County of Santa Cruz

HEALTH SERVICES AGENCY

1080 EMELINE AVENUE, SANTA CRUZ, CA 95060
(831) 454-4120 FAX: (831) 454-4272 TDD: (831) 454-4123

EMERGENCY MEDICAL
SERVICES PROGRAM

Policy No. 7000
Reviewed 01/07

Emergency Medical Services Program

Approved

_____
Medical Director

Subject: TRAUMA SYSTEM ORGANIZATION AND MANAGEMENT

I. Purpose

To identify the role and responsibilities of Santa Cruz Emergency Medical Services Agency (EMS) as they relate to the trauma care system.

II. Definition

A. "Local EMS agency" means the agency, department, or office having primary responsibility for administration of emergency medical services in a county and which is designated pursuant to the California Health and Safety Code.

B. "Trauma care system" or "trauma system" or "inclusive trauma care system" means a system that is designed to meet the needs of all injured patients. The system shall be defined by the local EMS agency in its trauma care system plan in accordance with California Trauma Care System Regulations.

III. Policy

A. As the lead agency for the Santa Cruz County emergency medical services system, Santa Cruz EMS is responsible for planning, implementing, and managing the trauma care system. These responsibilities include:

- Assessing needs and resource requirements;
- Developing the system design, including the number of trauma center(s) and determining patient flow patterns;
- Assigning roles to system participants, including designation of the trauma center(s);
- Working with the designated trauma centers and other system participants, and with neighboring EMS systems on outreach and mutual aid services;
- Development of a trauma data system, including a trauma registry at the trauma center, trauma data collection from non-trauma centers, prehospital data collection;
- Monitoring of the system to determine compliance with appropriate state laws and regulations, local EMS agency policies and procedures, and contracts, and taking corrective action as needed;

- Public information and education;
- Evaluating the impact of the system and revising the system design as needed.

B. To fulfill these responsibilities, Santa Cruz EMS will assign staff to the trauma care system. Other Santa Cruz EMS staff, including the EMS Medical Director, also participate in system monitoring, evaluation and problem solving activities. Approximately ten percent (10%) of the agency's total staff time is devoted to the trauma care system.

C. On a day-to-day basis, Santa Cruz EMS will oversee the quality assurance processes which are required of the trauma system and will investigate problems.

TRAUMA DATA COLLECTION AND MANAGEMENT

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1798.162, 1798.163 California Code of Regulations Sections 100255, 100257.

I. Purpose

A. To establish requirements for data collection and management by trauma system participants.

B. Definitions

1. "Trauma Center" or "designated trauma center" means a licensed hospital, accredited by the Joint Commission on Accreditation of Healthcare Organizations, which has been designated as a Level I, II, III, or IV trauma center and/or Level I or II pediatric trauma center by the local EMS agency, in accordance with California Trauma Care System Regulations.

2. “Trauma Receiving Facility” means a licensed hospital within the Trauma Service Area (Santa Cruz County), accredited by the Joint Commission on Accreditation of Healthcare Organizations, which receives trauma patients.

II. Policy

A. Prehospital records -- In addition to normal patient information, pre-hospital providers shall, for all patients who meet the trauma triage criteria (Policy # 7050 and PAM protocol), record PAM criteria met.

B. Trauma Center -- The Trauma Center shall complete a trauma registry form for all patients who are determined in the field to have met the trauma triage criteria (Policy # 7050 and PAM protocol) or who are brought to the Trauma Center and are later determined to meet triage criteria, and who are admitted to the Trauma Center, or transferred to another Trauma Center.

C. Trauma Receiving Facility -- The Trauma Receiving Facility shall complete a trauma registry form for all patients who are determined in the field to have met the trauma triage criteria (Policy #7050 *Trauma Patient Transport and Hospital Destination* and Policy #7070 *Trauma Triage*) or who are brought to the Trauma Receiving Facility and are later determined to meet triage criteria, and who are admitted to the Trauma Receiving, or transferred to another hospital or Trauma Center.

D. The trauma registry process shall include at least the following:

1. Time of arrival and patient treatment in:

a) Emergency department or trauma receiving area

b) Operating room

2. Dates for:

a) Initial admission

b) Intensive care

c) Discharge

3. Discharge data, including:

a) Total hospital charges (aggregate dollars only)

b) Patient destination

c) Discharge diagnosis

III. Cooperation with other counties

A. Where patients from the Santa Cruz EMS system are transported to a trauma center or trauma receiving facility in another EMS system, Santa Cruz EMS will seek patient information which is equivalent to that provided by a Santa Cruz trauma receiving facility.

B. Where patients from another EMS system are transported to a Santa Cruz EMS trauma receiving facility, Santa Cruz EMS will attempt to provide patient information which is equivalent to that provided by that system's designated trauma centers or trauma receiving facilities.

C. Hospitals and ambulance providers within the Santa Cruz EMS system are encouraged to cooperate with other EMS agencies in data collection and evaluation efforts.

County of Santa Cruz

HEALTH SERVICES AGENCY

1080 EMELINE AVENUE, SANTA CRUZ, CA 95060
(831) 454-4120 FAX: (831) 454-4272 TDD: (831) 454-4123

EMERGENCY MEDICAL
SERVICES PROGRAM

Policy No. 7020
Reviewed 01/07

Emergency Medical Services Program

Approved

_____
Medical Director

Subject: TRAUMA SERVICE AREA

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1798.162, 1798.163 California Code of Regulations Section 100255

I. Purpose

To establish service areas for trauma patients in Santa Cruz County.

II. Definition

A. "Service area" means that geographic area defined by the local EMS agency in its trauma care system plan as the area served by a designated trauma center.
B. "Trauma Center" or "designated trauma center" means a licensed hospital, accredited by the Joint Commission on Accreditation of Healthcare Organizations, which has been designated as a Level I, II, III, or IV trauma center and/or Level I or II pediatric trauma center by the local EMS agency, in accordance with California Trauma Care System Regulations.

III. Policy

A. The entire County of Santa Cruz will be considered the service area.
B. No trauma centers will be designated in the County of Santa Cruz at this time.
C. To provide optimal care for major trauma victims, patients meeting triage criteria, patients will be routed as specified in Policy # 7050 and MAP Triage Protocol.

TRAUMA PATIENT INTERFACILITY TRANSFERS

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1798.162, 1798.163 California Code of Regulations Section 100255, 100266

I. Purpose

A. To establish standards for trauma patient flow to trauma centers from receiving hospitals.

II. Definitions

A. “Pediatric” or “pediatric patient” means an individual, 14 years old or less.

B. "Trauma Center" or "designated trauma center" means a licensed hospital, accredited by the Joint Commission on Accreditation of Healthcare Organizations, which has been designated as a Level I, II, III, or IV trauma center and/or Level I or II pediatric trauma center by the local EMS agency, in accordance with California Trauma Care System Regulations.

III. Policy

A. Local Receiving Hospitals

1. Each shall have:

a) A written transfer agreement, (for both adults and children) with an appropriate designated Level I or II trauma center.

b) Guidelines for identification of those patients who should be transferred to the trauma center should consider the American College of Surgeons’ High-Risk Criteria for Consideration of Early Transfer.

c) A procedure for arranging for transfer of appropriate patients (adults and pediatrics), including, but not limited to:

(1) Notification of the receiving trauma center physician

(2) Arranging for transport, either ground or air

(3) Accompanying of the patient by hospital staff, if appropriate

County of Santa Cruz

HEALTH SERVICES AGENCY

1080 EMELINE AVENUE, SANTA CRUZ, CA 95060
(831) 454-4120 FAX: (831) 454-4272 TDD: (831) 454-4123

EMERGENCY MEDICAL SERVICES PROGRAM

Policy No. 7040
Reviewed 01/07

Emergency Medical Services Program

Approved

_____
Medical Director

Subject: TRAUMA QUALITY IMPROVEMENT AND SYSTEM EVALUATION

Authority for this policy are found in Division 2.5, California Health and Safety Code, Sections 1798.162, 1798.163 California Code of Regulations Section 100255, 100258, 100265 and California Evidence Code, Section 1157.7

I. Purpose

To establish a systemwide Quality Improvement (QI) program for evaluating the Santa Cruz EMS Trauma System in order to foster continuous improvement in performance and patient care. In addition, it will assist Santa Cruz EMS in defining standards; evaluating methodologies and utilizing the evaluation results for continued system improvement.

II. Definition

"Quality Improvement" (or Quality Assurance) means a method of evaluation of services provided, which includes defined standards, evaluation methodologies and utilization of evaluation results for continued system improvement. Such methods may include, but not limited to, a written plan describing the program objectives, organizations, scope and mechanisms for overseeing the effectiveness of the program.

III. Policy:

Trauma system participants within the Santa Cruz System will maintain a comprehensive quality program.

A. TRAUMA SYSTEM – QUALITY IMPROVEMENT PLAN:

1. The Santa Cruz EMS Trauma QI Plan consists of the following elements:
   a) An internal comprehensive quality improvement process.
   b) A periodic local audit of the trauma care provided by receiving hospitals in Santa Cruz County.
   c) An ongoing external medical audit of case reviews by the Trauma Audit Committees both in-county and out-of-county.
2. Trauma Systems Review – Santa Cruz EMS will be responsible an annual review of the trauma system, which will be conducted at least every two (2) years. The template for this review will be developed and approved by the Trauma Audit Committee.

3. Local Trauma Audit Committee (TAC) – TAC is a multidisciplinary medical advisory committee to the EMS Medical Director, comprised of representatives from surgical and non-surgical specialties. This is a closed committee.

TRAUMA PATIENT TRANSPORT AND HOSPITAL DESTINATION

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1797.222, 1798.162, 1798.163 California Code of Regulations Section 100255

I. Purpose

A. To establish guidelines for determining the transport mode and hospital destination for trauma patients in Santa Cruz County.

II. Definitions

A. "PAM triage criteria" refers to Santa Cruz County's adaptation of the CDC's published method for determining the need for a trauma center using physiologic criteria, anatomic criteria, and mechanism of injury http://www.cdc.gov/FieldTriage/. "PAM" as opposed to "MAP" uses very similar criteria but reverses the order in terms of assessing the severity of the injuries. Physiologic criteria should be assessed before Mechanistic criteria. (See Policy 7070)

B. "Pediatric patient" is < 15 years old.

III. Policy

A. The trauma plan in Santa Cruz County is driven by the tenet that all patients constituting both major and minor trauma should be triaged to the most appropriate receiving hospital.

B. All ALS and BLS field personnel will be trained in this policy (Policy 7050) and PAM triage protocol (Policy 7070)

IV. General Principles on Guiding Mode and Destination Decisions

A. When not otherwise specified herein, paramedics will coordinate the appropriate transport mode with the Incident Commander. Base Station consultation may also be utilized to affect the best transport mode decision.

B. Factors to consider include:

1. Patient status

a) In Extremis or unstable
b) Need for advanced field treatment
c) Need for immediate specialty care, such as pediatric, amputation, or burn

2. Distance
   a) Distance between the patient and the closest appropriate trauma center
   b) The need to rendezvous at a distant LZ
3. Delays
   a) Status of the roadway along the transport route (traffic, obstructions)
   b) ETA of the air ambulance
   c) Prolonged extrication
   d) Weather at the scene, LZ, and destination
4. Resources
   a) Extraordinary system wide demands for ambulances, such as an MCI
   b) Need for more field treatment personnel on the scene
   c) Hospital disaster, overload or diversion status

C. Depending on traffic conditions, NMC is closer when south of HWY 1 and Freedom Blvd. VMC is closer when north of that intersection.

D. When air transport is utilized, air crews will make the destination decision.

V. Patients Meeting Physiologic and/or Anatomic Criteria (Policy 7070)

A. Patients who are found to meet physiologic and/or anatomic criteria may be directly flown, or driven out of County to a trauma center without base station approval or notification. Mode and destination decisions are dependent on the catchment area.

1. Dominican Catchment Area
   a) Adult:
      (1) Air transport should be considered according section IV B above:

(2) Otherwise, ground transport to the time-closest trauma center will be necessary.

b) Pediatric:

(1) Air transport should be considered according section IV B above

(2) Otherwise, ground transport to the time-closest pediatric trauma center will be necessary

2. Watsonville Catchment Area

a) Adult:

(1) Air or ground transport should be considered according section IV B above

(a) In most cases ground transport to NMC from this area of the county will be faster than air transport.

b) Pediatric:

(1) Air transport to a pediatric trauma center

(2) Ground transport directly to NMC when air transport is unavailable.

(a) Contact NMC first. If declined then ground transport to closest pediatric trauma center, typically VMC.

3. North Monterey County (Auto-Aid)

a) Adult:

(1) Ground transport directly to NMC.

b) Pediatric

(1) Air transport to a pediatric trauma center

(a) If air unavailable contact NMC first. If declined then ground transport to closest pediatric trauma center, typically VMC.

VI. Patients Meeting Mechanism-Only Criterion

A. Patients meeting Mechanism only criteria, with no Physiologic or Anatomic criteria or other special considerations will typically not be transported to trauma center, but rather to the local hospital. (see references supporting this conclusion)

B. Except for North Monterey County, paramedics will make Base Station contact for destination directions on Mechanism only patients. For North Monterey County contact with NMC is required, if declined then follow Santa Cruz County protocols

C. If the Base Station directs transport to a trauma center, a patient meeting any mechanism will be transported to the closest appropriate trauma center by ground only. The fact that only ground transport is authorized for this patient must be clearly communicated to the Base Physician.

VII. Patients Meeting No PAM Criteria

A. Patients who meet no PAM criteria may be injured (lacerations, fractured extremity etc.) but are not considered trauma patients and should generally be transported, by ground, to a local Santa Cruz County hospital. Location of the call, patient preference and hospital status and ambulance availability should be used to guide the destination decision within the county.

B. Special considerations (see policy 7070) may guide transportation to a trauma center or regional specialty center when no other trauma criteria are met. One example of such a patient may include those with digital amputations where the amputated part is intact and available for possible re-implantation. Base contact is recommended when such situations arise.

VIII. Patients In-extremis

A. In extremis trauma patients are those patients in cardiac arrest, or with profound, life-threatening airway, breathing or circulatory compromise, despite pre-hospital basic and advanced life support interventions. These patients will always be transported to the closest Emergency Department.

IX. Additional Guidelines:

A. Paramedics are encouraged to seek Base consultation when complex situations not otherwise specified in this policy arise regarding trauma transport destination or mode of transport.

B. If a declared MCI is occurring elsewhere in the county, crews will not drive trauma patients out of county. When participating in a declared MCI, crews may drive patients no matter their PAM score, in accordance with the Transport Officer's directive.

Policy #7050: Trauma Patient Transport and Destination Matrix

Dominican Catchment Area (North of Hwy 1 and Freedom Blvd

Physiologic	Anatomic	Mechanism	Special	Transport Destination/Mode
				Local Hospital By Ground
				Base Contact
				Base Contact
				Trauma Center: Air or Ground
				Trauma Center: Air or Ground

Watsonville Catchment Area (South of Hwy 1 and Freedom Blvd)

Physiologic	Anatomic	Mechanism	Special	Transport Destination/Mode
				Local Hospital By Ground
				Base Contact
				Base Contact
				Trauma Center: Air or Ground
				Trauma Center: Air or Ground

North Monterey County (Auto Aid)

Physiologic	Anatomic	Mechanism	Special	Transport Destination/Mode
				Local Hospital By Ground
				Trauma Center: Air or Ground
				Trauma Center: Air or Ground
				Trauma Center: Air or Ground
				Trauma Center: Air or Ground

MUTUAL AID AND COORDINATION WITH NEIGHBORING SYSTEM

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1798.162, 1798.163, 1798.170 California Code of Regulations Section 100255

I. Purpose

A. To ensure that critical trauma patients are treated at an appropriate facility, regardless of geopolitical boundaries and to facilitate coordination with neighboring systems.

II. Definition

A. "Trauma Center" or "designated trauma center" means a licensed hospital, accredited by the Joint Commission on Accreditation of Healthcare Organizations, which has been designated as a Level I, II, III, or IV trauma center and/or Level I or II pediatric trauma center by the local EMS agency, in accordance with California Trauma Care System Regulations.

III. Policy

A. Santa Cruz EMS will coordinate its trauma care system with those in neighboring EMS systems in order to ensure that patients are transported to the most accessible trauma facility equipped, staffed, and prepared to administer care appropriate to the needs of the patient. Written mutual aid agreements will be executed as necessary to ensure coordination with neighboring systems.

1. Santa Cruz EMS will maintain contact with neighboring EMS agencies in order to monitor the status of trauma care systems in surrounding jurisdictions.

2. Santa Cruz County will contact the Santa Clara EMS agency to seek appropriate trauma service coordination.

B. Where patients from Santa Cruz County are transported to a trauma center in another EMS system, Santa Cruz EMS will seek trauma registry information.

C. Where patients from another EMS system are transported to a Santa Cruz EMS receiving hospital, Santa Cruz EMS will attempt to provide a basic data set of patient information.

D. Ambulance providers within Santa Cruz County are encouraged to cooperate with other EMS agencies in data collection and evaluation efforts of patients who are served by the Santa Cruz EMS system.

TRAUMA TRIAGE

Authority for this policy is noted in Division 2.5, California Health and Safety Code, Sections 1797.222, 1798.162, 1798.163 California Code of Regulations Section 100255

References for this policy include:

- Recommendations of the American College of Surgeons and the Centers for Disease Control, January 13, 2012 issue of the *Morbidity and Mortality Weekly Report.*
- Validation of a Prehospital Trauma Triage Tool: A 10-Year Perspective. *J. Trauma* 2008; 65:1253-1257.
- Guidelines for the Field Triage of Injured Patients: http://www.cdc.gov/fieldtriage/

I. Purpose

A. To establish guidelines for evaluating trauma patients to determine the most appropriate receiving hospital.

II. Definitions

A. "PAM" refers to the (P)hysiologic, (A)natomic, and (M)echanism, findings on a trauma patient

III. Policy

A. All trauma patients will be triaged using the following trauma triage tool. After completing this evaluation, pre-hospital personnel will transport patients in accordance with Policy 7050, "Trauma Patient Transport and Hospital Destination."

PAM Triage Criteria

Vital Signs and Level of Consciousness: (P)hysiologic

☐ Glascow Coma Scale	≤13
☐ Systolic Blood Pressure	<90 mmHg
☐ Respiratory Rate	<10 or >29 breaths/min or need for ventilatory support (<20 in infant aged <1 year)

Anatomy of Injury: (A)natomic

- ☐ All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- ☐ Chest wall instability or deformity (e.g. flail chest)
- ☐ Two or more proximal long-bone fractures
- ☐ Crushed, de-gloved, mangled, or pulseless extremity
- ☐ Amputation proximal to wrist or ankle
- ☐ Pelvic fractures
- ☐ Open or depressed skull fracture
- ☐ Paralysis

Mechanism of Injury and Evidence of High-Energy Impact: (M)echanism

Falls

- ☐ Adults: >20 feet (one story is equal to 10 feet)
- ☐ Children: >10 feet or two or three times the height of the child

High-risk auto crash

- ☐ Intrusion, including roof: >12 inches occupant site; >18 inches any site
- ☐ Ejection (partial or complete) from automobile
- ☐ Death in same passenger compartment
- ☐ Vehicle telemetry data consistent with a high risk of injury

Auto vs. pedestrian/bicyclist

- ☐ thrown, run over, or with significant (>20 mph) impact

Motorcycle crash

- ☐ >20 mph

Special Patient or System Considerations

Older Adults

- ☐ Risk of injury/death increases after age 55 years
- ☐ SBP <110 may represent shock after age 65
- ☐ Low impact mechanisms (e.g., ground level falls) may result in severe injury

Children

- ☐ Should be triaged preferentially to pediatric capable trauma centers

Anticoagulants and bleeding disorders

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

Burns

- ☐ Without other trauma mechanism: triage to burn facility
- ☐ With trauma mechanism: triage to trauma center

Pregnancy >20 weeks

EMS provider judgment