Contra Costa Health Services
Emergency Medical Services Agency

Trauma System Plan

Updated March 2009
# Table of Contents

SECTION I - SUMMARY OF PLAN .............................................................................................................. 1

SECTION II - ORGANIZATIONAL STRUCTURE ............................................................................................ 1

SECTION III - NEEDS ASSESSMENT ........................................................................................................ 4

A. TRAUMA SYSTEM CATCHMENT AREA ......................................................................................... 4
B. MAJOR TRAUMA PATIENTS ............................................................................................................. 4

SECTION IV - TRAUMA SYSTEM DESIGN ............................................................................................ 6

A. INCLUSIVE TRAUMA SYSTEM DESIGN ............................................................................................ 6
   1. John Muir Medical Center, Walnut Creek – Level II Trauma Center ........................................ 6
   2. Children’s Hospital and Research Center Oakland, Level I Trauma Center (Pediatric) .......... 6
   3. Non-Trauma-Center Hospitals ...................................................................................................... 6
B. COORDINATION WITH NEIGHBORING AGENCIES ...................................................................... 7
C. RATIONALE FOR NUMBER AND LOCATION OF TRAUMA CENTERS ......................................... 7
   1. Rationale for Number and Level of Trauma Centers .................................................................. 7
   2. Transport Times ............................................................................................................................ 8
   3. Service Areas ............................................................................................................................... 8
   4. Prehospital Services ....................................................................................................................... 8

SECTION V - TRAUMA CENTER STANDARDS ..................................................................................... 9

A. LOCAL ORGANIZATIONAL REQUIREMENTS .................................................................................. 9
   1. Trauma Service ............................................................................................................................ 9
   2. Surgical Services ......................................................................................................................... 9
   3. Emergency Services .................................................................................................................... 10
B. MEDICAL STAFF AVAILABILITY ..................................................................................................... 10
   1. Emergency medicine .................................................................................................................. 10
   2. Surgery ....................................................................................................................................... 10
   3. Anesthesia .................................................................................................................................. 10
   4. Non-surgical specialties ............................................................................................................... 10
C. TRAUMA SERVICE ............................................................................................................................ 11
   1. Personnel ..................................................................................................................................... 11
   2. Facility ......................................................................................................................................... 12
   3. Support ....................................................................................................................................... 12
D. SPECIAL FACILITIES/RESOURCES/CAPABILITIES ....................................................................... 12
   1. Emergency Department .............................................................................................................. 12
   2. Intensive Care Unit (ICU) ........................................................................................................... 13
   3. Post-anesthetic Recovery Room (PAR) ...................................................................................... 14
   4. Operating Suite .......................................................................................................................... 14
   5. Hemodialysis Capability ............................................................................................................. 14
   6. Burn Unit ..................................................................................................................................... 14
   7. Acute Spinal Cord Injury ............................................................................................................ 15
   8. Radiological Service ................................................................................................................... 15
   9. Rehabilitation Program ............................................................................................................... 15
  10. Pharmacy .................................................................................................................................... 15
  11. Clinical Laboratory Services ...................................................................................................... 15
  12. Human Support Service ............................................................................................................. 15
E. QUALITY IMPROVEMENT ................................................................................................................ 15
F. TRAUMA EDUCATION ........................................................................................................................ 16

SECTION VI - INTERCOUNTRY TRAUMA CENTER AGREEMENTS ........................................................ 16

A. TRAUMA CENTER BYPASS ............................................................................................................ 16
B. PEDIATRIC TRAUMA CENTER ........................................................................................................ 16

SECTION VII - GOALS AND OBJECTIVES ............................................................................................ 17
<table>
<thead>
<tr>
<th>SECTION VIII - IMPLEMENTATION SCHEDULE</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTION IX - FISCAL IMPACT</td>
<td>20</td>
</tr>
<tr>
<td>SECTION X - POLICY AND PLAN DEVELOPMENT</td>
<td>21</td>
</tr>
<tr>
<td>Organization and Management</td>
<td>22</td>
</tr>
<tr>
<td>Multidisciplinary Approach</td>
<td>23</td>
</tr>
<tr>
<td>Trauma Care Coordination Within the Trauma System</td>
<td>24</td>
</tr>
<tr>
<td>Trauma Care Coordination with Neighboring Jurisdictions</td>
<td>25</td>
</tr>
<tr>
<td>Trauma Data Collection and Management</td>
<td>26</td>
</tr>
<tr>
<td>Trauma Fees</td>
<td>27</td>
</tr>
<tr>
<td>Trauma Center Service Area</td>
<td>28</td>
</tr>
<tr>
<td>Trauma Center Designation/Re-designation Processes</td>
<td>29</td>
</tr>
<tr>
<td>Coordination with Health Care Organizations Within the Trauma System</td>
<td>33</td>
</tr>
<tr>
<td>Transportation</td>
<td>34</td>
</tr>
<tr>
<td>Pediatric Trauma Care</td>
<td>39</td>
</tr>
<tr>
<td>Trauma Center Equipment</td>
<td>40</td>
</tr>
<tr>
<td>Trauma Resuscitation Team Personnel Availability</td>
<td>41</td>
</tr>
<tr>
<td>Trauma Team Activation Criteria</td>
<td>42</td>
</tr>
<tr>
<td>Specialist Availability</td>
<td>43</td>
</tr>
<tr>
<td>Quality Improvement and System Evaluation</td>
<td>44</td>
</tr>
<tr>
<td>Trauma Center Review and Oversight</td>
<td>45</td>
</tr>
<tr>
<td>Prehospital Trauma Care</td>
<td>46</td>
</tr>
<tr>
<td>Trauma Triage Criteria an Destination Determination</td>
<td>48</td>
</tr>
<tr>
<td>EMS Personnel Training</td>
<td>56</td>
</tr>
<tr>
<td>EMS Dispatching</td>
<td>57</td>
</tr>
<tr>
<td>Communications System</td>
<td>58</td>
</tr>
<tr>
<td>Public Information and Education</td>
<td>59</td>
</tr>
<tr>
<td>Marketing and Advertising</td>
<td>60</td>
</tr>
<tr>
<td>Injury Prevention Programs</td>
<td>61</td>
</tr>
<tr>
<td>SECTION XI - WRITTEN LOCAL APPROVAL</td>
<td>62</td>
</tr>
<tr>
<td>SECTION XII - DATA COLLECTION</td>
<td>63</td>
</tr>
</tbody>
</table>
SECTION I - SUMMARY OF PLAN

Contra Costa County’s initial Trauma System Plan was developed in 1985, approved by the Board of Supervisors on November 19, 1985, and approved by the State Emergency Medical Services Authority (EMSA) on December 20, 1985 based upon the draft trauma regulations available at that time. The format and information contained in the plan were updated in October 1987 and again in December 2001 to comply with State trauma regulations. These plans were re-approved by EMSA on November 28, 1988, and on March 7, 2003, respectively. This plan includes updated trauma policies and procedures and address comments and questions included in EMSA correspondence dated March 7, 2003 and March 6, 2007, but does not represent any substantive change in prior plans.

Key elements of the Trauma System Plan include the following:

▸ Designation of a single Level II trauma center to serve all of Contra Costa County.
▸ Trauma center designation made on the basis of an open competitive process including use of an outside team of experts to evaluate trauma center applications.
▸ Maintenance of the American College of Surgeons Committee on Trauma Level II Trauma Center Verification.
▸ Recognition of the Level I pediatric trauma center designated by Alameda County as the appropriate facility to serve the needs of pediatric trauma patients.
▸ Full integration of the trauma system into the existing EMS system.
▸ Field triage of all major trauma patients to a designated trauma center when possible.
▸ Use of air ambulance (helicopter) services to reduce trauma transport times when appropriate.
▸ Maintenance of a trauma registry to track trauma system and trauma center performance on a case-by-case basis.
▸ A bi-county trauma audit (quality assurance and improvement) process to assure outside expert review of the trauma center and the trauma system on an ongoing basis.

SECTION II - ORGANIZATIONAL STRUCTURE

The Contra Costa County trauma system is an integral part of the EMS system shown in Figure II-1. The Contra Costa Health Services Department is the Local EMS Agency (LEMSA) as designated by the Board of Supervisors. The LEMSA staff include the EMS Director, EMS Medical Director, the Assistant EMS Director, the Health Services Emergency Preparedness Manager, two nursing positions, three prehospital care coordinators (nurse or paramedic), and two support staff.
John Muir Medical Center was designated in May 1986 following a request for proposal process as the County's sole Level II Trauma Center. John Muir's designation was renewed in May 1992 following a second request for proposal process providing an additional opportunity for hospitals to seek trauma center designation. The term of the existing contract is continuous, however may be renegotiated or terminated without cause after May 22, 2012 and with a two-year advance written notice.

While John Muir is the sole County-designated trauma center, the County recognizes Children’s Hospital and Research Center Oakland as an Alameda County designated Level I Trauma Center with specialized capability to care for pediatric trauma and has established mechanisms to assure that most pediatric trauma is transported directly to Children’s.

The EMS Agency is responsible for overall trauma system monitoring and quality improvement, and for administration of the trauma center designation contract. The trauma system quality improvement process established by Contra Costa County includes a joint Alameda-Contra Costa County Trauma Audit Committee (TAC), a county-level Pre-TAC Committee, and a trauma registry maintained both by the Trauma Center and by the County EMS
Agency. Trauma system oversight is conducted by the EMS Medical Director an EMS Prehospital Care Coordinator assigned approximately halftime as Trauma Coordinator.

The Trauma Audit Committee meets quarterly to review cases treated at the four Contra Costa and Alameda County trauma centers. A trauma surgeon from another trauma center or the Pre-Trauma Audit Committee has first reviewed cases referred to the Trauma Audit Committee. The EMS Medical Director may also submit cases for review. A system is now in place that allows trauma surgeons to review these cases electronically. Membership in the TAC and in the Contra Costa Pre-TAC is shown in Figures II-2 and II-3.

Figure II-2. Alameda-Contra Costa Trauma Audit Committee Membership

- EMS Medical Directors* (2) (Co-Chairs)
- Trauma Center Trauma Chiefs (4)
- Trauma Center Trauma Coordinators (4)
- Pediatric Trauma Surgeon
- Trauma Center Emergency Department Director or physician designee (4)
- Trauma Center Neurosurgeon (rotating)
- Trauma Center Anesthesiologist (rotating)
- Non-Trauma-Center Emergency Physician
- Forensic Pathologist (2)
- Trauma Surgeon (ACCMA recommendation)
- Neurosurgeon (SF Neurological Society recommendation)
- Base Hospital Coordinator
- EMS Directors* (2)
- EMS Program Coordinator*
- EMS Trauma Coordinators* (2)
*Non-voting members

Figure II-3. Contra Costa Pre-Trauma Audit Committee Membership

- EMS Medical Director or designee (Chair)
- Trauma Center Trauma Chief
- Trauma Center Trauma Coordinator
- Base Hospital Liaison Physician
- Base Hospital Coordinator
- Contra Costa County Hospitals’ ED Physician Directors or Designees
- Trauma Center Emergency Department Director or physician designee
- Solano County Base Hospital Physician
- EMS Trauma Coordinator
- Emergency ambulance and fire first responder clinical staff members
- Air Ambulance Clinical Coordinators
SECTION III - NEEDS ASSESSMENT

A. TRAUMA SYSTEM CATCHMENT AREA

The catchment area for the Contra Costa trauma system is the entire county and includes a population estimated to be 1,024,319 persons in 2006.¹

B. MAJOR TRAUMA PATIENTS

Figure III-1 shows the number of patients in Contra Costa meeting one or more of the County’s field trauma triage criteria broken down into those who were triaged in the field as major trauma patients and those triaged in the field as not having major trauma. The total number field triaged for transport to a trauma center has increased from 879 to 1,184 patients over the past five years. These include:

- Those patients triaged as meeting criteria established by the EMS Agency for automatic trauma center transport.
- Those patients directed by the base hospital for transport to a trauma center.

Most of these patients (1,026 patients in 2007) are transported to the John Muir Trauma Center. The remaining patients are transport to Children’s Hospital and Research Center Oakland as pediatric trauma cases or to other trauma centers when John Muir is on trauma bypass.

Table III-1. On-scene Triage of Patients Within Contra Costa Meeting Field Trauma Criteria

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Patients Triaged</strong></td>
<td>2,695</td>
<td>2,422</td>
<td>2,648</td>
<td>2,491</td>
<td>2,488</td>
</tr>
<tr>
<td>Transported to a trauma center</td>
<td>879</td>
<td>911</td>
<td>1,063</td>
<td>1,123</td>
<td>1,184</td>
</tr>
<tr>
<td>John Muir Health, Walnut Creek</td>
<td>765</td>
<td>763</td>
<td>917</td>
<td>1,006</td>
<td>1,026</td>
</tr>
<tr>
<td>Children's Hospital, Oakland</td>
<td>83</td>
<td>120</td>
<td>121</td>
<td>94</td>
<td>107</td>
</tr>
<tr>
<td>Other trauma center</td>
<td>31</td>
<td>28</td>
<td>25</td>
<td>23</td>
<td>51</td>
</tr>
<tr>
<td>Transported to a non-trauma center hospital</td>
<td>1,816</td>
<td>1,511</td>
<td>1,585</td>
<td>1,368</td>
<td>1,304</td>
</tr>
</tbody>
</table>

Typically, almost half of these patients triaged in the field as having major trauma (56.2 percent in 2007) turn out not to have major trauma following examination at the trauma center. Two hundred and eighty seven major trauma patients were transferred from other hospitals to John Muir during 2007. These retrospective major trauma patients are patients with an Injury Severity Score (ISS) of over 10 or patients with a lower ISS but who required a hospital stay of at least three days.

Table III-2 shows under-triage error rates for the past five years 2003 –2007.

Under-triage error rates representing patients mistakenly triaged as non-major-trauma have remained at or below five percent during the past five years and was 4.6 percent in 2007. Under triage error rate calculation has not changed over the course of years shown in this table, however improved data systems implemented in late 2003 (tracking patients via computerized ambulance patient care records) have facilitated better identification of under triage cases. For that reason, under triage error rates prior to 2004 may be underestimated.

Table III-2. Under triage by Year

¹ US Census Bureau.
### Table III-3: John Muir Trauma Registry Patients - 2007

<table>
<thead>
<tr>
<th>Category</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>All trauma registry patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,040</td>
</tr>
<tr>
<td>Treated and released from ED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>184</td>
</tr>
<tr>
<td>Died in ED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Transferred out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Admitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>819</td>
</tr>
<tr>
<td>Number admitted or died in ED (AB 430)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>825</td>
</tr>
</tbody>
</table>

2 Undertriage Rate = number of under triages divided by the number of patients triaged to trauma centers.
3 Undertriage Percent = number of under triages divided by the number of patients triaged to receiving facilities.

Table III-3 shows the number of trauma patients treated and entered into the trauma registry at the John Muir Trauma Center for fiscal year 2006-07. The number, either admitted or who died in the emergency department, was 1,351.
A. INCLUSIVE TRAUMA SYSTEM DESIGN

The Contra Costa County trauma system is an inclusive system involving all hospitals with basic emergency services and all EMS system providers. Roles of the various provider agencies are described below.

1. John Muir Medical Center, Walnut Creek – Level II Trauma Center

John Muir is the designated Level II trauma center for Contra Costa County and is the sole County designated trauma center. By protocol, all major trauma patients are transported to John Muir except (a) pediatric trauma patients; i.e., those 14 years and under that can be transported to Children’s Hospital and Research Center Oakland by ground ambulance or helicopter within reasonable time, (b) trauma patients with an unmanageable airway or cardiopulmonary arrest requiring transport to the nearest hospital basic emergency services, (c) trauma patients transported to an out-of-county trauma center when John Muir is on trauma bypass, and (d) trauma patients directed to an out-of-county trauma center by John Muir base hospital when significant time may be saved on transport. John Muir receives critical trauma patients as transfers when such patients have initially arrived at non-trauma-center facilities. As the trauma center, John Muir serves as the paramedic base hospital for all trauma cases and also serves as the County’s sole paramedic base hospital. John Muir is responsible for conducting its own internal quality improvement program and for participating in the EMS system quality improvement program. John Muir is also responsible for providing trauma-training opportunities for EMS field personnel and for providing injury prevention programs for the community.

2. Children’s Hospital and Research Center Oakland, Level I Trauma Center (Pediatric)

Located in the adjacent county of Alameda and designated as a Level I trauma center by Alameda County, Children’s Hospital and Research Center Oakland specializes in the care of pediatric patients and maintains a pediatric intensive care unit. By protocol and by agreement with Children’s Hospital, all pediatric major trauma patients in Contra Costa County are transported to Children’s Hospital except where transport time would be excessive (transports exceeding 30 minutes require base hospital direction) or where the patient has an unmanageable airway. Children’s Hospital and Research Center Oakland is responsible under its trauma center agreement with Alameda County, for conducting its own internal quality improvement program and for participating in the joint Alameda-Contra Costa County trauma system quality improvement program.

3. Non-Trauma-Center Hospitals

Contra Costa has eight non-trauma-center hospitals providing basic emergency services. These hospitals may receive major trauma patients by protocol when transport of a patient with an unmanageable airway or cardiopulmonary arrest to the nearest facility is required. Additionally, non-trauma-center hospitals may receive major trauma patients arriving by non-EMS transport or by EMS transport as a result of field triage. John Muir, as the County’s Level II trauma center, is required to accept these patients as transfers when appropriate care is not available at the receiving facility and the patient can be safely transferred.
B. COORDINATION WITH NEIGHBORING AGENCIES

Contra Costa’s trauma system cooperates with neighboring agencies in the following ways:

- Pediatric trauma patients are generally transported to Children’s Hospital and Research Center Oakland, Level I pediatric trauma center in Alameda County.
- Adult trauma patients may be transported by ambulance to Alameda County trauma centers (Highland, Eden) when John Muir is on trauma bypass.
- John Muir Trauma Center accepts major trauma patients from adjacent counties; specifically, trauma patients routinely air-transported from Solano County.
- Contra Costa utilizes air ambulances based out-of-county when units based in county are unavailable.
- Air ambulances transport to out-of-county trauma centers in Alameda, Sacramento, and Santa Clara when John Muir is on trauma bypass.

Since its inception, Contra Costa’s trauma system has included a joint Alameda-Contra Costa Trauma Audit Committee overseeing the two counties’ trauma quality improvement programs. This two-county TAC is jointly chaired by the EMS Medical Directors and includes trauma chiefs of each of the four trauma centers (John Muir, Highland, Eden, and Children’s), a neurosurgeon from each county, and other trauma center and non-trauma-center representatives. TAC meets quarterly. The trauma chiefs review each other’s cases in which there were trauma deaths or complications monthly, and refer those cases needing further exploration to the TAC for review.

C. RATIONALE FOR NUMBER AND LOCATION OF TRAUMA CENTERS

1. Rationale for Number and Level of Trauma Centers

Contra Costa County’s Trauma System Plan was developed in 1985. At that time, the County’s estimated population was 705,000. The estimated annual number of major trauma patients based upon California Health Facilities Commission discharge data and County Coroner’s data for emergency room death was 449. The Trauma Care Review Committee charged with developing the County’s Trauma System Plan recommend that a single Level II trauma center be designated in an effort 1) to meet the American College of Surgeons recommendation that each trauma surgeon treat a minimum of 50 cases per year to maintain proficiency, and 2) to achieve financial viability for a trauma center program which would incur significant fixed costs related to meeting trauma center requirements, such as the requirement to maintain in-house trauma surgery capability.

In the year 2005, Contra Costa’s population had grown to 1,017,787 and the number of major trauma patients treated at the John Muir Trauma Center was 917. While based upon population Contra Costa would qualify to designate two Level II trauma centers, the County believes that the goals of trauma team proficiency and trauma center financial viability continue to be best met with a single trauma center.

Further trauma center needs will continue to be reevaluated based upon county population growth, increases in number of patients needing trauma center care, and existing trauma center resources.
2. Transport Times

Table IV-1. Average Code 3 Transport Time to John Muir Medical Center - 2006

<table>
<thead>
<tr>
<th>Community</th>
<th>Average Transport Time (minutes)</th>
<th>Number of Code 3 Transports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antioch</td>
<td>23.8</td>
<td>67</td>
</tr>
<tr>
<td>Bay Point</td>
<td>17.3</td>
<td>24</td>
</tr>
<tr>
<td>Bethel Island</td>
<td>NA</td>
<td>0</td>
</tr>
<tr>
<td>Brentwood</td>
<td>33.6</td>
<td>11</td>
</tr>
<tr>
<td>Byron</td>
<td>43.3</td>
<td>2</td>
</tr>
<tr>
<td>Clayton</td>
<td>15.8</td>
<td>18</td>
</tr>
<tr>
<td>Concord</td>
<td>12.5</td>
<td>197</td>
</tr>
<tr>
<td>Crockett</td>
<td>20.9</td>
<td>7</td>
</tr>
<tr>
<td>Discovery Bay</td>
<td>NA</td>
<td>0</td>
</tr>
<tr>
<td>El Cerrito</td>
<td>30.8</td>
<td>8</td>
</tr>
<tr>
<td>El Sobrante</td>
<td>26.4</td>
<td>10</td>
</tr>
<tr>
<td>Hercules</td>
<td>23.5</td>
<td>9</td>
</tr>
<tr>
<td>Lafayette</td>
<td>11.0</td>
<td>55</td>
</tr>
<tr>
<td>Martinez</td>
<td>16.4</td>
<td>36</td>
</tr>
<tr>
<td>Moraga</td>
<td>13.7</td>
<td>3</td>
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<tr>
<td>Oakley</td>
<td>34.6</td>
<td>6</td>
</tr>
<tr>
<td>Orinda</td>
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</tr>
<tr>
<td>Pacheco</td>
<td>10.0</td>
<td>8</td>
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<tr>
<td>Pinole</td>
<td>23.0</td>
<td>11</td>
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<tr>
<td>Pittsburg</td>
<td>19.5</td>
<td>60</td>
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<tr>
<td>Pleasant Hill</td>
<td>12.0</td>
<td>54</td>
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<tr>
<td>Richmond</td>
<td>29.3</td>
<td>88</td>
</tr>
<tr>
<td>Rodeo</td>
<td>24.8</td>
<td>4</td>
</tr>
<tr>
<td>San Pablo</td>
<td>27.2</td>
<td>24</td>
</tr>
<tr>
<td>Walnut Creek</td>
<td>8.6</td>
<td>273</td>
</tr>
<tr>
<td>Total</td>
<td>15.8</td>
<td>979</td>
</tr>
</tbody>
</table>

3. Service Areas

The Contra Costa County trauma system includes a single service area, which is the entire area of the county. In January 1986, following approval of the County’s Trauma System Plan, a request for proposal was submitted to all hospitals licensed for Basic Emergency Services. Only one hospital, John Muir Medical Center located in Walnut Creek, chose to submit a trauma center proposal. Six years later in 1992, the County Board of Supervisors reopened trauma center designation to all hospitals. John Muir Medical Center remained the only hospital interested in trauma center designation.

4. Prehospital Services

Prehospital services are provided by fire service first responders, by contract ambulance services in exclusive operating areas (EOAs), and by designated helicopter air ambulance services.

Contra Costa has not used air transport to geographically expand the primary service area of the Contra Costa trauma system. However, the John Muir Trauma Center does cooperate with other counties and other trauma systems to accept out-of-county trauma patients when appropriate; i.e., when John Muir is the nearest available trauma center with a heliport for any patient for whom helicopter transport to a trauma center has been deemed appropriate.
Contra Costa’s *Trauma System Plan* as approved by the Board of Supervisors in 1985 requires that the County-designated trauma center have a “helicopter landing site with immediate access to trauma resuscitation room and operating suite.” This requirement remains in effect.

All prehospital personnel were trained in the County’s trauma treatment and triage protocols prior to the implementation of the trauma system in 1985. Since that time, these protocols are included as a part of the accreditation required of all new paramedics. Additionally, all paramedics are required to be certified in Prehospital Trauma Life Support or Basic Life Support certified.

All ambulances are required by County ordinance to be equipped with two-way radios operating on the County MEDARS system, which provides for ambulance-to-hospital communication. In addition, all contracted ambulances services used for 9-1-1 response are required to equip paramedic ambulance units with cellular telephones.

County trauma protocols require early notification of trauma centers of the impending arrival of a trauma patient.

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**SECTION V - TRAUMA CENTER STANDARDS**

Initial trauma system planning was based on the California State Trauma Regulations (draft, October, 1985), which provided for three levels of trauma centers. It was determined that a single Level II Trauma Center was possible and appropriate in Contra Costa County. This model has served the County well and continues to meet the needs of Contra Costa County residents.

A Contra Costa designated Trauma Center shall meet all trauma center requirements identified in §100259, California Code of Regulations, Title 22, Division 9. Local trauma center standards, established during initial trauma system planning, are required and are listed below and marked with an *. Those standards that are essential are marked with an "E", while those that are desirable but not essential are marked with a "D".

**A. LOCAL ORGANIZATIONAL REQUIREMENTS**

1. **Trauma Service**

   A trauma service or multidisciplinary trauma committee shall be included in the hospital organization. This service will provide for the implementation of the requirements specified in this section and provide for coordination with the Health Services Emergency Medical Services (EMS) Agency. The trauma service shall have the following functions:

   a. To provide and coordinate the care of patients with severe trauma through all phases of their care.
   b. To ensure the quality of care for patients with severe or multiple trauma.

2. **Surgical Services**

   The hospital organization shall include at least the following department(s), services(s), or section(s) staffed by qualified surgical specialists:

   E a. General.
   E b. Cardiothoracic.
   E c. Neurologic.
   E d. Orthopedic.
   E e. Ophthalmic.
   E f. Oral, otorhinolaryngologic, maxillofacial and/or plastic.
   E g. Urologic.
3. Emergency Services

The emergency department, division, service, or section shall be staffed so that trauma patients receive immediate and appropriate initial care.

B. MEDICAL STAFF AVAILABILITY

All professional staff listed in Sections 1, 2, and 3 below, as Essential “E” shall meet all qualifications including Board Certification by the appropriate board recognized by the American Board of Medical Specialties as described in Resources for Optimal Care of the Injured Patient 2006, Committee on Trauma, American College of Surgeons. Each shall be credentialed by the facility for the appropriate specialty.

1. Emergency medicine

In-house and immediately available at all times.

2. Surgery

Qualified surgical specialist(s) available as follows:

- a. General Surgery: Immediately available at all times (immediately available is defined to mean that the surgeon is unencumbered by conflicting duties or responsibilities; responding without delay when notified; and being within the specified area of the trauma center when the patient is delivered). The on-call general surgeon while on first-call to the trauma center is to be dedicated exclusively to that facility.

- b. The following surgical specialties shall be on call and promptly available from inside and outside hospital:

  1) Cardiothoracic.
  2) Neurologic: The on-call neurosurgeon while on first-call to the trauma center is to be dedicated exclusively to that facility.
  3) Orthopedic.
  4) Ophthalmic.
  5) Oral, otorhinolaryngologic, maxillofacial and/or plastic, depending on local circumstances.
  6) Urologic.
  7) General Surgery (second physician on call).
  8) Hand.
  9) Obstetric/Gynecologic.
  10) Vascular.
  11) Re-implantation/microsurgery capability. This surgical service may be provided through a written transfer agreement.

3. Anesthesia

Immediately available at all times. May be on-call provided that the anesthesiologist is in the operating room when the patient arrives. The on-call anesthesiologist, while on first-call to the trauma center, is to be dedicated exclusively to that facility.

4. Non-surgical specialties

Available on-call by page or telephone from inside or outside hospital and promptly available as necessary for the welfare of the patient as determined by physician in charge.

- a. Cardiology.
- b. Gastroenterology.
- c. Hematology.
- d. Infectious Diseases.
- e. Internal Medicine/Family Practice.
- f. Nephrology.
- g. Neurology.
E  h. Pathology.
E  i. Pediatrics.
D*  j. Psychiatry.
E*  k. Pulmonary Medicine.
E  l. Radiology.
D*  m. Rehabilitation and Physical Medicine.

C. TRAUMA SERVICE

1. Personnel

E a. Medical

1) Medical Director: Board-certified surgeon whose responsibilities include, but are not limited to, factors that affect all aspects of trauma care such as:
   a) Recommending trauma team physician privileges.
   b) Working with nursing and administration to support trauma patient needs.
   c) Developing trauma treatment protocols.
   d) Determining appropriate equipment and supplies for trauma care.
   e) Ensuring the development of policies and procedures to manage domestic violence, elder and child abuse and neglect.
   f) Having authority and accountability for the quality improvement peer review process.
   g) Correcting deficiencies in trauma care or excluding from trauma call those trauma team members who no longer meet standards.
   h) Coordinating pediatric trauma care with other hospital and professional services.
   i) Coordinating with local and State EMS agencies.
   j) Assisting in the coordination of the budgetary process for trauma program.
   k) Identifying representatives from neurosurgery, orthopedic surgery, emergency medicine, pediatrics and other appropriate disciplines to assist in identifying physicians from their disciplines who are qualified to be members of the trauma program.

E 2) Surgical Staff: Meets specific qualifications as described in Resources for Optimal Care of the Injured Patient 2006, Committee on Trauma, American College of Surgeons. The on-duty trauma surgeon is responsible for the supervision of trauma patient care with appropriate sub-specialty back up.
   a) Must maintain current certification in ACLS.
   b) Must maintain current certification in ATLS.

E b. Administrative

Trauma Care Coordinator. This person will be responsible for:

1) Internal administration of data and reporting requirements.
2) Coordination and liaison between the service, the hospital and the EMS System.
3) Program monitoring.
4) Coordination of internal and EMS System training of personnel.
5) Participation in trauma center administration meetings.
6) Other duties as assigned by the trauma service.

This individual must have experience and/or training in systems management and data collection/reporting.

c. Nursing

Trauma Nursing Coordinator: This individual is responsible for trauma center functions as related to nursing care of the trauma patient. The Trauma Nursing
Coordinator is a registered nurse with qualifications including evidence of educational preparation and clinical experience in the care of the adult and/or pediatric trauma patient, administrative ability, and responsibilities that include but are not limited to

1) Organizing services and systems necessary for the multidisciplinary approach to the care of the injured patient.
2) Coordinating day-to-day clinical process and performance improvement as it pertains to nursing and ancillary personnel.
3) Collaborating with the trauma program medical director in carrying out the clinical activities of the trauma program.

The Trauma Nursing Coordinator must:

- 1) Maintain current ACLS certification.
- 2) Have CEN or CCRN.
- 3) Maintain verification in Emergency Nurses Association Trauma Nursing Core Course.
- 4) Complete ten hours of BRN approved continuing education in trauma nursing each year, or teaching BRN approved continuing education in trauma. Trauma or trauma nursing research may be substituted.

The same individual may perform the Trauma Care Coordinator and the Trauma Nursing Coordinator roles if all qualifications are met.

2. Facility

- a. Must include a designated trauma resuscitation area, physically separated from other patient areas, of adequate size to accommodate multi-system injured patients and equipment.
- b. Must assure a helicopter landing site with immediate access to trauma resuscitation room and operating suite.

3. Support

Must include provision for immediate response from the blood bank, laboratory, pulmonary/respiratory therapy department, and operating room.

D. SPECIAL FACILITIES/RESOURCES/CAPABILITIES

1. Emergency Department

Must have special permit from the State of California to operate as a basic emergency medical service. It shall conform to requirements of California Code of Regulations, Title XXII, Chapter 1, et seq., and must provide emergency medical services to adult and pediatric patients.

- a. Designated Medical Director.
- 1) Board Certified by the American Board of Emergency Physicians.
- 2) Full-time practice (at least 30 clinical hours per week) in emergency medicine at trauma center hospital.

- b. Physician personnel.

- Meets specific qualifications as described in Resources for Optimal Care of the Injured Patient 2006, Committee on Trauma, American College of Surgeons

- c. Nursing personnel.

- 1) There shall be a Designated Clinical Liaison Nurse with the following qualifications:

- a) CEN.
- b) Must maintain current ACLS certification.
E* c) Ten hours of BRN approved continuing education in trauma nursing each year, or teaching BRN approved continuing education in trauma. Trauma or trauma nursing research may be substituted.

E* d) Must maintain verification in Emergency Nurses Association Trauma Nursing Core Course.

2) Staff Nurses shall have the following qualifications:

D* a) CEN.

E* b) Must maintain current ACLS certification.

E* c) Ten hours of BRN approved continuing education in trauma nursing each year, or teaching BRN approved continuing education in trauma. Trauma or trauma nursing research may be substituted.

D* d) Must maintain verification in Emergency Nurses Association Trauma Nursing Core Course.

d. Equipment and facilities

The emergency service shall have appropriate adult and pediatric equipment and supplies. The equipment shall include, but not be limited to the following and shall be available in the ER at all times:

E 1) Airway control and ventilation equipment, including laryngoscopes and endotracheal tubes of all sizes, bag-mask resuscitator, and a source of oxygen and mechanical ventilator available.

E 2) Sterile surgical sets for procedures standard for the Emergency Department including laparotomies and thoracotomies.

E 3) Focused abdominal sonography for trauma (FAST).

E 4) Drugs and supplies necessary for usual emergency medical care and the initial resuscitation of major trauma patients.

E 5) X-ray and CT capability available at all times.

E* 6) Two-way radio linked with emergency transport vehicles in accordance with the policies and procedures of the EMS System.

E* 8) Backboards and spinal immobilization boards.

E* 9) Blood warmer.

E 10) Autotransfuser.

2. Intensive Care Unit (ICU)

For trauma patients, the ICU may be a separate specialty unit. It shall conform to requirements of California Code of Regulations, Title XXII, Section70301, et seq.

E* a. There shall be a designated Medical Director.

E* b. There shall be a physician on duty in the ICU 24 hours per day or immediately available at all times.

E* c. Nursing personnel.

E* 1) Designated Clinical Liaison Nurse with trauma nursing experience.

E* a) Must maintain current ACLS certification.

D* b) CCRN.

E* c) Ten hours of BRN approved continuing education in trauma nursing per year.

E* d) Must attend orientation to all aspects of trauma nursing, including successful completion of a written examination and appropriate skills testing.

2) Staff Nurses

D* a) CCRN.

E* b) Must maintain current ACLS certification.

E* c) Ten hours of BRN approved continuing education in trauma nursing each year.

E* d) Must attend orientation to all aspects of trauma nursing, including successful completion of a written examination and appropriate skills testing.
d. Equipment shall include, but not be limited to, the following:

   1) Pulmonary Artery monitoring (Swan-Ganz).
   2) Cardio output monitor.
   3) Electronic pressure monitor.
   4) Mechanical ventilator-respirator.
   5) Patient weighing devices.
   6) Pulmonary function measuring devices.
   7) Thermal control device.
   8) ICP monitoring.
   9) Point of care testing capability.

e. Immediate access to clinical laboratory services.

3. Post-anesthetic Recovery Room (PAR)
(Surgical intensive care unit is acceptable). Shall meet the requirements of California Code of Regulations, Title XXII.

   a. RNs and other essential personnel shall be available 24 hours per day.
   b. There shall be appropriate monitoring and resuscitation equipment.
   c. Nursing staff must maintain current ACLS certification.
   d. Nursing staff must attend orientation to all aspects of trauma nursing, including successful completion of a written examination and appropriate skills testing.

4. Operating Suite
Shall meet the requirements of California Code of Regulations, Title XXII, and shall include, but not be limited to:

   a. An operating (trauma) room adequately staffed in-house and immediately available at all times.
   b. Nursing staff must attend orientation to all aspects of trauma nursing, including successful completion of a written examination and appropriate skills testing.
   c. Nursing staff must maintain current ACLS certification.
   d. Thermal control equipment.
   e. X-ray capability.
   f. C-Arm fluoroscopy with appropriate table.
   g. Cardiopulmonary bypass pump oxygenator.
   h. Operating microscope.
   i. Fracture table.
   j. Image intensifier.
   k. Endoscopes (bronchoscopes, gastroscopes, and esophagoscopes) available to the operating room.
   l. Craniotome.
   m. Mechanical Ventilator Respirator.
   n. Autotransfuser.
   o. Patient monitoring equipment.

5. Hemodialysis Capability
Shall conform to requirements of California Code of Regulations, Title XXII, Section 70301, et seq. by providing acute hemodialysis capability.

6. Burn Unit
   a. Physician-directed Burn Center/Unit staffed by nursing personnel trained in burn care and equipped to properly care for the extensively burned patient; or
   b. Transfer agreement with nearby burn centers or hospital with a burn unit.
7. Acute Spinal Cord Injury
Shall provide Acute Spinal Cord Injury management capability or a signed transfer agreement with a regional spinal cord injury rehabilitation center.

8. Radiological Service
Shall have available 24 hours per day:

- a. Certified radiological technician in-house at all times for general radiological procedures.
- b. Angiography of all types.
- c. Sonography.
- d. Computerized tomography, head and body with a technician who is immediately available at all times.

9. Rehabilitation Program
Shall meet the requirements of California Code of Regulations, Title XXII, Section 70301, et seq.

- a. To commence in the Trauma Center as soon as it is medically feasible.
- b. Signed transfer agreements with recognized Rehabilitation Centers in the area.
- c. Follow-up at community hospital and/or Rehabilitation Centers.

10. Pharmacy
Shall provide a pharmacy in-house with 24-hour per day on-call availability of a pharmacist.

11. Clinical Laboratory Services
Shall provide clinical laboratory services that includes, but is not limited to the following:

- a. Comprehensive blood bank or access to a community central blood bank and adequate hospital storage facilities. Have the capability of collecting blood and storing blood for emergency care.
- b. Be able to do blood gases and pH determinations.
- c. Drug and alcohol screening capability.
- d. Capability to determine serum and urine osmolality.
- e. Coagulation studies.
- f. Have laboratory and pulmonary technician available 24 hours per day.

12. Human Support Service
Shall provide the following services pursuant to California Code of Regulations, Title XXII:

- b. Occupational Therapy.
- c. Social Service.

E. QUALITY IMPROVEMENT
Must be consistent with §100265.

1. Medical and Nursing Care Evaluation, including:

- a. Detailed audit for trauma deaths, major complications, and transfers.
- b. Trauma conference, multi-disciplinary (morbidity and mortality conference), that includes all members of the trauma team held at least monthly.
- c. Medical records review, utilization review, tissue review of trauma cases.
- d. Clinical trauma nursing audit.

2. Participation in the trauma system data management system.
E* 3. Participation in Trauma Audit Committee (bi-county).
E* 4. Regional Trauma Committee, if required by EMS Office.
E* 5. Regional Trauma System Evaluation, if required by EMS Office.
E* 6. Special Audit of triage appropriateness, if required by EMS Office.
E* 7. Special audit of the cost of trauma by diagnosis, if required by the EMS Office.
E 8. Disaster Planning and Rehearsal.
E 9. Written system in place for patients, parents/legal guardians/primary caretaker(s) of minor children who are patients to provide input and feedback to hospital staff regarding the care provided to the child.

F. TRAUMA EDUCATION

1. Formal continuing education programs in trauma care for:
   a. Staff Physicians.
   b. Staff Nurses.
   c. Staff allied health personnel.
   d. Local EMS personnel including:
      1) First Responders.
      2) EMT-Is.
      3) Paramedics.
   e. Community Physicians and other health care personnel.
E* 2. Public Education programs including:
   a. Injury prevention in the home and industry, and on the highways and athletic fields.
   b. Problems confronting public, medical profession, and hospitals regarding optimal care for the injured.

SECTION VI - INTERCOUNTY TRAUMA CENTER AGREEMENTS

A. TRAUMA CENTER BYPASS

Contra Costa permits John Muir Trauma Center to go on “trauma bypass” under specified conditions when the resources of the trauma center are temporarily unavailable to care for additional trauma patients. Each episode of trauma bypass, including the conditions justifying bypass, is reported to the EMS agency for review. An agreement is in place with Alameda County for transport of Contra Costa trauma patients to Alameda County trauma centers when John Muir is on trauma bypass.

B. PEDIATRIC TRAUMA CENTER

Pediatric trauma patients meeting trauma center transport criteria are transported to the Children’s Hospital and Research Center Oakland’s Level I pediatric trauma center in Alameda County. An agreement is in place with Children’s Hospital to receive injured children from Contra Costa County.
SECTION VII - GOALS AND OBJECTIVES

Overview:
A number of goals and objectives have been identified to assure 1) rapid identification of severely injured patients in the field with 2) prompt transport to a trauma center where 3) well qualified physician and nursing staff are equipped and prepared to provide immediate intervention and ongoing care appropriate to the needs of the patient. These goals and objectives include:

A. Trauma System Planning
   Goal: Trauma plan incorporates applicable standards and guidelines from American College of Surgeons Committee on Trauma Resources for Optimal Care of the Injured Patient 2006 and as may be revised from time to time.
   Objective: To compare document standards to current EMS trauma policies and procedures to identify areas for improvement.
   To implement areas identified for improvement using a process designed for input from the Medical Advisory Committee and the trauma center.

B. EMS Response
   Goal: Rapid, well prepared response to injured patients in the field.
   Objective: To monitor and evaluate fire first responder compliance with established response times monthly to assure a paramedic response to all 9-1-1 requests within each emergency response area.
   To monitor and evaluate emergency ambulance compliance with established response times monthly to assure a paramedic response to all 9-1-1 requests within 10 minutes to at least 90% of all 9-1-1 responses.
   To assure through annual contract compliance evaluations that fire first responder and ambulance personnel are well prepared to provide quality care for trauma victims by requiring ongoing training that meets or exceeds that established by the American College of Surgeons as outlined in the Prehospital Trauma Life Support (PHTLS) curriculum or International Trauma Life Support (ITLS), sponsored by the American College of Emergency Physicians and the National Association of EMS Physicians.

C. Triage
   Goal: Critically injured patients that are most in need of the specialized services available at a trauma center are quickly identified in the field. These patients will have injuries that result in an Injury Severity Score (ISS) of >15.
   Objective: To monitor and evaluate undertriage rates by field and base hospital personnel to assure an undertriage rate of less than 5% annually and over time. Undertriage is defined as patients who are transported by EMS to a non-trauma center receiving hospital based on triage by paramedic or base and who have an ISS >15.
   To monitor and evaluate overtriage rates by field and base hospital personnel to maintain an overtriage rate of no more than 55% annually and over time. Overtriage is defined as patients transported by EMS to a trauma center based on triage criteria or are triaged by base hospital and have an ISS <15. (Should exclude out-of-county transports, transfers, patient “walk-ins”, and patients transported to trauma center as a receiving facility rather than as part of the trauma system.) Considerations for evaluation include discharges from the emergency department and trauma team non-activations on EMS transports based on triage.
D. **On scene Treatment**
   Goal: Field patient treatment protocols specifically designed to provide optimal care for the injured patient are in place.
   
   Objective: To review field trauma treatment protocols annually to assure care provided is state of the art for injured patients.

E. **On scene Time**
   Goal: Critically injured trauma patients are rapidly transported to definitive care at a trauma center.
   
   Objective: To ensure 90% compliance with on-scene times of 15 minutes or less by ambulance or helicopter.

F. **Transport Mode**
   Goal: Critically injured patients are transported from the field to a trauma center rapidly and in a safe manner. Ground ambulance transport times set the maximum standard and helicopter transport is used only if there is a measurable timesaving or if treatment needed is only available by helicopter staff.
   
   Objective: To ensure that when helicopter transport is used there is an identified timesaving or other overriding reason for its use with at least 90% compliance.

G. **Trauma Center Designation**
   Goal: A Level II trauma center is designated within Contra Costa County and is committed to providing care to critically injured patients.
   
   Objective: To maintain a written agreement with a local Level II trauma center that requires compliance with State and local trauma system plan.

H. **Trauma Center Services**
   Goal: Trauma center services meet or exceed state trauma regulations and local trauma center requirements identified in the Trauma System Plan.
   
   Objective: To receive and review an annual report from the trauma center that includes 1) an organizational chart, 2) a self-assessment of state and local regulations and requirements, 3) documentation of completion of local training and credentialing requirements for medical and nursing staffs, 4) confirmation of Level II Verification by the American College of Surgeons Committee on Trauma, 5) a description of injury prevention activities, and 6) a description of any additional programs or activities that enhance care provided at the Level II Trauma Center.
   
   To assure that trauma center maintains American College of Surgeons Committee on Trauma’s Level II Verification.
   
   To monitor trauma center bypass of ambulances to assure that trauma bypass does not exceed 5% (438 hours) annually.

I. **Trauma Center and Trauma System Evaluation**
   Goal: The trauma center maintains a comprehensive trauma registry and collects EMS related data that includes at a minimum those patients described in “Patient Inclusion Criteria” for the National Trauma Data Bank.
   
   Objective: To assure data is available to evaluate care provided all injured patients at the trauma center.
   
   To assure data is available to evaluate triage, transport and field treatment of all critically injured patients.
Goal: Mechanisms are in place to assure that quality trauma care is provided all critically injured patients in Contra Costa County.

Objective: 
To document compliance with Trauma Policy 16 and the associated Trauma System Quality Improvement Program. Full compliance with this objective will include at least four Trauma Audit Committee meetings annually and six to eight prehospital trauma care review meetings annually.

To provide an annual review of the trauma system plan, the results of which are provided to the state EMS Authority.
SECTION VIII - IMPLEMENTATION SCHEDULE

Board direction to develop a trauma system plan                    February 12, 1985
Bi-County Trauma Planning Task Force established                 April 4, 1985
Contra Costa Trauma Care Review Committee established           May 5, 1985
Public hearings on Trauma Plan                                  October 30, 1985 – February 22, 1986
Trauma System Plan approved by Board of Supervisors              November 19, 1985
State EMSA approval of Contra Costa Trauma System Plan           December 20, 1985
Trauma system plan for Contra Costa County and trauma center    January 3, 1986
RFP issued                                                      
Trauma center site review                                       March 20, 1986
Trauma center designation approved by Board of Supervisors       May 14, 1986
Trauma training and orientation for prehospital care and medical staffs of non-trauma-center hospitals completed April – June 1986
Trauma system implementation completed                          June 30, 1986
First Trauma Audit Committee meeting                            October 22, 1986
Trauma Plan re-approved by EMSA following adoption of State trauma regulations November 28, 1988
Trauma center RFP issued                                        January 14, 1992
Trauma center designation approved by Board of Supervisors       May 22, 1992
Trauma Plan re-approved by EMSA following local implementation of new State trauma regulations March 7, 2003
Revised Trauma Plan endorsed by EMCC                            March, 2009

SECTION IX - FISCAL IMPACT

Specific data on the initial fiscal impact of the trauma system was not collected. At this time the Contra Costa County trauma system has been in continuous operation for almost 25 years. During this period, there have been no significant changes in the trauma system plan that would have a fiscal impact on the trauma center, other hospitals, prehospital providers, or the local EMS agency.
SECTION X - POLICY AND PLAN DEVELOPMENT

The county’s trauma policies are contained in full in the February 1988 Addendum to the Trauma System Plan for Contra Costa County, which was submitted to and approved by the Emergency Medical Services Authority in 1988. These policies have not changed in any substantive ways, however, following are the Contra Costa County Trauma Policies matched and coordinated to follow California Code of Regulations §100255 “Policy Development”

Trauma Policy 01. **Organization and Management**
Trauma Policy 02. **Multidisciplinary Approach**
Trauma Policy 03. **Trauma Care Coordination Within the Trauma System**
Trauma Policy 04. **Trauma Care Coordination with Neighboring Jurisdictions**
Trauma Policy 05. **Data Collection and Management**
Trauma Policy 06. **Fees – Application, Designation and Redesignation, Monitoring and Evaluation**
Trauma Policy 07. **Trauma Center Service Area**
Trauma Policy 08. **Trauma Center Designation/Re-designation Process**
Trauma Policy 09. **Coordination with Health Care Organizations Within the Trauma System**
Trauma Policy 10. **Transportation**
Trauma Policy 11. **Pediatric Trauma Care**
Trauma Policy 12. **Trauma Center Equipment**
Trauma Policy 13. **Trauma Personnel Availability**
Trauma Policy 14. **Trauma Team Activation Criteria**
Trauma Policy 15. **Specialist Availability**
Trauma Policy 16. **Quality Improvement and System Evaluation**
Trauma Policy 17. **Trauma Triage Criteria and Destination Determination**
Trauma Policy 18. **EMS Personnel Training**
Trauma Policy 19. **EMS Dispatching**
Trauma Policy 20. **Communications System**
Trauma Policy 21. **Public Information and Education**
Trauma Policy 22. **Marketing and Advertising**
Trauma Policy 23. **Injury Prevention**
ORGANIZATION AND MANAGEMENT

Purpose: To describe the organization and management objectives for the emergency medical services system that includes the trauma care system.

Policy: The trauma system shall be an integral part of the EMS system. As such, the trauma system shall be organized and managed by the EMS Agency under authority of the State of California, Division 2.5 of the Health and Safety Code, and the Contra Costa County Board of Supervisors.

System organization and management shall meet the following criteria and objectives:
1. Assure that a comprehensive system of emergency medical and trauma services is available and that all components within the system meet established standards.
2. Provide impartial and objective administration of the EMS and trauma systems.
3. Provide monitoring and evaluation of the system in an efficient and effective manner.
4. Develop and administer programs to assure cost effectiveness and quality assurance throughout the system.
5. Maintain an independent and expert medical review mechanism.
6. Develop and maintain an impartial selection appeals mechanism.
7. Maintain, evaluate, and provide periodic reports on the status of the EMS System including an annual report to the EMCC, the Board of Supervisors, California EMS Authority, and the people of Contra Costa County.
8. Periodically, but at least every two years, provide a performance evaluation of the trauma system, and make results of the trauma system evaluation available to system participants pursuant to §100258, Title 22, California Code of Regulations.
9. Ensure that trauma centers and other hospitals that treat trauma patients participate in the quality improvement process.
MULTIDISCIPLINARY APPROACH

Purpose: To establish the multidisciplinary nature of the Contra Costa County Trauma Care System.

Policy: Ambulance personnel, fire first responder, police, dispatchers, base hospital personnel, and receiving hospitals shall be considered in trauma system planning, training, monitoring and evaluation.

The Contra Costa County trauma center shall develop and maintain a multidisciplinary approach to patient care within its facility.
TRAUMA CARE COORDINATION WITHIN THE TRAUMA SYSTEM

Purpose: To assure that non-medical and non-trauma center emergency services are familiar with trauma system operations and are prepared to provide the support necessary for optimum trauma system function.

Policy: The EMS Agency will provide public safety agencies in Contra Costa with specifically prepared orientation information and periodic updates on the trauma system and the trauma center concept.

Emergency departments of EMS system receiving hospitals not designated as trauma centers shall be included in special provider education programs that explain the trauma system operation.
TRAUMA CARE COORDINATION WITH NEIGHBORING JURISDICTIONS

Purpose: To develop mechanisms that will enhance the trauma care systems in Contra Costa and surrounding counties.

Policy: The EMS Agency will maintain mutual aid and other trauma system support plans such as trauma center by-pass arrangements with adjacent counties in conjunction with the development and maintenance of their trauma and EMS systems.

The EMS Agency will provide assistance and encouragement to neighboring counties in their development of EMS and trauma care systems.
TRAUMA DATA COLLECTION AND MANAGEMENT

Purpose: To identify a mechanism for trauma system evaluation and audit.

Policy: The EMS Agency shall require the collection, analysis, and regular presentation of specified trauma care data by the trauma center and the base hospital(s). Standards established for data collection shall meet or exceed that established in California Code of Regulations, §1000257.

**Trauma Center**: The trauma center shall collect and report prehospital and hospital data on each patient admitted to the trauma center as specified by the EMS Agency.

**Base Hospital**: Base hospitals shall collect specific data and perform audit and evaluation functions on the triage, transport and treatment of major trauma patients. This information shall be reported to the EMS Agency monthly.
TRAUMA FEES

Purpose: To assure funding to provide trauma center application and designation processes, and to provide trauma center and trauma system monitoring and evaluation.

Policy: The EMS Agency will maintain a fee structure for applicants and the designated trauma center as necessary to cover the costs of the application and system design and the continuing costs of the monitoring and evaluation of the trauma center.

1. System design and application fee: The EMS Agency shall charge a one-time, non-refundable application fee of $10,000 per application for trauma center designation.

2. Monitoring and evaluation: The EMS Agency shall charge an annual fee for trauma center designation. The current annual designation fee is $75,000 plus commitments to support community services including annual $30,500 payments to County for injury prevention activities.
TRAUMA CENTER SERVICE AREA

Purpose: To define the service area for the Contra Costa County designated trauma center.

Policy: The service area for the Contra Costa County trauma center shall be the entirety of Contra Costa County.
TRAUMA CENTER DESIGNATION/RE-DESIGNATION PROCESSES

Purpose: To establish an equitable process for the identification of a ranked list of qualified trauma center applicants.

Policy: General Information

Only one hospital in the county shall be designated as the trauma center. The primary criteria for designation shall be:

1. Quality and scope of current services
2. Demonstrated commitment to the care of major trauma patients
3. Compliance with the criteria for trauma center designation including commitment to fulfill all obligations associated with and arising from designation as a Trauma Center. (See Trauma Policy 8.1)
4. Comprehensiveness of the proposal
5. Cost-effectiveness of the proposed services

Application for trauma center designation shall be based on a competitive request for proposal process. All hospitals in Contra Costa County shall receive a Request For Proposal (RFP).

Proposal Process

The details of submission of the proposal shall be specified in the RFP. The proposal shall be accompanied by a non-refundable application fee of $10,000 in the form of a certified check made payable to Contra Costa County.

A proposers’ conference shall be held at a place specified in the RFP within four weeks of the distribution of the RFP. Proposers will be requested to submit questions in writing at least five working days prior to the conference.

Applications shall be judged for completeness by the EMS Agency staff. Applications rejected on the basis of incompleteness shall be returned to the applicants with a notice of deficiency. These applications shall be resubmitted within 10 working days of return to complete the application.

Review Process

The EMS Agency shall select an independent review team to evaluate the proposals and sites. The review team shall be composed of individuals who are knowledgeable in trauma care, EMS system management, statistical methods, trauma system monitoring and evaluation, and prehospital emergency care.

A list of the proposed review team members (with accompanying backgrounds and qualifications) shall be submitted to all applicant hospitals that may challenge any member of the proposed team on the basis of conflict of interest or other relevant grounds. Applicants will be given five working days to respond to the proposed list of reviewers.

Once selected, the review team shall be asked to review each hospital proposal prior to
a site visit. The applicants shall have 30 days prior notice of the site visit. Each applicant will receive a list of the individuals in the facility to be interviewed and the material required by the site review team. At the conclusion of the site visit a debriefing will be held with the hospital staff and the site review team. Upon completion of the site review, the team shall submit written recommendations to the EMS Agency. The EMS Agency will review and forward the review team recommendations the Contra Costa Health Services Department. The recommendations shall include a ranking of the applicants according to a rating scale specified in the RFP. The applicant receiving the highest rank shall be recommended to the Health Services Department for designation unless the EMS Agency can demonstrate why such designation should not be made.

**Designation**

The designation shall be made by the Health Services Department within two weeks of the site review for a three-year period with a one-year probationary period. After the first year, the designated facility will be visited by a site review team similar in composition to the original site review team to assess the performance of the designated facility. The recommendations of this site review team and the comments of the EMS Agency shall be forwarded to the Health Services Department for their consideration. Upon designation the County, with the Board of Supervisor’s approval, shall enter into a contract with the designated hospital. This contract shall be for a one-year probationary period with renewal for a minimum of two additional years upon successful completion of the probationary year. The contract shall commence within 90 days following initial designation. The EMS Agency shall notify all applicants of the designation award. Protests, if any, shall be made in writing and submitted to the EMS Agency within ten working days of the designation announcement. Protests shall be limited to the following:

1. Failure of the EMS Agency to follow the procedures and requirements specified in the RFP.
2. Demonstrated conflict of interest on the part of the review team members.

Protests shall be submitted to a special appeals board appointed by the Health Services Director. The appeals board shall hold hearings on the protests and report to the Health Services Department within 45 days of the filing of the protest. In the event that the protest is upheld, the EMS Agency shall be required to request updated applications and initiate a new process.

After designation, termination by the county can only be made for cause. The EMS Agency shall be required to annually evaluate the designated facility and report their findings to Contra Costa Health Services. The report shall address the following:

1. Major deficiencies (if any) by the trauma center.
2. Recommended action on continuing the designation or placing the trauma center on probation. In the event the trauma center is placed on probation, an independent site review team shall be named to conduct an evaluation and report to the EMS Agency and the Health Services Department.

Trauma centers may voluntarily terminate the designation providing six months’ written notice. Designation may be rescinded sooner if an alternative trauma center is designated prior to the end of the six-month period.
STATEMENT OF COMMITMENT

1. To maintain all services and personnel necessary to comply with the standards set forth in the Trauma System Plan, and to enter into a written Designation Agreement.

2. To accept all trauma victims triaged and transported to the Trauma Center and all promptly initiated transfers of trauma patients who meet trauma triage criteria from non-trauma center hospitals within the county regardless of the patient's ability to pay for medical care or hospitalization. This requirement shall include unsponsored or medically indigent patients; patients who are insured under MediCal or Medicare; other third party insurers, or self-insurers.

3. To provide in-patient medical care continuously, and where indicated, as an out-patient for follow-up or rehabilitative services until the patient is discharged completely from medical care, excepting when other arrangements are appropriate and in the best interests of the patient, or as otherwise provided by the written Designation Agreement.

4. To assure that all trauma patients will be accepted and provided appropriate medical treatment by the appropriate staff physicians regardless of ability to pay physicians' fees.

5. To assure there shall be no transfer of a trauma patient to another hospital facility based in whole or in part on the financial or social status of a patient or their ability to pay for care and services except as provided in paragraphs 6 and 7 which follow below;

6. To assure that patients who are members of recognized Health Maintenance Organizations may be promptly transferred to a hospital of that organization when such transfer is deemed prudent and medically indicated by the trauma physician in charge of the trauma patient's medical care in consultation with a physician representing the Health Maintenance Organization.

7. To assure that patients who are covered by MediCal be transferred to a MediCal contract hospital, if the Trauma Center is not a MediCal contract hospital, when such transfer is deemed prudent and medically indicated by the physician in charge of the patient's medical care in consultation with a physician representing a MediCal contract hospital.

8. To provide to the County EMS Agency patient care and other data in a form prescribed by the EMS Agency, for system management, medical audit, operations research and evaluation purposes.

9. To permit announced and unannounced site surveys of its facilities by the County EMS Agency or its designated representatives, for the purposes of monitoring contract compliance, quality of care and adherence to performance standards during the designation period.

10. To document and provide, hospital charges per patient, the actual collections, reimbursements, sources of payment and aggregate totals, to the County EMS Agency on request. Physician billing or reimbursements are not required to be reported.

11. To address the reception, treatment and care of any trauma patient when the Trauma Center does not have the physical and human resources immediately available for that trauma patient. The diversion and/or transfer of patients by the Trauma Center must be reported to the EMS Agency on a regular monthly basis.

12. To acknowledge that where specific individuals have been identified to assume responsibility for a component of the Trauma Center performance, said individual has been permanently and formally appointed. Exceptions must be clearly noted in the proposal.
13. To pay to Contra Costa County an annual designation fee) for each year for which the hospital is designated by contract as a Trauma Center of the Emergency Medical Services System of Contra Costa County. This fee is subject to change as costs or other conditions warrant.

14. To assist in providing training of prehospital personnel to the level specified in the Trauma System Plan.

15. To participate in the County EMS Communication system to the level specified in the Trauma System Plan.

16. To assume the responsibilities of paramedic base hospital in providing medical direction to paramedic units countywide on patients meeting trauma triage criteria.
COORDINATION WITH HEALTH CARE ORGANIZATIONS WITHIN THE TRAUMA SYSTEM

Purpose: To assure that members of health care organizations triaged as major trauma victims receive medically indicated trauma center services. To assure that members of health care organizations are transferred to a health care organization facility when the attending physician has determined that the patient is medically stable for transport.

Policy: The trauma center shall provide inpatient medical care continuously and, where indicated and currently available at the trauma center hospital, outpatient care for follow-up or rehabilitative services until the patient is discharged completely from medical care. An exception to this requirement is that patients who are members of recognized Health Maintenance Organizations may be promptly transferred to a hospital of the organization when such transfer is deemed prudent and medically indicated by the trauma physician in charge of the major trauma patient’s medical care.
TRANSPORTATION

Purpose: To assure identified major trauma victims access to the specialized resources available at a trauma center.

Policy: Major trauma patients, identified through established triage criteria, shall be transported directly to the trauma center under the medical radio control of the Base Hospital. Ground vehicles will be the primary method of transportation, however, policies and procedures for accessing helicopter transport have been developed, (Trauma Policy 10.1) and air transport is encouraged in areas of the county distant from the trauma center if there will be a transport timesaving or if critical treatment needed is only available on the helicopter.

Patients, who are not identified as major trauma victims until they have presented at a non-trauma center receiving hospitals, shall be transferred to a trauma center following consultation with appropriate trauma center medical staff. Trauma Policy 10.2.

The Contra Costa County designated trauma center shall develop written transfer agreements with regional trauma centers, and, if specialty care not available, hemodialysis, acute spinal cord injury management and burn management.

Trauma center by-pass procedures are to be implemented when trauma center resources are unavailable to a degree that patients arriving at the trauma center may not have access to trauma center level care.
I. PURPOSE
To identify procedures for use by public safety agencies when requesting a medical helicopter or rescue aircraft for an EMS system response.
To specify criteria for patient transport by air ambulance (medical helicopter) and to outline coordination of field operations at incidents involving air ambulance response.
To assure the most appropriate, safest, and most cost effective method of transport based on the needs of the patient.

II. AUTHORITY
Division 2.5, California Health and Safety Code; Title 22. Division 9 and Chapter 8, California Code of Regulations.

III. REQUEST FOR MEDICAL HELICOPTER OR RESCUE AIRCRAFT
A. The Incident Commander (IC) or designee is responsible for initiating a medical helicopter or rescue aircraft response through his or her fire/medical dispatch center if these resources are thought to be necessary and are in the best interest of the patient. Requests may occur prior to or after IC arrival at scene.

B. Requests should include the current weather conditions, and if known:
   1. Number of patients potentially requiring helicopter transport,
   2. Current weather conditions, and
   3. Haz-Mat information if pertinent.

IV. EMS AIRCRAFT UTILIZATION CRITERIA
Helicopter transport involves increased costs and more potential risk in transport. The benefits of transport should outweigh risks. For these reasons, helicopter transport should only be used when both time and clinical criteria are met.

A. Time Criteria.
   Helicopter transport generally should be used only when it provides an advantage in terms of timely delivery of the patient from the scene to the emergency department.
   1. Helicopter field care and transport time (which includes on-scene time, flight time, and transport from helipad to the emergency department) is optimally 20-25 minutes in most cases.
   2. Time to ground transport a patient to a helicopter rendezvous site, or a time delay in helicopter arrival are additional factors to be considered when determining whether or not a helicopter is the most rapid method of transport overall.
   3. Trauma patients with potential need for advanced airway intervention (GCS 8 or less, trauma to neck or airway, rapidly decreasing mental status) may be appropriate for helicopter transport even when time criteria is not met.

B. Clinical Criteria
   Patients who meet the following criteria may benefit from helicopter transport.
   1. Trauma patients who meet high-risk criteria according to EMS trauma triage policy except for:
      a. Stable patients with isolated extremity trauma (who may meet high-risk criteria on that basis).
      b. Patients with mechanism but no significant physical exam findings.
   2. Trauma patients who do not meet high-risk criteria but by evaluation of mechanism and physical exam findings, appear to have potential significant injuries that merit rapid transport.
   3. Patients with specialized needs available only at a remote facility e.g., burn victims or critical pediatric patients.
   4. Critically ill or injured patients whose conditions may be aggravated or endangered by ground transport (e.g. limited access via ground ambulance or unsafe roadway) may be appropriate for helicopter transport.

V. HELICOPTER UTILIZATION AND CANCELLATION DECISION
A. The decision to use a helicopter rests with the Incident Commander (IC).
B. The IC is responsible for cancellation of the helicopter response when helicopter transport criteria are not met. The following information is important for the IC to consider in making the best possible decision regarding mode of transport:

1. **Patient need.** The paramedic with primary patient care responsibility will have the best information regarding the patient meeting clinical criteria.
2. **Estimated ground transport time versus air response and transport.** The ground transport crew will be the best resource for determining whether or not there will be a transport time savings based on the travel time considering current traffic/weather conditions particularly when timesaving by helicopter is minimal.
3. **Proximity of a helispot or need for a helicopter/ambulance rendezvous site.** A significant amount of time may be added to overall transport time if a helicopter is unable to land in proximity to the patient.
4. **ETA of the helicopter.** If the patient is packaged and ready for transport, ground transport may be the fastest mode of transport overall if a helicopter has not arrived on scene.

C. The ground ambulance responding to, or at the scene, should not be canceled until:

1. The helicopter has left the scene with the patient aboard, or
2. The senior medical personnel with primary patient care responsibility on-scene have determined that no patient transport is required.

VI. COMMUNICATIONS

A. Under normal circumstances, CALCORD is utilized for air-to-ground communication. The IC or designee, in conjunction with the fire/medical dispatch will designate an alternate frequency if necessary.

B. The IC or designee may cancel a helicopter response at any time prior to patient transport through the fire/medical dispatch center or by direct communication to responding helicopter.

VII. GROUND AMBULANCE RESPONSIBILITIES

A. Ground ambulance units shall make trauma base contact as soon as possible to provide early notification of patient arrival.

B. A ground unit paramedic, who accompanies a patient in a rescue aircraft must assure the presence of appropriate medical equipment and must obtain orientation to the aircraft and to medical air transport procedures prior to transport.

VIII. HELICOPTER RENDEZVOUS

A. If a helicopter rendezvous is deemed appropriate even considering added transport time, a helispot (rendezvous site) as close as possible to the scene should be established.

B. A first-responder paramedic may elect to maintain primary patient care responsibility by accompanying the patient in transport to the helispot in order to facilitate communication with the treating helicopter crew.

IX. MULTICASUALTY INCIDENT (MCI) RESPONSES

Detailed roles and responsibilities for EMS helicopter providers during multicasualty incidents are specified in the County MCI Plan. Helicopters:

A. Respond to an incident only when requested.

B. Prepare to stage at closest airport or location designed by the Incident Commander.

X. INCIDENT REVIEW AND QUALITY IMPROVEMENT

A. Helicopter providers shall participate in EMS Agency quality improvement activities.

B. Contra Costa EMS maintains oversight of helicopter utilization and works with helicopter provider agencies in assuring appropriate use of helicopter resources.
I. PURPOSE
To outline the criteria and process for transfer of patients needing trauma center care from non-trauma centers to appropriate trauma centers.

II. POLICY
Under field trauma triage protocols, most critical trauma patients will be triaged directly to a Trauma Center from the field. Trauma patients, who present at other facilities via EMS or other arrival mode, should be considered for transfer to trauma centers for definitive care when medically appropriate.

III. PATIENT SELECTION
A. Patients appropriate for trauma center transfer may include:
   1. Patients who, as a result of trauma, have need for:
      a. Timely surgical or diagnostic imaging intervention to prevent mortality or morbidity; or
      b. Evaluation by trauma surgeon or advanced diagnostic modality to address potential critical injuries; or
      c. Monitoring of a traumatic injury that may require intervention or complex care not readily available otherwise.
   2. Patients who have sustained injuries with mechanisms likely to need trauma center evaluation or intervention, including:
      a. Penetrating injury to head, neck, torso, groin, pelvis or buttocks; or
      b. Penetrating injury to extremity with fracture (excluding hands/feet) or with compromised circulation;
      c. Other traumatic mechanisms that have resulted in symptoms, signs, or diagnostic evidence of serious injury.

B. Patients in need of emergent intervention are of the highest priority, and should be transferred in a timely fashion by the fastest available and appropriate transport method. These patients include:
   1. Patients with need for immediate neurosurgical intervention;
   2. Patients with penetrating gunshot wounds to head or torso;
   3. Patients with penetrating wounds by any mechanism who present with or develop shock;
   4. Patients with blunt injury and shock;
   5. Patients with vascular injuries that cannot be stabilized and are at risk of hemorrhagic shock or loss of limb acutely (excluding fingers/toes).

IV. TRAUMA CENTERS
A. John Muir Medical Center – Walnut Creek (JMMC-WC) is the designated trauma center for adults (patients 15 years of age and older) in Contra Costa County.
B. Children's Hospital in Oakland is the closest designated trauma center for pediatric patients (patients 14 years of age and younger).
C. When JMMC-WC is on trauma bypass status, it is unable to accept patients with emergent need for transfer or field triages because critical hospital resources (surgeons, operating rooms) are not available. Location and helipad availability are items to consider in choice of other trauma. Other local adult trauma centers include:
   1. Oakland – Alameda County Medical Center (formerly Highland) (no helipad on site);
   2. Castro Valley – Sutter Eden Medical Center (helipad on site);
   3. Sacramento – UC Davis Medical Center (helipad on site);
   4. San Jose – Santa Clara Valley Medical Center (helipad on site);
   5. San Francisco General Hospital (no helipad on site).

Trauma Policy 10. Transportation
D. When not on trauma bypass status, JMCC-WC may also be impacted by bed availability issues and may not be able to accept non-emergent transfers.

E. Alternate pediatric trauma centers include UC Davis Medical Center and Santa Clara Valley Medical Center in San Jose.

V. PROCESS
A. Contact the trauma center to discuss patient status and request transfer. See attachment 1 for list of hospitals and phone numbers.
B. If transfer is accepted, arrange for transport, appropriate to patient condition or potential.

VI. TRANSPORT OPTIONS
Timeliness of availability and level of care needed should be considered in all transports.

<table>
<thead>
<tr>
<th></th>
<th>Emergency Ambulance</th>
<th>Critical Care Transport Paramedic (CCT-P)</th>
<th>Critical Care Nurse (CCT-RN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>Within 10 minutes in most cases</td>
<td>Variable (service not designed for emergency response)</td>
<td>Air Ambulance: Within 30-45 minutes in most cases</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ground Ambulance: Variable (service not designed for emergency response)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skill</th>
<th>911 Paramedic Ambulance Scope of Practice (Includes Basic scope)</th>
<th>Interfacility Transfer Paramedic Scope of Practice (CCT-P)</th>
<th>Critical Care Nurse Scope of Practice (CCT-RN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring</td>
<td>Continuous ECG monitoring</td>
<td>Same as 911 paramedic ambulance</td>
<td>Paramedic scope plus Arterial line monitoring</td>
</tr>
<tr>
<td></td>
<td>Chest tube monitoring</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Pulse oximetry</td>
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<td></td>
<td>End-tidal CO2 monitoring</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>IV line monitoring, (no arterial lines)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasive procedures</td>
<td>Needle thoracostomy</td>
<td>Same as 911 paramedic ambulance</td>
<td>Surgical cricothyrotyomy</td>
</tr>
<tr>
<td></td>
<td>Needle cricothyrotyomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medications</td>
<td>Morphine</td>
<td>Morphine</td>
<td>Wide range of medications, wider array of narcotic/sedative agents.</td>
</tr>
<tr>
<td></td>
<td>Midazolam for seizures</td>
<td>Midazolam for seizures or sedation while intubated</td>
<td>Paralytic agents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blood transfusions</td>
<td>Blood transfusions</td>
</tr>
</tbody>
</table>

C. Ambulance transport capability can also be potentially enhanced with utilization of hospital-based RN or physician staff to address scope issues if necessary in order to facilitate the fastest transports with highest levels of care.
PEDRIATRIC TRAUMA CARE

Purpose: To assure that pediatric trauma patients receive appropriate trauma care in the most expeditious manner possible.

Policy: Transport to Children’s Hospital and Research Center Oakland, the Alameda County designated pediatric trauma center, shall be considered utilizing field triage criteria when triaging pediatric trauma patients at the scene.

The Contra Costa County designated adult trauma center shall adopt written transfer agreements with adult and pediatric trauma centers in the region and is encouraged to transfer pediatric trauma to Children’s Hospital when stable for transfer or when trauma center lacks capability to stabilize.

Pediatric transports and transfers shall be reviewed as part of the trauma system quality assurance program.
TRAUMA CENTER EQUIPMENT

Purpose: To assure that routine and specialized equipment and supplies are available for the care of trauma patients.

Policy: The trauma center shall have available all equipment required necessary to comply with requirements of trauma center designation as established in the trauma center's contract with the county based on original draft trauma regularizations as well as any subsequent equipment standards identified in the California Code of Regulations, Title 22, Chapter 7 “Trauma Care Systems.”
TRAUMA RESUSCITATION TEAM PERSONNEL AVAILABILITY

Purpose: To assure immediate assessment and intervention appropriate to the needs of critically injured patients.

Policy: Contra Costa County shall adopt standards for the necessary personnel in a trauma center that meet or exceed State regulations for a Level 2 trauma center.

E = essential  D = desirable  * = local standard

E  Emergency Medicine shall be in-house and immediately available at all times.

Qualified surgical specialist(s) shall be available as follows:

1. General Surgery shall be in-house and immediately available at all times. (Immediately available is defined to mean that the surgeon is unencumbered by conflicting duties or responsibilities; responding without delay when notified; and being within the specified area of the trauma center when the patient is delivered.) The on-call general surgeon while on first call to the trauma center is to be dedicated exclusively to that facility.

E 2. Anesthesia shall be immediately available at all times. May be on-call provided that the anesthesiologist is in the operating suite when the patient arrives. The on-call anesthesiologist while on first call to the trauma center is to be dedicated exclusively to that facility.

3. Nurses who have successfully completed on orientation to all aspects of trauma nursing shall be available to care for trauma patients in the emergency department, operating suite, post anesthesia recovery room, and intensive care unit. Nurses assigned to these critical care areas shall meet all certification and continuing education in trauma requirements as described in the Contra Costa County Trauma System Plan.

4. The radiological service shall have a certified radiological technician in-house and immediately available at all times for general radiologic procedures, angiography and imaging services, and computerized tomography.

5. The clinical laboratory service shall have laboratory and pulmonary technicians available 24 hours per day.

6. The surgical service shall have in-house operating room staff immediately available at all times.

7. The intensive care unit shall have a physician promptly available at all times.
TRAUMA TEAM ACTIVATION CRITERIA

Purpose: To assure immediate assessment and intervention by the trauma team appropriate to the needs of critically injured patients.

Policy: 1. The trauma center shall develop and implement policies and procedures to assure a trauma team approach to the effective evaluation and early intervention of trauma patients as they arrive at the Trauma Center Emergency Department. The trauma center shall identify a minimum of two trauma teams to respond to multiple trauma patients arriving simultaneously.

The trauma team shall consist of at a minimum:

a. Trauma Surgeon (2nd call surgeon for Team 2 if necessary)

b. Emergency Physician

c. Emergency Department RN(s)

d. Scribe RN (another RN unencumbered by emergency department trauma resuscitation activities may perform this role, e.g. operating room RN.)

e. Laboratory staff e.g., phlebotomist

f. Radiology Technician(s)

g. Respiratory Therapy staff

h. Administrative staff

i. Neurosurgeon (on call) for patients with central nervous system injuries if needed

j. Pediatrician for patients 14 years of age or less if needed

k. Obstetrician if patient is pregnant, and if needed

2. An emergency physician, trauma surgeon or emergency department RN makes the decision to activate the trauma team based on trauma triage criteria and information provided by prehospital personnel.

3. The trauma surgeon makes the decision to deactivate the team.

4. The trauma surgeon accepts primary responsibility for the patient until another physician agrees to accept primary responsibility.
SPECIALIST AVAILABILITY

Purpose: To assure surgical and nonsurgical specialists are available to care for trauma patients.

Policy: Contra Costa County shall adopt and maintain standards for surgical and nonsurgical specialists available in a trauma center that meet or exceed State regulations for a Level 2 trauma center.

E = essential  D = desirable  * = local standard

1. The following surgical specialties shall be on-call and promptly available from inside and outside the hospital:
   E  • Cardiothoracic
   E  • Neurologic (the on-call neurosurgeon while on first call to the trauma center is to be dedicated exclusively to that facility.)
   E  • Orthopedic
   E  • Ophthalmic
   E  • Oral, otolaryngologic, maxillofacial and/or plastic, depending on local circumstances
   E  • Urologic
   E* • General Surgery (second physician on-call)
   D* • Hand
   D* • Obstetric/Gynecologic
   E* • Vascular

2. Non-surgical specialties shall be available on-call by page or telephone from inside or outside the hospital and promptly available as necessary for the welfare of the patient as determined by the physician in charge.
   E  • Cardiology
   D  • Gastroenterology
   E  • Hematology
   D  • Infectious Diseases
   E  • Internal Medicine/Family Practice
   E  • Nephrology
   D* • Neurology
   E  • Pathology
   E  • Pediatrics
   D* • Psychiatry
   E* • Pulmonary Medicine
   E  • Radiology
   D* • Rehabilitation and Physical Medicine
QUALITY IMPROVEMENT AND SYSTEM EVALUATION

Purpose(s):
1. To assure quality trauma services through a comprehensive EMS Trauma System Plan, a well-crafted trauma center selection process, a written agreement with the designated Level II trauma center, and extensive quality processes, both internal and external.
2. To assure severely injured patients who are most in need of trauma center services have access to these services. A severely injured patient is defined as a patient with injuries resulting in an Injury Severity Score (ISS) of > 15.
3. To treat and transport injured patients to appropriate facilities based on need by dispatching appropriate EMS response resources, by providing appropriate field care following EMS field treatment policies, and by the triage of seriously injured patients directly to trauma centers according to EMS trauma triage policy.
4. To provide timely feedback to field crews and base personnel on under triages, care issues, or other information.
5. To assure prehospital treatment does not delay transport. *Limit non-entrapment on-scene time to 10 minutes or less when possible.*
6. To assure appropriate use of ground and air transport systems. *Consider response, patient needs, on scene and transport times for both ground and air in making transport mode choices.*
7. To make any modifications to the prehospital trauma care system based on data and QI activities.

Policy:
The following plans and processes shall be in place:

**Trauma System Plan**
The Contra Costa Trauma System Planning process shall be consistent with California Trauma Regulations and shall be approved by the Emergency Medical Care Committee (EMCC), the Board of Supervisors, and the California EMS Authority. Substantive changes or modifications to the trauma system plan will be made following processes for public input as described in state trauma regulations, EMS system planning guidelines and the Contra Costa EMS System Plan. Review of trauma system objectives shall occur as part of annual state EMS System Planning and reporting process.

**Trauma Center Designation Requirements**
In addition to state trauma regulations, the following are included as local trauma center designation requirements:
1. Licensure as an acute care hospital pursuant to the California Health and Safety Code.
2. Accreditation by Joint Commission.
3. Permit for Basic or Comprehensive Emergency Medical Services pursuant to the California Code of Regulations, Title 22.
4. Annual Trauma Center report that demonstrates that well prepared and credentialed physician, nursing and support personnel, equipment and facilities are available to care for trauma patients.
5. Trauma bypass time (percentage) monthly review and trending to assure that trauma bypass does not exceed 5% (438 hours) annually.

6. Trauma registry and base hospital trauma log are maintained by the trauma center and data provided the EMS agency for performance monitoring.

7. Injury prevention is provided through such programs as child passenger safety, “Every 15 Minutes”, and violence prevention programs.

**Trauma Center Review and Oversight**

**Internal**

1. Trauma Surgeon Quality Assurance (TSQA): Monthly multidisciplinary peer review meetings with minimum 60% attendance requirement by all trauma surgeons and trauma liaisons from anesthesia, orthopedics, neurosurgery, emergency medicine, radiology and pulmonology. All cases reviewed at TSQA and TAC are then referred to Hospital Peer Review for transparency.

2. Critical care rounds daily with trauma medical director (TMD) and trauma nursing staff.

3. Multidisciplinary rounds weekly for the primary purpose of patient care planning with representation from trauma surgery, trauma nursing, neuropsychology, social services, patient accounting, and pastoral care services.

4. Trauma and ED staffs concurrently conduct an ongoing evaluation of triage criteria and effectiveness for all trauma transfers to the trauma center and retrospectively by EMS. Trauma center staff initiates case review the business day following each critical trauma patient transfer from another Contra Costa receiving facility (possible undertriaged trauma patients). This review is sent to the base and/or EMS personnel for further input when appropriate. When individual issues are identified including inconsistencies with Contra Costa EMS trauma triage policy, education is provided to the individual by the appropriate trauma liaison. Trends are identified and monitored by EMS for discussion at Trauma System Evaluation Committee when appropriate.

5. Triage feedback to ED physicians and MICNs is conducted using standardized peer review processes for both nursing and medicine. Aggregate triage data is available to all staff and can be found in the EMS Annual Report.

6. Orientation of MICNs, emergency physicians and trauma surgeons to system and standards.

**External**

1. Trauma Audit Committee (TAC), a confidential review process is used to review major trauma cases for appropriateness and timeliness of care within the trauma center as well as in the field setting. The reviews trauma deaths, complications and cases with aspects that vary from pre-established standards. Appropriate feedback is given to involved individuals. Contra Costa County shall share the same membership and meet jointly each month with Alameda County’s program to the extent that this option is available. Membership shall be comprised of the trauma medical director and trauma nurse coordinator from each trauma center in Contra Costa and Alameda Counties, as well as representatives of the major related trauma sub-specialties, county medical examiners and EMS staffs from each county.

2. QI processes utilize tools including Trauma Registry (Regional/National) such as Trauma Quality Improvement Program and National Trauma Data Bank.

3. Trauma Center maintains Level II Verification by the American College of...
Surgeons Committee on Trauma.

4. EMS meets with trauma center administration 1 - 2 times annually to discuss QI and other trauma system related activities for the following year and to discuss any issues affecting trauma system effectiveness.

5. The trauma center shall permit announced and unannounced site surveys of its facilities by the Contra Costa County Health Services Department, the EMS division of the Department or their designated representatives, for the purposes of monitoring contract compliance, quality of care and adherence to performance standards during the designation period.

Prehospital Trauma Care

The EMS Agency collects data and monitors trauma system performance including paramedic response times with on-scene time, triage effectiveness, and trauma protocol adherence as part of its EMS system evaluation process.

1. EMS provider agencies, including fire first response agencies, emergency 911 ambulance services and air ambulance providers, review and evaluate trauma patient care furnished by their employees. EMS provider review includes:
   - Compliance with trauma field treatment protocols, destination determination protocols and field triage protocols.
   - Delays on transport (extended on-scene times)

2. Trauma center and EMS staff give EMS providers and base hospital staff early notification of any situations that might require review or re-education such as:
   - Questions about field assessment, care provided, or triage decisions.
   - Questions regarding field/base hospital reports being consistent with policy (Trauma base log, .wav files, and PCRs used for review)

3. Trauma System Evaluation Committee or TSEC (former Pre TAC) - The primary objective of this committee is to review and evaluate trauma system function. Membership of TSEC is comprised of QI staff from EMS providers including fire, emergency ambulance, air ambulance; Trauma Nurse Coordinator, Trauma Chief, Base Hospital Coordinator, Base Liaison Physician from the Trauma Center, Receiving Hospital ED RN and MD representatives; and EMS Agency Medical Director and EMS Trauma Coordinator. There are eight TSEC meetings are held each year. Evaluation includes the following:
   - Response, on scene and transport time data for ground and air ambulance to determine at a minimum that critical trauma patients are transported to a trauma system without unnecessary delay, and to determine that seriously injured patients are transported using the safest and most expeditious means. Paramedic response time is 10 minutes or less 90% of the time measured monthly (The paramedic may be a fire first responder, a ground ambulance provider or a quick response vehicle or QRV). The ultimate goal for on-scene times for critically injured patients not requiring extrication is an average 10 minutes or less annually, although interim standards of 15 or 20 minutes may be set to measure progress.
   - Field treatment data to demonstrate that care provided was consistent with EMS policies, procedures and field treatment protocols, and that any care provided on scene prior to transport was necessary and did not delay transport. Review of clinical management of patients with traumatic injures includes Pain relief, Airway management, Spinal immobilization, Invasive procedures (thoracostomy, IO), and Vascular Access issues.
• Destination determination data (field triage) to assure that seriously injured trauma patients are transported to a trauma center, and that field and base hospital personnel comply with EMS trauma triage and destination determination policies and procedures. The undertriage standard is an undertriage rate of less than 5% annually and over time. The overtriage standard is an overtriage rate of no more than 55% annually and over time. Considerations for evaluation include discharges from the emergency department and trauma team non-activations on EMS transports.

• Interfacility transfers of trauma patients to the trauma center to assure timeliness of transfer and safe yet rapid transfer using an appropriate mode of transport.

4. Trauma Center Educational modules (2 - 4/year) lecture, rounds, and other activities to advance prehospital skills in assessment, treatment, communications, and general knowledge base of trauma care. Participants to include ambulance service providers, fire first response agencies, receiving hospitals staffs, helicopter providers, and other EMS system participants.

5. The EMS Agency shall be responsible for periodic performance evaluation of the trauma system, including the trauma center, which shall be conducted at least every two (2) years.
TRAUMA TRIAGE CRITERIA AND DESTINATION DETERMINATION

Purpose: To assure that critically injured patients are transported without delay to the most appropriate facility.

Policy: The EMS Agency shall ensure that policies and procedures are in place to assist field and base hospital personnel in identifying critically injured patients (Trauma Policy 17.1). Critically injured adult patients are transported to the Contra Costa designated Level II trauma center. Critically injured pediatric patients are transported to Children’s Hospital and Research Center Oakland.

To assure that patients with non-critical injuries are transported according to an appropriate receiving hospital following EMS Policy on hospital destination determination. (Trauma Policy 17.2.)
I. PURPOSE
Trauma triage directs trauma patients to appropriate medical facilities for definitive care. The goal of triage is to identify critically injured patients who need rapid surgical intervention or the specialized services of the trauma center. Those who do not need trauma center services can be transported to the closest appropriate facility or the patients’ hospital(s) of choice.

II. DEFINITIONS

**Base Hospital**: John Muir Medical Center – Walnut Creek Campus is the designated base hospital for Contra Costa County.

**Trauma Center**: The appropriate trauma center for adults is John Muir Medical Center – Walnut Creek Campus. The most appropriate trauma center for pediatric patients (0-14 years) is Children’s Hospital, Oakland if transport can be made in less than 30 minutes.

**High-Risk Criteria**: Symptoms and mechanisms that correlate with a high risk of critical trauma injuries and merit direct transport to a trauma center after an early notification call.

**Early Notification Call**: For patients meeting criteria for direct transport to the trauma center (high-risk), notification in a brief manner at an early stage to allow the trauma center to prepare resources pending the patient’s arrival. The call should be made as early as possible, preferably before leaving the scene.

**Call-In Criteria**: For patients who do not have high-risk criteria, but have trauma mechanisms that could potentially cause severe trauma. These patients require a destination determination call to the base hospital.

**Destination Determination**: For patients meeting call-in criteria, the base hospital physician will determine which patients warrant trauma center destination based on the report of the paramedic.

**5-minute Update**: Notification from the field to the trauma center that the patient will be arriving in five minutes. This call initiates hospital activation of a trauma team.

**Patients with Unmanageable Airway**: Patients whose airways are unable to be adequately maintained with BLS or ALS maneuvers. Patients requiring needle cricothyrotomy should be considered to have an unmanageable airway.
III. TRAUMA TRIAGE ALGORITHM

- **Unmanageable airway**
- **Trauma arrest (not meeting field determination)**

**High-Risk Criteria**

- **Physiologic Criteria**
  - BP <90 (adults)
  - GCS 13 or less if not pre-existing

- **Anatomic Criteria**
  - Penetrating injury to head, neck, torso, groin, pelvis or buttucks
  - Fracture of femur
  - Fracture of long bone(s) resulting from penetrating trauma
  - Traumatic paralysis
  - Amputation above wrist or ankle
  - Major burns associated with trauma

- **Mechanism Criteria**
  - MVC with:
    - Extrication > 20 minutes
    - Fatalities in the same vehicle
    - Ejection from vehicle
  - Unrestrained MVC with:
    - Head-on mechanism > 40 mph
    - Extrication required
  - Fall 15 feet or greater

- **Combined Criteria**
  - Motorcycle crash with:
    - Abdominal or chest tenderness
    - Observed loss of consciousness
  - Unrestrained motor vehicle crash with:
    - Abdominal tenderness

**MEETS CALL-IN CRITERIA?**

- **YES**
  - Closest Facility

- **NO**
  - Early notification, Trauma Center Transport

**In the absence of significant symptoms or physical findings despite mechanism, call for destination decision instead of early notification.**
IV. CALL-IN CRITERIA FOR BASE HOSPITAL DESTINATION DECISION

A. Most trauma mechanisms are quite variable in terms of risk for significant injury. In order to maintain the highest accuracy in trauma triage, base hospital destination decision is required prior to transport of the following patients (who do not meet high-risk criteria otherwise):

1. Evidence of high-energy dissipation or rapid deceleration which may include:
   a. vehicle rollover with unrestrained occupant,
   b. intrusion of passenger space by 1 foot or greater,
   c. impact of 40 mph or greater (restrained),
   d. persons requiring disentanglement from a vehicle,

2. Adult hit by vehicle traveling faster than 15 mph.

3. Child less than 14 years hit by a vehicle.

4. Persons ejected from a moving object (motorcycle, horse, etc.)

5. Significant blunt force to the head, neck, thorax (chest/back), abdomen or pelvis.

6. Penetrating injury to extremities (above knee or elbow) without apparent fracture.

B. If no significant symptoms or physical findings noted despite above mechanism(s), call-in not required and patient may be transported to hospital of choice or to closest facility.

C. Base contact should be made if a patient meets call-in criteria and it is believed trauma center services may be needed, even in the event that the trauma has occurred several hours prior to EMS response.

D. Patients 65 years of age and older may sustain significant injuries with less forceful mechanisms, and may merit call-in for less significant mechanisms (e.g. ground level fall with new alteration of mental status).

V. TRIAGE AND REPORTING PROCEDURES

A. Determine whether patient meets high-risk criteria for direct transport or meets call-in criteria.

B. Contact the Base Hospital as soon as possible for either early notification or destination decision as indicated in the Trauma Triage Algorithm.

1. Early Notification Report: This report should be brief (approximately 1 minute)
   a. Agency name and unit number
   b. Advise as Early Notification Report
   c. ETA at trauma center
   d. Patient age and sex
   e. Brief description of mechanism of injury and scene
   f. Brief description of known significant abnormalities in primary and secondary surveys

2. Destination Decision Report: This report needs to contain sufficient detail to aid in decision making by base physician.
   a. Agency name and unit number
   b. Advise as Destination Decision Report
   c. ETA to trauma center
   d. Patient age and sex
   e. Mechanism of injury (brief description)
   f. Basic scene information (e.g. protective gear, extrication, estimated MPH)
   g. Primary Survey (can be reported as ABCD normal except…)
   h. Secondary Survey (report abnormal findings only)
   i. Prehospital treatments and response
   j. Paramedic concerns
C. The **five-minute update call** should be made when five minutes from the trauma center and should include expanded patient information, including significant changes in vital signs, mental status, physical findings or symptoms en route.

D. Receiving hospitals shall be contacted by field personnel prior to arrival.

E. On Trauma Center arrival, use MIVT format at transfer of patient care. (30-second report)
   1. Report should be made to Trauma physician or ED physician
   2. MIVT format
      a. **Mechanism of injury**
      b. **Injuries Sustained and Level of Consciousness** (AVPU format)
      c. **Vital signs** – include ECG rhythm if abnormal, pulse oximetry if known
      d. **Treatment and patient’s response to treatment**
      e. **More detailed information can be provided when requested**

VI. **SPECIAL CIRCUMSTANCES**

A. All patients with unmanageable airway should be transported to the closest Basic ED.

B. Patients who do not qualify for field pronouncement of death but have or develop cardiopulmonary arrest should be transported to the closest Basic ED.

C. Contra Costa County Trauma Center Bypass:
   1. Transport patients with high-risk criteria or patients directed to a trauma center by base hospital destination decision via ground or air transport, as indicated, to the closest appropriate and available designated out-of-county trauma center.
   2. If an out-of-county trauma center is not available:
      a. Transport via ground to the nearest Basic ED, which may include John Muir Medical Center – Walnut Creek Campus.
      b. If helicopter transport is utilized, transport to John Muir Medical Center – Walnut Creek Campus.

D. Out-of-County Destinations:
   1. Aside from trauma center bypass situations, an out-of-county destination may be the appropriate destination if there is significant time saving.
   2. The base shall be contacted to assist with destination determination of patients who require transport to out-of-county destinations, including pediatric patients with prolonged transport times (>30 minutes) and patients redirected because of trauma center bypass.
   3. The base will be responsible for notification of other trauma centers to alert them of the patient’s pending arrival.

E. Disrupted Communications with Base:
   1. Patients who normally require base hospital destination determination should be transported to the most appropriate and available receiving facility per the paramedic’s judgment.
   2. Alternate mechanisms of communication (e.g., via dispatch) should be used to determine trauma center availability if out-of-county destinations are being considered.
I. PURPOSE
To determine the appropriate receiving facility for patients transported by ground ambulance.

II. POLICY
A. A patient, transported as part of an EMS response, shall be taken to the most appropriate acute care hospital staffed and equipped to provide care appropriate to the needs of the patient.
B. County boundaries are not considerations in determining the appropriate receiving hospital.
C. Field transport personnel are responsible for making transport code decisions.

III. PROCEDURE
Field personnel shall assess a patient to determine if the patient is unstable or stable. Patient stability must be considered along with a number of additional factors in making destination and transport code decisions. Additional factors to be considered include:

- Patient or family’s choice of receiving hospital and ETA to that facility
- Recommendations from a physician familiar with the patient’s current condition
- Patient’s regular source of hospitalization or health care
- Ability of field personnel to provide field stabilization or emergency intervention
- ETA to the closest basic emergency department
- Traffic conditions
- Hospitals with special resources
- Hospital diversion status

A. Unstable Patients
1. An unstable patient is usually transported to the closest appropriate acute care hospital emergency department.
2. If the patient or family requests, or if other factors exist which indicate that another facility be considered, field personnel are to contact the base hospital and present their findings, including ETAs to both facilities. Base personnel will weight the benefits of each destination and may direct field personnel to a facility other than the closest.
3. Trauma patients should be transported in accordance with County trauma protocols.
4. Unstable patients are usually transported Code 3 unless contraindicated for medical reasons.

B. Stable Patients
1. Stable patients are transported to appropriate acute care hospitals within reasonable transport times based on patient’s/family preference.
2. If a patient does not express a preference, the hospital where the patient normally receives health care or the closest ED is to be considered.

C. Patients on 5150 Holds
1. Police or other designated individuals may place a person who, as a result of a mental disorder is a danger to self, to others, or is gravely disabled on a “5150” involuntary hold. This involuntary hold is an application for detention for up to 72 hours for the purpose of psychiatric evaluation and treatment.
2. A patient placed on a 5150 hold in the field shall be assessed for the presence of a medical emergency. Based upon the history and physical examination of the patient, field personnel shall determine whether the patient is stable or unstable.
3. Medically stable patients on 5150 holds shall be transported to Contra Costa Regional Medical Center.
4. **Medically unstable** patients on 5150 holds shall be transported to the closest acute care hospital.
   a. A patient with a current history of overdose of medications is to be considered unstable.
   b. A patient with history of ingestion of alcohol or illicit street drugs is considered unstable if there is any of the following:
      1) Significant alteration in mental status (e.g., decreased level of consciousness or extremely agitated),
      2) Significantly abnormal vital signs
      3) Any other history or physical findings that suggest instability (e.g. chest pain, shortness of breath, hypotension, diaphoresis).

D. **Obstetrical Patients**
   1. A patient is considered “Obstetric” if pregnancy is estimated to be of 20 weeks duration or more.
   2. Obstetric patients should be transported to acute care hospitals with in-patient obstetrical services in the following circumstances:
      a. Patients in labor;
      b. Patients whose chief complaint appears to be related to the pregnancy, or who potentially have complications related to the pregnancy;
      c. Injured patients who do not meet trauma criteria or guidelines.
   3. In-patient obstetrical services are provided by all acute care hospitals in Contra Costa County with the exception of Doctor’s Medical Center in San Pablo, Kaiser Medical Center in Richmond and John Muir Health – Concord Campus. Other nearby Approved Ambulance Receiving Facilities in western Contra Costa include: Alta Bates in Berkeley, Kaiser Medical Center in Oakland, Sutter Solano Medical Center in Vallejo and Kaiser Medical Center in Vallejo.
   4. Obstetric patients meeting trauma criteria are to be transported to adult trauma enters.
   5. Obstetric patients with impending delivery or unstable conditions where imminent treatment appears necessary to preserve the mother’s life should be transported to the nearest basic emergency department.
   6. Stable obstetric patients should be transported to the emergency department of choice if their complaints are clearly unrelated to pregnancy.
   7. The base hospital is available to provide guidance in situations in which the appropriate choice of receiving facility is unclear to transport personnel.

E. **Patients With Burns**
   1. **Hospital Selection**
      a. Burned patients with unmanageable airways should be transported to the closest basic ED.
      b. Patients with minor burns and moderate burns can be cared for at any acute care hospital.
      c. Adult and pediatric patients with burns and significant trauma should be transported to the closest appropriate trauma centers.
      d. Patients with more extensive or complex burns may be appropriate for transport directly to a Burn Center including:
         1) Partial thickness (2nd degree)>20% TBSA
         2) Full thickness (3rd degree)> 10%
         3) Significant burns to the face, hands, feet, genitalia, perineum, or circumferential burns of the torso or extremities
         4) Chemical or high voltage electrical burns
         5) Smoke inhalation with external burns
   2. **Procedure for Burn Center destination**
      a. Contact Burn Center prior to transport to confirm bed availability.
      b. Consult base hospital for any questions regarding destination decision.
c. If air transport to UC David Medical Center or Santa Clara Valley Medical Center is not available, patient should be transported by ground to the closest available burn center.

d. The closest available Burn Centers are:

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<thead>
<tr>
<th>Hospital</th>
<th>Services</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Santa Clara Valley Medical Center</td>
<td>Adult and Pediatric</td>
<td>408-885-6666</td>
</tr>
<tr>
<td>751 S. Bascom Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Jose, California</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UC Davis Medical Center – Regional Burn Center</td>
<td>Adult and Pediatric</td>
<td>916-734-3636</td>
</tr>
<tr>
<td>2315 Stockton Blvd.</td>
<td></td>
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<tr>
<td>Sacramento, California</td>
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</tr>
<tr>
<td>St. Francis Burn Center</td>
<td>Adult and Pediatric</td>
<td>415-353-6255</td>
</tr>
<tr>
<td>900 Hyde Street</td>
<td></td>
<td></td>
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<tr>
<td>San Francisco, California</td>
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F. Hospital Diversion

1. CT Diversion

a. A hospital goes on CT Diversion when it does not have an operation CT scanner. The following patients should not be transported to a facility on “CT scan diversion,” but should be transported to the next closest appropriate ED with a functioning CT scan.

1) Suspected stroke – duration of signs and symptoms two hours or less. Symptoms might include sudden onset of weakness, paralysis, confusion, speech disturbances, visual field deficit and may be associated with a headache.

2) New onset of altered level of consciousness for traumatic or medical reasons.

b. Most patients meeting the above criteria should be transported to the next closest appropriate ED with a functioning CT scan.

c. CT Diversion Exceptions

1) Patients with unstable airways, uncontrolled bleeding, or in cardiac arrest should be transported to the nearest ED regardless of CT diversion status.

2) Patients requesting transport to a hospital on CT diversion have the right to be transported to that hospital. These patients should be told:

   a) That the hospital of choice has an inoperative CT scanner and has requested that patients that may need this service be transported to another facility to assure availability of the necessary level of care.

   b) That transport to a hospital with an inoperative CT scanner might result in a delay of care and/or a transfer to another facility.

2. Physical Plan Casualty (PPC) Diversion

If notified that a hospital is on PPC diversion, transport units should determine the appropriate destination for the patient as identified in this policy while eliminating the hospital on diversion from consideration.
EMS PERSONNEL TRAINING

Purpose: To assure that prehospital EMS personnel are trained:

1. To identify those patients with critical or potentially critical injuries.
2. To provide appropriate field stabilization,
3. To provide rapid transport to the appropriate facility.

Policy: The EMS Agency, in conjunction with the designated trauma center, shall assure that prehospital EMS personnel are clinically and operationally prepared to function as part of the trauma system.

Training standards for prehospital EMS personnel shall meet or exceed those established nationally by the American College of Surgeons as outlined in the Prehospital Trauma Life Support (PTLS) curricula.

The EMS Medical Director shall set criteria for continuing education requirements in trauma care of prehospital EMS personnel as determined through ongoing quality improvement activities and medical control mechanisms.
EMS DISPATCHING

Purpose: To assure that EMS dispatchers provide rapid entry into the trauma care system by promptly dispatching the most appropriate ambulance to provide triage and initial resuscitation of trauma patients in the field and during transport.

Policy: Personnel doing ambulance dispatch shall be trained to recognize that the timely response of a paramedic unit is the goal for potential trauma cases.
COMMUNICATIONS SYSTEM

Purpose: To assure adequate communication links between the designated trauma center, ambulance units and other receiving hospitals throughout the county.

Policy: Trauma system communications shall be incorporated into the existing EMS communications system. The trauma center shall be included in the existing EMS communications network to assure the following communications capabilities:

1. Field communications with pre-hospital personnel.
2. Inter-facility radio communications with all other emergency receiving hospitals.
3. Disaster communications including telephone, radio and ReddiNet.
PUBLIC INFORMATION AND EDUCATION

Purpose: To establish a mechanism for informing the public of the Contra Costa County trauma care system the specialized resources available for the trauma care in the County and method for accessing this system.

Policy: The EMS Agency and the trauma center along with the Emergency Medical Care Committee shall develop ongoing public information and education programs to promote public awareness of the County trauma system.
MARKETING AND ADVERTISING

Purpose: To assure that marketing and advertising by the trauma center or other prehospital provider is reviewed in advance to assure compliance with Contra Costa County guidelines.

Policy: The Contra Costa County trauma center and other prehospital care providers are encouraged to communicate their services and accomplishments to the general public. Marketing and advertising plans regarding trauma services shall be submitted in advance to the EMS Agency and advertising shall be subject to review by the EMS Agency according to the following guidelines:

1. Shall provide accurate information;
2. Shall not include false claims;
3. Shall not be critical of other providers;
4. Shall not include financial inducements to any provider or third party.
INJURY PREVENTION PROGRAMS

Purpose: To assure coordination of public and private agencies and trauma centers in injury prevention programs.

Policy: The Contra Costa County trauma center is required to and other prehospital care providers are encouraged to participate in and to promote educational programs directed towards the prevention of injury.
SECTION XI - WRITTEN LOCAL APPROVAL

In 1985, following extensive media publicity around delayed care and the subsequent death of a trauma patient initially transported to one of the county’s hospitals licensed to provide Basic Emergency Services, the Board of Supervisors directed the Department of Health Services to develop a countywide trauma system plan. An initial step was the formation of a Joint Contra Costa-Alameda Trauma Planning Task Force to help educate key personnel in both counties about trauma systems and trauma system planning. Subsequently, Contra Costa County established a Trauma Care Review Committee to develop and recommend a trauma system plan for Contra Costa County. The original plan was approved by the Board of Supervisor on November 19, 1985 and issued in January 1986. This update was approved by the Board of Supervisors Emergency Medical Care Committee on March 11, 2009.
SECTION XII - DATA COLLECTION

a. Contra Costa County has adopted the Lancet Trauma One trauma registry for its standardized data collection and data management system for trauma care. The Trauma One registry includes prehospital, emergency department, and hospital data for all trauma patients treated or admitted to the John Muir Medical Center. Trauma One registry data is also available to Contra Costa County from Alameda County on those Contra Costa patients transported to an Alameda County trauma center. The trauma registry data is supplemented by prehospital care reports and hospital disposition data for those patients transported to a non-trauma-center hospital.

b. Prehospital data included in the Trauma One registry as implemented in Contra Costa County include all data elements required by §100176 of the EMT-P regulations. (Contra Costa County does not have an EMT-II program.)

c. Hospital data included in the Trauma One registry as implemented in Contra Costa County include all data as outlined in §100257(c) of the trauma regulations and as follows.