level I pediatric trauma center for the nine county Region. Because of the proximity of S-SV to surrounding EMS Agencies and primarily because of patient referral patterns and patient flow patterns, S-SV EMS works in collaboration not only with Sacramento County but El Dorado County as well to assure communication and to address system issues as they arise.

H. Transport Times/Service Areas

S-SV EMS currently uses the Trauma Triage Criteria Policy # 860 to determine where a trauma patient is to be transported. (See attached policy) S-SV EMS has Level II, III, and IV trauma centers and each facility plays an important role in the delivery of trauma care.

RESPONSE TIME STANDARDS	
PLACER COUNTY	
AMERICAN MEDICAL RESPONSE (AMR)	
Roseville	8 minutes 90% of the time
Rocklin	8 minutes 90% of the time
Auburn City & County All of the City of Auburn and County area – ½ mile West of Hwy 49 from the City of Auburn to Dry Creek Road. East of Hwy 49 up to and including Interstate 80 North to include Bell Road. In addition, ½ mile East of Hwy 49 from Bell Road to Dry Creek Road.	8 minutes 90% of the time
Auburn – East to include Colfax	15 minutes 90% of the time
Auburn West to Rocklin	15 minutes 90% of the time
Lincoln	10 Minutes 90% of the time
AMR Placer County Rural	20 minutes 90% of the time
AMR Placer County - Wilderness	As soon as possible
SOUTH PLACER FIRE PROTECTION DISTRICT	
South Placer FPD	ALS on scene 10 minutes 90% of the time and ambulance on scene 15 minutes 90% of the time
FORESTHILL FIRE PROTECTION DISTRICT	
Foresthill, Todd Valley Estates, Baker Ranch	15 minutes 90% of the time
Foresthill - Wilderness	As soon as possible
NORTH TAHOE FIRE PROTECTION DISTRICT	
Kings Beach and Tahoe City	10 minutes 90% of the time
Remainder of NTFPD	20 minutes 90% of the time
Wilderness	As soon as possible

NEVADA COUNTY	
SIERRA NEVADA MEMORIAL HOSPITAL AMBULANCE	
Grass Valley and Nevada City	9 minutes 90% of the time
Sierra Nevada Rural 15: Nevada County Consolidated Fire District, Ophir Hill FPD, Highway 49 through Higgins FPD to include the corridor ½ mile east and west of Hwy 49, and Lake of the Pines.	15 minutes 90% of the time
Sierra Nevada – Rural 20: Those portions of Higgins FPD not contained in the 15 min response zone. Peardale-Chicago Park FPD.	20 minutes 90% of the time
Sierra Nevada – Wilderness	As soon as possible
PENN VALLEY FIRE PROTECTION DISTRICT	
Penn Valley Proper & Lake Wildwood	ALS on scene 10 minutes 90% of the time and ambulance on scene 15 mins 90% of the time
Penn Valley Rural	ALS on scene 20 minutes 90% of the time and ambulance on scene 30 minutes 90% of the time
Penn Valley - Wilderness	As soon as possible
TRUCKEE FIRE PROTECTION DISTRICT	
Truckee	10 minutes 90% of the time
Truckee/Donner Summit Rural 20	20 minutes 90% of the time
Truckee/Donner Summit – Wilderness	As soon as possible

RESPONSE TIME STANDARDS	
SUTTER & YUBA COUNTY	
BI-COUNTY AMBULANCE	
Yuba City	8 minutes 90% of the time
Marysville	8 minutes 90% of the time
Linda	10 minutes 90% of the time
Olivehurst	10 minutes 90% of the time
Rural – Sutter County	20 minutes 90% of the time
Rural – Yuba County	20 minutes 90% of the time
Bi-County - Wilderness	As soon as possible
BEALE AIR FORCE BASE	
Beale AFB	8 minutes 90% of the time
Beale – Wilderness	ASAP

I. Response Areas Population Density

When establishing response times the following shall be taken into consideration:

Call Volume
Population density
Type of event

The following is our population by county:

County	Population
Butte	221,485
Colusa	21,674
Nevada	97,019
Placer	357,463
Shasta	178,601
Siskiyou	44,796
Sutter	95,851
Tehama	63,772
Yuba	73,439

J. Pediatric Trauma Care

Pediatric care has long been a priority for the S-SV Region. The region has an extensive history of commitment to improving pediatric care and has played a key role in developing standards for pediatrics within our region that have become the model for many other EMS jurisdictions in California. Pediatric trauma is handled in several ways. UCDMC is designated by Sacramento County EMS Agency and verified by the American College of Surgeons as a Level I Pediatric Trauma Center. S-SV recognizes this designation and UCDMC functions as the Level I pediatric trauma center for the nine county Region. According to the Sacramento EMS Agency, UCDMC meets all the criteria for a Level I Pediatric Trauma Center as specified in the trauma regulations Section 100261. This level of service is also stipulated in contract with the S-SV EMS

Agency. Trauma Triage criteria preferentially route critically injured pediatric patients to the Level I Pediatric trauma center (UCDMC). See policy # 860 Trauma Triage Criteria.

Sutter Roseville Medical Center, the Level II trauma center has a contract with UCDMC to facilitate transfer of critical pediatric trauma should they happen to be transported to their facility. Every designated trauma center in S-SV Region will be required to have a transfer agreement with UCDMC for pediatric trauma care.

In addition to the contract for tertiary trauma care with UCDMC, S-SV has a contract with UCDMC as regional Pediatric Critical Care Center.

K. Rehabilitation

The rehabilitation of the trauma patient and continual support of the family members is an important part of trauma system planning. Each trauma center is required to document a plan for integration of rehabilitation into the acute and primary care of the trauma patient, at the earliest stage possible. Sutter Roseville Medical Center has an acute care rehabilitation center that opened in 2008, Sutter Rehabilitation Institute. The Sutter Rehabilitation Institute is the only standalone facility in the S-SV EMS Region dedicated exclusively to rehabilitation. The institute is certified by the California Association of Rehabilitation Facilities in 2011. The Institute provides therapeutic care to stroke, brain injury, multiple trauma, amputation, spinal cord injury orthopedic injuries and other neurological disorders.

Enloe Medical Center has the Enloe Rehabilitation Center in Chico which is an inpatient setting for physical rehabilitation and includes physiatrists, PT, OT, ST and nursing care. Enloe Medical Center also has contract with Santa Clara Valley Medical Center a transfer agreement for spinal cord injuries.

Mercy Medical Center Redding begins rehabilitation in the acute care setting when during weekly trauma rounds the physiatrist is present to discuss rehabilitation issues and needs. The hospital provides in house physical therapy, occupational therapy, speech therapy and social services. The hospital also has transfer agreements to a freestanding rehabilitation hospital.

Oroville Hospital provides physical therapy, occupational therapy, speech therapy and social services.

Hospitals are required to identify a mechanism to initiate rehabilitation services and/or consultation upon admission, including policies regarding coordination of transfers between the facilities. These transfer agreements should provide for periodic feedback of patient progress to the acute care facility to update the healthcare team and ultimately the system trauma registry.

L. Critical Care Capability

Critical care capability is determined by meeting the standards set forth in the trauma system plan. The personnel must be consistent with the level of designation. Each facility applying for trauma center designation must describe the availability of their trauma team members in the applications. Each center must show that it has a trauma service, surgical specialty departments, an emergency department staffed at the appropriate level, on-call requirements and qualified non-surgical specialists.

Level I – A Level I Trauma Center has the greatest amount of resources and personnel for care of the injured patient. Typically, it is also a tertiary medical care facility that provides leadership in patient care, education and research for trauma, including prevention programs.

Level II – A Level II Trauma Center offers similar resources as a Level I facility, differing only by

the lack of research for a Level I designation.

Level I and II Pediatric – Level I and II Pediatric Trauma Centers focus specifically on pediatric trauma patients. Level I Trauma Centers require some additional pediatric specialties and are research and teaching facilities.

Level III – A Level III Trauma Center is capable of assessment, resuscitation and emergency surgery, if warranted. Injured patients are stabilized before transfer, if indicated to a facility with a higher level of care according to pre-existing arrangements.

Level IV – A Level IV Trauma Center is capable of providing 24-hour physician coverage, resuscitation and stabilization to injured patients before they are transferred, if indicated.

M. Medical Organization and Management

Medical system organization and management for the trauma system will be the same as the EMS System.

N. Quality Assurance and System Evaluation

Each trauma center is required to establish and maintain a Continuous Quality Improvement program specific to trauma. System-wide Continuous Quality Improvement is achieved through the establishment of a Regional Multi-disciplinary Trauma Review Committee. This committee is responsible for establishing criteria or audit filters for review of certain cases that fall outside of established norms for patient care. These meetings are conducted in accordance with 1040 of the Government Code and 1157.7 of the California Evidence code. All members of the committee are required to sign confidentiality statements.

Each case has a finding of appropriateness of care rendered and committee members make recommendations to the appropriate committees for changes.

V. Intercounty Trauma Center Agreements

A contract was executed between S-SV EMS and UCDMC, the designated Level I Trauma Center in Sacramento County, to provide tertiary trauma coverage. This contract has been in effect since September 13, 1993 and updated on a periodic basis. S-SV Trauma Triage criteria that defines trauma patients is specified in the contract. Criteria for interfacility transfer of patients needing a higher level of care are in place. UCDMC will act as a tertiary referral center to the facilities who receive injured patients needing a higher level of care.

S-SV has a contract with UCDMC for Level I pediatric trauma center for the nine county region. In addition to the contract for tertiary trauma care with UCDMC, S-SV has a contract with UCDMC as a regional Pediatric Critical Care Center. Because of the proximity of S-SV to surrounding EMS Agencies and primarily because of patient referral patterns and patient flow patterns, S-SV EMS works in collaboration not only with Sacramento County but El Dorado County as well to assure communication and to address system issues as they arise.

VI. OBJECTIVES

A. To ensure optimal and accessible care for all persons sustaining trauma

B. Improve trauma care to the rural areas in our region – May 2013 a Rural Trauma Course was held at Tahoe Forest Hospital and June 2013 a Rural Trauma Course was held at Eastern Plumas Health Care, Cheri White, PhD, ACNP-BC, CCRN, Trauma and Acute Care Surgery Program Director, Sutter Roseville Medical Center was the course director.

C. Continue quality and performance improvement by measuring results of morbidity and

mortality throughout the S-SV EMS region.

D. Ensure designated facilities have appropriate resources to meet the needs of the injured

E. Work to close the gaps in service delivery through policy development

F. Improve use of the central trauma registry

VII. Implementation Schedule

Objective	July 2012	Aug 2012	Sept 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	April 2013	May 2013	June 2013	
A. To ensure optimal and accessible care for all persons sustaining injuries													Ongoing
B. Improve trauma care to the rural areas in our region											Rural Trauma Course – Cheri White, RN	Rural Trauma Course – Cheri White, RN	Ongoing
C. Continue quality & performance improvement by measuring results of morbidity & mortality		Regional Trauma CQI Mtg.			Regional Trauma CQI Mtg.				Regional Trauma CQI Mtg				Ongoing
D. Ensure designated facilities have appropriate resources to meet the needs of injured patients			Mercy Medical Center Redding ACS Consu-ltative Site Visit		Enloe Medical Center ACS Consul-tative Site Visit						Sutter Roseville Medical Center ACS Re-verification	Oroville Hospital ACS Consultative Site Visit	Ongoing
E. Work to close the gaps in service delivery through policy development						S-SV EMS Policy/ Protocol Manual Update						S-SV EMS Policy/ Protocol Manual Update	Ongoing
F. Improve use of the trauma registry.		Provided Trauma One classes for users	Provided Trauma One Classes for users							Provided Online Trauma One classes for users	Provided Online Trauma One classes for users	Provided Online Trauma One classes for users	

VIII. Fiscal Impact

Annual cost for trauma service fees are paid to S-SV EMS by the designated facilities to cover administration and staff, trauma registry management and trauma registry training fees.

IX. Policy and Plan Development

The Medical Control Committee meets on a monthly basis to review and establish policies and procedures for the transportation and treatment of patients. This committee established Policy #860, Trauma Triage Criteria for transportation of the trauma patient.

Patients with compromised airway or who are pulseless, apneic and asystolic are transported to the nearest hospital. Transfer agreements are in place between the trauma centers and receiving hospitals.

All trauma centers are required in their contract to submit trauma registry data. S-SV EMS uses Lancet Technology (Trauma One), which are CEMSIS and NTDB compliant.

The purpose of S-SV Policy #860, Trauma Triage Criteria, is to identify those patients who are at greatest risk for severe injury and determine the most appropriate facility to transport persons with different injury types and severities. When ground ambulance or EMS aircraft transport times do not exceed 45 minutes, all children <14 years of age who meet Anatomic and/or Physiologic Trauma Triage Criteria should be transported directly to a designated pediatric trauma center.

Designated trauma centers within the S-SV region sign contracts upon designation and re-designation. The contracts are presented to the JPA Governing Board of Directors for approval. Transfer agreements between receiving hospitals and trauma centers are required contractually.

All Level II trauma centers are required to have angiography, computerized tomography, a comprehensive blood bank or access to a community central blood bank, coagulation studies, blood gas, serum and urine osmolality, drug and alcohol screening. Also required is thermal control equipment, endoscopes, bronchoscope, esophagoscope, gastroscope, craniotome.

A Level II trauma center shall also have a basic emergency service and have the following equipment**:**

Peritoneal lavage, drugs and supplies for initial resuscitation of major trauma patients, x-ray capability, two-way radio capable of being accessed by ambulances, pneumatic antishock trousers, skeletal tongs, backboards and spinal immobilization boards.

The following services are required**:**

Intensive Care Units with a physician promptly available at all times, immediate access to clinical laboratory services, cardiac output monitoring, electronic blood pressure monitoring, patient weighting devices, pulmonary function measuring devices, thermal control devices and intracranial pressure monitoring devices. In order to be designated as a Level II trauma center a hospital must have a trauma service or multi disciplinary trauma committee included in their organizations and the following surgical specialties**:**

General surgery, cardiothoracic, neurologic, orthopedic, ophthalmic, oral, otorhinolaryngological, maxillofacial and/or plastic and urologic.

A Level III trauma center must have**:**

A multi-disciplinary trauma committee, a surgery department, an emergency department, a qualified general surgical specialist, a qualified non-surgical specialist or specialty availability, which is as follows**:**

Emergency medicine, in-house at all times, an anesthesiologist, internal medicine, pathology, pediatrics and radiology on call and promptly available.

The criteria for trauma team activation are based on ACS guidelines. S-SV has established a Regional Trauma Quality Improvement committee which meets triannually.

S-SV Policy 860, Trauma Triage Criteria, states the anatomic, physiologic and mechanism criteria for field transport to trauma centers. This policy also addresses the pediatric patient. EMS personnel are required to attend an accreditation class before being accredited in the S-SV region in order to train them to policies and procedures. Each trauma hospital is required through contract to participate in the development of public education and awareness campaigns for the service area. Trauma centers agree to submit all marketing and promotional plans with respect to its designation as a trauma center to the Agency for review and approval prior to implementation. All designated trauma centers must cooperate with public and private agencies in injury prevention programs.

X. Local Approval

The plan is approved by the S-SV EMS JPA Governing Board of Directors.

XI. Data Collection

Optimal care of the trauma patient and organization of a regional trauma system requires accurate data. A trauma registry defines a database to provide information for analysis and evaluation of the quality of patient care, including epidemiological and demographic characteristics of trauma patients. The registry provides for the collection, storage, and reporting of information about trauma patients, including the facts related to the patient's injury event, severity, care and outcome.

Within the trauma center the trauma registry provides multiple functions. It provides the basis

for performance improvement activities, outcome research, resource utilization, injury surveillance, professional and public education and injury prevention. At the regional level the registry provided valuable data about the system as a whole including under and over triage, incidence, costs and outcomes. The data is used to educate the public and public officials about trauma as a public health problem assisting as a basis for legislation and regulatory efforts.

As required by Section 100257 of the California Code of Regulation Title 22, Chapter 7, Trauma Regulations, S-SV EMS has implemented a standardized data collection instrument and implemented a data management system. The prehospital data collection tool utilized is an ePCR supported by ESO Solutions which is both CEMSIS and NEMSIS compliant. The data can be reviewed and used to track trends and given to the QI/Education Coordinator to be used as a tool for the medical control committee to develop and establish policy and protocols for the region. The data collected are required data elements that are in Section 100176 of the Paramedic regulations.

In 2009, S-SV EMS contracted with Lancet Technology – Trauma One and all trauma centers use Trauma One to collect trauma data.

Inclusion Criteria:

At least one of the following injury diagnostic codes defined in the International Classification of Diseased, Ninth Revision, clinical Modification **(ICD-9-CM): 800- 959.9**

AND Physically evaluated by trauma or burn surgeon in the ED or resuscitation area

OR Death in Emergency Department

OR Transfer for trauma services (note: may include inter-facility and intra-facility)

Exclusion:

Isolated burn without penetrating or blunt mechanism of injury.

XII. Trauma System Evaluation

The evaluation of the trauma system is ongoing and continuous. The Regional Trauma Continuous Quality Improvement Committee (RTCQI) meets triannually and is responsible for reviewing trauma care at the trauma centers (morbidity and mortality) as well as the system as a whole. Routine evaluation of trauma registry data is conducted by the S-SV EMS Agency Data Analyst along with the Trauma Coordinator and issues are addressed by the Agency through its Medical Director and Committee structure as identified. Trauma related items are discussed at the tri-annual trauma meeting and subsequently policy related recommendations are forwarded to the Medical Control Committee, which meets monthly and approves policy revisions for the entire system including trauma, pediatrics, triage, dispatch etc.

The hospitals in the S-SV EMS Region have EMSystems/EMResource – a real time emergency resource management system. EMResource provides real-time communication and resource management for everyone involved in emergency medical response. Authorized users log on to a secure website and view regional emergency department status and available hospital resources to support patient transport and transfer decision making. During mass casualty incidents, hospital capacity is queried by triage category and inpatient bed capacity. Additional incident specific resources are easily tracked such as decontamination capability, ventilators, and specific pharmaceuticals. Secure, redundant servers are reliably accessed 24/7 providing an excellent communication infrastructure for emergency management personnel, acute healthcare providers and public health officials.

The trauma centers are evaluated on a routine basis. S-SV contracts with the American College of Surgeons-Committee on Trauma (ACS-COT) and utilizes the Verification Team Process to

validate that the trauma centers meet the ACS criteria for trauma center verification outlined in the S-SV Trauma Plan. The trauma centers are inspected every three years. S-SV EMS has the sole authority to designate trauma centers in the region, prior to ACS-COT review and verification. Verification is determined after the site reviewers have submitted a complete report to S-SV and the trauma center. S-SV presents the designation approval to the JPA Governing Board of Directors and a letter of designation is mailed to the trauma center.

A trauma center must submit a written proposal for designation application to S-SV. Written proposals are read and reviewed to determine completeness, ability to meet designation criteria and qualifications of each hospital and its personnel and cost estimate of proposed trauma services. An evaluation team composed of experts from outside the Agency's region, who are experienced in the implementation and operation of trauma services, trauma systems and trauma care, are appointed by the Agency. This committee advises the Agency on trauma center designation. A multi disciplinary team includes a trauma surgeon, emergency physician, trauma nurse and EMS Administrator. Upon the completion of the review of written proposal and the on-site evaluations, the review committee conducts an exit interview to each hospital. The review committee is sequestered and prepares a written report submitting its findings and recommendations to the Agency.

Following receipt of the written report and recommendations of the proposal review committee, the Agency will draft a Trauma Center Designation Agreement based upon the proposal submitted by the hospital that is recommended for designation by the proposal review committee.

Each proposal for a level II trauma center must be accompanied by a non-refundable application fee in the amount of $20,000 to cover the costs associated with the processing of the

application proposal review, site evaluation/validation team visits and other designation process expenses. An annual designation fee shall be charged to the designated trauma center to offset the ongoing costs to the Agency for trauma system maintenance, monitoring and evaluation. Level III proposals must be accompanied by a fee of $10,000. S-SV retains the right to inspect trauma centers without notice.

S-SV EMS AGENCY HOSPITAL CAPABILITIES — REFERENCE NO. 505-A

Hospital Name	*County*	*Base Mod. Base Receiving*	*Level I/II Trauma Center*	*Level III Trauma Center*	*Level IV Trauma Center*	*Labor and Delivery*	*Pediatric Trauma Center*	*Burn Receiving Center*	*STEMI Receiving Center*	*Stroke Receiving Center*
Biggs Gridley Memorial Hospital	**Butte**	**Receiving**			**X**					
Enloe Medical Center	**Butte**	**Base**	**X**			**X**			**X**	**X**
Feather River Hospital	**Butte**	**Base**				**X**				
Oroville Hospital	**Butte**	**Base**		**X**		**X**				**X**
Colusa Regional Medical Center	**Colusa**	**Base**			**X**	**X**				
Sierra Nevada Memorial Hospital	**Nevada**	**Modified Base**				**X**				**X**
Tahoe Forest Hospital	**Nevada**	**Modified Base**				**X**				
Kaiser Roseville Medical Center	**Placer**	**Modified Base**				**X**			**X**	**X**
Sutter Auburn Faith Hospital	**Placer**	**Modified Base**								**X**
Sutter Roseville Medical Center	**Placer**	**Base**	**X**			**X**			**X**	**X**
Kaiser North Sacramento	**Sacramento**	**Receiving**								**X**
Kaiser South Sacramento	**Sacramento**	**Receiving**	**X**			**X**				**X**
Mercy General Hospital	**Sacramento**	**Receiving**				**X**			**X**	**X**
Mercy Hospital Folsom	**Sacramento**	**Receiving**				**X**				**X**
Mercy San Juan Medical Center	**Sacramento**	**Receiving**	**X**			**X**			**X**	**X**
Methodist Hospital	**Sacramento**	**Receiving**				**X**				**X**
Sutter General Hospital	**Sacramento**	**Receiving**								**X**
Sutter Memorial Hospital	**Sacramento**	**Receiving**				**X**			**X**	**X**
UC Davis Medical Center	**Sacramento**	**Base**	**X**			**X**	**X**	**X**	**X**	**X**
Fairchild Medical Center	**Siskiyou**	**Base**			**X**	**X**				

Hospital Name	County	Base Mod. Base Receiving	Level I/II Trauma Center	Level III Trauma Center	Level IV Trauma Center	Labor and Delivery	Pediatric Trauma Center	Burn Receiving Center	STEMI Receiving Center	Stroke Receiving Center
Mercy Medical Center Mt. Shasta	Siskiyou	Base		X		X				
Mayer's Memorial Hospital	Shasta	Base			X	X				
Mercy Medical Center Redding	Shasta	Base	X			X			X	X
Shasta Regional Medical Center	Shasta	Base		X					X	X
Fremont Medical Center - L&D	Sutter	L & D Only				X				

Updated 06-2013

S-SV EMS AGENCY HOSPITAL CAPABILITIES **REFERENCE NO. 505-A**

Hospital Name	County	Base Mod. Base Receiving	Level I/II Trauma Center	Level III Trauma Center	Level IV Trauma Center	Labor and Delivery	Pediatric Trauma Center	Burn Receiving Center	STEMI Receiving Center	Stroke Receiving Center
St. Elizabeth Community Hospital	Tehama	Base		X		X				
Rideout Memorial Hospital	Yuba	Modified Base		X					X	

S-SV EMS MCI CONTROL FACILITIES

Control Facility	County / Area of Responsibility
Enloe Medical Center	Butte and Colusa Counties
Rideout Memorial Hospital	Sutter and Yuba Counties
Sierra Nevada Memorial Hospital	Western Slope of Nevada County
Sutter Roseville Medical Center	Western Slope of Placer County
Tahoe Forest Hospital	Tahoe Basin and Eastern Slope of Nevada and Placer Counties
Mercy Medical Center Redding	Shasta County/Siskiyou County/Tehama County

REFERENCE NO. 605

SUBJECT: PREHOSPITAL DOCUMENTATION

PURPOSE:

To define the responsibilities and requirements of prehospital personnel and service provider agencies in the initiation, completion and distribution of prehospital documentation.

AUTHORITY:

California Health and Safety Code, Division 2.5, Sections 1797.202, 1797.204, 1797.220, 1798 and 1798.220.

California Code of Regulations, Title 22, Chapter 2, 3 and 4.

POLICY:

A. Prehospital documentation shall be completed as follows:

1. ALS / LALS / BLS transport and ALS / LALS non-transport prehospital personnel shall complete patient care documentation for every response where patient contact is established.

2. ALS / LALS / BLS transport and ALS / LALS non-transport prehospital personnel shall complete appropriate documentation for all cancelled calls including:

   a. "Code 4" or cancelled calls prior to arrival at scene.

   b. "No patient contact" calls defined as arrival on scene and unable to locate any patient, or no direct interaction with patient.

3. BLS non-transport prehospital personnel shall complete patient care documentation for the following types of responses:

   a. An AED is utilized.

   b. An EMT optional skill is performed.

   c. An RAS / AMA is completed by BLS personnel.

B. Prehospital patient care documentation includes the following:

1. A written or electronic Patient Care Report (PCR).

2. An S-SV EMS Interim Patient Care Report (Reference No. 605-A) or an equivalent interim patient care report form utilized in addition to the PCR.

C. A PCR is a legal medical record and the primary source of information for provider, base / modified base hospital and S-SV EMS Agency Continuous Quality Improvement (CQI) review.

D. Prehospital personnel shall be responsible for providing clear, concise, complete, legible and accurate prehospital documentation.

E. Any form of falsification of prehospital documentation shall be considered a serious infraction subject to disciplinary certification / accreditation action by the S-SV EMS Agency and/or referral to the appropriate licensing authority.

PROCEDURE:

A. PCR UTILIZATION

Prehospital service provider agencies who are required to complete prehospital documentation as indicated by this policy must utilize one of the following forms of documentation:

1. An ePCR system:

   a. All S-SV EMS approved ALS / LALS / BLS transport and ALS / LALS non-transport providers must utilize one of the following ePCR systems:

      - The S-SV EMS Agency selected ePCR system.

      - An equivalent National EMS Information System (NEMSIS) compliant ePCR system.

2. A written PCR:

   a. A written PCR may be utilized by BLS non transport providers for prehospital documentation purposes as required by this policy.

   b. A written PCR shall include, at a minimum, all data elements listed in the following appropriate policy(s):

      - EMT / Public Safety AED Program: Service Provider Requirements and Responsibilities, Reference No. 474.

      - EMT Optional Skill: Service Provider Application, Approval Process, Requirements and Responsibilities, Reference No. 477.

      - Patient Initiated Release at Scene (RAS) or Patient Initiated Refusal of Service Against Medical Advice (AMA), Reference No. 850.

B. DOCUMENTATION / COMPLETION OF THE PCR

1. Patient information documented on the PCR provides a medical record of the patient's assessment, history, treatment rendered, response to treatment and all other pertinent medical information regarding the patient.

2. The certification name(s) and certification / license number(s) of appropriate prehospital personnel rendering patient care on a responding unit are required to be documented on the PCR. The primary prehospital patient care provider shall sign the PCR. An electronic signature is acceptable if an ePCR system is utilized for prehospital documentation.

3. All pertinent supporting patient care documentation (including but not limited to completed RAS / AMA forms, DNR / POLST forms, patient medication lists and cardiac monitor strips) shall be attached to the PCR.

C. MINIMUM PATIENT CARE DOCUMENTATION REQUIRED TO BE LEFT WITH THE PATIENT AT THE RECEIVING FACILITY AT TIME OF DELIVERY

The following minimum prehospital patient care documentation, when available to prehospital personnel, shall be completed by the primary patient care provider and left at the receiving facility at the time of patient delivery:

1. Date of incident & incident number
2. Call location
3. EMS unit number
4. Patient name, sex, age, date of birth, address, city and telephone number
5. Chief complaint
6. Patient weight
7. PQRST / time of symptom onset (including time of incident and mechanism of injury for all trauma patients)
8. Pertinent medical history
9. Medications
10. Medication allergies
11. Vital signs (including GCS, BP, pulse, respirations, pain scale, cardiac rhythm and Sp02 as appropriate)
12. Treatment rendered (including time, type of treatment, medication, dose, route, response and total IV volume infused)
13. Name, title and ID of the prehospital provider completing the documentation

There are no exceptions to this requirement. It is the preference of the S-SV EMS Agency that a completed PCR be left at the receiving hospital at the time of patient delivery. However, prehospital personnel may satisfy this requirement with the completion of the S-SV EMS Interim Patient Care Report (Reference No. 605-A) or an equivalent interim patient care report form that includes, at a minimum, all of the information listed above.

D. DISTRIBUTION OF THE COMPLETED PCR

1. The completed PCR shall be distributed as follows:

    a. Service provider agency.

    b. Receiving hospital:

    - In instances when a completed PCR is not left with the patient at the receiving hospital at the time of patient delivery (i.e. when an interim patient care report is utilized), a copy of the completed PCR shall be provided to the receiving hospital within 24 hours.

    - When patient care is transferred from one ALS / LALS provider to another provider for transportation, the ALS / LALS non-transporting provider shall send a copy of their completed PCR to the receiving hospital within 24 hours.

    c. Base / modified base hospital:

    - In instances where a base / modified base hospital is utilized for medical control that is not the receiving facility (including AMA patients and RAS patients that require base / modified base hospital contact), a copy of the completed PCR shall be sent to the base / modified base hospital that was utilized within 24 hours.

    d. S-SV EMS Agency:

    - In instances when an AED or EMT Optional Skill is utilized by a BLS service provider, a copy of the completed PCR shall be sent to the S-SV EMS Agency within 7 days.

2. S-SV EMS service provider agencies shall be responsible for maintaining the PCRs for all patient care responses in accordance with all applicable laws, regulations, Government Codes and policies. The PCR shall be made available to the S-SV EMS Agency upon request.

E. PREHOSPITAL DOCUMENTATION TRAINING

Each service provider agency is responsible for training their appropriate prehospital personnel in the initiation, completion and distribution of required prehospital documentation.

F. PREHOSPITAL DATA SUBMISSION

ePCR data shall be provided to the S-SV EMS Agency in the following manner:

1. Prehospital service providers utilizing the S-SV EMS Agency selected ePCR system shall complete a data sharing agreement with the S-SV EMS Agency.

2. Prehospital service providers not utilizing the S-SV EMS Agency selected ePCR system shall establish a process with the S-SV EMS Agency ePCR vendor to allow for EMS data submission. This data shall include, at a minimum, all NEMSIS data elements. Data shall be submitted to the S-SV EMS Agency data system on a minimum of a monthly basis, no later than the 15th day of the following month.

CROSS REFERENCES:

Prehospital Care Policy Manual

Alternate Transport Vehicle Policy, Reference No. 416

EMT / Public Safety AED Program: Service Provider Requirements and Responsibilities, Reference No. 474

EMT Optional Skill: Service Provider Application, Approval Process, Requirements and Responsibilities, Reference No. 477

Patient Initiated Release at Scene (RAS) or Patient Initiated Refusal of Service Against Medical Advice (AMA), Reference No. 850

REFERENCE NO. 860
SUBJECT: TRAUMA TRIAGE CRITERIA
PURPOSE:

To identify those patients who are at greatest risk for severe injury and determine the most appropriate facility to transport persons with different injury types and severities.

AUTHORITY:

California Health & Safety Code, Division 2.5; Chapter 6, Article 2.5, Section 1798.160 et seq.

California Code of Regulations, Title 22, Division 9, Chapter 7

Centers for Disease Control and Prevention 'Morbidity and Mortality Weekly Report' (MMWR), Recommendations and Reports, January 13, 2012 / Vol. 61 / No. RR-01, 'Guidelines for Field Triage of Injured Patients, Recommendation of the National Expert Panel on Field Triage, 2011':
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6101a1.htm?s_cid=rr6101a1_w

PRINCIPLES:

The trauma triage criteria indicate high-risk factors for serious traumatic injuries. Trauma patients meeting triage criteria should be transported as soon as possible, and time on scene should be limited. Procedures at the scene should be limited to triage, patient assessment, airway management, control of external hemorrhage and appropriate immobilization. Additional interventions should be completed en route with the exception of those incidents requiring prolonged extrication.

TRAUMA CENTER LEVELS

Level I: A Level I Trauma Center has the greatest amount of resources and personnel for care of the injured patient. Typically, it is also a tertiary medical care facility that provides leadership in patient care, education and research for trauma, including prevention programs.

Level II: A Level II Trauma Center offers similar resources as a Level I facility, differing only by the lack of research activities for a Level I designation.

Level I and II Pediatric: Level I and II Pediatric Trauma Centers focus specifically on pediatric trauma patients. Level I Pediatric Trauma Centers require some additional pediatric specialties and are research and teaching facilities.

Level III: A Level III Trauma Center is capable of assessment, resuscitation and emergency surgery, if warranted. Injured patients are stabilized before transfer, if indicated, to a facility with a higher level of care according to pre-existing arrangements.

Level IV: A Level IV Trauma center is capable of providing 24-hour physician coverage, resuscitation and stabilization to injured patients before they are transferred, if indicated.

PATIENT DESTINATION:

A. Patients with an unmanageable airway shall be transported to the closest receiving hospital for airway stabilization.

B. For any patient who is found to meet at least one of the Anatomic or Physiologic Trauma Triage Criteria:

   1. If the time closest designated Trauma Center is a Level I or Level II Trauma Center, transport directly to the Level I or Level II Trauma Center.

   2. If the time closest designated trauma center is a Level III Trauma Center, contact the Level III Trauma Center for a destination decision.

C. If a trauma patient meets Mechanism of Injury Trauma Criteria only, with or without meeting any of the Special Considerations Criteria, prehospital personnel shall contact the closest base/modified base hospital for a destination decision.

D. If a trauma patient meets the Special Considerations Criteria only, without meeting any of the Anatomic, Physiologic or Mechanism of Injury trauma triage criteria, contact with the closest base/modified base hospital shall be made for a destination decision when prehospital personnel determine that transport to a trauma center may be in the best interest of the patient.

E. The use of EMS aircraft for transport of trauma patients should provide a clinically significant reduction in arrival time to the most appropriate designated trauma center. If the total time for air transport exceeds the ground ambulance arrival time, air transport may not be indicated.

F. Pediatric Trauma Patient Destination

   1. When ground ambulance or EMS aircraft (if utilized) transport times do not exceed 45 minutes, all children $\leq$ 14 years of age who meet Anatomic and/or Physiologic Trauma Triage Criteria should be transported directly to a designated pediatric trauma center.

   2. If a pediatric patient meets criteria for direct transport to a designated pediatric trauma center, but the patient's condition is so critical that any additional transport time may jeopardize the patient's life, the patient shall be transported to the closest designated trauma center.

G. Prehospital personnel shall notify the designated receiving trauma center of the patient's pending arrival as soon as possible.

TRAUMA TRIAGE CRITERIA:

A. **Physiologic Criteria**:

1. Respiratory Rate < 10 or > 29 breaths per minute (<20 in infant aged <1 year) or need for ventilatory support, or
2. Glasgow Coma Score ≤ 13, or
3. Systolic Blood Pressure < 90

B. **Anatomic Criteria:**

1. All penetrating injuries to the head, neck, chest, torso, and extremities proximal to the elbow or knee
2. Chest wall instability or deformity (e.g. flail chest)
3. Two or more proximal long-bone fractures
4. Paralysis
5. Pelvic fractures
6. Amputation proximal to wrist or ankle
7. Crushed, degloved or mangled or pulseless extremity
8. Open or depressed skull fracture

C. **Mechanism of Injury Criteria:**

1. High-risk auto crash (one or more of the following):
   a. Ejections (partial or complete) from automobile
   b. Death in the same passenger compartment
   c. Intrusion, including roof: > 12 inches at occupant site or > 18 inches at any site
2. Non-Automotive crash > 20 mph including, but not limited to: motorcycle, ATV, go-cart, bicycle, skateboard, watercraft and aircraft
3. Auto vs Pedestrian / Bicycle: thrown, run over, or with significant (> 20 mph) impact
4. Adults who fall > 20 feet
5. Children who fall > 10 feet or two to three times the height of the child
6. Other high energy impact

D. **Special Considerations**

1. Age:

    a. Adults > 55 years of age

    - SBP <110 might represent shock after 65 years of age
    - Low impact mechanism (e.g. ground level falls) might result in severe injury.

    b. Children ≤ 14 years of age

    - Children should be triaged to pediatric capable trauma centers when possible

2. Anticoagulation or bleeding disorders

    - Patients with head injury are at high risk for rapid deterioration

3. Burns:

    a. With trauma mechanism: Triage to trauma center

    b. Without trauma mechanism: Triage to burn facility

4. Pregnancy > 20 weeks

5. EMS provider judgment in conjunction with medical control

TRAUMA REGISTRY:

All hospitals receiving trauma patients from the S-SV EMS Region shall supply data to the S-SV EMS Trauma Registry.

GLASGOW COMA SCALE (GCS): Adult & Pediatric Combined GCS
Note: Modifications for age appropriate response for infant/young child are typed in bold print.

GLASGOW COMA SCORE					
EYE OPENING RESPONSE		**BEST VERBAL RESPONSE**		**BEST MOTOR RESPONSE**	
4 pts =	Open spontaneously	5 pts =	Oriented & converses Appropriate words and phrases **Cries appropriately, coos, babbles**	6 pts =	Obeys commands **Normal spontaneous movement**
3 pts =	To verbal stimuli **To speech, to shout**	4 pts =	Disoriented & converses **Irritable cry**	5 pts =	Localizes pain **Withdraws to touch**
2 pts =	To painful stimuli	3 pts =	Inappropriate words **Inappropriate crying/screaming**	4 pts =	Flexion withdrawal **Withdraws to pain**
1 pt =	No response	2 pts =	Incomprehensible sounds/words **Grunts**	3 pts =	Flexion abnormal (decorticate)
		1 pt =	No response	2 pts =	Extension (decerebrate)
				1 pt =	No response
Risk of injury is high with GCS < 14 COMA is defined by GCS ≤ 8 Any patient with a GCS ≤ 8, consider intubation and hyperventilate at 20 to 24 breaths per minute to reduce cerebral swelling.					