

Contra Costa County Health Services Department
Emergency Medical Services Agency

1994 Annual Program Report

- June 1995 -

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I. IntroductionI. Introduction

A. Overview of EMSA. Overview of EMS

Emergency Medical Services includes that 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 hospital 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. EMS includes ambulance services, fire services, law enforcement agencies, public safety dispatch centers, hospitals and specialty care centers, training institutions and organizations, citizen and medical advisory groups, local and state EMS agencies, and other governmental and voluntary organizations. While most EMS responses are day-to-day emergencies, EMS agencies also plan and prepare for disaster medical response.

In California, EMS systems are organized on a county or regional basis. Local EMS Agencies designated by county boards of supervisors are responsible for local EMS planning and coordination consistent with State law and regulations. Local EMS agencies are the lead agencies coordinating EMS services at the county or regional level. The State Health Services Emergency Medical Services Authority (EMSA) is the lead EMS agency. The State 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 the County Health Services Department as the Local EMS Agency. The EMS functions of the Health Services Department are carried out by the EMS Director and staff. The County Health Officer is designated as the EMS Medical Director with statutory responsibilities to oversee medical aspects of the EMS program. The Emergency Medical Care Committee (EMCC) meets regularly to provide advice and recommendations regarding EMS matters to the County Health Services Director and to the EMS Agency.

B. Local EMS Agency FunctionsB. Local EMS Agency Functions

The principal functions of a local EMS agency are specified in the Health & Safety Code. These include:

- Planning, implementing, and evaluating emergency medical services.
- Monitoring and approving EMT-I, paramedic, and Mobile Intensive Care Nurse (MICN) training programs.
- Conducting certification/accreditation/authorization 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.
- Developing and implementing a trauma system plan.

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).

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

- Planning and coordinating disaster medical response.
- Approving and monitoring Prehospital Continuing Education Providers.

To accomplish these functions, the EMS Agency employs a full time staff of 9 persons, including the EMS director, program coordinator, two prehospital care coordinators, trauma coordinator, training coordinator, administrative aide, and two clerks.

C. Emergency Medical Care CommitteeC. 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 has acted as an advisory body to its board of supervisors and local EMS agency on all matters relating to EMS.

In 1994, the County Board of Supervisors reorganized its advisory body system and recommended that the EMCC become advisory to the Health Services Director. The Health Services Director appointed the existing EMCC members to this new advisory committee on a temporary basis. Recommendations for objectives and prescribed membership will be made to the Health Services Director as part of the comprehensive EMS system planning process currently being undertaken.

The current Contra Costa EMCC consists of 20 members. Each of the Contra Costa County Board of Supervisors selects one consumer representative. Additionally, the Board appoints members nominated by the following organizations:

American Heart Association
American Red Cross
California Highway Patrol
Contra Costa Ambulance Providers
Emergency Department Physicians
Emergency Nurses Association
Fire Chiefs' Association
Health Services Department
Hospital Council of Northern & Central California, East Bay Conference
Los Medanos College or Contra Costa College
Office of Emergency Services
Police Chiefs' Association
Public Managers' Association
Sheriff-Coroner Communication Division
Alameda-Contra Costa Medical Association

The EMCC meets on the second Wednesdays of January, February, April, May, July, August, October, and November, 4:00 to 5:30 p.m., in the County Emergency Operating Center located at 50 Glacier Drive, Martinez. All meetings of the EMCC and its subcommittees are open to the public.

During 1994, the EMCC held 5 committee meetings (3 meetings were canceled during interim committee reorganization). Meetings were also held by various standing and ad hoc subcommittees. The EMCC actions and activities included the following:

- Initiated work on the State required EMS System Plan revision. EMCC members participated eight subcommittees formed to address EMS system components.
- EMCC members committed to continue serving on the committee as advisory to the Health Services Department Director rather than the Board of Supervisors pending EMS System Plan completion and approval.

Two consumer members of the EMCC also served on a special evaluation committee to review the performance of the County's emergency ambulance contractors.

D. Delivery of EMS ServicesD. 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 necessary information to dispatch fire first responder and ambulance.

The initial response to a potentially life threatening incident includes both a fire 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. Firefighters are trained and equipped to provide rescue, first aid, and cardiac defibrillation.

Emergency ambulance services in most parts of the County are provided by a private company, American Medical Response (formerly Regional Ambulance), under contract with the County. In the San Ramon Valley and Moraga 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. Advanced life support (ALS) ambulance units are staffed with two paramedics and are always dispatched to potentially life threatening incidents. Paramedics work under direction of base hospital medical personnel and are able to administer lifesaving drugs and perform other invasive lifesaving procedures. Basic life support (BLS) ambulance units are staffed by two EMT-I's and may be used for non-emergency response or to provide additional support at an emergency incident. In some areas, firefighter first responders may respond to medical emergencies in an ambulance vehicle rather than an engine. This provides backup transport capability to the paramedic ambulance in the event there are multiple victims or a delay in the paramedic ambulance response.

Patient treatment and transport are carried out under State and local EMS agency policies and procedures. These policies may include, in the case of paramedics, making contact with a mobile intensive care nurse (MICN) or physician at a designated base hospital to obtain direction in management of the patient. Patients are transported to an appropriate hospital. Hospital destination is based upon County EMS protocols and patient preference. Critical patients may be directed to the nearest emergency department or to a 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. CALSTAR, one of ten medical helicopter services authorized to respond to EMS calls in Contra Costa, maintains a 24-hour helicopter unit staffed by specially trained flight nurses based at Buchanan Field in Concord. Other helicopter services are available to respond from neighboring counties if CALSTAR is unavailable.

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

In 1988, the voters of Contra Costa County passed countywide Measure H providing 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 add six staffed paramedic ambulance units to respond to 9-1-1 calls; to establish a firefighter first

responder defibrillation program and to purchase automatic defibrillators for all fire response units; to purchase medical supply caches for use in multicasualty and disaster response; to upgrade the MEDARS radio system used for ambulance-to-hospital communications; to provide ambulances with radios for communication with fire first responders, and to upgrade the ambulance dispatch system and dispatcher preparedness.

F. Development of EMS in Contra Costa County

The emergency medical services system approach and the use of paramedic personnel to provide advanced life support care under the supervision of a base hospital physician or mobile intensive care nurse began evolving as a new model for health care delivery in the late 1960's. Contra Costa as well as a number of other progressive counties throughout California began developing their emergency medical services systems during that time. Following are milestones in the development of the EMS system in Contra Costa County:

- 1968** ➤ **Emergency Medical Care Committee (EMCC)** appointed by the Contra Costa County Board of Supervisors to provide oversight of emergency medical services within the county. This committee laid the foundation for the EMS system as it exists today.
- 1970** ➤ State **Wedworth-Townsend Act** passed enabling 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 setting.
 - **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 in Contra Costa County.
- 1975** ➤ EMCC recommended that the County develop an **advanced life support program** and identify an agency to **coordinate emergency medical services** throughout the county. The County Health Department established the **EMS Program** with Federal funding under the auspices of Comprehensive Health Planning.
- 1976** ➤ Los Medanos Community College in conjunction with Stanford University developed **training programs for paramedics and MICN's**.
- 1977** ➤ **First paramedics and MICN's graduated** from Los Medanos Community College training programs and certified by the County Health Officer.
 - **Joint Exercise of Powers Agreement** between Alameda and Contra Costa Counties established the East Bay EMS Region as means for the development of a Regional EMS program.

- 1978** ➤ First **paramedic-staffed ambulances** put into service in Moraga by Moraga Fire Protection District, in Concord by Michael's Ambulance and in Walnut Creek by Pomeroy Ambulance.
- 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.)
- 1980** ➤ Joint Powers Agreement for Regional EMS disbanded at the request of the EMCCs of both Alameda and Contra Costa Counties.
- Comprehensive **California Emergency Medical Services System and the Prehospital Emergency Medical Care Personnel Act** passed. This legislation set EMS system standards as well as prehospital personnel training and certification standards and provided a basic standardized structure for EMS systems throughout the state.
- Provision establishing **exclusive ambulance zones** for emergency and non-emergency transport added to the County Ambulance Ordinance.
- Brookside Hospital designated by County as a third base hospital brought medical direction closer for west county paramedic units.
- 1982** ➤ The Board of Supervisors approved the County **Multicasualty Incident Plan** providing for on-scene coordination, resource notification, and patient distribution in multicasualty situations.
- 1983** ➤ Health Services Department designated by the Board of Supervisors as **Local EMS Agency** pursuant to State EMS Act. County Health Officer designated **EMS Medical Director**.
- **Revised Ambulance Ordinance** established competitive bidding process for emergency ambulance service. **Request for Proposal (RFP)** results in selection of five providers based upon highest level of service without County subsidy: Cadillac Ambulance, Regional Ambulance, Moraga Fire District, San Ramon Valley Fire District, and East County Ambulance.
- 1984** ➤ **San Ramon Valley Fire District** established paramedic level ambulance service through joint undertaking with John Muir Medical Center.
- Ten ambulance zones consolidated into **5 Emergency Response Areas (ERAs)**. Exclusive ambulance service contracts were awarded to 4 providers: Cadillac Ambulance, Regional Ambulance, Moraga Fire and San Ramon Valley Fire.
- 1985** ➤ **EMS System Plan** developed according to standards set by the State 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 by an Ad Hoc subcommittee of the EMCC.
 - Procedure for **Emergency Department (ED) diversion** developed and implemented to permit diversion of emergency ambulances away from an ED if the number of critical patients in the ED was such that more critical patients arriving in the department could not be cared for adequately.
 - Brookside Hospital dropped as base hospital as a result of downgrading of emergency department from "Basic Emergency Services" licensure to "Standby Emergency Services" licensure.
- 1986**
- Comprehensive **Trauma System Plan** providing for the designation of a single Level II Trauma Center approved by Board of Supervisors. RFP issued for trauma center designation. Trauma system **treatment and triage protocols** adopted. Ambulance personnel and first responders received **specialized training** in critical trauma patient management.
 - John Muir Medical Center designated as **Level II Trauma Center** for the County pursuant to the Trauma System Plan.
 - The **Bay Area Trauma Registry Project** funded by the State undertaken to develop a trauma data registry.
 - **Operational Procedures for Patient Transport by Helicopter** implemented.
 - Cadillac Ambulance purchased by Regional Medical Systems making RMS the single private emergency ambulance provider in the county.
 - **RFP process for emergency ambulance service** in 5 ERAs. Ambulance service contracts awarded to 3 providers: Regional Ambulance, Moraga Fire and San Ramon Valley Fire.
 - **Base Hospital** contracts established with John Muir Medical Center (2 zones), 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** adopted by Board of Supervisors. Guidelines included development of multi-disciplinary quality assurance review process administered by EMS Agency.

- 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 the reporting of **communicable disease exposure** developed and made available to fire, police and ambulance agencies countywide.
 - Basic Emergency status re-established for Brookside Hospital emergency department.
- 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 five year funding under a consent agreement between IT Corporation and State Department of Health Services. Joint project administered by Contra Costa 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 the County Board of Supervisors under administration of County Health Services.
- 1990**
- **County Service Area EM-1** became operational.
 - **EMS Disaster Planning Project** initially funded by the State administered by the EMS Agency. The County Health Officer is the designated Regional Disaster Medical Health Coordinator 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 required paramedic-staffed ambulance response to emergency calls at 95% 10 minute maximum response for urban areas of the county. The number of paramedic ambulances increased from 12 to 19 paramedic units with ambulance service subsidies funded by Measure H.
 - **First Responder Defibrillation Program** developed and implemented including an RFP competitive bid process for semi-automatic defibrillator selection.

- Countywide system of **Multicasualty Medical Caches** established containing 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.
 - First issue of the **EMS Newsletter** produced and distributed to provide EMS system participants with information regarding new policies/procedures, continuing education activities and other EMS related activities.
- 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.
 - "**Operational Procedures For Response to an Expanded Medical Emergency**" developed and implemented.
 - "**Do Not Resuscitate**" program implemented.
 - **EMS treatment protocols for children** developed and implemented.
 - **Two new radio channels** for ambulance to hospital communications obtained.
 - John Muir Trauma Center permanently (20 years) designated as **Level II trauma center** following request-for-proposal review process.
 - **Proposed In Fire Service EMS Model Assessment** report completed and distributed.
 - New **Base Hospital contracts** negotiated with Mt. Diablo Hospital, John Muir Medical Center, and Los Medanos Hospital.
 - Initiation of **fire/medical dispatch linkage** project.
 - **First responder paramedic program** implemented in rural Byron/Discovery Bay area as a cooperative effort among East Diablo Fire, American Medical Response (formerly Regional Medical Systems), and the County.
- 1993**
- Los Medanos Community Hospital terminated base hospital status. Mt. Diablo Medical Center assumed base hospital responsibilities for ambulances assigned to east county.

- A release at General Chemical Company, Richmond, triggered a large scale response by fire, police and EMS.
 - Emergency State legislation moved responsibility for **paramedic certification** from individual counties/regions to State EMSA.
 - **Functional integration** of 5 County fire districts (Contra Costa County Fire Protection District, Riverview Fire Protection District, Orinda Fire Protection District, Moraga Fire Protection District and West County Fire Protection District).
 - Initial implementation of Medical Transmission Network to **inter-link computer dispatch systems** of all agencies involved in emergency ambulance dispatch.
 - County "**Do Not Resuscitate**" program expanded to recognize State Guidelines.
 - **Continuous Quality Improvement "Quality Action Team"** formed to improve prehospital incident review process.
 - San Ramon Valley Fire Protection District began pilot to evaluate **computerized medical dispatch program**.
 - **16 channel mobile radios**, programmed with existing fire service radio channels, installed in all paramedic units.
 - **Highway Injury Record Linkage Software (HIRLS)** and **Firearm Injury Reporting, Surveillance and Tracking (FIRST) System** projects funded by a State EMS Grant obtained by the EMS Agency.
- 1994** ➤ Los Medanos Hospital no longer providing hospital services.

II. List of Major Accomplishments - 1994

- Initiated revision of **EMS System Plan**.
- 44,473 **emergency ambulance responses**.
- Completed **Medical Transmission Network linkage** between Contra Costa County Fire District and American Medical Response; began development of linkages with Sheriff's Communications and Richmond Police Dispatch.
- Conducted **Hospital Emergency Incident Command System training** for hospital personnel.
- Conducted a **major functional exercise testing** the County's disaster medical response plan; participated in State disaster medical exercise.
- **Coordinated medical/health mutual aid response** from 14 northern California coastal counties (Region II) to the Northridge earthquake.
- Completed initial work on standardization of incident review process through **Continuous Quality Improvement "Quality Action Team"**.
- **436 EMT-I's certified, 91 paramedics accredited and 46 MICN's authorized**.
- Reviewed 804 **interfacility transfers**; provided in-depth review of 11 transfers.
- 123 patients received **first responder defibrillation**; 7 went home from hospital.
- Distributed 58,865 **"9-1-1" brochures** in conjunction with the EMCC Public Information and Education Committee.
- Developed and implemented protocols for the **certification of EMT-I's** under new State legislation.
- Established an **EMT-I training program for firefighters**.
- Developed process to approve **Prehospital Continuing Education Provider Programs** to offer continuing education for EMT-I and paramedic personnel.
- Obtained EMSA grant to conduct study of **poison control center alternatives**.
- Conducted a formal **evaluation of emergency ambulance contracts** with Moraga Fire, San Ramon Valley Fire, and American Medical Response.
- Extended **emergency ambulance contracts** with Moraga Fire, San Ramon Valley Fire, and AMR for one year.

- Provided ongoing monitoring to the trauma system, including review of cases at trauma audit committee meetings.

III. EMS System Participants

A. Advisory Committees

Emergency Medical Care Committee (EMCC): The Contra Costa EMCC is a multidisciplinary committee appointed by the Health Services Director. Membership is made up of representatives of EMS related organizations and consumers. Formerly appointed by and advisory to the Board of Supervisors, the EMCC is currently being restructured as a departmental advisory committee.

EMCC Public Information & Education Committee (PIE): This subcommittee of the EMCC promotes the development and dissemination of informational materials to establish an awareness of the emergency medical service system offered in Contra Costa County. PIE membership includes representatives of the EMCC, fire agencies, ambulance services and the EMS agency. Committee participation from all interested individuals is encouraged. Meetings are held on a quarterly basis or more frequently if needed.

Medical Advisory Committee (MAC): This committee was established in 1977 to provide advice and recommendations to the EMS Agency and EMS Medical Director on medically related topics. Such topics include medical treatment guidelines for both ALS and BLS services; new prehospital skills and/or medications for the ALS program; prehospital policies and procedures related to the medical management of patients; and, review of medical quality assessment/improvement issues. MAC membership consists of base hospital coordinators, liaison physicians, paramedic representatives from each of the ALS provider agencies, and physicians from receiving hospital emergency departments.

Measure H Oversight Committee: This committee was appointed by the Health Services Director to assist in ongoing program planning and monitoring and to advise the Department on preparation of the annual budget for the County Service Area for EMS. The Oversight Committee includes representatives of the Public Managers' Association, Fire Chiefs' Association, Police Chiefs' Association, East Bay Hospital Conference and two consumer members of the EMCC. Meetings are held on a bimonthly basis.

Pre-Trauma Audit/Trauma Audit Committees (Pre-TAC/TAC): These confidential committees were established to review system response and care provided victims of trauma in the County and to monitor compliance of providers to Trauma System standards. Members of both confidential quality assurance (QA) committees are appointed by the EMS Medical Director. Both Pre-TAC and TAC are held jointly with Alameda County and provide monitoring for two separate trauma systems.

Pre-TAC, which meets monthly, is responsible for initial committee review of all trauma related system issues, including trauma center cases selected by predefined QA trauma audit filters, and systems issues identified by trauma system participants. Membership consists of representatives from receiving and base hospitals as well as the trauma center, a trauma surgeon from Alameda County and EMS staff. Cases requiring further evaluation are referred to the Bi-County Trauma Audit Committee (TAC) as are particularly difficult or cases which might be of interest to TAC members.

Co-chaired by the Medical Directors of each county, TAC meets bimonthly and is composed of trauma directors and nurse coordinators, emergency physicians, neurosurgeon, orthopedists and anesthesiologists, non-trauma center receiving hospitals, base hospitals, coroner's office, Alameda/Contra Costa Medical Association, and EMS agency staff. This committee makes recommendations to the EMS agencies regarding identified trauma system or trauma center issues.

Transfer Review Committee: This confidential multidisciplinary committee was established as part of the County Patient Transfer Guidelines to review patient transfers between acute care hospitals. Committee members appointed by the EMS Medical Director include representatives of major medical specialties, East Bay Hospital Conference, Alameda-Contra Costa Medical Association, Emergency Department Nurses Association, and Emergency Medical Care Committee. The panel meets quarterly to review and recommend action on specific patient transfer investigations.

Multicasualty Advisory Committee (MCAC): This 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 been used to develop additional procedures for emergency response to varying magnitudes of incidents. This committee consists of representatives from police, fire, EMS, ambulance providers (both ground and air), and receiving and base hospitals.

Helicopter Operations Committee: This committee was established to provide a forum for exchange of helicopter related information. The committee meets quarterly and consists of representatives from fire, police, hospitals, ambulance and helicopter providers. Typical topics include provider agency updates, review of procedures, operational issues, policies and procedures, equipment and training issues and other items of interest.

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

Hospital Disaster Forum: This forum, organized in 1990 as a part of the Disaster Planning Project, provides an arena for interested individuals to discuss issues of mutual concern regarding hospital disaster preparedness. Expanded in 1994 to include clinics, the Forum has welcomed speakers from both private and government agencies to support hospitals and cities in their disaster preparedness. Membership of the Forum consists of hospital and city disaster planners, ambulance and fire agencies, industry, OES and EMS Agencies as well as hospital/clinic representatives. This group meets quarterly.

Bay Area Medical Mutual Aid (BAMMA): This committee consists of representatives of the Bay area EMS Agencies who meet periodically to discuss disaster planning.

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
- Richmond Police Dispatch
- 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 only)

C. First RespondersC. First Responders

County Fire Protection Districts:

- Bethel Island Fire Protection District (3 units)
- Contra Costa County Fire Protection District (43 units)
- Crockett-Carquinez Fire Protection District (3 units)
- East Diablo Fire Protection District (11 units)
- Moraga Fire Protection District (2 units)
- Orinda Fire Protection District (3 units)
- Pinole Fire Protection District (Covered by Pinole Fire Department)

Municipal Fire Departments:

- El Cerrito Fire Department (2 units)
- Pinole Fire Department (2 units)
- Richmond Fire Department (12 units)

Independent Fire Protection Districts:

- San Ramon Valley Fire Protection District (22 units)
- Kensington Fire Protection District (2 units)
- Rodeo-Hercules Fire Protection District (3 units)

Other First Responders:

- Dougherty Regional Fire Authority (5 units)
- East Bay Regional Parks
- Private & military fire services

Special Paramedic First Responder Programs:

- Moraga Fire - Paramedic Engine
- American Medical Response - Byron/Discovery Bay area
- California Highway Patrol - Helicopter Unit

D. Emergency Ambulance ProvidersD. Emergency Ambulance Providers

- American Medical Response
- San Ramon Valley Fire
- Moraga Fire

E. EMS HelicoptersE. EMS Helicopters

Air Ambulances:

- CALSTAR based 24 hours per day at Buchanan Airport with a second helicopter based in Gilroy
- Stanford Life Flight based in Palo Alto
- Davis Life Flight based in Sacramento
- REACH helicopter based in Santa Rosa with a second ship in Vacaville
- Medi-Flight, 2 helicopters based in Modesto
- Air Med Team based in Stanislaus County

Rescue Aircraft:

- California Highway Patrol (ALS helicopter)
- East Bay Regional Parks (BLS helicopter)
- U.S. Coast Guard (BLS rescue capabilities, including hoist capability)
- Sonoma County Sheriff's Dept (ALS Helicopter, long line capability)

F. HospitalsF. Hospitals

Base Hospitals:

- John Muir Medical Center
- Mt. Diablo Medical Center

Trauma Center:

- John Muir Medical Center

Burn Center:

- Brookside Hospital

Receiving Hospitals:

- Brookside Hospital
- Delta Memorial Hospital
- Doctors Hospital of Pinole
- John Muir Medical Center
- Kaiser Medical Center, Martinez
- Kaiser Medical Center, Richmond
- Kaiser Medical Center, Walnut Creek
- Merrithew Memorial Hospital
- Mt. Diablo Medical Center
- San Ramon Regional Medical Center

IV. EMS Program Activities

A. Emergency Ambulance Services

Emergency ambulance services are provided countywide under performance based contracts with the County in each of five exclusive operating areas (**Emergency Response Areas**) designated by the Board of Supervisors. Contracts are awarded on a competitive basis, as required by law, in all areas except ERA 3 which is served by Moraga Fire, which is exempt from competitive bidding under a provision of the Health & Safety Code. ERA's 1, 2, and 5 are served by American Medical Response. ERA 4 is served by San Ramon Valley Fire. All five ERA's are covered by performance based contracts which require ALS level response to all life threatening or potentially life threatening emergencies, and a 10 minute or shorter response time for at least 95 percent of all Code 3 calls within urban areas.

ERA 1	All of west county and central county west of I-680 including cities of Richmond, San Pablo, El Cerrito, Hercules, Pinole, Martinez, Pleasant Hill, Lafayette, Orinda, and a portion of Walnut Creek	American Medical Response 7 ALS units 3+ BLS units
ERA 2	Central county east of I-680 including cities of Concord, Clayton, and a portion of Walnut Creek	American Medical Response 5 ALS units 2+ BLS units
ERA 3	Area of Moraga Fire Protection District including city of Moraga	Moraga Fire 1 ALS unit
ERA 4	Area of San Ramon Valley including cities of Danville and San Ramon	San Ramon Valley Fire/John Muir Medical Center 2 ALS units 6 BLS units
ERA 5	All of east county including cities of Pittsburg, Antioch, and Brentwood	American Medical Response 4 ALS units 1 BLS unit

January 1992 marked the beginning of the first year for which the Measure H funded enhancements to the County ambulance system were fully implemented. Under Measure H, six additional paramedic ambulance units were added by American Medical Response, bringing their total number of available paramedic ambulances to 16 units. With San Ramon Valley and Moraga Fire, the total number of in-service paramedic ambulance units available in the county was brought up to 19. BLS ambulance units remain available to respond to non-life threatening calls and to provide backup during multicasualty incidents or during rare occasions when all ALS units are on calls.

During 1994, the EMS system received 44,473 requests for emergency ambulance response. Of these, 36,172 (81.3%) were considered to involve potentially life threatening situations to which a Code 3 (red lights and siren) ambulance response was necessary. The remaining 8,301 (18.7%) ambulance responses were dispatched Code 2 (immediate response without lights and siren). Of the total responses, 41,329 (93%) were handled by American Medical Response, 2,613 (5.9%) by San Ramon Valley Fire Protection District ambulance, and 531 (1.2%) by Moraga Fire Protection District ambulance. Average Code 3 ambulance response time countywide was 6.87 minutes. The

county ambulance staffing standard was met on all but 201 (0.6%) of the 36,172 Code 3 ambulance responses.

Not all ambulance responses result in patient transport. Of the 44,473 emergency ambulance responses during the year, 31,332 (70.5%) resulted in patient transport to an emergency receiving hospital. Ambulances responding to the remaining 13,141 (29.5%) requests were canceled either enroute or at the scene without the need for patient transport. Reasons for cancellation vary from poor information regarding patient severity, to the patient having been transported by other means such as private auto, to the patient refusing ambulance transport. In many instances, a situation which was perceived to be a medical emergency had been resolved or stabilized by the time an ambulance unit arrived on the scene.

Emergency Ambulance Responses

	1992		1993		1994	
All EMS Ambulance Responses	40,780	100.0%	43,774	100.0%	44,473	100.0%
Code 3 (lights & sirens)	33,997	83.4%	36,484	83.3%	36,172	81.3%
Code 2	6,783	16.9%	7,290	16.7%	8,301	18.7%
American Medical Response	37,737	92.5%	40,650	92.9%	41,329	92.9%
San Ramon Valley Fire	2,491	6.1%	2,561	5.9%	2,613	5.9%
Moraga Fire	552	1.4%	563	1.3%	531	1.2%
Transported	29,774	73.0%	30,886	70.6%	31,332	70.5%
Not Transported (dry run)	11,006	27.0%	12,888	29.4%	13,141	29.5%
Average Code 3 Response Time	6.11 minutes		6.85 minutes		6.87 minutes	
Code 3 Responses not Meeting Ambulance Staffing Standard ¹	208	0.6%	162	0.4%	201	0.5%

¹ Ambulance staffing standard is two paramedics on each ambulance dispatched to all emergency medical requests, or a minimum of two EMT-Is on an ambulance on multiple ambulance responses or if requested by a public safety dispatch center.

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 control** services for ambulances county-wide. Total base hospital contacts by prehospital personnel in 1994 totaled 13,923. Twelve field care audits and two endotracheal intubation refresher classes were offered by the two bases as continuing education opportunities for prehospital personnel.

Treatment Protocols: **ALS Field Treatment Guidelines** are used by paramedics, MICN's, and base hospital physicians to provide care to patients in the pre-hospital setting. 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**.

C. First Responder Services

The responding fire unit usually arrives at the scene of an emergency a few minutes ahead of the ambulance, as there are many more fire stations than ambulance stations throughout the County. For this reason, the individuals on the fire response unit are known as the **fire first responders**. These first responders are trained and equipped to provide medical aid to patients until the ambulance arrives. All fire fighters are trained in first aid and CPR and many are trained and certified as Emergency Medical Technician-I's. 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 stabilization of the patient before an ambulance arrives. Fire first responders also provide rescue, extrication, and an extra pair of hands to care for patients with particularly complex medical problems.

Early Defibrillation Program: One of the major EMS program enhancements identified in the Measure H Service Plan was the establishment of a **first responder defibrillation program** in the fire services. Early defibrillation is the standard of care for patients in cardiac arrest. The successful resuscitation of patients in ventricular fibrillation is directly related to how quickly defibrillation is provided. As fire first responders are generally the first rescuers on scene, the EMS Agency developed and implemented a First Responder Defibrillation program in which all fire agencies in Contra Costa County participate to assure that this state-of-the-art cardiac care is provided patients countywide. Fire first responders use a "**semi-automatic**" **defibrillator** which, when applied to the patient's chest, automatically assesses the patient's heart rhythm and instructs the firefighter to shock the patient if he/she is in ventricular fibrillation. A defibrillator is available on each first response fire apparatus routinely used to respond to medical emergencies. Approximately 4 hours of training are necessary to prepare a firefighter to use the defibrillator. Training was completed and the program was available to citizens countywide in March, 1992.

In 1994, a defibrillator was applied to 428 patients in cardiac arrest. Of those patients, 123 or 28.74% were assessed by the semi-automatic defibrillator to be in a shockable rhythm and were defibrillated. Twenty-one of the 123 patients who received shocks were admitted to the hospital, for a 17.07% field save rate. Of those 21 patients who were shocked and admitted to the hospital, 6 or 5.69% of the patients receiving early defibrillation were discharged from the

hospital.

Paramedic First Responder Programs: Paramedic first responders provide a method for combining early advanced life support care with the generally shorter response times of first responder units. Two types of paramedic first responder services are provided in Contra Costa County.

- The EMS Agency approved the use of an **ALS Engine** in the **Moraga Fire District** in 1988, as a pilot program to provide back up ALS service to the Moraga paramedic ambulance. The ALS Engine is staffed with a minimum of one (1) paramedic and one (1) EMT-1. It is stocked with ALS equipment and supplies, and is dispatched simultaneously with an ALS transport unit. The pilot program was approved for permanent designation in 1992.
- The **EMS Agency, American Medical Response, and East Diablo Fire District** entered into a formal cooperative effort to provide a more timely, cost effective method of delivering ALS to the citizens of the Discovery Bay and Byron areas. This effort resulted in the creation of an **ALS First Responder Paramedic Unit** that was placed into service on May 18, 1992. The effectiveness of this unit during its first year of operation was evaluated based on several factors including response times, scene management and safety, dispatch zones, field documentation, communications abilities, quality assurance, training and single rescuer effectiveness. The implementation of this paramedic First Responder Unit has positively changed the manner in which ALS care is delivered to this low call volume area.

Both the Moraga Fire ALS Engine and the American Medical Response First Responder Paramedic Unit operate under base hospital medical control 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 address only the medical aspects of the officer's responsibility. As a result of the approval process for these guidelines, new lines of communications have opened up between the EMS community and many of the law enforcement agencies in the County.

D. Dispatch & CommunicationsD. Dispatch & Communications

MEDARS: Medical Emergency & Disaster Ambulance Radio System (MEDARS) is the County radio system used for communications between ambulances and hospitals, and between Sheriff's Dispatch and ambulances. Prior to March 1992, the system consisted of only two radio channels, MED 1-2, which provided one channel for communications between Sheriff's Dispatch and ambulances and only one channel for all paramedic and EMT units to use to contact hospitals in the County. Paramedic units use the radio to contact their base hospital to give a patient report and receive treatment orders. With the single channel available for all ambulance/hospital communications, this important communications capability

was not always readily available when needed.

In 1992, two additional channels, were added to the system bringing the EMS communications system up to the current 4 radio channels, with three of the channels used exclusively for ambulance/hospital communications, and one channel, Med 11, used exclusively for communications between Sheriff's Dispatch and ambulances. These four medical radio channels are now identified as Med 11-14. The two new channels, Med 13-14 are used in the central and eastern parts of the County. They are not available in the western part of the County, due to the possibility of interference with another Bay Area agency assigned to the same frequencies. The two new channels were designated for paramedic use only, to avoid overcrowding and possible communication delays. MED 12 continues to be used by paramedics in the western part of the County, and by EMT units throughout the County.

Message Transmission Network: The **Message Transmission Network (MTN)** was initially developed by Contra Costa EMS in 1993 as a means of interconnecting the various dispatch centers involved in handling emergency medical calls. Making use of the existing All County Criminal Justice Information Network (ACCJIN), MTN links the computer-aided dispatch systems at the fire/medical dispatch centers, ambulance dispatch centers, and Sheriff's dispatch. This means that emergency call information entered at one dispatch center does not need to be reentered at another dispatch center. Ambulance requests can be transmitted much more rapidly than by voice communications and errors are reduced. During 1994, the system was installed and operational between Contra Costa Fire and American Medical Response. This meant that over 60 percent of the county's emergency ambulance requests could be relayed electronically over MTN rather than through voice contact between dispatchers. Linkage of the remaining fire/medical dispatch centers (Richmond, Pinole, and San Ramon Valley) and the Sheriff's dispatch center, which provides ambulance coordination during multicasualty incidents and disasters, is scheduled for 1995. Ultimately, it is planned that the system will also provide a linkage to all of the police dispatch centers.

Priority Dispatching: Emergency Medical Dispatch (EMD) is a process of screening calls to provide the appropriate EMS first-responder/ambulance response, and of providing simple emergency medical instructions to the caller to be initiated prior to the arrival of EMS personnel. Contra Costa County Fire Dispatch has been providing limited call screening and pre-arrival instructions for several years. In 1993, commercial medical dispatch programs were evaluated and Medical Priority's ProQA Dispatch System, the only available computerized medical dispatch system, was selected to be piloted in the San Ramon Valley Fire Protection District Dispatch Center. In 1994, dispatch response minimum standards were developed, San Ramon Valley Fire Dispatchers were trained to the Medical Priority Dispatch System and the pilot program was initiated.

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 SystemE. Trauma System

In 1986, the Board of Supervisors approved a comprehensive **Trauma System Plan** for the County. That same year the County designated John Muir Medical Center as a Level II Trauma Center, and on June 30, 1986 trauma triage and transport protocols went into effect directing ambulance personnel to transport critical trauma patients directly to John Muir Trauma Center bypassing other hospitals. In 1994, **3,438** patients met field trauma triage criteria, **977** of whom were transported from the field to John Muir Trauma Center. This number does not include patients who were not transported through the EMS system and those who were transferred to John Muir from other hospitals. The triage protocols used by ambulance and base hospital personnel identify mechanisms of injury, anatomic factors and a physiologic trauma scoring system to assist in the identification of critical trauma patients. Patients who are in traumatic full arrest or have unmanageable airways (total of **70** in 1994) are triaged to the closest basic emergency department. Procedures are in place for those critically injured patients who arrive at non-trauma center hospitals through self-transport or field under-triage to be transferred to the trauma center. Some trauma patients who arrive at John Muir have been either transferred or transported from the field from surrounding counties, generally by air. There were **96** interfacility trauma transfers in 1994, **64** of which were Major Trauma Victims, (MTV's) retrospectively.

During the past 8.5 years of operation, a total of **25,921** patients have been triaged through the County trauma system. These include **9,519** patients transported to John Muir, **615** patients transported to other trauma centers, (primarily Children's Hospital in Oakland) and **15,650** patients who were transported to non-trauma center hospitals, refused transport or expired in the field.

If trauma center resources are temporarily overwhelmed, the trauma center staff may consider placing the trauma center on temporary "Trauma Center Bypass". In 1994, the John Muir Trauma Center bypass rate was **2.27%** and was most often due to the simultaneous arrival of multiple trauma patients. During episodes of trauma center bypass, patients may be triaged to out-of-county trauma centers or to non-trauma centers within the county. In 1994, **2** MTV's were transported to non-trauma centers due to trauma center bypass.

Trauma Injury Prevention: The EMS Agency continued to support injury prevention activities in 1994, by participating in the Childhood Injury Prevention Coalition and its subcommittees and events (e.g., Bicycle Safety Days), and in the Health Service Department's Committee for Violence Prevention. Additionally, the EMS Newsletter featured violence and injury prevention articles and provided information encouraging readers to participate in prevention activities. The EMS agency was awarded extensions on two EMSA injury prevention grants. The first was for motor vehicle data collection and integration and the second, for firearm surveillance. The latter has provided valuable data supporting the development of the County's Violence Prevention Plan: Framework For Action. The EMS Agency has continued its participation in the County's Child Death Review Team and has been an participant of the Law Enforcement Training Advisory Committee (LETAC).

F. Helicopter Transport

The **Operational Procedures for Patient Transport by Helicopter** were originally developed

during trauma system planning in 1985/1986. 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. Brookside Hospital in San Pablo also has a helipad and is often used as an ambulance/helicopter rendezvous point. The county standard of care for air transport of emergency patients has been by "air ambulance" which is staffed with two ALS level of 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 was adopted. In 1994, Sonoma County Sheriff's Department was added to the resource list for their ability to provide long-line rescue.

In 1994 there were **408** transports of patients by helicopter to John Muir Trauma Center; **398** by air ambulance and **10** by rescue helicopter. **305** of these transports were from Contra Costa, 49 from out of County and 54 with unknown origin. The majority of helicopter transports is performed by CALSTAR.

G. Hospital Emergency Services

Transfer Review Process: 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 process for review of interfacility transfers was identified in this document including the formation of the **Transfer Review Panel**, a confidential multidisciplinary committee to oversee the transfer review process. The panel members represent facilities and organizations from throughout the County including major medical specialties. The panel's purpose is to review and make recommendations on patient transfer investigations as outlined in the County Transfer Guidelines. In 1994, a total of 804 transfers were reported to and reviewed by the EMS staff. This staff evaluation resulted in indepth review of 11 cases by the EMS Agency staff and the Transfer Review Panel.

Emergency Department Diversion of Ambulances: **Diversion of ambulances** by the emergency departments of acute care receiving facilities in the County is permitted by EMS Policy, initially developed and implemented in August, 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 which is able to provide immediate emergency treatment. The documentation pertaining to all reported incidents of ED ambulance diversion is reviewed by EMS staff. During 1994, there were 6 facilities which utilized diversion a total of 115 times. There were no reports of problems in patient care resulting from these diversion incidents.

H. Disaster/Multicasualty Planning

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 the Regional Disaster Medical/Health Coordinator 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, the county EMS agencies and the 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 1994, the emphasis in disaster planning continued to be on development of the County medical operations response.

Multicasualty Plan: The EMS Agency recognized the need for a coordinated response to multicasualty events by police, fire and ambulance personnel following the Yuba City/Martinez bus accident in 1976. The **Multicasualty Advisory Committee (MCAC)**, a multidisciplinary committee consisting of representatives of police, fire, EMS and ambulance providers was appointed in 1978 to develop an integrated response plan. The **Multicasualty Incident (MCI) Plan** concept was first endorsed by the County Board of Supervisors in 1980 and in June 1982, the first Multicasualty Incident Plan was issued. The Plan establishes a common organization and management structure for the coordination of emergency response to a multicasualty incident. It establishes an efficient and effective emergency medical response to the injured and establishes methods of triage and transportation that will provide for the survival of the greatest number of casualties. The Plan may be implemented whenever the number of injured persons may exceed the medical capabilities of the jurisdictional resources. It is implemented by the Incident Commander of any incident whether it be a fire officer, law enforcement officer or ambulance crew member. The plan has been revised twice; most recently in 1992 at which time hazardous materials response and helicopter response components were added.

The Multicasualty Advisory Committee has continued to meet on an as-needed basis to review multicasualty response incidents and to provide periodic updates to the Multicasualty Incident Plan.

Medical Advisory Alert: The Medical Advisory Alert is a component of the MCI Plan developed in 1987, is an advisory "warning" indicating that an event has occurred or a condition exists which *may* tax the medical resources of the affected area and is based upon information received from on-scene personnel or via a public safety agency of jurisdiction. It is implemented by a fire or law enforcement agency, the on-duty ambulance field supervisor or the senior ambulance person on the scene or a base hospital. Additionally it can be initiated by the Health Officer, Sheriff's Dispatch or EMS staff.

Expanded Medical Emergency: The Operational Procedures for Response to an Expanded Medical Emergency were developed for responses to those incidents requiring higher levels of response than is required day to day, but not requiring the full response of support services initiated with the Multicasualty Plan. Its focus is to provide an organizational structure to incidents that have more than one transport unit responding to them. It is designed to avoid overloading one facility with patients and to eliminate multiple calls to the base hospital(s) regarding the same incident. Developed and initiated in 1992, it has been used successfully numerous times throughout the County.

HSD Emergency Management Team: The EMS Agency provides staffing and planning for the Health Services Emergency Management Team. This group, which consists of Health Services Department personnel designated to respond to the County EOC or Medical/Health Operations Center in a disaster, meets monthly for planning and exercises.

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. These supplies were organized into **multi-casualty supply caches** and were placed in fire stations throughout the County. The fire agencies agreed to store and maintain the caches in good condition, as well as to transport caches, when possible, to an incident, when requested, within thirty minutes of that request. In 1992, five additional caches were purchased and placed in fire stations, for a total of twenty five caches. Cache supplies include bandaging equipment, splinting supplies, oxygen administration supplies, and blood pressure equipment.

EMS HAZMAT Response Preparedness: Contra Costa and Solano Counties participated in a Joint EMS Hazardous Materials (Hazmat) Response Program which was funded over five years by the IT Corporation under consent decree from 1987 through 1992. As the result of this program, specialized training programs and treatment protocols for ambulance personnel and for hospitals in managing patients exposed to hazardous materials were developed.

The EMS Agency has continued to interface with industry by participating as guest member on C.A.E.R. (Community Awareness and Emergency Response) and P.M.A.O. (Petro-Chemical Mutual Aid) thereby encouraging emergency medical response planning by integrating the chemical facility's emergency response plans with those of the local community.

I. Certification ProgramsI. Certification Programs

Paramedics: In January 1994 the State EMS Authority (EMSA) was legislated responsibility for credentialing paramedics. In January 1995, paramedic certification became paramedic licensure, and the State paramedic written examination procedure for recertification was eliminated.

In 1994, 91 paramedics were either accredited or re-accredited by the Contra Costa County EMS Agency to practice as paramedics within the County.

EMT-I's: EMT-I's may be certified by any one of the local EMS Agencies in the State. Once certified, he/she may function as an EMT-I State-wide.

In June, 1994, legislature was passed which allows EMT-I's to either complete 24 hours of continuing education or complete a 24 hour refresher course every two years to maintain their certification. Written and skills testing which had been required every two years was changed to a four year cycle. In 1994, 436 EMT-I's were certified/recertified in Contra Costa.

MICN's: In 1994, 46 RN's were either authorized or re-authorized in Contra Costa to practice in the expanded MICN role within the County.

Certification Review: Certification review, as defined in State regulations, is a process reserved for the formal investigation of cases where very serious lapses in operational or medical protocol not thought to be amenable to remediation, or cases where there has been a significant deviation from State regulations or county policy standards. Potential problem cases are identified by the provider agency, the base hospital or the EMS Agency. The EMS "Certification Review Process", which describes the procedure to be used if certification review becomes necessary, was amended in 1992 by adding base hospital reporting requirements and procedures. In 1994, certification review was undertaken by the EMS Agency in 1 case with no formal action taken against the involved individual's certification.

Another case, begun in 1993, was referred to the EMS Authority for disposition, as now required by State Regulations.

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. Since most paramedic training programs operate on the same time schedule, Los Medanos Community College changed its 1995 program schedule to begin training in the spring, rather than in the fall. This change was made to help assure availability of approved paramedic preceptors for the students when they enter the field portion of the program. It is anticipated that these students will complete their training in early 1996.

EMT-I Training Programs: Los Medanos Community College and Mt. Diablo Adult Education currently offer EMT-I training in Contra Costa County. Med-Help, a private training facility in Concord, discontinued its EMT-I training program in late 1993. The EMT-I courses offered by both training institutions have been approved by the EMS Agency.

- **Los Medanos Community College** offers an EMT training program each fall at their Pittsburg campus. In addition, they offer training through Contra Costa College in San Pablo.
- **Mt. Diablo Adult Education** offers EMT training programs at various times throughout the year at their facility in Concord.

MICN Training Programs: Several area training programs have found it necessary to temporarily or permanently discontinue their MICN classes. Los Medanos Community College, which has provided an MICN program for many years, discontinued its MICN training program in 1992 due to budget constraints and relatively low attendance. The only ongoing MICN training programs in the area are at Stanford University and UC Davis. Mt. Diablo Medical Center developed and conducted an MICN course for nurses from Mt. Diablo Medical Center and John Muir Medical Center in 1994. Eleven enrolled and ten completed the course.

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). Early access of 9-1-1, as the first step in the "**Chain of Survival**", was a message consistently repeated in most forms of P.I.E. outreach activities during the year.

PIE activities for 1994 included the following:

- Distribution of the EMS Agency's **9-1-1 Brochure**. Over 58,865 brochures were distributed to schools, cities, industry, churches, hospitals and public safety agencies. The 9-1-1 Brochure includes information about CPR training and the importance of early access of 9-1-1 in emergency situations.
- Information regarding location of local CPR classes was available through the San Francisco based, USF/Paramedic Association staffed 1-800-GIVE-CPR number until November 1994. When this program was discontinued, the EMS Agency acquired the 800 number, allowing for continued CPR information for County residents. The 800 number is advertised in the EMS 9-1-1 Brochure, in local newspapers, telephone books, CCC Cable T.V. and in Bay Area Rapid Transit (B.A.R.T.) stations.
- Speakers have been provided for a number of community and wellness organizations such as "Mended Hearts".

L. Other ProgramsL. Other Programs

DNR Program: The Do-Not-Resuscitate (**DNR**) program for patients with terminal medical problems was implemented on January 1, 1993. This program evolved in response to concern from community groups, patient advocates, and medical personnel over the patient's right to self-determination. Historically, patients have received treatment to the fullest extent, regardless of their wishes, and discussions regarding the limits of resuscitation were reserved for medical personnel at the receiving hospital.

The Do-Not-Resuscitate program allows patients, in conjunction with their physician, to refuse resuscitative measures in the prehospital setting, even if the 9-1-1 system has been activated. This form permits the patient to have his/her wishes to forego resuscitation followed anywhere in the State. The DNR form 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.

EMS Newsletter: The "**Emergency Medical Services Newsletter**" is in its fifth year of publication.

V. Statistical Reports

A. Ambulance Dispatch ReportsA. Ambulance Dispatch Reports

Ambulance Dispatch Report

**Number of Responses, Response Code, and Response Level by Ambulance Provider
American Medical Response, San Ramon Valley Fire District, Moraga Fire District**

Year 1994

Response Code and Level	All Providers		American Medical Response		San Ramon Valley Fire District		Moraga Fire District	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total responses	44,473	100.0%	41,329	100.0%	2,613	100.0%	531	100.0%
Code 3 responses	36,172	81.3%	33,474	81.0%	2,197	84.1%	501	94.3%
Code 2 responses	8,301	18.7%	7,855	19.0%	416	15.9%	30	5.7%
Total code 3 responses	36,172	100.0%	33,474	100.0%	2,197	100.0%	501	100.0%
ALS response	35,686	98.7%	32,999	98.6%	2,186	99.5%	501	100.0%
Exempt BLS response	285	0.8%	285	0.8%	0	0.0%	0	0.0%
Non-Exempt BLS response	201	0.5%	190	0.6%	11	0.5%	0	0.0%
Code 2 responses	8,301	100.0%	7,855	100.0%	416	100.0%	30	100.0%
ALS response	2,924	35.2%	2,478	31.6%	416	100.0%	30	100.0%
BLS response	5,377	64.8%	5,377	68.5%	0	0.0%	0	0.0%

Source: Contra Costa County Emergency Medical Services
Report Generated: October 3, 2001

Ambulance Dispatch Report

Patient Transport by Ambulance Provider American Medical Response, San Ramon Valley Fire District, Moraga Fire District

Year 1994

Response Outcome	All Providers		American Medical Response		San Ramon Valley Fire District		Moraga Fire District	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total responses	44,473	100.0%	41,329	100.0%	2,613	100.0%	531	100.0%
Transported	31,332	70.5%	29,414	71.2%	1,564	59.9%	354	66.7%
Cancelled	13,141	29.5%	11,915	28.8%	1,049	40.1%	177	33.3%
Total patient transports	31,332	100.0%	29,414	100.0%	1,564	100.0%	354	100.0%
Transported code 3	2,768	8.8%	2,584	8.8%	174	11.1%	10	2.8%
Transported code 2	28,211	90.0%	26,760	91.0%	1,328	84.9%	123	34.8%
Transport code not reported	353	1.2%	70	0.2%	62	4.0%	221	62.4%
Total Cancelled	13,141	100.0%	11,915	100.0%	1,049	100.0%	177	100.0%
Enroute	3,904	29.7%	3,442	28.9%	441	42.0%	21	11.9%
On Scene	9,237	70.3%	8,473	71.1%	608	58.0%	156	88.1%

Source: Contra Costa County Emergency Medical Services
Report Generated: October 3, 2001

Richmond	8,261	18.6%	1,250	15.1%	7,011	84.9%	6.83	2.0%
San Pablo	2,231	5.0%	408	18.3%	1,823	81.7%	6.25	1.8%
El Cerrito	1,129	2.5%	170	15.1%	959	84.9%	6.16	1.3%
El Sobrante	499	1.1%	64	12.8%	435	87.2%	6.27	1.4%
North Richmond	361	0.8%	40	11.1%	321	88.9%	6.50	1.6%
Kensington	166	0.4%	16	9.6%	150	90.4%	10.03	0.0%
Pinole	1,017	2.3%	107	10.5%	910	89.5%	5.78	2.2%
Hercules	538	1.2%	86	16.0%	452	84.0%	7.70	0.9%
Rodeo	451	1.0%	87	19.3%	364	80.7%	7.89	2.2%
Crockett	225	0.5%	35	15.6%	190	84.4%	10.65	1.6%
Concord	6,541	14.7%	1,584	24.2%	4,957	75.8%	6.54	0.7%
Martinez	1,878	4.2%	400	21.3%	1,478	78.7%	7.35	7.2%
Pleasant Hill	1,534	3.5%	347	22.6%	1,187	77.4%	7.28	0.3%
Pacheco	238	0.5%	49	20.6%	189	79.4%	7.58	1.6%
Clayton	244	0.6%	39	16.0%	205	84.0%	11.27	0.0%
Clyde	22	0.1%	4	18.2%	18	81.8%	8.73	0.0%
Walnut Creek	3,763	8.5%	647	17.2%	3,116	82.8%	6.81	0.4%
Lafayette	836	1.9%	138	16.5%	698	83.5%	7.22	0.3%
Orinda	519	1.2%	111	21.4%	408	78.6%	9.76	1.2%
Moraga	563	1.3%	80	14.2%	483	85.8%	4.43	0.4%
Alamo	320	0.7%	55	17.2%	265	82.8%	7.26	0.0%
Danville	1,086	2.4%	183	16.9%	903	83.2%	5.94	0.0%
San Ramon	1,179	2.7%	179	15.2%	1,000	84.8%	6.33	0.1%
Antioch	3,700	8.3%	782	21.1%	2,918	78.9%	6.46	1.0%
Pittsburg	3,607	8.1%	779	21.6%	2,828	78.4%	5.96	0.8%
Bay Point	1,336	3.0%	243	18.2%	1,093	81.8%	8.92	0.8%
Oakley	869	2.0%	144	16.6%	725	83.4%	7.80	0.8%
Bethel Island	198	0.5%	47	23.7%	151	76.3%	13.01	0.0%
Knightsen	8	0.0%	1	12.5%	7	87.5%	7.14	0.0%
Brentwood	724	1.6%	106	14.6%	618	85.4%	8.08	1.3%

Ambulance Dispatch Reports

Number of Transports by Hospital Destination, Transport Code, and Major Trauma Victim Status.
American Medical Response, San Ramon Valley Fire District, Moraga Fire District

Year 1994

Hospital	All Transports		Code 3 Transports		Code 2 Transports		Transport Code Unknown	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Transports	31,332	100.0%	2,768	100.0%	28,211	100.0%	353	100.0%
Brookside	4,959	15.8%	450	16.3%	4,496	15.9%	13	3.7%
Delta	3,809	12.2%	387	14.0%	3,413	12.1%	9	2.6%
Doctors	1,561	5.0%	172	6.2%	1,382	4.9%	7	2.0%
John Muir	3,743	12.0%	684	24.7%	2,931	10.4%	128	36.3%
Kaiser - Martinez	2,003	6.4%	58	2.1%	1,938	6.9%	7	2.0%
Kaiser - Richmond	1,371	4.4%	68	2.5%	1,301	4.6%	2	0.6%
Kaiser - Walnut Creek	2,142	6.8%	157	5.7%	1,925	6.8%	60	17.0%
Los Medanos	816	2.6%	81	2.9%	733	2.6%	2	0.6%
Merrithew	4,892	15.6%	63	2.3%	4,817	17.1%	12	3.4%
Merrithew - RCC	147	0.5%	0	0.0%	147	0.5%	0	0.0%
Mount Diablo	3,566	11.4%	380	13.7%	3,174	11.3%	12	3.4%
San Ramon	861	2.8%	107	3.9%	734	2.6%	20	5.7%
Alta Bates	513	1.6%	24	0.9%	459	1.6%	30	8.5%
Children's	152	0.5%	53	1.9%	98	0.4%	1	0.3%
Eden	6	0.0%	2	0.1%	4	0.0%	0	0.0%
Highland	34	0.1%	15	0.5%	19	0.1%	0	0.0%
Kaiser - Vallejo	137	0.4%	2	0.1%	135	0.5%	0	0.0%
Kaiser - Oakland	136	0.4%	16	0.6%	120	0.4%	0	0.0%
Summit	91	0.3%	2	0.1%	72	0.3%	17	4.8%
Other/Unknown	393	1.3%	47	1.7%	313	1.1%	33	9.4%

Source: Contra Costa County Emergency Medical Services. Report Generated: October 3, 2001

B. Helicopter Utilization ReportB. Helicopter Utilization Report

Trauma Patient Transport by Helicopter

Year 1994

Total Helicopter Transports	408
Origin of Transports - Contra Costa County	
West County	139
East County	126
South County	23
Central County	17
Origin of Transports - From Out-of-County	
Solano County	46
Alameda County	0
Marin County	2
Napa County	1
Origin Unknown	54

CALSTAR	339
REACH	40
Stanford Life Flight	10
Davis Life Flight	0
Medi-Flight	6
Air Med Team	0
California Highway Patrol	9
East Bay Regional Parks	1
U.S. Coast Guard	0
Sonoma County Sheriff's Dept.	0
Unknown	3

Source: Trauma Registry Data

C. Trauma System ReportC. Trauma System Report

Trauma System Report

Year 1994

Trauma System Operations		Retrospective MTV's
System patients meeting trauma triage criteria	3,438 ¹	²
Patient triage:		433
Field CTP to John Muir Trauma Center Includes transfers to JMMC from non-trauma centers	977	
Field CTP to Children's Hospital	81	²
Field CTP to other trauma centers	34	²
Field CTP to non-trauma center As result of trauma center bypass		2
Field non-CTP's to non-trauma centers	2,285	14
Traumatic arrest/unmanageable airway to closest hospital Trauma center or non-trauma center	74	74

CTP/Field: Patient meets criteria for automatic transport to a trauma center, is triaged to a trauma center by base hospital or ambulance personnel under disrupted communications.

MTV/Retrospective: Critical trauma patient based on retrospective criteria (ISS over 15 or ISS 10-14 with at least a three day hospitalization)

¹ Does not capture all patients pronounced in the field

² Total not available

Data Sources: Trauma Base Log, Sheriff-Coroner Reports, Helicopter Provider Reports, Ambulance Agency Reports, John Muir Trauma Center Trauma Registry Reports, John Muir Medical Center Bypass Reports, Contra Costa County Receiving Hospitals, Out-Of-County Trauma Centers, Out-Of-County Receiving Hospitals.

Traumatic Injuries by Type

Year 1994

Type of Injury	Total	Average Age	Average ISS	Average LOS
Blunt	774	35	11.04	5.7
Penetrating	289	30	10.32	4.5
Both	0	0	0	0
Burns	0	0	0	0

Source: Trauma Registry Data, John Muir Medical Center

Identified Critical Trauma Patients by Anatomic Factor - Mechanism of Injury

(Based upon 1063 trauma center arrivals in 1994)

Anatomic Factor	Total	MTV	Average ISS
Penetrating injury to the head, neck, chest, abdomen, pelvis or groin.	294	119	10.38
Significant injury to the head, neck, chest, abdomen or pelvis.	769	302	10.96
Two or more proximal long bone fractures	0	0	0
Traumatic paralysis	0	0	0
Amputation above the wrist or ankle	0	0	0
Major Burns associated with trauma	0	0	0
Trauma Score Criteria Only	9	6	13.78

Mechanism of Injury	Total	MTV	Average ISS
High energy dissipation	227	92	11.15
Pedestrian struck by auto > 15 mph or < age 12	3	1	8.67
Patient ejected from vehicle	49	26	16.76
Fall > 15 feet to hard surface	16	10	15.44
Intrusion in passenger space	22	9	12.95
Death of others in same vehicle	19	14	22.95

Extrication of patient required	69	34	12.49
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Source: Trauma Registry Data, John Muir Medical Center

Trauma Center Bypass

Year 1994

Trauma Bypass Count	Total Time On Bypass	Percent Time On Bypass	Average Length Of Bypass	Count Bypass > 2 Hours
95	199 hrs 13 mins	2.27%	2 hrs 6 mins	45

Reason for Bypass	Count	Total Time	Percent
Trauma Resuscitation Overload	54	115 hrs 25 mins	57.9%
Trauma Surgeon(s) with Patients	29	57 hrs 22 mins	28.8%
Neurosurgeon(s) in OR	0	0 hrs 0 mins	0%
OR Overload	4	8 hrs 31 mins	4.3%
CT Scanners Down	5	12 hrs 45 mins	6.4%
No ICU beds	0	0 hrs 0 mins	0%
Other	3	5 hrs 0 mins	2.6%

Source: Trauma Registry Data

Demographic Summary of Trauma Triage to the Trauma Center

(Based on 1063 trauma center cases)

Year 1994

Age/Sex	# of Patients	Average Injury Severity Score	Average Length of Stay
0 - 14	64	8.9	3.7
15 - 29	432	11.0	5.3
30 - 54	442	10.5	5.4
= > 55	125	12.5	6.5
MALE	797		
FEMALE	265		
UNDETERMINED	1		

Source: Based on Trauma Registry Data

Disposition of Major Trauma Victims From the Trauma Center

Year 1994

Disposition	Automatic Transport Trauma	Triage Trauma
Released from ED	0	2
Transferred from ED	0	0
Admitted/transferred	71	179
Admitted/discharged	69	653
Died	36	25
AMA/AWOL	1	21
Foster care/Police custody	0	4
Unknown/not recorded	1	0

Source: Based on Trauma Registry Data

D. Early Defibrillation Program ReportsD. Early Defibrillation Program Reports

First Responder Defibrillation

Activity Report

1994

Number of patients:	428
Number of patients who received defibrillation shocks:	123
Number of patients shocked who were witnessed arrests:	79
Number of patients shocked that received CPR prior to fire's arrival:	56
Number of patients shocked who were field saves (admitted to hospital):	21
Number of patients shocked that were discharged alive from the hospital:	7

- 28.74 % of the total number of patients had a shockable rhythm.
- 17.07 % of those patients with a shockable rhythm were admitted.
- 5.69 % of those patients with a shockable rhythm were discharged.
- 64.23 % of all patients with a shockable rhythm were witnessed arrests.
- 45.53 % of all patients with a shockable rhythm had CPR prior to fire's arrival.
-

First Responder Defibrillation

Activity Report by Agency

1994

Fire Agency	Defibrillator Attached	Patient Shocked	Patient Admitted	Patient Discharged
Bethel Island	4	2	0	0
Contra Costa	289	81	14	3
Crockett	5	3	1	0
Dougherty	0	0	0	0
East Diablo	9	0	0	0
El Cerrito	14	3	0	0
Kensington	6	0	0	0
Moraga	0	0	0	0
Oakley	3	0	0	0
Orinda	3	0	0	0
Pinole	10	4	0	0
Richmond	48	16	1	1
Rodeo	13	7	3	1
San Ramon	23	6	2	2

Total	428	123	21	7
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E. Patient Transfer ReportE. Patient Transfer Report

"X"	Gyn/surg. Psych Medical	Non-violation P: No records sent Non-violation
"C"	Psych	P: No arrangements

Source: Contra Costa County Emergency Medical Services Agency

F. Emergency Department Diversion Report
F. Emergency Department Diversion Report

Emergency Department Diversion (By-Pass)

Year 1994

Hospital	Number of Incidents	Total Time	Percent	Average
Brookside	39	59 hr 32 min	< 1%	1 hr 32 min
Delta Memorial	17	35 hr 18 min	< 1%	2 hr 5 min
Doctors, Pinole	1	0 hr 50 min	< 1%	0 hr 50 min
John Muir	1	0 hr 20 min	< 1%	0 hr 20 min
Kaiser, Martinez	0			
Kaiser, Richmond	3	7 hr 53 min	< 1%	2 hr 38 min
Kaiser, Walnut Creek	0			
Los Medanos	7	14 hr 50 min	< 1%	2 hr 7 min
Merrithew Memorial	40	95 hr 19 min	1.09%	2 hr 23 min
Mt Diablo	3	8 hr 34 min	< 1%	2 hr 51 min
San Ramon Regional	0			

Source: Contra Costa County Emergency Medical Services

G. Base Hospital Contact Report G. Base Hospital Contact Report

BASE HOSPITAL CONTACT REPORT

John Muir and Mt. Diablo Medical Centers

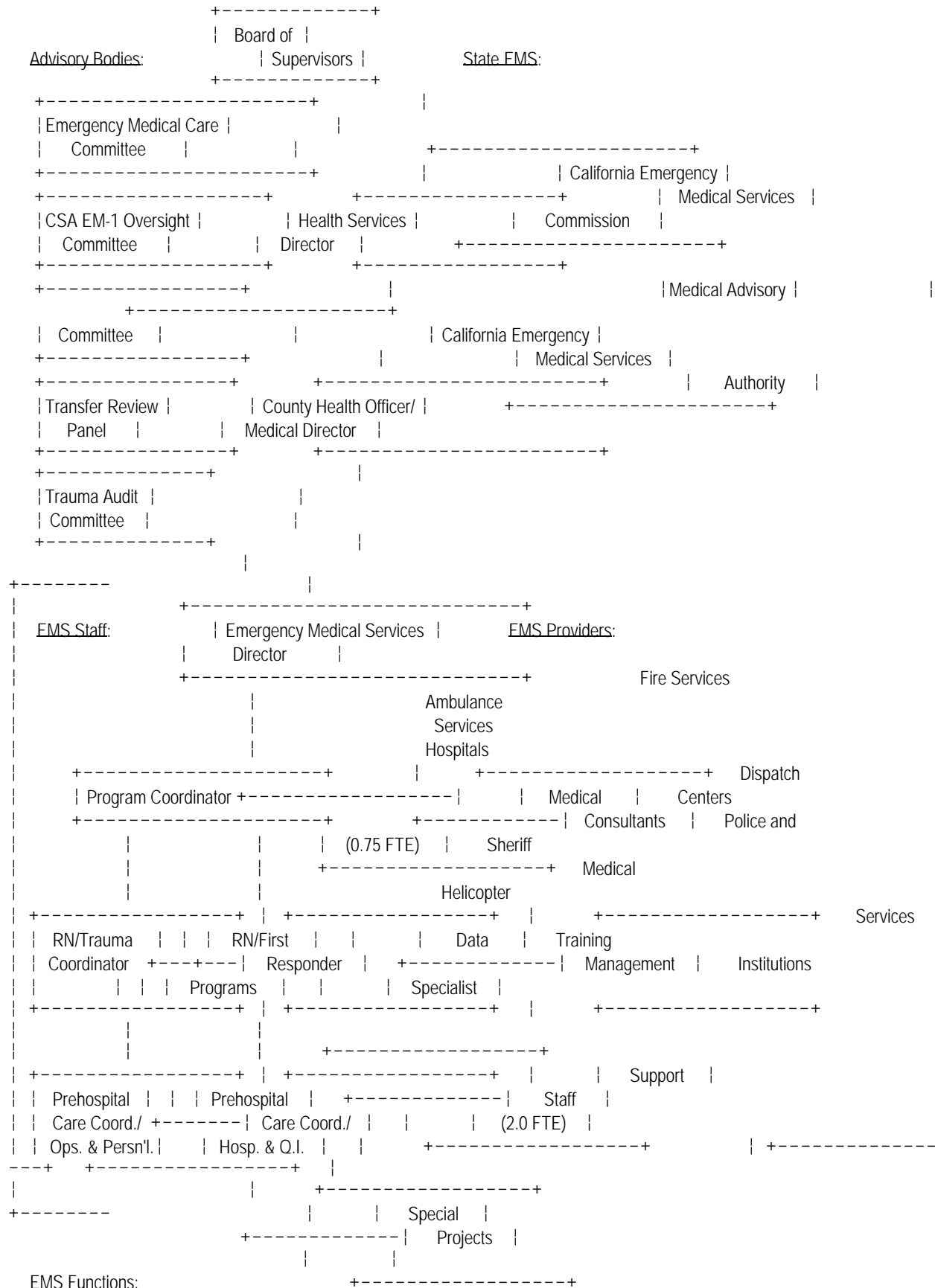
Year 1994

	System Totals	John Muir Base	Mt. Diablo Base
Total Base Contacts	13,922	8,432	5,490
ALS Care Provided	10,524	5,610	4,914
No ALS Provided	3,398	2,822	576
Adult Patients	12,929	7,710	5,219
Pediatric Patients (age < or = 14)	887	634	253
Patient Age Unknown	106	88	18
Cardiac Arrests	669	394	275

Source: Contra Costa County Emergency Medical Services from data supplied by Base Hospitals

VI. EMS Agency Organizational Chart

Organization Chart



- Provide overall coordination of County EMS
- Provide medical disaster planning and

System.

coordinate medical disaster response.

- Regulate emergency ambulance services.
- Regulate County Trauma System.
- Establish prehospital treatment protocols.
- Approve and monitor paramedic programs.
- Approve and monitor first responder defibrillation programs.
- 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.

VII. EMS ExpendituresVII. EMS Expenditures

Emergency Medical Services Expenditures
FY 1992-93, 1993-94, and 1994-95

A. Basic Emergency Medical Services Program (Budget Unit #6543)

Category	FY 1992-93	FY 1993-94	FY 1994-95 (projected)
Salaries & benefits	\$ 404,232	\$ 395,496	\$ 404,999
Services & supplies	159,482	154,478	134,417
Total	\$ 563,714	\$ 549,974	\$ 539,416

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

Category	FY 1992-93	FY 1993-94	FY 1994-95 (projected)
Paramedic services	\$ 2,670,019	\$ 2,993,404	\$ 2,965,754
First responder programs	102,287	596,336	444,870
Communication/dispatch	148,318	432,559	309,380
Other programs (PCC)	-	61,000	85,000
Direct costs	\$ 2,920,624	\$ 4,083,299	\$ 3,805,004
Administration/collection	293,844	442,148	401,497
Contribution to reserves	-	180,637	-
Total	\$ 3,214,468	\$ 4,706,084	\$ 4,206,501

Source: Contra Costa County Emergency Medical Services Agency, 5/95.

VIII. 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, administration of specified drugs and other medicinal preparations, 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 other 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 a blunt instrument).

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 an immediate ambulance response to a potentially urgent but non-life threatening incident without the use of red lights and sirens and adhering to all requirements of the vehicle code (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: Circulation, Respiration, Abdomen/Thorax, Motor and Speech. 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: A coordinating center for the efficient management of all participating emergency resources within a designated area of responsibility. The center dispatches 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 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 Department: A department of county government responsible for health related issues. The Contra Costa County Health Services Department, which includes the Emergency Medical Services Agency, has been designated by the local Board of Supervisors as the "Local EMS Agency", and the County Health Officer as the "EMS Medical Director".

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: Negative effects (e.g. disability or abnormality) resulting from 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 require 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 Registry: A database containing individual patient data collected by the trauma center and submitted to EMS after trauma patient discharge. The record, containing over 100 variables, includes demographic data, cause of injury, diagnoses, treatments, etc.

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: The method used by ambulance personnel to determine whether an injured patient needs the specialized services of a trauma center. The method takes into consideration the mechanism of injury, obvious injuries and other information obtained in a brief patient exam.

Triage: A continuous process of sorting accident victims according to the severity of their injuries. Necessary when the number of victims exceeds the number of rescuers or resources available.

IX. List of Documents Available From the EMS AgencyIX. List of Documents Available From the EMS Agency

EMS System Plan, 1985

Trauma System Plan, 1986

Patient Transfer Guidelines, 1987

Prehospital Care Manual, 5/95

Multicasualty Incident (MCI) Plan, 1/92

County Service Area EM-I Proposal and Service Plan

Emergency Medical Guidelines for Law Enforcement Agencies, 1992

Request for Proposal for Trauma Center Designation, 1992

Request for Proposal for Emergency Ambulance Services, 1990

Multicasualty Cache Supplies and Locations

Expanded Medical Emergency Response Procedure

Message Transmission Network Specifications

EMS Policies:

- # 1 EMT-1 CERTIFICATION
- # 2 PARAMEDIC ACCREDITATION
- # 3 MICN AUTHORIZATION AND RE-AUTHORIZATION
- # 4 CONTRA COSTA COUNTY FEE STRUCTURE FOR EMT-1, PARAMEDIC, MICN
- # 5 PREHOSPITAL CREDENTIAL REVIEW PROCESS GUIDELINES
- # 6 PREHOSPITAL CONTINUING EDUCATION PROVIDER
- # 7 COUNTY PARAMEDIC EVALUATOR
- # 8 PARAMEDIC STUDENT PRECEPTOR PROGRAM
- # 9 PATIENT DESTINATION & TRANSPORT CODE DETERMINATION
- #10 PATIENT REFUSAL OF EMERGENCY MEDICAL CARE/AMB TRANSPORT
- #11 PARAMEDIC BASE HOSPITAL COMMUNICATIONS ON ALS CALLS
- #12 IMMEDIATE MEDICAL CONTROL & DIRECTION OF PARAMEDICS
- #13 TRAUMA PATIENTS
- #14 TRANSFER OF CRITICAL TRAUMA PATIENTS TO TRAUMA CENTER
- #15 GUIDELINES FOR INTERFACILITY TRANSFERS VIA AMBULANCE
- #16 BLS TRANSPORT FOLLOWING BLS/ALS TIERED RESPONSE BY SRVF
- #17 PARAMEDIC FIRST RESPONDER UNITS
- #18 FIRST RESPONDER DEFIBRILLATION
- #19 DETERMINATION OF DEATH IN THE PREHOSPITAL SETTING
- #20 DO NOT RESUSCITATE (DNR) ORDERS IN THE PREHOSPITAL SETTING

#21 PHYSICIAN ON SCENE

#22 COMMUNICABLE DISEASE EXPOSURE

#23 REPORTING ABUSE OF CHILDREN OR ELDER/DEPENDENT ADULTS

#24 EMERGENCY DEPARTMENT DIVERSION

#25 CONTROLLED SUBSTANCE RECORD KEEPING/REPLACEMENT PROCEDURES

#26 PULSE OXIMETRY

#27 PARAMEDIC ADVANCED AIRWAY CERTIFICATION

