Emergency Medical Services Agency
1999 Annual Program Report

- April 2000 -

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I. Introduction

A. Overview of EMS

Emergency Medical Services is a system of services organized to provide rapid response to serious medical emergencies, including immediate medical care and patient transport to definitive care in an appropriate medical setting. An effective EMS system involves a variety of agencies and organizations working together to accomplish the goal of providing rapid emergency medical response and treatment. While most EMS responses are day-to-day emergencies, EMS agencies also plan and prepare for disaster medical response. EMS includes:

- Public safety dispatch centers
- Fire services
- Ground and air ambulance services
- Law enforcement agencies
- Hospitals and specialty care centers
- Training institutions and organizations
- Citizen, professional, and technical advisory groups
- Local and State EMS Agencies
- Other governmental and voluntary organizations

In California, EMS systems are organized on a county or regional basis. Local EMS Agencies (LEMSA's) are designated by county boards of supervisors as the lead agencies responsible for coordinating EMS services at the county or regional level consistent with State law and regulations.

The California Emergency Medical Services Authority (EMSA) approves local EMS system plans, provides guidance to local EMS agencies, develops EMS regulations, administers the Regional Poison Control Center program, and carries out other EMS activities. The State EMS Commission, with members appointed by the Governor and certain other State officials, is advisory to the EMSA and reviews and approves all EMS regulations.

In Contra Costa County, the Board of Supervisors has designated County Health Services as Local EMS Agency. The EMS Director, EMS Medical Director, and staff carry out EMS functions of Health Services. The EMS Medical Director has statutory responsibilities to oversee medical aspects of the EMS program. An Emergency Medical Care Committee (EMCC) provides advice regarding EMS matters to the Board of Supervisors and to the EMS Agency.

B. Local EMS Agency Functions.

Principal functions of a local EMS agency as specified in the Health & Safety Code include:

- Planning, implementing, and evaluating emergency medical services.
- Monitoring and approving EMT-I, paramedic, and Mobile Intensive Care Nurse (MICN) training programs.
- Conducting credentialling programs for EMT-I's, paramedics and MICN's.
- Authorizing advanced life support (ALS) programs.
- Establishing policies and procedures for medical control of the EMS system, including dispatch, patient destination, patient care, and quality assurance.

- Establishing ordinances and/or exclusive operating areas for the regulation of ambulance services.
- Approving and monitoring Prehospital Continuing Education Providers.
- Developing and implementing a trauma system plan.
- Conducting an impact evaluation when notified that an acute care hospital plans to downgrade or cease providing emergency medical services.

The County Board of Supervisors has further charged the Health Services Department as the local EMS Agency with the following responsibilities:

- Monitoring interfacility patient transfers.
- Implementing EMS program enhancements funded under County Service Area EM-1 (Measure H).
- Tracking and monitoring hospital emergency and critical care capacity.

Additionally, the EMS Agency is the lead agency responsible for:

- Procuring and monitoring emergency ambulance services countywide.
- Implementing and monitoring an Emergency Medical Services for Children Program county-wide.
- Planning for and coordinating disaster medical response at local and regional levels.

To accomplish these functions, the EMS Agency employees a staff of 10, including the EMS director, part-time EMS medical director, program coordinator, Health Services disaster preparedness manager, two prehospital care coordinators, trauma coordinator, training coordinator, and two clerks.

C. Emergency Medical Care Committee.

Each county may, under the Health & Safety Code, establish an Emergency Medical Care Committee (EMCC) with membership prescribed and appointed by the county board of supervisors. The EMCC acts as an advisory body to its board of supervisors and local EMS agency on all matters relating to EMS.

The Contra Costa EMCC consists of five consumer representatives, one from each of the five supervisorial districts, and representatives of the following groups and organizations:

- American Heart Association
- American Red Cross
- California Highway Patrol
- Contra Costa Ambulance Provider
- Air Medical Transportation Provider
- Emergency Department Physicians
- Emergency Nurses Association
- Contra Costa Fire Chiefs' Association
- Field Paramedic (1 private/1public)
- County Health Services
- Hospital Council – Bay Area Division
- Contra Costa EMS Training Institution

- County Office of Emergency Services
- Contra Costa Police Chiefs' Association
- Contra Costa Public Managers' Association
- Sheriff-Coroner Communication Division
- Alameda-Contra Costa Medical Association
- Base Hospital
- Trauma Center
- Community Awareness and Emergency Response (CAER)
- Communications Center Managers Association
- EMS Director

The EMCC meets quarterly and all meetings of the EMCC and its subcommittees are open to the public.

D. Delivery of EMS Services.

EMS services are typically provided in response to a medical emergency reported through the 9-1-1 emergency telephone system. A 9-1-1 call placed from any telephone is automatically routed to the appropriate designated Public Safety Answering Point (PSAP). A dispatcher or complaint operator at the PSAP determines the nature of the emergency and, if the PSAP is part of a fire/medical dispatch center, obtains information necessary to dispatch the appropriate response units. If the PSAP is not part of a fire/medical dispatch center, the call may be transferred to a "secondary PSAP" where a dispatcher then obtains information necessary to dispatch fire and medical units.

The initial response to a potentially life threatening incident generally includes both a fire first responder unit and a paramedic-staffed ambulance. The location of fire stations throughout the county enables firefighters to make a rapid initial response to a medical emergency. All fire fighters are trained in first aid, CPR and defibrillation. Most are trained and certified as Emergency Medical Technicians. In situations involving patient problems such as obstructed airway, severe bleeding, or cardiac arrest, fire fighters arriving early on the scene may be able to initiate lifesaving measures and achieve some patient stabilization before the ambulance arrives. In some areas of the county, fire agencies staff first responder units with paramedics so that advanced life support services can be initiated prior to the arrival of the ambulance.

A private company, American Medical Response under contract with the County, provides emergency ambulance services in most parts of the County. In the San Ramon Valley and Moraga-Orinda areas, emergency ambulance service is provided by the fire service. Depending upon the nature of the incident, an ambulance may be dispatched Code 3 (red lights and siren) or Code 2 (immediate response, but following normal traffic regulations). Ambulances may be staffed with either paramedic-trained or EMT-I trained personnel.

The staffing standard for response to potentially life threatening incidents is an Advanced life support (ALS) ambulances staffed with paramedics. Paramedics are able to administer lifesaving drugs and perform other lifesaving procedures. Basic life support (BLS) ambulances are staffed with two EMT-I's and may be used for non-emergency response or to provide additional support at an emergency incident.

Patient treatment and transport are carried out under State and local EMS agency policies and procedures. These policies include, in the case of paramedics, making contact with a mobile intensive care nurse (MICN) or physician at a designated base hospital for medical consultation in patient management according to County EMS treatment guidelines.

Patients are transported to hospitals able to provide needed services. Hospital destination is determined based upon patient preference and County EMS protocols. Critical patients may be directed to the nearest emergency department or to the trauma center. Noncritical patients may be transported to hospitals of choice within reasonable travel time.

Medical helicopter service is available to transport critical patients when ground ambulance transport time would be excessive. Two medical helicopter services, CALSTAR and REACH, are authorized to respond to local EMS calls on a daily rotation schedule. Both agencies provide advanced life support services and maintain 24-hour helicopter unit availability based at Buchanan Field in Concord. Other helicopter services are available to respond from neighboring counties if both CALSTAR and REACH are unavailable.

E. County Service Area EM-1 (Measure H) Funding.

In 1988 Contra Costa voters countywide passed ballot "Measure H" which provides for enhancements to the EMS system including increased paramedic ambulance service, additional medical training and equipment for firefighter first responders, and an improved EMS communications system. Following a 71.6% affirmative vote, the Board of Supervisors, with the support of the 18 city councils, formed County Service Area EM-1 to levy charges on real property as specified in Measure H. Assessments are limited to $10.00 annually for a single-family residence. Commercial and industrial properties are generally assessed at $30.00 or higher, depending upon the use code classification of the parcel.

Measure H assessments have been used to finance the following:

- Increased paramedic ambulance units available to respond to 9-1-1 calls,
- A county-wide firefighter first responder defibrillation program including automated external defibrillators purchased and maintained for all fire response units,
- Medical supply caches purchased and maintained for multicasualty/disaster response,
- An upgrade to the MEDARS radio system used for ambulance-to-hospital communications,
- Radios for ambulances to communicate with fire first responders, and,
- An upgraded ambulance dispatch system and dispatcher preparedness.
- ➢ Enhanced response to Hazardous Materials incidents.

II. List of Major Accomplishments – 1999

- Eleven patients receiving first responder defibrillation, discharged as hospital "saves".
- Received a State grant to develop and implement an EMS for Children Program.
- Obtained State approval for Year 2 of the Data Linkage and Outcome Project grant.
- Completed Hospital Resource Assessment update.
- Bay Area Disaster Medical Assistance Team (DMAT) attained Level I designation. Received orders for and made 2 deployments to other parts of the US to provide medical aid.
- Trained 1,500 teachers in START triage.
- All hospitals agreed to participate in ReddiNet, a microwave based emergency communications system.
- Participated in a statewide disaster communications exercise along with hospitals, ambulance service providers, RACES and other EMS agencies.
- Adopted Service Excellence program along with the other Health Services divisions.
- Submitted application for $300,000 Department of Justice Domestic Preparedness Equipment Support Program.
- Submitted application for two state grants providing $27,000 for purchase of computer equipment for the Health Services Department Operations Center.
- 984 of 1,025 patients with possible major traumatic injuries met trauma criteria and were transported to trauma centers including 827 to John Muir Trauma Center and 129 to Children's Hospital Oakland.
- Total of 56,986 emergency ambulance responses dispatched. 97.9% of the 44,291 ambulances dispatched Code 3 "lights and siren" were paramedic staffed units.
- Total of 40,194 patients transported by ambulance. 9,390 patients were transported Code 3 "lights and siren". 400 patients were transported by helicopter.
- Credentialed 253 EMT-I's, 161 paramedics and 35 MICN's.
- Recognized 25th annual EMS Awareness Week.

III. Issues in the Forefront

A. Statewide EMS Vision and Assessment

EMS Vision 2000. In June 1999, the State EMS Authority (EMSA) issued its report "Shaping the Future of EMS in California". This report was a summary of the results of the EMS Vision planning process initiated in 1997 under the direction of the State EMS Commission. The Vision planing process was undertaken to develop goals for the improvement of EMS in California. To develop these goals a planning process was undertaken which included representation from the major EMS stakeholder groups and culminated in an open statewide Vision conference held in December 1998.

The June 1999 report contained some 66 recommendations for the future shape of EMS in California based upon consensus input from the December 1998 conference. Realization of the Vision process then began with the appointment of committees to develop implementation plans for each of the six areas of:

- ➢ Governance and Medical Control
- ➢ Funding
- ➢ Education and Personnel
- ➢ System Review and Data
- ➢ Access
- ➢ Prevention

These implementation committees were set up to continue the representation of EMS stakeholder groups, including:

- ➢ EMS Administrators' Association of California
- ➢ EMS Medical Directors' Association of California
- ➢ American College of Emergency Physicians
- ➢ California Fire Chiefs' Association
- ➢ California Ambulance Association
- ➢ California State Firefighters Association
- ➢ California Professional Firefighters
- ➢ Service Employees International Union
- ➢ California Rescue and Paramedic Association
- ➢ Emergency Nurses Association
- ➢ League of California Cities
- ➢ California State Association of Counties
- ➢ California Paramedic Program Directors

Oversight of the project is maintained by a Vision Project Team consisting of the State EMSA Director, an EMS Commissioner, a project manager hired by EMSA, and the chairs of the six implementation committees.

The project will result in the development of a State EMS System Plan including strategies of implementation of the Vision recommendations, a revision of EMSA's "EMS System Standards and Guidelines," and EMS system performance benchmarks.

Shared governance. One of the key recommendations to come out of the Vision process is the recommendation that the Health and Safety Code be amended "to require the establishment of Local EMS Commissions balanced to ensure true shared governance with mandated final authority in defined areas of mutual interest." This recommendation envisions the establishment of mechanisms at the local level through which governance areas of EMS (e.g., ambulance standards and contracts) would be shared between counties and other local government entities with EMS responsibility.

NHTSA assessment. In August 1999, the National Highway and Transportation Safety Administration (NHTSA) completed an assessment of Emergency Medical Services in California undertaken at the invitation of the State EMS Authority. The NHTSA assessment resulted in 90 recommendations, many of which were duplicative or overlapped with recommendations from the Vision process. EMSA has prioritized these recommendations and is implementing them with the Vision process. Both the Vision documents and the NHTSA assessment are available on the EMSA web site at *www.emsa.cahwnet.gov*.

B. First Responder Paramedic Services

Background. Traditionally, paramedic services in Contra Costa County have been provided in connection with emergency ambulance service. Each of the contracted emergency ambulance providers (currently American Medical Response, San Ramon Valley Fire Protection District, and Moraga-Orinda Fire Protection District) has provided emergency response with paramedic-staffed ambulances. Fire units dispatched as first responders on emergency medical calls, on the other hand, have been staffed by personnel trained at the EMT-I level and have been equipped with semiautomatic external defibrillators (SAEDs). In 1988, Moraga Fire initiated a first responder paramedic program in conjunction with its paramedic ambulance program. In 1992, a first responder paramedic program was established in the East Diablo Fire District using AMR paramedics responding in a single-paramedic-staffed non-transporting unit stationed in the Byron fire station. San Ramon Valley Fire began adding paramedic first responder services in 1997. At this point, paramedic first responder programs were provided only by agencies that were already designated paramedic ambulance providers.

In 1996, Bethel Island Fire became the first non-ambulance service to provide paramedic first responder service. Bethel Island was followed by Contra Costa County Fire, which established four paramedic engines in 1997. Contra Costa County Fire's program was expanded in 1999 to include eight paramedic units.

Funding paramedic first responder services. Prior to the 1999 expansion of Contra Costa County Fire's paramedic program, CSA EM-1 (Measure H) funds had only been used to fund first responder programs in those areas such as Byron-Discovery Bay and Bethel Island with significant populations located long distances from the nearest ambulance station. In September 1998, the Board of Supervisors authorized a reduction in ambulance response requirements for central county (from 95% 10-minute response to 90% 10-minute response) and use of resulting ambulance subsidy savings for funding expansion of Contra Costa Fire paramedic services.

Board direction and current planning. At the direction of the Board of Supervisors, the EMS Agency has been working with individual fire agencies interested in pursuing development of paramedic services, and with the County Fire Chiefs' Association in developing a countywide plan for paramedic first responder services. It is anticipated that an initial plan will be available for public discussion by mid-2000.

C. Hospital Closures and Overcrowding

Closures and downsizing. With the announcement in November 1999 by Doctors Medical Center of its intended closure of emergency and acute care services in Pinole, Contra Costa County is now poised for its fifth major hospital closure or downsizing in seven years. In 1993, Contra Costa County had eleven general acute care hospitals, including ten providing emergency services and serving as EMS receiving hospitals. During the ensuing five years, the county's residents saw:

- the closure of the Veterans' Administration Hospital in Martinez in 1993;
- the elimination of emergency services and closure of Los Medanos Hospital in 1994;
- the elimination of intensive services at Kaiser Richmond in 1995 and further downgrading in 1996 (Kaiser Richmond has subsequently reopened its acute and intensive care services and has announced plans to upgrade its emergency services from "standby" to "basic emergency services") in August 2000;
- the elimination of inpatient services in 1996 and closure of all hospital services including emergency services at Kaiser Martinez in 1997; and
- the elimination of emergency, acute, and intensive care services at Doctors Medical Center Pinole in April 2000.

What have been the consequences of these hospital closures and downsizing for the EMS system? First, elimination of an EMS receiving facility has meant longer transport times for some ambulance patients. Second, longer ambulance trips have meant that emergency units are out of service for longer periods of time. Third, reduced emergency department, intensive care, and acute care resources have meant more overcrowding and longer waits for service, especially during periods of peak demand. Negative consequences for individual patients, arriving at closed emergency departments, enduring long interfacility transfers, and having long wait times in overcrowded emergency departments, have been well documented.

Lewin study. A 1999 study conducted by The Lewin Group for the Hospital Council of Northern and Central California concluded that hospital bed and emergency department capacity in Contra Costa and Alameda Counties is and will continue to be adequate *under normal conditions*. But the study did acknowledge that some areas may be strained during months of peak demand. The Lewin study recognized that nursing supply is as important as bed supply in determining hospital capacity for providing care. The study pointed out that there were actions that a hospital take to ensure that patients who need care receive it during peak demand periods and concluded that hospitals in the region (Contra Costa and Alameda Counties) have responded to changes in demand. The Lewin study cited three major challenges facing hospital providers:

- Providing care for increasing numbers of patients without medical insurance.
- Complying with unfunded regulatory requirements to provide certain services or levels of services.
- Limited availability of specialty nursing staff.

In a critique of the Lewin study, the California Nurses Association took issue with some of the Lewin study's conclusions and methodology. But there seemed to be consensus on two key points:

- Hospital resources are in short supply during peak periods; and
- There is a serious shortage of trained specialty nurses.

Ambulance diversion. Shortages in hospital critical care resources usually become known to the EMS system through *ambulance diversion*. Most counties have EMS ambulance diversion policies under which hospitals facing a temporary overload can divert ambulance patients to other emergency departments. In Contra Costa County, ambulance diversion is permitted only for

emergency department overload and not for lack of acute or critical care beds. However, experience of critical care beds is often a cause for emergency department overload as patients are held in the ED for admission.

1997- While excessive ambulance diversion has been a problem for years in some EMS systems, diversion was not a problem i -
98. During that period, many communities were hit particularly hard by an influenza epidemic.

emergency departments. To meet the crisis which had become apparent over the Christmas and New

the Health Officer, and declared a local emergency due to lack of sufficient hospital emergency and

conduct on an on-
resources that EMS had initiated during the crisis.

The spike in hospital emergency department visits during the winter of 1997-
impact changes in health care economics has been having on hospitals' reserve capacity. For several years, health care providers had been under
costs. As a result, hospital admissions were down, lengths of hospital stay for patients were down, and the acuity of patients in the hospital was up. Hospitals sought to maximize efficiency and to ffing levels to just meet expected demands. When actual demand surpassed that which had been expected, the hospitals and EMS systems were caught unprepared. There was little reserve left

Planning for Peak Period Demand. demand period of 1997-
representatives from the hospitals, the EMS Agency, and the Hospital Council of Northern and Central California began a series of meetings to explore steps that could be taken to better monitor demand better manage high demand periods in the future. Under Hospital Council leadership, a two county (Contra Costa and Alameda) plan was developed which included (1) a public education campaign around obtaining flu shots and appropriate use of the emergency epartments and (2) identification of steps hospitals should take to conserve resources during periods of high demand. This latter resulted in the development of a "census alert" system under which -identified steps at certain stages
or a "Census Alert II." Census alert status is communicated to the EMS Agency, which, in turn, conveys the more serious "Census Alert II" status to other hospitals. Use of common terminology and ilitates communication of status internally to hospital staff and physicians and externally to EMS and other hospitals. This system proved effective during the 1998 99 and 1999-
flu seasons.

A third element of the two- for management of peak demand periods is the installation of the ReddiNet II hospital communications system pioneered by the Healthcare

hospital emergency departments and the local EMS Agency for monitoring the status of hospital -to day basis, during multicasualty incidents, and during major disasters. By the end of 1999, all EMS receiving hospitals in Contra Costa and Alameda Count
Children's Hospital, Oakland, and the two county EMS agencies had agreed to install the system. Installation should be completed by early 2001.

While peak period planning, system monitoring and enhanced communica
sufficiency of emergency and critical care resources remains to be addressed. In September 1998, AB 2103 (Gallegos) was signed into law amending Section 1300 of the Califor
Code. This law requires advance notification to the county by a hospital planning to close or downgrade its emergency services, and requires the County to conduct an impact evaluation study to ealth Services (DHS) before approval of the closure or downgrade. The full extent of AB 2103 was first tested in Contra Costa County when Doctors Medical

Center's announced intent to close emergency and acute care services at its Pinole campus. As a result of the impact evaluation study undertaken by the County EMS Agency, Contra Costa County recommended to the DHS that the closure not be permitted. DHS subsequently determined that existing law does not authorize DHS to prevent or delay emergency services closures or downgrades.

Contra Costa County is currently supporting legislation introduced in the 1999-2000 legislative session by Assemblywoman Dion Aroner (AB 421), which would strengthen the provisions of AB 2103. If passed, this legislation would provide that DHS could not permit closure or downgrading hospital emergency services when a county impact evaluation concludes that such closure or downgrading would not be in the best interests of the general public.

IV. EMS System Participants

Advisory Commi

): The EMCC is a multidisciplinary committee

and its EMS Agency. Membership consists of representatives of EMS related organizations and

Board of Supervisors. At that time the Health Services Department assumed the EMCC as an advisory body. In 1997, the Board of Supervis -established the EMCC as advisory to the Board.

public. Specific meeting information is available through the EMS Agency.

: Established in 1977, this committee provides advice and

Examples include ALS and BLS medical treatment guidelines; new prehospital skills and/or medications; prehospital
of medical quality issues. Membership consists of base hospital coordinators, liaison physicians, representatives from each ALS provider agency, and receiving hospital emergency phy representatives.

-Trauma Audit/Trauma Audit Committees (Pre TAC/TAC): These committees evaluate

County Trauma System Plan according to provisions of State trauma regulations. Both Pre TAC and TAC are held jointly with Alameda County and provide monitoring for two separate trauma systems.

committees. Pre- s monthly, is responsible for initial committee review of all trauma related system issues, including select trauma center cases. Cases identified by Pre TAC are referred to the Bi County Trauma Audit Committee (TAC).

-chaired by the county EMS Medical
multidisciplinary representation from the four Alameda/Contra Costa County trauma centers, as well as representatives of non trauma center receiving hospitals, prehospital care providers, ACCMA, coroner's office
Costa and Alameda County also participate in case review activities. Cases referred from Pre-
are reviewed along with cases identified as having teaching value. This committee presents

system or trauma center issues.

Multicasualty Advisory Committee (MCAC): This ad hoc multidisciplinary committee was originally organized by the EMS Agency in 1978 to develop an integrated emergency response plan for multicasualty incidents. The committee has also developed additional procedures for emergency response to varying magnitudes of emergency medical incidents. Representatives from police, fire, EMS, ambulance providers (both ground and air) and receiving hospitals participate. The Multicasualty Incident Plan was last revised in 1998.

First Responder Defibrillation Operations Committee: This committee is charged with reviewing and evaluating operational matters related to the first responder defibrillation program. Membership consists of training representatives from each fire first-responder agencies. This group meets quarterly.

Facilities/Critical Care: This committee evaluates/makes recommendations to the EMCC with respect to issues that impact hospitals and their interface with the EMS system.

Hospital Disaster Forum: This forum provides an arena for interested individuals and agencies to discuss issues of mutual concern regarding hospital disaster preparedness. In addition to hospital representatives, membership of the Forum consists of city disaster planners, ambulance and fire agencies, OES and the EMS Agency. Speakers from both private and government agencies are welcome to support hospitals and cities in disaster preparedness. This group meets quarterly.

B. PSAP's and Dispatch Centers

Public Safety Answering Points:

- Antioch Police Department
- California Highway Patrol
- Concord Police Department
- East Bay Regional Park Police
- Martinez Police Department
- Pinole Police Department
- Pleasant Hill Police Department
- Richmond Police Department
- Sheriff's Communications
- Walnut Creek Police Department

Fire/Medical Dispatch Centers:

- Contra Costa County Fire Dispatch
- West County Consolidated Communications Operations
- San Ramon Valley Fire Dispatch
- Sheriff's Dispatch
- West Bay Dispatch (Pinole Police)

Ambulance Dispatch Centers:

- American Medical Response
- San Ramon Valley Fire
- Contra Costa County Fire (Moraga-Orinda only)

C. First Responders

County Fire Protection Districts:

- Bethel Island Fire Protection District (10 units)
- Contra Costa County Fire Protection District (92 units)
- Crockett-Carquinez Fire Protection District (3 units)
- East Diablo Fire Protection District (14 units)
- Oakley Fire Protection District (7 units)
- Pinole Fire Protection District (Covered by Pinole Fire Department)

Municipal Fire Departments:

El Cerrito Fire Department (6 units)

➢

➢ Richmond Fire Department (20 units)

Independent Fire Protection Districts:

San Ramon Valley Fire Protection District (38 units)

➢ -Hercules Fire Protection District (9 units)

➢ -Orinda Fire Protection District (17 units)

Other First Responders:

East Bay Regional P

➢ Private & military fire services

➢ Moraga- - Paramedic Engine

➢ - Byron/Discovery Bay area

➢ - Paramedic Engine

➢ ighway Patrol -

➢ Contra Costa Fire -

➢ San Ramon Valley Fire –

D. Emergency Ambulance Providers

American Medical Response (16 31 ambulances)

San Ramon Valley Fire (5 ambulances)

➢ a-

E. EMS Helicopters

➢ CALSTAR (1) Buchanan Field; (other helicopters in Gilroy and Roseville).

REACH (1) Buchanan Field; (another helicopter in Vacaville).

➢ nclude Stanford Life Flight, Palo Alto; Davis Life Flight, Sacramento; Medi Flight, Modesto; Air Med Team, Stanislaus County

Rescue Aircraft:

California Highway Patrol (ALS helicopter)

➢

➢ U.S. Coast Guard (BLS rescue capabilities, including hoist ability)

F. Hospitals

Receiving Hospitals:

- Contra Costa Regional Medical Center, Martinez (formerly Merrithew Memorial Hospital)
- Doctors' Hospital, San Pablo Campus (formerly Brookside Hospital)
- Doctor's Hospital, Pinole Campus (No emergency services as of 4/3/00)
- John Muir Medical Center, Walnut Creek
- Kaiser Medical Center, Walnut Creek
- Mt. Diablo Hospital Medical Center, Concord
- San Ramon Regional Medical Center
- Sutter Delta Medical Center, Antioch
- Kaiser Richmond Medical Center, (Inpatient services re-established 1999)

Base Hospitals:

- John Muir Medical Center
- Mt. Diablo Medical Center

Trauma Center:

- John Muir Medical Center
- Children’s Hospital, Oakland is the regional trauma center for pediatric patients.

V. EMS Program Activities

Emergency Ambulance Services

Emergency ambulance services are provided countywide under performance based contracts in each of three exclusive operating areas. The County currently contracts with American Medical sponse, San Ramon Valley Fire Protection District and Moraga-
Contracts are awarded on a competitive basis, as required by law, except for Moraga-
which is exempt from the competitive bid requirement under of the Health & Safety Code.

American Medical Response	All of west, east county and north/central county. Includes cities of Richmond, San Pablo, El Cerrito, Hercules, Pleasant Hill, Lafayette, Walnut Creek, Concord, and	**16 31 ALS/BLS**
Moraga Orinda Fire	-Orinda Fire Protection District including	**2 ALS**
San Ramon Valley Fire	Area of San Ramon Valley Fire Protection District	**5 ALS**

Contracts with all three providers require ALS level response to all life threatening or potentially
-minute or shorter response time for at least 95 perce
Code 3 calls within urban areas. An exception to this response standard is in the central county portion of the Contra Costa Fire Protection District. The District began piloting a first responder
t program, a ten-
been set for the local ambulance transport provider American Medical Response, based on rapid paramedic first response by Contra Costa Fire paramedics. In 1999, the county ambulance staffing
met on 43,937 (98.0%) of 44,851 Code 3 ambulance responses. Paramedics respond to emergency medical requests, while BLS ambulance units remain available to respond to
-life threatening calls and to provide backup during multicasualty incidents or duri
occasions when all ALS units are on calls.

Of these, 44,851 (77.9%) were considered to involve potentially life threatening situations to which a Code 3 (red l
ambulance responses were dispatched Code 2 (immediate response without lights and siren). Of the total responses, 52,169 (90.7%) were handled by American Medical Response, 3,8
Ramon Valley Fire Protection District ambulance, and 1,574 (2.7%) by Moraga-
District ambulance. Average Code 3 ambulance response time countywide was 7.10 minutes.

nsport. Of the 57,568 emergency ambulance responses during the year, 40,081 (69.6%) resulted in patient transport to an emergency receiving

enroute or at the scene without the need for patient transport. Reasons for cancellation vary from

such as private auto, to the patient refusing ambulance transport. In many instances a situation,

which was initially perceived to be a medical emergency, had been resolved or stabilized by the time an ambulance unit arrived on the scene.

Emergency Ambulance Dispatches

	1995		1996		1997		1998		1999	
All EMS Ambulance Dispatches	**46,969**	**100.0%**	**46,980**	**100.0%**	**52,143**	**100.0%**	**53,490**	**100.0%**	**57,568**	**100.0%**
Code 3 (lights & siren)	37,428	79.7%	37,580	80.0%	41,849	80.3%	42,199	78.9%	44,851	77.9%
Code 2	9,541	20.3%	9,400	20.0%	10,294	19.7%	11,291	21.1%	12,717	22.1%
American Medical Response	44,285	94.3%	44,298	94.3%	48,311	92.7%	50,007	93.5%	52,169	90.7%
San Ramon Fire	2,139	4.6%	2,131	4.5%	3,209	6.2%	2,368	4.4%	3,825	6.6%
Moraga-Orinda Fire	545	1.2%	551	1.2%	623	1.1%	1,115	2.1%	1,574	2.7%
Transport	33,056	70.4%	34,010	72.4%	36,877	70.7%	38,510	72.0%	40,081	69.6%
No Transport (Dry Run)	13,913	29.6%	12,970	27.6%	15,266	29.3%	14,980	28.0%	17,487	30.4%
Average Code 3 Response Time	7.01 minutes		6.92 minutes		6.98 minutes		7.22 minutes		7.10 minutes	
Code 3 Responses Not Meeting Ambulance Staffing Standard	561	1.5%	497	1.3%	447	1.1%	499	1.2%	914	2.0%

NOTE: Orinda Fire and Moraga Fire combined into the Moraga-Orinda Fire Protection District in 1997. Prior to that time, calls in Orinda were handled by American Medical Response.

B. Base Hospital and Paramedic Service Programs

Base Hospital Services: Mt. Diablo Medical Center and John Muir Medical Center provide direct (on-line) and indirect (retrospective review) medical oversight services for ambulances countywide. Total base hospital contacts by field personnel in 1999 totaled 7,404. The two base hospitals offered twelve field care audits as continuing education opportunities for prehospital personnel.

Treatment Protocols: EMS Field Treatment Guidelines are used by first responders, paramedics, EMT's, MICN's, and base hospital physicians to provide care to patients in the field. These guidelines are reviewed and endorsed by the Medical Advisory Committee based on current research and medical need in the county and are adopted by the EMS Medical Director. Field treatment protocols are reviewed and revised on an ongoing basis. Changes made in 1999 included reviewing and updating pediatric treatment guidelines.

C. First Responder Services

Most EMS responses involve dispatch of both fire and ambulance units. All firefighters are required by law to be trained in emergency first aid and most are certified as EMT-I's. Firefighters respond from the nearest fire station and are normally the first responder on the scene of a medical emergency. Twelve County-governed, independent district and municipal fire departments respond from a total of 66 fire stations within the county.

First Responder Defibrillation Program: The first responder defibrillation program, established on a countywide basis in 1992, provides rapid access to life-saving care for patients with cardiac arrest. In 1999, 336 patients with cardiac arrest had a semi-automated external defibrillator (SAED) attached. Shocks were administered to 130 patients, and of those 23 survived to hospitalization. A total of 11 patients were discharged alive from hospitals. In all 11 cases, the

patients' cardiac arrests were witnessed (either seen or heard). Witnessed arrests have the greatest probability of survival with rapid activation of the 911 system.

The number of survivors has remained steady over the past three years, and the overall system efficacy remains essentially constant. The most standardized measure of system efficacy compares the number of survivors to the number of witnessed cardiac arrests having shockable cardiac rhythms. For 1999, this percentage was 15.9%. In 1999, a higher percentage of patients received CPR prior to arrival of first responders (41% vs 24.4% in 1998). This percentage, however, is still slightly less than in several past years (average of 45% in 1994-1996).

An additional enhancement to the system has been the introduction of biphasic defibrillators in November 1999. These defibrillators have potential advantages in terms of limiting heart muscle damage from electrical shock and adjusting the level of shock to the patient's individual need. This enhancement was completed without cost to the EMS system.

In 1999 a first responder defibrillation program was implemented in the Moraga and Orinda Police Departments.

First Responder Paramedic Programs: First responder paramedics provide a method for combining early advanced life support care with the generally shorter response times provided by first responder units. Several models of paramedic first responder service are provided in Contra Costa County.

➢ In 1988, the EMS Agency approved the use of a pilot program ALS Engine in Moraga Fire District, to provide back up ALS service to the Moraga paramedic ambulance. An ALS Engine, staffed with at least 1 (one) paramedic and 1 (one) EMT-1 and stocked with ALS equipment/supplies, was dispatched simultaneously with an ALS transport unit to emergency medical requests. This program received permanent approval in 1992.

In 1997, Moraga Fire Protection District merged with the Orinda Fire Protection District to form the Moraga-Orinda Fire Protection District. By 1999 all first responder units were staffed to provide paramedic advanced life support care.

➢ In 1992, American Medical Response, East Diablo Fire District and the EMS Agency entered into a formal cooperative effort to provide a more timely, cost effective method of delivering ALS to citizens in the Discovery Bay/Byron areas by implementing an ALS First Responder Paramedic Unit. This program has had a positive impact on the manner in which ALS care is delivered to this low call volume area.

➢ In 1996, the EMS Agency approved an ALS Engine pilot program in the Bethel Island Fire District, to provide ALS service prior to the arrival of the AMR paramedic transport ambulance. In this largely volunteer fire district, experienced full-time paramedic employees of other ALS provider agencies are hired by Bethel Island on a part-time, on-call basis to staff its ALS Engine. This program was extended through 2000.

➢ In 1997, San Ramon Valley Fire implemented a program under which minimum ambulance staffing was dropped from two paramedics to one paramedic. This enabled the District to increase the number of stations with paramedic staffing and provided flexibility for responses of paramedic ambulances and paramedic engines for critical patients. A dispatch plan was developed based on Medical Priority's Emergency Medical Dispatch System to assure two paramedics are on scene when needed for certain categories of patients.

➢ In 1997, Contra Costa Fire implemented a pilot first-responder paramedic program in the Walnut Creek area. Two engines staffed with a paramedic and 2 firefighters, and "Medic Unit", a non-transporting unit staffed with one paramedic provides first responder services. In 1998 the program expanded to 3 (three) engines and a "Medic Unit", the additional engine having been added in the

Martinez area. In 1999 the program expanded to seven engines and a "Medic Unit" extending coverage throughout Contra Costa Fire's district in the central county area.

All five First Responder Paramedic programs operate under base hospital medical direction as well as EMS Agency policies and procedures.

Emergency Medical Guidelines for Law Enforcement Agencies: Emergency Medical Guidelines For Law Enforcement Agencies were developed and implemented in 1992 following approval by the County Police Chiefs' Association and the Emergency Medical Care Committee. These guidelines provide direction to law enforcement personnel when they are the first to arrive on the scene of a medical emergency. The guidelines, last revised in 1994, address only the medical aspects of the officer's responsibility.

D. Dispatch and Communications

MEDARS: The Medical Emergency & Disaster Ambulance Radio System is the County radio system used for ambulance-to-hospital and for Sheriff's Dispatch-to-ambulance communications. Prior to 1992, the system consisted of two radio channels, MED 1-2, which provided a channel for communications between Sheriff's Dispatch and ambulances and only one channel for all paramedic and EMT units to contact hospitals.

In 1992, two channels were added bringing the EMS communications system up to the current four radio channels. These two channels were designated for paramedic use only, to avoid overcrowding and possible base hospital communications delays.

Message Transmission Network (MTN): MTN is a computer network designed to interconnect the county's four fire/medical dispatch centers, Sheriff's dispatch, and American Medical Response (AMR) dispatch. Currently, the MTN system is in use at Contra Costa Fire Dispatch, Sheriff's Dispatch, and AMR Dispatch and handles about 60% of all EMS dispatches countywide. By establishing a direct data link among the various computer-aided dispatch systems, MTN decreases dispatch time, reduces dispatch errors, enhances ambulance monitoring capability of Sheriff's dispatch, and provides system response data.

MTN makes use of the All County Criminal Justice Information Network (ACCJIN), which provides an existing linkage among 9-1-1 answering points using similar protocols (TCP/IP) to those used on the Internet.

Priority Dispatching: **Emergency Medical Dispatch (EMD)** is a process where EMS dispatchers screen calls to provide appropriate EMS first-responder/ambulance response, and provide simple emergency medical instructions for the caller to initiate prior to the arrival of EMS personnel. Contra Costa Fire Dispatch has been providing limited call screening and pre-arrival instructions for a number of years. In 1993, Medical Priority's ProQA Dispatch System, the only available computerized medical dispatch system, was selected for use as a pilot program by San Ramon Valley Fire's Dispatch Center. Following the successful pilot, the Medical Priority ProQA Dispatch System has been fully implemented in San Ramon's fire/ambulance dispatch center. In **1998** ProQA Dispatch System was implemented in the Contra Costa Fire Dispatch Center and in West County Consolidated Communications Operations (Richmond Police).

Fire Radios: **Sixteen channel mobile radios**, programmed with existing **fire service radio channels**, have been installed in all paramedic units, to facilitate communication among paramedics, fire dispatch centers, and fire first responders.

E. Trauma System

In 1986, the Board of Supervisors approved a comprehensive Trauma System Plan for the County and designated John Muir Medical Center as the county's Level II Trauma Center, and in June of that year, ambulance personnel began transporting critical trauma patients directly to John Muir. Ambulance and base hospital personnel use triage protocols, which include evaluation of

mechanisms of injury and anatomic factors as well as a physiologic trauma scoring system to identify critical trauma patients.

In 1999, 2,909 patients were identified as requiring trauma triage, 827 of whom were transported directly to John Muir Trauma Center. One hundred fifty-seven patients were transported to out of county trauma centers, primarily Children's Hospital, Oakland; Eden Hospital, Castro Valley; and Highland Hospital, Oakland. Patients in traumatic full arrest or whose airway cannot be managed, (total of 41 in 1999) are triaged to the closest basic emergency department for resuscitation. During the past 13.5 years of operation, a total of 40,667 patients have been triaged through the County trauma system.

Critically injured patients who arrive at a non-trauma center hospital may be transferred to a trauma center. Thirty-two of the 76 injured patients transferred to John Muir in 1999 were retrospective "major trauma victims". John Muir Trauma Center also received 170 trauma patients from surrounding counties, generally by air transport. .

If trauma center resources are temporarily overwhelmed the trauma center may consider "Trauma Center Bypass", directing any additional critical trauma patients to out of county trauma centers until resources are again available. In 1999 John Muir Trauma Center bypass rate was 2.8% and was most often due to simultaneous arrival of multiple trauma patients. One critical trauma patient was triaged to an out of county trauma center during bypass.

Trauma System Evaluation: A major aspect of the trauma system is an extensive trauma system and trauma center monitoring program. Included in the monitoring program is a unique, bi-county audit system held in conjunction with Alameda County EMS and Alameda County trauma centers. This joint county evaluation system has been in place since the inception of the county trauma system.

Trauma Injury Prevention: The EMS Agency supported injury prevention activities in 1999, by participating in the Childhood Injury Prevention Coalition and and events (e.g., bicycle Safety Days) and helmet use studies. The EMS Agency also participates on the County's Child Death Review Team. John Muir Trauma Center supports an active injury prevention program that includes car seat inspections, school based presentations, participation in health fairs, representation on a number of injury prevention organizations, target groups and committees. John Muir Injury Prevention has received National Awards of Recognition for their programs and service to the community including recognition for the development of "Nurses & Cops Caring for Contra Costa Children", which provides free car seat inspections for all areas of Contra Costa County throughout the year.

F. Helicopter Transport

The Operational Procedures for Patient Transport by Helicopter were originally developed during trauma system planning in 1985/1986 and were revised in 1994. Most helicopter transports are for trauma patients from distant areas of Contra Costa or from other counties to the John Muir Trauma Center in Walnut Creek. Doctors' Hospital, San Pablo also has a helipad and may be used as an ambulance/helicopter rendezvous point. The County's current standard of care for emergency patients transport by air is by an "air ambulance" which is staffed with two ALS care providers. Rescue aircraft are also requested for their special resources. As an example, a U.S. Coast Guard helicopter has been used for its hoist capability. Additionally, a formal procedure for access of military aircraft has been adopted.

In 1999 there were 400 transports of local patients by helicopter, almost exclusively to trauma centers. Local authorized air ambulance helicopter providers, CALSTAR and REACH, are dispatched on a daily rotation schedule and performed the majority of transports in 1999. John Muir Trauma Center received approximately 140 patients from other Bay area counties

G. Hospital Emergency Services

Interfacility Transfer Process: The original Contra Costa County Patient Transfer Guidelines were approved by the County Board of Supervisors on February 2, 1988. These guidelines established the procedures necessary for the transfer of patients between acute care facilities. A revision of the transfer review process to focus on aggregate data was initiated in 1998. In 1999, 3,126 transfers were reported. The EMCC's Facilities and Critical Care Standing Committee reviews this data quarterly. Trends and issues identified through this process are used to modify policy and to educate hospital and prehospital personnel throughout the county.

Emergency Department Diversion of Ambulances: Diversion of ambulances by the emergency departments of acute care receiving facilities in the County is permitted by an EMS Policy #24, which was initially developed and implemented in 1985. Under the ambulance diversion policy, hospitals whose emergency departments are temporarily overloaded, may direct certain ambulance patients to other nearby hospitals. The purpose of this policy is to assure that patients are transported to a hospital that is able to provide immediate emergency treatment. EMS staff reviews the documentation pertaining to all reported incidents of ED ambulance diversion. During 1999 there were 4 facilities that utilized diversion a total of 20 times or for approximately 35 hours. There were no reports of problems in patient care resulting from these diversion incidents.

At the end of 1997, and into the first quarter of 1998, Contra Costa experienced an acute shortage of ED and critical care resources. This phenomenon was felt in surrounding counties and throughout much of the State. As a result of this shortage, in 1998 the hospitals in Contra Costa worked in conjunction with the Hospital Council and EMS Agency to develop a framework for hospital response to scarcity in staffing, equipment, and/or bed capacity. Each hospital agreed to develop and internally integrate this Hospital Census Alert System for shortages in their facility. This system was implemented countywide in early 1999.

H. Disaster/Multicasualty Planning and Response

Y2K Planning and Response: A major focus of disaster planning by EMS, hospitals, and disaster response agencies during 1999 was on preparation for potential problems related to Y2K issues. Planning included actions to assure that critical computer applications and electronic equipment with embedded microchips were Y2K compliant and contingency planning to respond to critical systems failures as well as to potential out-of-control millennium revelry. EMS, along with all Contra Costa hospitals and emergency ambulance services, participated in a Statewide Y2K exercise held September 16, 1999. EMS staff activated the Health Services Departmental Operating Center (DOC) and the Region II Regional Disaster Medical/Health Coordinator (RDMHC) position on December 31st in preparation for potential problems. RACES amateur radio volunteers were active participants in the September 16th exercise as well as in the December 31st activation. These volunteers responded to hospitals and to the DOC to assist in maintaining vital communications linkages in the event of failures or excess demand. Fortunately, no significant Y2K related problems were encountered in Contra Costa County or within Region II.

Disaster Planning Grant: Since 1990, the EMS Agency has received a series of disaster planning grants through the State EMS Authority in connection with the designation of the Contra Costa County Health Officer as Regional Disaster Medical/Health Coordinator (RDMHC) for the northern California coastal area (OES Region II). These grants have enabled the EMS Agency to enhance the County's EMS disaster preparedness by improving coordination among cities, hospitals, county EMS agencies and State EMS Authority in the event of an earthquake or other major disaster. Initial efforts were toward development of procedures for the rapid assessment of hospital operating status and capacity, and for the communication of that information from hospitals to the County.

In 1999 the major objectives of the disaster planning grant were:

- To continue to develop, implement, and update a medical mutual aid system throughout the region

- To update Region II contact and resource information.
- To facilitate Region II participation in the 2nd annual Statewide Disaster Exercise, and,
- To assist Region II counties to develop their own Medical/Health Departmental Operations Center emergency response plans.

Disaster Medical Assistance Team (DMAT): A DMAT is volunteer team established under the National Disaster Medical System (NDMS), through the U.S. Public Health Service. DMAT volunteer teams are organized, trained, and prepared to provide medical and health care to disaster victims.

In 1997, County Health Services began sponsoring a DMAT, drawing support from 4 other Bay area counties. Alameda, San Francisco, San Mateo, Marin and Contra Costa Counties participate in the Bay area DMAT. A physician serves as DMAT CA-6 Commander, and over 130 individuals have submitted applications volunteering to become a part of the response team or of team support services. DMAT CA-6 is the only DMAT based in northern California and one of just eight within the State.

In November 1999, DMAT CA-6 was awarded a Level I designation. Members from CA-6 deployed to Ft. Dix, New Jersey for Operation Refugees and to Seattle, Washington for the World Trade Organization Council meetings.

Multicasualty Plan: Following the Yuba City/Martinez school bus accident in 1976, which killed 29 and injured another 23 young adults, the EMS Agency recognized the need for a coordinated response to multicasualty events by police, fire and ambulance personnel. The multidisciplinary Multicasualty Advisory Committee (MCAC), produced the first Multicasualty Incident Plan in 1982. This plan established a common organization and management structure for coordination of emergency response to multicasualty incidents, and may be implemented whenever the number of injured exceeds local medical capabilities. The plan was updated in 1998 to incorporate the most current emergency medical response information.

In 1999, multicasualty responses were mounted to a fire at the Tosco Avon Refinery, to a fire at the Chevron Refinery in North Richmond and to the emergency evacuation of Richmond Health Center in response to a noxious odor.

Medical Advisory Alert: The Medical Advisory Alert, a notification procedure developed in 1987, may be implemented when an incident has occurred or a condition exists which *might* tax the local medical resources. When an MAA is implemented, Sheriff's Communications alerts those agencies with responsibilities in providing administrative or other support during a multicasualty incident that the potential for such a situation exists.

Expanded Medical Emergency: The operational procedures for response to an Expanded Medical Emergency were developed to provide an on-scene organizational structure for incidents requiring more than one ambulance, but not requiring the outside support services activated with the Multicasualty Plan. It is designed to avoid overloading one hospital with patients and to eliminate multiple calls to base hospital(s) regarding the same incident. Developed and initiated in 1992, this procedure is used frequently and successfully throughout the County.

Multi-Casualty Supply Caches: In 1991 the EMS Agency purchased emergency medical supplies to be available for use countywide in a multicasualty or disaster situation. Supplies are organized into 25 multi-casualty supply caches that are stored and maintained in fire stations throughout the County. Fire agencies have agreed to rapidly transport caches to incidents if possible. Cache supplies include bandaging equipment, splinting supplies, oxygen administration supplies, and blood pressure equipment.

Health Services Emergency Preparedness Program: In 1999, Health Services continued implementation of the new Health Services Emergency Plan and coordination of emergency plans among the various Health Services divisions. The Emergency Plan identifies how critical health and

medical services will be delivered in a disaster, and how the increased demand for services brought on by the disaster will be managed. Emergency-task checklists, procedures and reporting sites ensure resources are mobilized effectively. Division representatives meet monthly to develop strategies to further prepare key Health Services personnel to respond to medical and health needs of the county in times of disaster. Emphasis in 1999 was on Y2K preparedness and response to a terrorist event involving nuclear, biological or chemical (NBC) weapons of mass destruction. Twenty-seven Contra Costa County Health professionals were trained in medical response to NBC terrorist events.

I. Certification Programs

Paramedics: In January 1994, State EMS Authority was legislated responsibility for credentialling paramedics. In January 1995, paramedic certification was reorganized to become paramedic licensure, and State paramedic recertification written examination procedure was eliminated. In 1999, 161 paramedics were either accredited or re-accredited by the Contra Costa County EMS Agency to practice as paramedics within the County.

EMT-I's: Any local EMS Agency may certify EMT-I's within the State. Once certified, an EMT-I may function as such statewide. In June 1994, legislation passed which permits EMT-I's to either complete continuing education (24 hours), or an EMT-I refresher course every two years to maintain certification. Required written/skills testing process was modified from a 2 year to a 4 year cycle. In 1999, 253 EMT-I's were either certified or recertified in Contra Costa County.

MICN's: In 1999, 35 RN's were either authorized or re-authorized in Contra Costa to practice in the expanded MICN role within the County.

Credential Review: Credential review, as defined in state regulations, is a process reserved for formal investigation of cases where serious lapses in operational or medical protocol not thought to be amenable to remediation have occurred, or cases where there has been a significant deviation from state regulations or county policy.

J. Training Programs

Local EMS Agencies are required to review and approve training programs for prehospital personnel as meeting all requirements established by State regulations.

Paramedic Training Programs: Los Medanos Community College in Pittsburg provides a paramedic training program. Los Medanos completed a paramedic program in early 1999. There are no current plans to offer another paramedic program.

EMT Training Programs: Los Medanos Community College, Mt. Diablo Adult Education, Contra Costa College and METS currently offer EMT training within the county. The EMS Agency has approved the EMT courses offered by these training institutions.

- Los Medanos Community College offers an EMT training program each fall at its Pittsburg campus.
- Contra Costa College offers an EMT training program each year at its San Pablo campus.
- Mt. Diablo Adult Education offers EMT training programs at various times throughout the year at its facility in Concord.
- Medical Emergency Training Systems (METS) offers EMT training programs at various times throughout the year at its facility in Concord.

MICN Training Programs: Los Medanos Community College conducted one MICN class in 1998. Stanford University and UC Davis also provide MICN training in the Bay area. Although lack of MICN classes makes it difficult for interested nurses to obtain this training, both base hospitals continue to have a sufficient number of MICN's for staffing purposes.

K. Public Information Education Programs

The Public Information and Education (PIE) Subcommittee of the Emergency Medical Care Committee is charged with providing public information and education concerning Emergency Medical Services. Emphasis has been on EMS system access, recognition of life threatening situations, prevention of injuries, self-help techniques and first-aid skills that the public can utilize in emergency situations (CPR specifically).

- ➢ Local CPR class availability can be accessed through 1-800-GIVE-CPR. Up until November 1994, the program was available to local residents through the USF/Paramedic Association. When that program was discontinued, the EMS Agency was able to acquire and staff the 800 number for county residents. This number is advertised in the EMS 9-1-1 Brochure, local newspapers, telephone books and CCC Cable TV.
- ➢ EMS has continued to provide speakers for a number of community and wellness organizations such as Junior Chamber of Commerce, the Rotary Club, acute care receiving and skilled nursing facilities, and school districts.
- ➢ Began revision of the EMS 9-1-1 Brochure

L. Other Programs

DNR Program: A Do-Not-Resuscitate (DNR) program for patients with terminal medical problems was implemented in January 1993. This program evolved in response to concern from the public over the patient's right to self-determination. The Do-Not-Resuscitate program allows patients, in conjunction with their physicians, to refuse resuscitative measures in the prehospital setting, even if the 9-1-1 system is inadvertently activated. The DNR form, recognized by prehospital personnel statewide, is physician initiated and provides prehospital personnel with a physician order to not resuscitate the patient. Comfort measures and care other than resuscitative measures are still provided by first responders and ambulance personnel. The EMS Agency has distributed thousands of DNR forms to hospitals, nursing homes, hospices, home health agencies, and private physicians throughout the county.

A. Ambulance Dispatch Report

Year 1999

Number of Dispatches, Response Code, and Response Level by Ambulance Provider

American Medical Response, San Ramon Valley Fire District, Moraga-Orinda Fire District

Response Code and Level	All Providers		American Medical Response		San Ramon Valley Fire*		Moraga/Orinda Fire	
	#	%	#	%	#	%	#	%
Total Dispatches	**57,568**	**100.0**	**52,169**	**100.0**	**3,825**	**100.0**	**1,574**	**100.0**
Code 3 Dispatches	44,851	77.9	39,679	76.1	3,639	95.1	1,533	97.4
Code 2 Dispatches	12,717	22.1	12,490	23.9	186	4.9	41	2.6
Total Code 3 Dispatches	**44,851**	**100.0**	**39,679**	**100.0**	**3,639**	**100.0**	**1,533**	**100.0**
ALS Response	43,937	98.0	38,765	97.7	3,639	100.0	1,533	100.0
BLS Response	914	2.0	914	2.3	0	0.0	0	0.0
Total Code 2 Dispatches	**12,717**	**100.0**	**12,490**	**100.0**	**186**	**100.0**	**41**	**100.0**
ALS Response	6,525	51.3	6298	50.4	186	100.0	41	100.0
BLS Response	6,192	48.7	6192	49.6	0	0.0	0	0.0

Ambulance Dispatch Report (cont.)

Year 1999

Patient Transport by Ambulance Provider

American Medical Response, San Ramon Valley Fire District, Moraga-Orinda Fire District

Response Code and Level	All Providers		American Medical Response		San Ramon Valley Fire*		Moraga/Orinda Fire	
	#	%	#	%	#	%	#	%
Total Dispatches	**57,568**	**100.0**	**52,169**	**100.0**	**3,825**	**100.0**	**1,574**	**100.0**
Transported	40,081	70.5	38,710	74.2	494	12.9	877	55.7
Cancelled	17,487	29.5	13,459	25.8	3,331	87.1	697	44.3
Total Patient Transports	**40,081**	**100.0**	**38,710**	**100.0**	**494**	**100.0**	**877**	**100.0**
Transported Code 3	3,093	7.7	3,009	7.8	37	7.5	47	5.4
Transported Code 2	36,778	91.8	35,491	91.7	457	92.5	830	94.6
Helicopter	197	0.5	197	0.5	0	0.0	0	0.0
Transport Code Not Reported	13	0.0	13	0.0	0	0.0	0	0.0
Total Cancelled	**17,487**	**100.0**	**13,459**	**100.0**	**3,331**	**100.0**	**697**	**100.0**
Enroute	3,921	22.4	2,799	20.8	1020	30.6	102	14.6
On Scene	13,566	77.6	10,660	79.2	2,311	69.4	595	85.4

* December 1999 data not available for San Ramon Valley Fire Protection District.

Community	#	%	#	%	#	%	Time*	on Response	
Totals	**57,568**	**100.0**	**12,717**	**22.1**	**44,851**	**77.9**	**7.10**	**914**	**2.0**
Richmond	9,946	17.3	1,259	12.7	8,687	87.3	6.96	242	2.8
San Pablo	2,733	4.7	546	20.0	2,187	80.0	6.06	61	2.8
El Cerrito	1,483	2.6	207	14.0	1,276	86.0	7.62	47	3.7
El Sobrante	379	0.7	57	15.0	322	85.0	8.02	7	2.2
North Richmond	19	0.0	1	5.3	18	94.7	6.71	0	0.0
Kensington	207	0.4	24	11.6	183	88.4	11.49	5	2.7
Pinole	1,257	2.2	149	11.9	1,108	88.1	6.18	21	1.9
Hercules	707	1.2	121	17.1	586	82.9	7.80	9	1.5
Rodeo	398	0.7	89	22.4	309	77.6	8.48	3	1.0
Crocket	255	0.4	39	15.3	216	84.7	12.01	5	2.3
Concord	8,534	14.8	2,655	31.1	5,879	68.9	6.70	117	2.0
Martinez	2,779	4.8	893	32.1	1,886	67.9	7.95	82	4.3
Pleasant Hill	2,043	3.5	576	28.2	1,467	71.8	6.51	27	1.8
Pacheco	269	0.5	53	19.7	216	80.3	7.15	6	2.8
Clayton*	383	0.7	98	25.6	285	74.4	10.82	6	2.1
Clyde	9	0.0	2	22.2	7	77.8	9.57	0	0.0
Walnut Creek	5,458	9.5	1,436	26.3	4,022	73.7	7.40	54	1.3
Lafayette	953	1.7	275	28.9	678	71.1	8.83	7	1.0
Orinda	871	1.5	53	6.1	818	93.9	8.22	2	0.2
Moraga	647	1.1	8	1.2	639	98.8	7.70	0	0.0
Alamo	313	0.5	17	5.4	296	94.6	4.27	0	0.0
Danville	1,724	3.0	77	4.5	1,647	95.5	4.00	0	0.0
San Ramon	1,550	2.7	91	5.9	1,459	94.1	3.61	0	0.0
Diablo	16	0.0	0	0.0	16	100.0	5.38	0	0.0
Antioch	5,339	9.3	1,555	29.1	3,784	70.9	6.66	72	1.9
Pittsburg	4,810	8.4	1,358	28.2	3,452	71.8	7.33	86	2.5
Bay Point	1,403	2.4	324	23.1	1,079	76.9	7.53	18	1.7
Oakley	1,002	1.7	253	25.2	749	74.8	9.07	13	1.7
Bethel Island	282	0.5	81	28.7	201	71.3	14.46	4	2.0
Knightsen	14	0.0	0	0.0	14	100.0	13.08	1	7.1
Brentwood*	1,068	1.9	281	26.3	787	73.7	9.00	14	1.8
Discovery Bay*	222	0.4	76	34.2	146	65.8	17.21	3	2.1
Byron*	137	0.2	42	30.7	95	69.3	15.65	2	2.1
Out of County	2	0.0	0	0.0	2	100.0	6.00	0	0.0
Other/Unknown	356	0.6	21	5.9	335	94.1	6.47	0	0.0

Hospital	All Transports		Transports		Transports		Unknown	
	#	%	#	%	#	%	#	%
Totals	**40,081**	**100.0**	**3,217**	**100.0**	**36,799**	**100.0**	**65**	**100.0**
Contra Costa Reg.	5,300	13.2	112	3.5	5,188	14.1	0	0.0
Doctors, Pinole	1,990	5.0	184	5.7	1,805	4.9	1	1.5
Doctors, San Pablo	7,126	17.8	478	14.9	6,647	18.1	1	1.5
John Muir	4,577	11.4	679	21.1	3,894	10.6	4	6.2
Kaiser, Richmond	1,456	3.6	43	1.3	1,412	3.8	1	1.5
Kaiser, Walnut Crk	3,405	8.5	230	7.1	3,173	8.6	2	3.1
Mt. Diablo	7,768	19.4	711	22.1	7,057	19.2	0	0.0
San Ramon Reg	277	0.7	23	0.7	254	0.7	0	0.0
Sutter/Delta	6,211	15.5	521	16.2	5,690	15.5	0	0.0
Valley Care	12	0.0	1	0.0	11	0.0	0	0.0
Alta Bates	680	1.7	22	0.7	658	1.8	0	0.0
Children's	201	0.5	56	1.7	145	0.4	0	0.0
Eden	3	0.0	1	0.0	2	0.0	0	0.0
Highland	6	0.0	1	0.0	5	0.0	0	0.0
Kaiser, Vallejo	230	0.6	2	0.1	228	0.6	0	0.0
Kaiser, Oakland	114	0.3	0	0.0	114	0.3	0	0.0
Summit	17	0.0	0	0.0	17	0.0	0	0.0
Helicopter Transport	197	0.5	124	3.9	21	0.1	52	80.0
Other/Unknown	511	1.3	29	0.9	478	1.3	4	6.2

B. Helicopter Utilization Report

Contra Costa Patients Transported by Helicopter

Origin	1995		1996		1997		1998		1999	
	Pts	%	Pts	%	Pts	%	Pts	%	Pts	%
TOTAL	**280**	**100.0**	**268**	**100.0**	**273**	**100.0**	**376**	**100.0**	**400**	**100.0**
West County	114	40.7	114	42.5	130	47.6	127	33.8	140	35.0
East County	120	42.9	102	38.1	103	37.7	122	32.4	176	44.0
South County	10	3.6	23	8.6	12	4.4	9	2.4	21	5.3
Central County	36	12.9	29	10.8	28	10.3	29	7.7	55	13.8
Unknown							89*	23.7	8	2.0

*Information unavailable from air ambulance providers. A significant portion of these patients are thought to have been transported from outside of Contra Costa.

Helicopter Transports Originating Within Contra Costa by Provider Agency

Provider	1995		1996		1997		1998		1999	
	Pts	%	Pts	%	Pts	%	Pts	%	Pts	%
TOTAL	**280**	**100.0**	**268**	**100.0**	**273**	**100.0**	**376**	**100.0**	**400**	**100.0**
CALSTAR	250	89.3	251	93.7	244	89.4	195	51.9	182	45.5
REACH	8	2.9	7	2.6	13	4.8	86	22.9	204	51.0
CHP	4	1.4	6	2.2	3	1.1	3	<1	5	1.3
Other	17	6.1	4	1.5	13	4.8	0	0.0		<1
Unknown	1	<1	0	0.0	0	0.0	92*	24.5	9	2.3

*Information unavailable from air ambulance providers. A significant portion of these patients is thought to have been transported from out side of Contra Costa.

Transported to a trauma center	930	842	957	925	984
John Muir Medical Center	835	735	841	814	827
Children's Hospital, Oakland	71	87	88	99	129
Other trauma center	24	20	28	12	28
Transported to the closest receiving hospital	47	39	40	39	41
CPR/Unstable airway	46	38	39	38	41
Trauma center on bypass	1	1	1	1	0
Triaged in the field as not having major trauma	2,124	2,112	1,856	1,956	1,884

Field Triage Errors (errors per 100 patients triaged with major trauma) – 1999

$$\textbf{Undertriage error rate} = \frac{\text{Patients field-triaged as not having major trauma, but subsequently found to have major trauma}}{\text{Total number of patients triaged in the field as having major trauma}} = \frac{13}{1025} = \textbf{1.3}$$

$$\textbf{Overtriage error rate} = \frac{\text{Patients field-triaged as having major trauma, but subsequently found not to have major trauma}}{\text{Total number of patients triaged in the field as having major trauma}} = \frac{534^*}{1025} = \textbf{52.0}$$

* Not all follow-ups received from Eden, Highland, or Children's Hospital Oakland.

Definitions:

Field triaged major trauma - All patients meeting County EMS criteria based on CRAMS score or anatomic factors for automatic consideration as major trauma patients plus all patients meeting trauma base hospital call-in criteria for whom a trauma center destination is given.

Retrospective major trauma determination - All patients whose hospital Injury Severity Score (ISS) is over 15 or who have an ISS between 10 and 14 with at least three day hospital stay are considered to be major trauma patients. All patients not meeting these criteria are considered non-major trauma patients.

Undertriage and Overtriage Rates by Year

Type of Triage Error	1995	1996	1997	1998	1999
Undertriage	2.0	2.4	3.8	2.9	1.3
Overtriage	54.1	46.5	50.3	45.0	52.0

Contra Costa	814	827
Solano	131	94
Alameda	14	15
Marin	12	23
Napa	*	6
Other	5	4
Unknown	89	37

* Any patients transported from Napa in 1998 would be included in "Other".

Mode of Transport for All Trauma Patients Transported to John Muir Trauma Center

Mode of Transport & Origin	1998		1999	
	Pts	%	Pts.	%
Total All Modes	**1,065**	**100.0**	**1,006**	**100.0**
Ground Total	527	49.5	435	43.2
Contra Costa	527	49.5	435	43.2
Air Total	538	50.5	571	56.8
Contra Costa	287	26.9	392	39.0
Out of County	162	15.2	142	14.1
Unknown*	89	8.4	37	3.7

* Incomplete data submitted by CALSTAR and REACH.

Major Trauma Diagnosis for All Trauma Patients Transported to John Muir Trauma Center

Major Trauma Diagnosis	1998		1999	
	Pts.	%	Pts.	%
Patients transported to John Muir from the FIELD as critical trauma patients	**814**	**100.0**	**827**	**100.0**
TC diagnosed as major trauma victims	482	59.2	430	52.0
TC diagnosed as NOT major trauma victims.	332	40.8	397	48.0

rhythm	142	29.1	145	31.5	107	27.6	164	39.9	130	38.7
Patients without shockable rhythm	356	70.9	316	68.5	280	72.4	247	60.1	206	61.3
Patients with shockable cardiac rhythms	**142**	**100.0**	**145**	**100.0**	Information not available		**164**	**100.0**	**130**	**100.0**
Witnessed arrest	88	62.0	82	56.6			73	44.5	69	53.1
Unwitnessed arrest	54	38.0	63	43.4			91	55.5	46	35.4
Unknown	0		0				0		15*	11.5
CPR prior to EMS arrival	65	45.8	66	45.5			40	24.4	54	41.5
No CPR prior to EMS arrival	77	54.2	79	54.5			117	71.3	57	43.8
Unknown	0		0				7	4.3	19*	14.6
Patients with shockable cardiac rhythms	**142**	**100.0**	**145**	**100.0**	**107**	**100.0**	**164**	**100.0**	**130**	**100.0**
"Field Saves"	43	30.3	35	24.1	23	21.5	20	12.2	23	17.7
"System Saves"(patient discharged from hospital)	17	12.0	17	11.7	13	12.1	11	6.7	11	8.5

* Information not available.

First Responder Defibrillation Activity Report by Agency -- 1999

Fire Agency	Defibrillator Attached	Patient Shocked	Patient Discharged
Total	**336**	**130**	**11**
Bethel Island	2	1	1
Contra Costa	203	85	6
Crockett	3	2	0
East Diablo	11	4	0
El Cerrito	35	14	0
Moraga-Orinda	0	0	0
Oakley	5	4	0
Pinole	8	1	1
Richmond	45	15	2
Rodeo	20	3	1
San Ramon	4	2	0

Transferring facility					
Contra Costa Regional	5	6	5	38	52
Doctors' Pinole	41	50	88	194	114
Doctors' San Pablo	143	197	244	686	652
John Muir	26	11	19	38	150
Kaiser Martinez	37	17	257	118*	0
Kaiser Richmond	65	126	1,312	1,498	809
Kaiser Walnut Creek	8	10	128	635	285
Mt. Diablo	144	127	148	203	253
San Ramon	22	20	21	52	62
Sutter Delta	334	335	302	623	749

*Kaiser Martinez closed 1/98.

Reason for Transfer

Reason for Transfer	1999	
	#	%
Total patients transferred.	**3,126**	**100.0**
Higher Level of Care	1,274	40.8
5150	86	28.2
No Bed	308	9.9
Insurance Status	430	13.8
Other	137	4.4
Patient Request	78	2.5
Not Marked	13	0.4

Total patients transferred.	**3,126**	**100.0**
Psychiatric	909	29.1
Pediatric	480	15.4
Cardiac	193	6.2
Respiratory	144	4.6
Neurosurgery	123	3.9
General Surgery	179	5.7
OB/GYN	106	3.4
Trauma	89	2.8
Other Medical	854	27.3
Other	46	1.5
Not Marked	3	<1

Mode of Transfer

Transfer Mode	1999	
	#	%
Total patients transferred.	**3,126**	**100.0**
EMT-I Ambulance	2,063	66.0
Critical Care Transport	826	26.4
Paramedic Ambulance	69	2.2
Auto/Taxi	74	2.4
Other (including Helicopter)	77	2.5
Not Marked	17	<1

Avg time/event	2.5 hrs	2.3 hrs	1.6 hrs	4.3 hrs	1.25 hrs
Doctors' Pinole					
# of events	0	0	3	0	1
Total time	0 hrs	0 hrs	5.4 hrs	0 hrs	2.5 hrs
Avg time/event	0 hrs	0 hrs	1.8 hrs	0 hrs	2.5 hrs
Doctors San Pablo					
# of events	35	16	34	6	1
Total time	49.8 hrs	24.7 hrs	77.8 hrs	6.2 hrs	2.5 hrs
Avg time/event	1.4 hrs	1.5 hrs	2.3 hrs	1.0 hrs	2.5 hrs
John Muir					
# of events	0	0	1	0	0
Total time	0 hrs	0 hrs	1.4 hrs	0 hrs	0.0 hrs
Avg time/event	0 hrs	0 hrs	1.4 hrs	0 hrs	0.0 hrs
Kaiser Martinez			11/97 - No longer receives ambulance patients	N/A	N/A
# of events	0	1			
Total time	0 hrs	13 hrs			
Avg time/event	0 hrs	13 hrs			
Kaiser Richmond			4/97 - No longer receives ambulance patients	N/A	
# of events	2	0			*0
Total time	26.0 hrs	0 hrs			0.0 hrs
Avg time/event	13.0 hrs	0 hrs			0.0 hrs
Kaiser Walnut Creek					
# of events	0	0	3	0	0
Total time	0 hrs	0 hrs	12.8 hrs	0 hrs	0.0 hrs
Avg time/event	0 hrs	0 hrs	4.3 hrs	0 hrs	0.0 hrs
Mt Diablo					
# of events	20	19	9	1	0
Total time	34.6 hrs	46.2 hrs	14.0 hrs	1.7 hrs	0.0 hrs
Avg time/event	1.7 hrs	2.4 hrs	1.5 hrs	1.7 hrs	0.0 hrs
San Ramon Regional					
# of events	0	1	0	0	0
Total time	0 hrs	1.1 hrs	0 hrs	0 hrs	0.0 hrs
Avg time/event	0 hrs	1.1 hrs	0 hrs	0 hrs	0.0 hrs
Sutter Delta					
# of events	2	6	13	10	16
Total time	2.0 hrs	5.5 hrs	28.5 hrs	10.2 hrs	27.8 hrs
Avg time/event	1.0 hrs	0.9 hrs	2.2 hrs	1.0 hrs	hrs

* Limited ambulance traffic resumed 2/99.

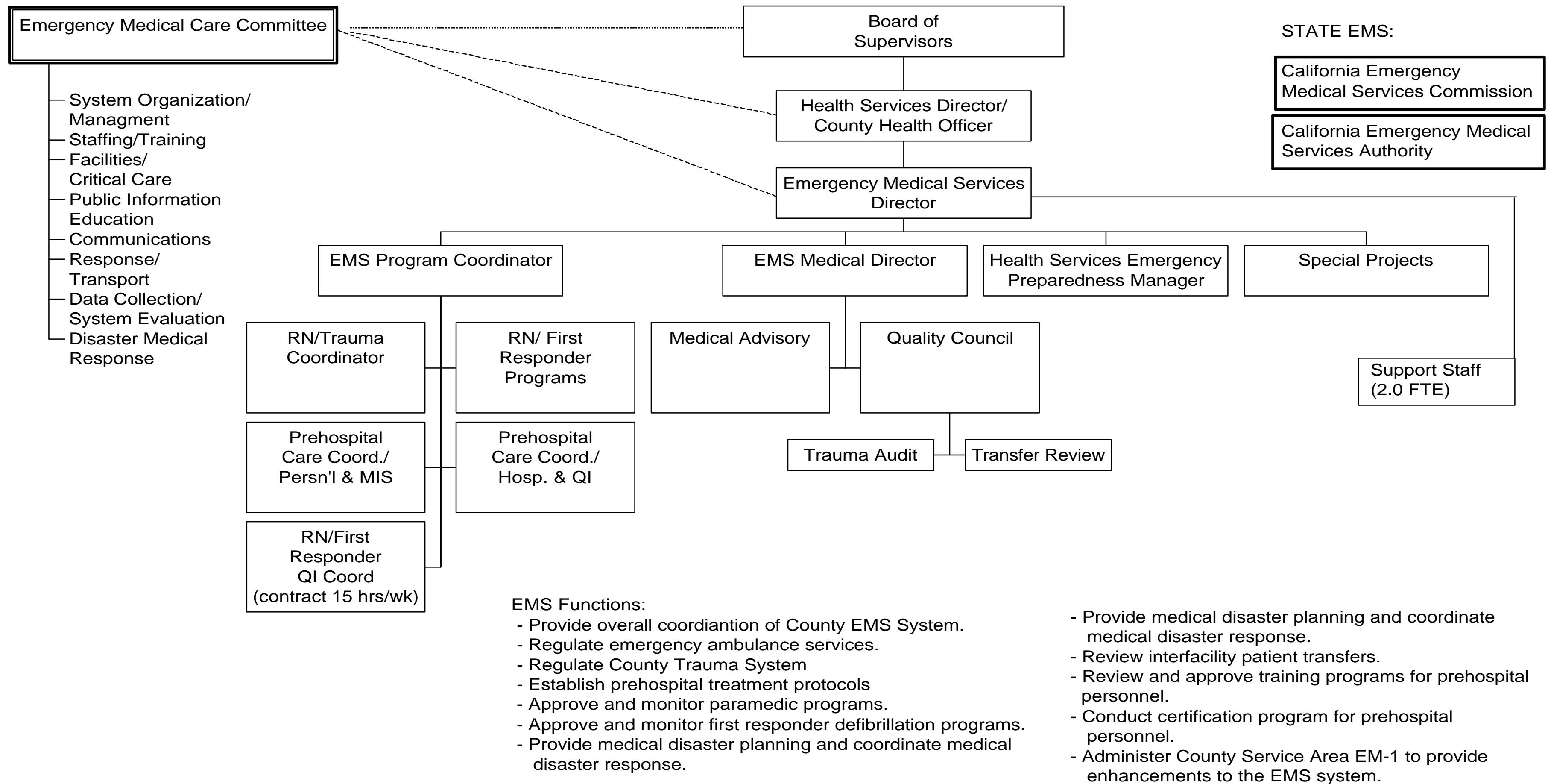
Total Base Contacts	13,296	100.0	13,646	100.0	10,426	100.0	7,270	100.0	7,404	100.0
ALS Care Provided	10,172	76.5	10,407	76.3	8,572	82.2	4,819	66.3	3,919	52.9
No ALS Provided	3,124	23.5	3,239	23.7	1,854	17.8	2,451	33.7	2,734	36.9
EMT-P Contacts	12,823	96.4	13,057	95.7	9,633	92.4	6,482	89.2	6,424	86.8
EMT-I Contacts	187	1.4	163	1.2	186	1.8	132	1.8	101	1.4
EMT Not Identified	286	2.2	1	0.0	607	5.8	103	1.4	572	7.7
Adult Patients	12,744	95.8	12,857	94.2	9,781	93.8	6,849	94.2	6,846	92.5
Pediatric Patients (age < or = 14)	398	3.0	525	3.8	403	3.9	290	4.0	330	4.5
Age Not Identified	106	0.8	158	1.2	231	2.2	149	2.0	212	2.9

Contacts by Base Hospital -- 1999

	System Totals	John Muir Base	Mt. Diablo Base
Total Base Contacts	7,404	4,856	2,548
ALS Care Provided	3,919	2,542	2,128
No ALS Provided	2,734	2,314	420
EMT-P Contacts	6,424	4,206	2,218
EMT-I Contacts	101	48	53
EMT Not Identified	572	295	277
Adult Patients	6,846	4,407	2,439
Pediatric Patients (age < or = 14)	330	243	87
Age Not Identified	212	190	22

VII. EMS Agency Organizational Chart

Contra Costa Health Services Emergency Medical Services



EMS Functions:

- Provide overall coordiantion of County EMS System.
- Regulate emergency ambulance services.
- Regulate County Trauma System
- Establish prehospital treatment protocols
- Approve and monitor paramedic programs.
- Approve and monitor first responder defibrillation programs.
- Provide medical disaster planning and coordinate medical disaster response.
- Provide medical disaster planning and coordinate medical disaster response.
- Review interfacility patient transfers.
- Review and approve training programs for prehospital personnel.
- Conduct certification program for prehospital personnel.
- Administer County Service Area EM-1 to provide enhancements to the EMS system.

TOTAL	564,743	620,945	600,131	827,423	835,386

B. Measure H Enhancements (County Service Area EM-1)

Category	FY 1994-95	FY 1995-96	FY 1996-97	FY 1997-98	FY 1998-99
Direct costs:					
Salaries & benefits	199,984	178,254	176,573	167,657	181,583
Services & supplies	3,580,773	4,409,931	3,797,066	3,595,767	3,788,740
Paramedic ambulance services (AMR contract)	2,502,384	2,502,384	2,502,384	2,356,412	2,076,380
Paramedic ambulance services (Moraga Fire contract)	117,116	58,558	58,558	79,872	79,872
Paramedic services (San Ramon Valley Fire)	--	--	--	--	150,000
First responder services - East Diablo Fire paramedic program (AMR contract)	229,841	233,480	232,840	237,312	232,841
First responder services - Bethel Island Fire paramedic program	--	--	81,113	106,160	96,731
First responder services – Contra Costa Fire paramedic program	--	--	--	--	147,533
Base hospital services	100,000	100,000	100,000	--	50,000
First responder services - fire service reimbursements	76,503	830,714	299,999	306,902	306,932
First responder services - defibrillation program	35,332	133,029	94,436	58,070	171,018
Sheriff's dispatch	168,012	168,012	168,012	180,747	181,221
Other EMS dispatch and radio communications	55,933	38,031	15,695	59,775	74,766
Poison control center services	20,361	107,965	44,618	--	--
Hazmat program	150,000	150,000	150,000	150,000	150,000
Other services & supplies	125,291	87,758	49,411	60,517	71,446
Total direct costs	3,780,757	4,588,185	3,973,639	3,763,424	3,970,323
Administration/collection	262,687	403,000	383,922	357,720	400,647
Contribution to reserves	--	180,637	--	--	--
TOTAL	**4,224,081**	**5,171,822**	**4,357,561**	**4,121,144**	**4,370,970**

1968 ➢ **Emergency Medical Care Committee (EMCC)** appointed by County Board of Supervisors to provide oversight of emergency medical services within the county.

1970 ➢ State **Wedworth-Townsend Act** enabled counties to conduct pilot projects using **paramedics and mobile intensive care nurses** (MICN's) to provide advanced life support services to patients in the field.

➢ **Ambulance Regulations** added to the County Ordinance Code which included permit and ambulance registration processes.

1972 ➢ Ten **ambulance zones** established for the provision of emergency ambulance service within the county.

1975 ➢ In response to EMCC's recommendation and with county approval, Health Department agreed to develop an **advanced life support program** and to provide coordination of emergency medical services countywide. Initial EMS Program developed with Federal funding under auspices of Comprehensive Health Planning.

1976 ➢ Los Medanos Community College, in conjunction with Stanford University, developed first **training programs** for paramedics and MICN's.

1977 ➢ **First paramedics and MICN's graduated** from Los Medanos Community College training programs and were certified by County Health Officer.

➢ John Muir Medical Center and Mt. Diablo Medical Center designated **Base Hospitals** for medical control of paramedic units throughout the county. (Initial base hospital services were provided on a monthly rotation schedule.)

➢ **Joint Exercise of Powers Agreement** between Alameda and Contra Costa Counties established an East Bay EMS Region for the development of a Regional EMS program.

➢ **First paramedic-staffed ambulances** responded in Walnut Creek (Pomeroy Ambulance in May 1977); in Moraga (Moraga Fire Protection District in June 1977); in Concord (Michael's Ambulance in January 1978); and in Richmond (Cadillac Ambulance February 1978 - Labor issues delayed active participation in program until 1979).

1980 ➢ Joint Powers Agreement for Regional emergency medical services disbanded following the recommendations of EMCC's from Alameda and Contra Costa Counties.

➢ Comprehensive **California Emergency Medical Services System and Prehospital Emergency Medical Care Personnel Act enacted**. This legislation set EMS system standards, as well as prehospital personnel training/certification standards, and provided a basic standardized structure for EMS systems throughout the State.

➢ Provision added to the County Ambulance Ordinance which established **exclusive ambulance zones** for emergency and non-emergency transport.

➢ Brookside Hospital designated by county as third base hospital to provide medical direction for west county paramedic units.

that sought the highest level of service possible without County subsidy resulted in exclusive contracts with Cadillac Ambulance, Regional Ambulance, Moraga Fire District, San Ramon Valley Fire District, and East County Ambulance.

1984

- ➢ Paramedic level ambulance transport services implemented by San Ramon Valley Fire District in a joint program with John Muir Medical Center.
- ➢ Ten ambulance zones consolidated into 5 **Emergency Response Areas** (ERA's). Exclusive ambulance service contracts awarded to Cadillac Ambulance, Regional Ambulance, Moraga Fire and San Ramon Valley Fire following competitive bid.

1985

- ➢ **EMS System Plan** developed according to standards set by EMS Authority.
- ➢ First formal RFP process for paramedic **base hospital designation** developed and administered for 4 base hospital zones countywide.
- ➢ **Emergency Medical Dispatch** (EMD) standards and criteria developed and recommended by the EMCC.
- ➢ Procedure for **Emergency Department (ED) diversion** implemented to allow diversion of emergency ambulances away from an ED if number of critical patients in ED was such that any more critical patients could not be cared for adequately.
- ➢ Brookside Hospital emergency department downgraded licensure to "Standby Emergency Services" and relinquished paramedic base hospital designation.

1986

- ➢ Comprehensive **Trauma System Plan** approved by Board of Supervisors providing for the designation of a single Level II Trauma Center. Trauma system **treatment and triage protocols** adopted. Ambulance personnel and first responders trained in specialized critical trauma patient management.
- ➢ John Muir Medical Center designated as County's **Level II Trauma Center**.
- ➢ Bay Area **Trauma Registry Project** initially funded by State EMSA.
- ➢ Operational Procedures for **Patient Transport by Helicopter** implemented.
- ➢ Cadillac Ambulance purchased by Regional Medical Systems making RMS the single private emergency ambulance provider in county.
- ➢ **Competitive bidding process** for emergency ambulance service providers in 5 ERA's. service contracts awarded to Regional Ambulance, Moraga Fire and San Ramon Valley Fire.
- ➢ Base Hospital contracts established with John Muir Medical Center, Mt. Diablo Medical Center and Los Medanos Community Hospital.
- ➢ Emergency medical dispatch program including pre-arrival instructions implemented by Contra Costa County Fire Dispatch Center.

1987

- ➢ Formal **Patient Transfer Guidelines**, which included a multi-disciplinary quality assurance process to be administered by the EMS Agency, adopted by Board of

Supervisors, as well as by all hospitals within the county.

- ➢ Health Services Department **Emergency Management Team** consisting of key Health Services personnel designated to respond to the County EOC or Medical/Health Operations Center in a disaster.
- ➢ Program for reporting **communicable disease exposure** developed and available to fire, police and ambulance agencies countywide.
- ➢ Brookside Hospital restored to basic emergency licensure status.

1988

- ➢ **"Measure H"**, a general election ballot advisory measure calling for the establishment of a benefit assessment for enhanced EMS services, approved by 71.6% of the voters countywide.
- ➢ Joint **Solano/Contra Costa County EMS Hazardous Materials Training Project** established with 5 year funding under consent agreement between IT Corporation and State Department of Health Services; administered by EMS Agency.
- ➢ Pilot "**first responder paramedic engine**" program undertaken by Moraga Fire Protection District.

1989

- ➢ Countywide **Benefit Assessment District for Enhanced Emergency Medical Services**, County Service Area EM-1, approved by all city councils and established by Board of Supervisors under administration of Health Services.

1990

- ➢ C**ounty Service Area EM-1** became operational.
- ➢ Initial funding for the **EMS Disaster Planning Project** obtained from State EMSA and administered by local EMS Agency. The County Health Officer is the designated **Regional Disaster Medical Health Coordinator** (RDMHC) for OES Region 2.
- ➢ San Ramon Regional Medical Center licensed for Basic Emergency Services opened in San Ramon.

1991

- ➢ **High-performance ambulance contracts** initiated with Regional Ambulance, San Ramon Valley Fire, and Moraga Fire. Standards set for required paramedic-staffed ambulance response to emergency calls at a 95% 10 minute maximum response for urban areas of county. Number of paramedic staffed ambulances increased from 12 to 19 to meet this standard with ambulance service subsidies funded by Measure H.
- ➢ **First Responder Defibrillation Program** developed which included an RFP competitive bid process for semi-automatic defibrillator selection. PhysioControl was selected to provide defibrillation equipment.
- ➢ Countywide system of M**ulticasualty Medical Caches** established including supplies to be used in multicasualty or disaster situations.
- ➢ Specialized **Hazardous Materials Response Protocols** and training program developed and implemented for ambulance personnel.
- ➢ The first **paramedic training program** to be provided in the County on an on-going basis began at Los Medanos Community College.

1992

- ➢ **Fire First Responder Defibrillation Program** implemented countywide.
- ➢ "**Emergency Medical Guidelines for Law Enforcement Agencies**" endorsed by the EMCC and the County Police Chiefs' Association.
- ➢ "EMS **Operational Procedures For Response to an Expanded Medical Emergency**" (EME) developed and implemented.
- ➢ **"Do Not Resuscitate" program** instituted which provides patients with option of predetermining levels of resuscitation to be performed by field personnel.

predetermining levels of resuscitation to be performed by field personnel.

- E**MS treatment protocols for children** developed and implemented.
- Two **new radio channels** for ambulance-hospital communications put into service.
- John Muir Trauma Center permanently (20 years) designated as **Level II trauma center** following request-for-proposal review process.
- **In Fire Service EMS Models Assessment** completed.
- Base Hospital contracts renegotiated with Mt. Diablo, John Muir and Los Medanos hospitals.
- The **Medical Transmission Network**, a fire/medical dispatch computer linkage project was begun.
- **First responder paramedic** program funded by Measure H and provided by American Medical Response implemented in Byron/Discovery Bay area.

1993

- Base hospital services no longer provided by Los Medanos Hospital.
- **Chemical release** from General Chemical Company in Richmond area triggered a large-scale fire, police and EMS response. Thousands of patients requested evaluation at local medical facilities in following weeks.
- Poison control public hotline discontinued by San Francisco Poison Control Center due to funding issues. EMS Agency maintained PCC access via local 911 system.
- Functional integration of 5 County fire districts (Contra Costa County, Riverview, Orinda, Moraga and West County).
- County "Do Not Resuscitate" program reorganized to incorporate new State Guidelines.
- "**Quality Action Team**" formed to improve EMS incident review.
- 16 channel **mobile radios** programmed with existing fire service radio channels, installed in all paramedic units.
- State funding for **Highway Injury Record Linkage Software** (HIRLS) and **Firearm Injury Reporting, Surveillance and Tracking (FIRST) System** projects obtained by EMS Agency; programs administered by Health Services Injury Prevention Program.

1994

- Continuing education adopted as method for EMT-I's to maintain State certification.
- Los Medanos Community **Hospital closed** 4/23/94.
- Responsibility for paramedic certification transferred from individual counties/regions to State EMSA.
- Hospital personnel trained in **Hospital Emergency Incident Command System** (HEICS).
- **Medical/health mutual aid response** to Northridge earthquake in southern California coordinated among northern California coastal counties (Region II).
- **EMT-I training program for firefighters** established by EMS Agency.
- State EMSA grant to study poison control center alternatives obtained by EMS Agency.
- Emergency Medical Care Committee restructured to report to Health Services Director.

1995

- Kaiser, Richmond and Oakland merged. Richmond facility received only non-critical ambulance patients due to lack of ICU capabilities.
- Paramedic certification changed to State licensure.

➢ **Revised EMS System Plan** approved by EMCC and County Board.

➢ EMS Agency gained part-time Assistant EMS Medical Director.

➢ San Ramon Valley Fire Protection District successfully completed pilot **computerized medical dispatch program**.

➢ EMS started the **1-800-GIVE-CPR** public information program locally.

➢ **BLS standards** added to EMS Prehospital Care Manual.

1996 ➢ Asst. EMS Medical Director position became **EMS Medical Director**.

➢ Standards for **EMS Enhanced First Responder Programs** developed.

➢ Request for Proposal process for emergency ambulance service. Contracts awarded to San Ramon Fire and American Medical Response. Moraga Fire exempt from competitive bid process.

➢ Bethel Island Fire's First Responder Paramedic program started.

➢ Emergency Medical Care Committee performed EMS System evaluation.

➢ Local hospitals and Health Services/EMS staff participated in "**Hospital Shelter-in-Place Project**" funded by local Emergency Planning Committee and State OES.

➢ **Computerized pen-based Patient Care Report** pilot introduced.

1997 ➢ **Bay Area Disaster Medical Assistance Team** (DMAT) was formed and sponsored by County Health Services.

➢ Contra Costa Fire Protection District's First Responder Paramedic Program implemented. **"Partners"** course used to train EMT-Is to assist paramedics.

➢ **Multicasualty response** to victims of Concord Water World slide collapse. One death and 32 injured were triaged to area hospitals.

➢ Regional Disaster Medical Health Coordinator provided public health nurse mutual aid during 1996-97 winter storms in No. California.

➢ **Computerized pen-based patient care reporting** implemented Countywide.

➢ EMCC made a Board of Supervisors advisory committee.

➢ **Statewide Poison Control Center** system implemented.

➢ John Muir Medical Center and Mt. Diablo Medical Center merged to form John Muir/Mt. Diablo Health System.

➢ Brookside Hospital acquired by Tenet Corporation and renamed Doctor's Hospital, San Pablo Campus. Doctor's, Pinole became Doctor's Hospital, Pinole Campus.

➢ Kaiser, Richmond and Kaiser, Martinez downgraded services provided. No longer designated ambulance-receiving facilities.

➢ Orinda Fire and Moraga Fire merged to form Moraga-Orinda Fire Protection District.

➢ American Medical Response purchased by Laidlaw. Laidlaw merged its ambulance services under the AMR name.

➢ **Interfacility Transfer Review** process revised.

1998 ➢ Board of Supervisors declared a local emergency due to shortage of hospital **emergency and critical care resources**.

➢ The **new county hospital**, Contra Costa Regional Medical Center opened.

- ➢ First load of **spent nuclear fuel rods** transported by train through county.
- ➢ Antioch Ambulance Service bought by Golden Empire Ambulance.
- ➢ American Medical Response accepts subsidy reduction to fund expansion of Contra Costa Fire First Responder Paramedic Program.
- ➢ West County Consolidated Communications Operations and Contra Costa Fire District Dispatch Center personnel trained in Emergency Medical Dispatch (EMD)
- ➢ **Defibrillation equipment** upgraded.
- ➢ **Multicasualty Incident (MCI) Plan** revised.
- ➢ State grant obtained for **Data Linkage and Outcome Project**.
- ➢ **Resource Information Management System** (RIMS) installed to provide linkage of Region II counties to Statewide disaster information management system.
- ➢ **Hospital resource assessment** completed.
- ➢ Bay Area DMAT attained Level II designation.
- ➢ Department-wide Contra Costa Health Services **Emergency Plan** completed.

1999

- ➢ Kaiser Richmond opened inpatient critical care as part of plan to become a full-service hospital over the next year.
- ➢ Oakley Fire organized as a fire protection district.
- ➢ Contra Costa Fire expanded Pilot First Responder Paramedic Program in central county.
- ➢ **Multicasualty response** to a fire at Tosco's Avon Refinery.
- ➢ **Multicasualty response** to a fire at Chevron Refinery, North Richmond.
- ➢ **Multicasualty response** to Richmond Health Center for noxious odor assessment.
- ➢ Pilot **Bi-phasic AED project** implemented.
- ➢ Health Services Department Operations Center (DOC) activated for **Y2K transition**.

2000

- ➢ All Moraga-Orinda Fire EMS response vehicles staffed with paramedics.

X. Glossary of EMS Terms

- **Abbreviated Injury Score (AIS):** A scale created to describe the anatomical injuries resulting from trauma. AIS scores obtain a value from each of 9 body areas: head, face, neck, thorax, spine, upper extremities, lower extremities, and external/other. For each body region, a severity code is assigned which describes the injuries as minor, moderate, serious severe, critical, maximum injury with little chance of survival, and unknown. The AIS is universally accepted and is the foundation for the Injury Severity Score.
- **Advanced Cardiac Life Support (ACLS):** An advanced level certification provided by the American Heart Association generally required for paramedics, emergency nurses and emergency physicians.
- **Advanced Life Support:** Special services designed to provide definitive prehospital emergency medical care, including, but not limited to, cardiopulmonary resuscitation, cardiac monitoring, cardiac defibrillation, advanced airway management, intravenous therapy, specified drug administration, and other specified techniques and procedures administered by paramedics under the direct supervision of a base hospital as part of a local EMS system at the scene of an emergency, during transport to an acute care hospital, during interfacility transfer, and while in the emergency department of an acute care hospital until responsibility is assumed by the emergency or other medical staff of that hospital.
- **Air Ambulance:** Any aircraft specifically constructed, modified or equipped, and used for the primary purpose of responding to emergency calls and transporting critically ill or injured patients whose medical flight crew has at a minimum two attendants certified or licensed in advanced life support.
- **Authorized Registered Nurse (ARN) or Mobile Intensive Care Nurse (MICN):** A registered nurse who has been authorized by the medical director of the local EMS agency as qualified to issue instructions to prehospital emergency medical care personnel within an EMS system according to standardized procedures developed by the local EMS agency.
- **Authorizing EMS Agency:** The local EMS Agency which approves utilization of specific EMS aircraft within its jurisdiction.
- **Base Hospital:** One of a limited number of hospitals which, upon designation by the local EMS agency and upon the completion of a written contractual agreement with the local EMS agency, is responsible for directing the advanced life support (ALS) system and prehospital care system assigned to it by the local EMS agency.
- **Base Hospital Physician:** A physician who is currently licensed in California, who is assigned to the emergency department of a base hospital, and who is knowledgeable in the medical protocols, radio procedure and general operating policies of the County EMS system, and a person from whom ambulance personnel may take medical direction by radio or telephone.
- **Basic Life Support:** Emergency first aid and cardiopulmonary resuscitation procedures which, as a minimum, include recognizing respiratory and cardiac arrest and starting the proper application of cardiopulmonary resuscitation (CPR) to maintain life without invasive techniques until the victim may be transported or until advanced life support is available.
- **Basic Trauma Life Support (BTLS):** A trauma care course developed by the American College of Emergency Physicians. This course is required for paramedics in Contra Costa County.
- **Blunt:** An injury that occurs without penetration of the body (e.g. motor vehicle injuries, falls, assaults with blunt instruments).
- **Cardiac Arrest:** A state when the heart stops beating or where it quivers (ventricular fibrillation)

and does not pump blood to the rest of the body, which will result in death. Resuscitation, such as defibrillation, if provided soon enough may save the patient's life in some situations.

- **Cardiopulmonary Resuscitation (CPR):** The procedure of performing artificial respiration and artificial circulation to a non-breathing, pulseless patient.
- **Casualty Collection Point (CCP):** A site for the congregation, triage (sorting), preliminary treatment, and evacuation of casualties following a disaster.
- **Code 2:** Used by EMS systems to refer to immediate ambulance responses to potentially urgent but non-life threatening incidents without using red lights and sirens and adhering to all Vehicle Code requirements (speed limits and rights-of-ways).
- **Code 3:** Ambulance response with red lights and sirens to an emergency incident. When responding Code 3, the emergency unit may exceed the posted speed limit within certain constraints and may proceed through red lights without making a complete stop, although the ambulance driver is held responsible for assuring safety for his/her unit and other drivers while doing so.
- **Computer Aided Dispatch (CAD):** A computer system consisting of associated hardware and software to facilitate call taking, unit selection, resource dispatch and deployment, event time stamping, as well as creation and real time maintenance of incident database.
- **County Service Area (CSA) EM-1:** Special benefit assessment district established by the Board of Supervisors to fund EMS enhancements.
- **CRAMS**: A 10 point scale used to identify Critical Trauma Patients. The acronym CRAMS represents five weighted component measures: **C**irculation, **R**espiration, **A**bdomen/Thorax, **M**otor and **S**peech. It was designed as a prehospital triage tool. The scale ranges from 0 (most severe) to 10 (least severe).
- **Critical Trauma Patient (CTP):** Any patient who meets established field trauma triage criteria and is triaged to a trauma center or is triaged to a closer facility due to trauma center bypass or due to trauma full arrest or unmanageable airway.
- **Defibrillator:** A piece of equipment which can momentarily arrest all non-coordinated contractions of heart muscle fibers with the use of electric current in order that a spontaneous beat may resume. Hospitals and paramedics (ALS providers) use manually operated defibrillators which require judgement on the part of the rescuer. First responders use automatic or semi-automatic defibrillators which assess the patient's cardiac status and provide the shock (or instruct that the shock be provided) if necessary.
- **Dispatch Center:** Coordinating center for efficient management of all participating emergency resources within a designated area of responsibility. Centers dispatch rescue personnel and equipment, and coordinates these various resources to ensure maximum effectiveness.
- **Emergency:** A condition or situation in which an individual has a need for immediate medical attention, or where the potential for such need is perceived by emergency medical personnel or a public safety agency.
- **Emergency Ambulance Unit:** A vehicle specially constructed, equipped with appropriate medical equipment/supplies, and staffed with qualified personnel for transporting sick or injured patients.
- **Emergency Department:** The area of a licensed general acute care hospital that customarily receives patients in need of emergency medical evaluation and or care.
- **Emergency Medical Services Aircraft:** Any aircraft utilized for the purpose of prehospital emergency patient response and transport. EMS aircraft includes air ambulances and all categories of rescue aircraft.
- **Emergency Medical Services Authority (EMSA):** The State EMS organization which develops standards for local EMS systems and provides coordination and leadership.

- **Emergency Medical Services Commission:** A State multidisciplinary committee established by State legislation to review and approve regulations, standards, and guidelines, as well as to advise the EMS authority on a variety of issues.
- **Emergency Medical Services Medical Director:** A licensed physician appointed as the medical director of the local EMS Agency to provide medical control and to assure medical accountability through the planning, implementation and evaluation of the EMS system.
- **Emergency Medical Services System:** A specially organized and coordinated arrangement which provides for the personnel, facilities, and equipment for the effective and coordinated delivery of medical care services under emergency conditions.
- **Emergency Medical Services System Plan:** A plan for the delivery of emergency medical services consistent with state guidelines addressing the components listed in Health and Safety Code Section 1797.103.
- **Emergency Medical Technician-I (EMT-I):** An individual trained in all facets of basic life support and certified by the EMS Agency in the county where training occurred. In the Contra Costa County EMS system, EMT-I staffed ambulances generally provide back-up to paramedic staffed ambulances, although they may be dispatched to respond to certain requests which have been determined to require only basic life support services.
- **Emergency Medical Technician-Paramedic, EMT-P or Paramedic:** An individual whose scope of practice includes skills and procedures to provide advanced life support as part of an EMS system and who is certified by the State of California and accredited by the local EMS agency has having met established criteria. In the Contra Costa County EMS system, paramedics are to be dispatched to all emergency medical requests unless it has been established by the fire/medical dispatch center that a basic life support ambulance is a sufficient level of response.
- **Emergency Operating Center (EOC):** A facility designed and equipped for the use by city, county or other governmental agency leadership to manage the disaster response to the community.
- **Emergency Response Area (ERA):** An ambulance zone designated by the county for issuing ambulance permits and identifying exclusive operating areas for emergency ambulance service agreements. Contra Costa County is divided into five emergency response areas.
- **Fire/Medical Dispatch Center:** A public Safety Dispatch Center which receives requests to respond to medical emergencies, dispatches medical first responders and initiates ground and air ambulance response.
- **First Responder:** The first EMS rescuer to arrive on the scene of a medical emergency; generally a fire non-transport unit.
- **Health & Safety Code:** The division of State legislation that includes Division 2.5 EMS Statutes.
- **Health Services:** A department of county government responsible for health related issues. Contra Costa Health Services, which includes the Emergency Medical Services Agency, has been designated by the local Board of Supervisors as the "Local EMS Agency".
- **Hospital Emergency Incident Command System (HEICS):** A generic crisis management plan developed expressly for comprehensive medical facilities which is modeled closely after the Fire Service Incident Command System.
- **Incident Command System (ICS):** A flexible organizational structure which provides a basic expandable system developed by the Fire Services to mitigate any size emergency situation. In 1992 California law mandated this system be used by emergency responders and emergency planning officials within public service.
- **Injury Severity Score (ISS):** The sum of the squares of the highest AIS codes in each of the three most severely injured body regions. The ISS is one component used in calculating the patient's probability of survival.

- **Local EMS Agency:** The local agency, usually a county health department, or office having primary responsibility for administration of emergency medical services in a county or multi-county area.
- **Major Trauma Patient (MTV):** A retrospective determination made by assessing and scoring a patient's injuries using the Abbreviated Injury Scale (AIS) and Injury Severity Score (ISS). In Contra Costa County, an ISS of greater than 15 or an ISS of 10 to 14 with a greater than 3 day length of hospitalization is classified as an MTV.
- **Measure H:** The Contra Costa County advisory ballot measure in the Fall of 1988, which, when it passed overwhelmingly in each city and in the unincorporated area of the County, advised a special assessment be collected to support EMS programs; specifically added paramedic ambulance units, EMS communications system enhancements, disaster supplies, and enhanced medical training and equipment for fire first-responders.
- **Medical Control:** The medical management of the emergency medical services system. This is done prospectively, e.g., policies and procedures; on-line, e.g., base hospital direction; and retrospectively, e.g., continuing education, case review, quality improvement activities.
- **Morbidity:** Disability or abnormality resulting from an illness or injury.
- **Mortality:** Any death resulting from injury or illness.
- **Multicasualty Incident (MCI):** An emergency incident involving any number of injured persons which over-taxes the rescue and medical resources of the responsible agencies within an area of the County.
- **Mutual Aid:** The furnishing of resources from one individual or agency to another, including but not limited to facilities, personnel, equipment and/or services, pursuant to an agreement between the individuals and/or agencies when requested during time of need.
- **Penetrating:** Any injury that penetrates the skin (e.g. gunshot wounds or stabbings).
- **Predesignated Rendezvous Landing Site:** An emergency medical services landing site as authorized by the local EMS Agency with input of jurisdictional fire agency, predesignated to facilitate transport of patients when the scene does not allow for a landing site.
- **Probability of Survival:** Statistically defines the patient's chance of surviving sustained injuries. The range of possible values for this probability (referred to as Ps) is from 0.0 to 1.0. A Ps of 0.0 indicates no chance of survival and a 1.0 means that the patient is expected to live. The components of Ps are RTS, age ISS and the type of injury (blunt or penetrating).
- **Public Safety Agency:** A functional division of a public agency which provides fire fighting, police, medical or other emergency services.
- **Public Safety Answering Point (PSAP):** The location where 9-1-1 calls are answered and either appropriate resources are dispatched or the request is relayed to the responding agency.
- **Regional Disaster Medical/Health Coordinator (RDMHC):** An individual within each OES Region whose principle function is to coordinate the acquisition of medical and health mutual aid in response to a request from the State EMS Authority, Department of Health services, or Governor's Office of Emergency Services in support of a state medical/health response to a major disaster.
- **Rescue Aircraft:** An aircraft whose usual function is not prehospital emergency medical transport but which may be utilized, in compliance with local EMS policy, for prehospital emergency patient transport when use of an air or ground ambulance is inappropriate or unavailable.
- **Response Time:** The actual elapsed time between receipt of a request for service and the arrival of the ambulance at the requested location.
- **Revised Trauma Score (RTS):** A score using three physiological parameters to measure injury severity: The Glasgow Coma Scale, systolic blood pressure, and respiratory rate.

- **Standardized Emergency Management System:** A system required by Government Code for managing response to multi-agency and multi-jurisdictional emergencies in California. SEMS consists of five organizational levels which are activated as necessary: Field Response, Local Government, Operational Area, Region, State.
- **START:** Acronym for Simple Triage and Rapid Treatment. This is the initial triage system developed by Hoag Hospital and Newport Beach Fire Department, Newport Beach CA that has been adopted by the California Fire Chief's Association.
- **Trauma Care System:** A formally organized arrangement of health care resources, defined by the local EMS Agency, by which severely injured patients are triaged, transported to and treated at designated trauma centers.
- **Trauma Center:** A licensed general acute care hospital which has been designated as a Level I, II or III Trauma Center by the local EMS Agency. The trauma center provides staffing and equipment to immediately provide evaluation and intervention for severely injured patients. John Muir Medical Center is the designated Level II Trauma Center for Contra Costa County.
- **Trauma System Plan:** A formal plan for the transport and care of critically injured patients. Trauma system plans must be submitted to and approved by the EMS Authority and must be updated annually. The Contra Costa County Trauma System Plan includes the utilization of one level II trauma center within the county.
- **Trauma Triage Criteria:** Method used by ambulance personnel to determine whether an injured patient needs the specialized services of a trauma center. The method considets the mechanism of injury, obvious injuries and other information obtained in a brief patient exam.
- **Triage:** Continuous process of sorting accident victims according to severity of their injuries. Necessary when the number of victims exceeds the number of rescuers or resources available.
- **Weapons of Mass Destruction:** include nuclear, biological or chemical weapons used in terrorist attacks.

XI. List of Documents Available at the EMS Agency

9-1-1 Brochure
County Service Area EM-1 Proposal and Service Plan
Disaster Medical Assistance Team, DMAT CA-6 information
EMCC By-laws
Emergency Medical Guidelines for Law Enforcement Agencies, 1992
EMS Agency Annual Program Reports
EMS Aircraft – Classification, 1998
EMS System Plan, 1995
EMS System Plan, Annual Update - 1998
Expanded Medical Emergency Response Procedure
Facilities Assessment, 12/99
Medical Helicopter Dispatch Guidelines, 4/98
Message Transmission Network Specifications
Multicasualty Cache Supplies and Locations
Multicasualty Incident (MCI) Plan, 1/98
Operational Procedures for Patient Transport by Helicopter, 7/94
Partners Course
Patient Transfer Guidelines, 1997
Prehospital Care Manual, 1/00
Regional Disaster Medical/Health Coordinator Emergency Plan
Request for Proposal for Emergency Ambulance Services, 1996
Request for Proposal for First Responder Defibrillation Equipment, 1991
Request for Proposal for Trauma Center Designation, 1992
Trauma System Plan, 1986

EMS Policies:

Communicable Disease Exposure
Contra Costa County Emergency Medical Services Fee Structure
County Paramedic Evaluator
Determination of Death in the Prehospital Setting
Do Not Resuscitate (DNR) Orders in the Prehospital Setting
Emergency Department Diversion
EMT-1 Certification
End-Tidal CO_2 Detection Devices
First Responder Defibrillation
First Responder Paramedic Programs
Hospital Guidelines for Interfacility Transfers via Ambulance
Immediate Medical Control & Direction of Paramedics
Interfacility Paramedic Transfer Program
MICN Authorization and Re-authorization

Paramedic Accreditation
Paramedic Base Hospital Communications on ALS calls
Paramedic Student Preceptor Program
Patient Destination Determination
Patient Refusal of Emergency Medical Care and/or Ambulance Transport
Physician on Scene
Prehospital Continuing Education Provider
Prehospital Credential Review Process Guidelines
Prehospital Patient Care Record (PCR)
Procedures for Controlled Substances
Pulse Oximetry
Reporting Abuse of Children or Elder/Dependent Adults
Transfer of Care in the Field
Transfer of Critical or Possibly Critical Trauma Patients to Trauma Center
Trauma Patients