

## Transformation from Planning to Operations: Emergency Medical Services in Disaster Response

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### Abstract

The preparedness for response to the medical consequences of a natural or technological event is an integral part of a comprehensive disaster response plan. Historically, planning and preparedness have lacked specific products and measurable objectives to determine if a jurisdiction was ready to respond.

The development and implementation of measurable objectives and implementation of those objectives in the planning process is a critical breakthrough in disaster planning. California subscribes to an “all-hazard” planning approach and uses operational planning that will work in multiple environments. The response profile for medical care in a disaster has been shown to be required within 8 hours in the situation where mass casualties are present. Two specific strategies should be employed to prepare for the medical response to disaster events. First, EMS systems should be strengthened and, second, measurable benchmarks for disaster response should be established.

The current trend is a transformation from “preparedness” to “products”, and “planning” to “operations”. The State continues to emphasize a Standardized Emergency Management System, using the principles of the Incident Command System, to achieve multi-organizational planning efforts as part of a State response plan. The foundation of medical disaster response is built on a strong “day-to-day” EMS system, using the basic components of an EMS System. Since disaster structures are unable to effectively form and respond within a short response profile, the ambulance system and emergency departments should be robust and able to increase their capabilities and capacities quickly. This recognition that the medical response is time dependent has led to specific plans to obtain rapid mobile, medical response within a time-phased deployment. These plans include benchmarks and measurable objectives related to EMS and Ambulance Strike Teams, Disaster Medical Assistance Teams, Hospital Surge capacity, communications, training, and exercises. These specific objectives form the benchmarks for evaluation of the medical preparedness for EMS and hospitals. (*Ann Disaster Med.* 2004;3:11-26)

**Key words:** EMT; Operations Plan; Disaster Response

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## Introduction

### ***The organization in a disaster environment***

Fires, floods, earthquakes and other natural disasters continue to challenge disaster planners. The risk of terrorist attacks with biological, chemical, and nuclear weapons poses new policy and management challenges for governmental agencies that have the responsibility to respond to these threats.<sup>1</sup>

Implementing these new priorities will require considerable organizational learning and change.<sup>2-4</sup> But agencies have deeply imbedded professional norms and organizational culture, and they are resistant to change even in times of crisis. Each agency responds with its own routines, and its own distinctive view of “the threat,” which impedes effective collaboration. Within the emergency medical services community, many organizations must be coordinated in order to achieve an effective response to the medical consequences of a disaster event. Additionally, new demands for effective and accountable disaster response are being heard worldwide.<sup>3,4</sup> The media and politicians require the best response possible to ensure the health and safety of the public.

The use of specific benchmarks for medical response can lead to continuous improvement in the overall readiness for EMS and hospital systems as they plan for earthquake response, and other natural or technological disasters involving mass casualties. The use of standard evaluation tools also allows for a comprehensive system formation.

### ***California emergency medical services authority (EMSA)***

The State of California Emergency Medical

Services Authority (EMSA) is charged with providing leadership in developing and implementing EMS systems throughout California and setting standards for the training and scope of practice of various levels of EMS personnel.<sup>5</sup> The EMS Authority also has responsibility for promoting disaster medical preparedness throughout the state, and, when required, managing the state’s medical response to major disasters. Emergency and disaster medical services in California are rooted in the skills and commitment of the first responders, EMTs, nurses, physicians, and administrators who deliver care to the public and operate the system. In order for high quality services to be delivered with high efficiency, all aspects of EMS systems must work together, mutually reinforcing and supporting each other for the benefit of the patient.<sup>5,6</sup> The California EMS Authority, through standard setting, consensus building, and leadership, plays a central role in improving the quality of emergency medical services available for all Californians.

In California, day-to-day EMS system management is the responsibility of the local and regional EMS agencies. It is principally through these agencies that the EMS Authority works to promote quality EMS services statewide. EMS Authority staff also work closely with many local, state and federal agencies and private enterprises with emergency and/or disaster medical services roles and responsibilities.

The EMS Authority provides statewide coordination and leadership for the planning, development, and implementation of local EMS systems. California has 32 local EMS systems that are providing emergency medical services for California’s 58 counties. Seven regional EMS systems comprised of thirty-three coun-

ties and twenty-five single county agencies provide the services. Regional systems are usually comprised of small, more rural, less-populated counties and single-county systems generally exist in the larger and more urban counties.

***Coordination of multiple autonomous organizations with functional interdependence***

The United States EMS Act of 1973 (Public Law 93-154) defined an EMS system as “a system which provides for the arrangement of personnel, facilities, and equipment for the effective and coordinated delivery in an appropriate geographic area of health care services under emergency conditions (occurring either as a result of the patient’s condition or of natural disasters or similar conditions) and which is administered by a public or nonprofit private entity which has the authority and the resources to provide effective administration of the system.” The target groups for an EMS system include patients suffering from behavioral emergencies, burns, cardiac emergencies, neonatal emergencies, poisonings, spinal cord injuries, and trauma. The delivery of emergency health care requires the participation of numerous independent organizations, including public safety agencies, ambulance services, and hospitals. Despite their autonomy, these organizations have high degrees of functional interdependence as they work to provide care, sometimes simultaneously, to individual patients. Managing interdependence requires planning, standardization, and mutual adjustment. Richard A. Narad, describes the multicratic organization in his Dissertation entitled, “Managing Functional Interdependence between Multiple Autonomous Organizations” (University of

Southern California, 1991.) This model serves as the theory base in management and policy considerations for emergency response. The community has five possible approaches to managing the interdependence of its EMS providers.

The first, ignoring it, will result in conflicts, inefficiencies, and, in the end, a lower level of care to the patient. The second approach involves the creation of voluntary networks (for example, EMS councils) to attempt to coordinate system participants. This approach depends on the willingness of participants to cooperate. A third approach, started under the federal EMS initiative, creates an independent agency to develop a system plan and to attempt to convince providers to participate in the plan. Under the fourth approach, this planning agency is granted regulatory powers (such as the franchising of ambulance services and formal designation of specialty hospitals) to assign roles and responsibilities to system participants in order to enforce implementation of the plan. The fifth approach is placing the entire EMS system under a single agency. This method is not fully used even in systems (for example, New York, San Francisco) in which the government owns or manages most of the system’s resources.

Under the third and fourth approaches, the job of the lead agency (regardless of its specific regulatory powers) is to plan for the entire EMS system in order to provide the optimal response to the emergency patient. In doing so, it must consider all potential patient needs and all resources required to meet those needs. In many ways, the lead agency must act like the management of a large corporation, coordinating the activities of its various divisions.

Because of the number of autonomous

organizations involved in an EMS system, policies should be established at the system level rather than by individual providers. Regionwide policies will standardize the actions of the various organizations so that each knows its role and responsibilities.

***Disaster response built on a strong day to day EMS system***

The EMS Authority, as the lead agency responsible for coordinating California’s medical response to disasters, provides medical resources to local governments in support of their disaster response. This may include the identification, acquisition and deployment of medical supplies and personnel from unaffected regions of the state to meet the needs of disaster victims. Response activities may also include arranging for evacuation of injured victims to hospitals in areas/regions not impacted by a disaster.

Disaster Medical Response includes the development and implementation of activities that include, but are not limited to:

- Medical and Health Mutual Aid system;
- Ambulance Strike Teams;
- Multi-Casualty Incident Plan (MCI);
- Standard Triage Methodology and Triage Tags;
- Disaster Medical Assistance Teams (DMAT);
- National Pharmaceutical Stockpile;
- Participation by medical and Health representatives in State Emergency Operations Center;
- Medical/Health Emergency Operations Center;
- Critical Incident Stress Teams;
- Metropolitan Medical Strike System teams (MMRS);

- Disaster Exercises – 2 times per year;  
The medical response to disasters requires the contributions of many agencies. The EMS Authority works closely with the Governor’s Office of Emergency Services, California National Guard, Department of Health Services and other local, state, and federal agencies to improve disaster preparedness and response.

The EMS Authority also works closely with the private sector: hospitals, ambulance companies, and medical supply vendors.

Responsibilities for disaster medical services preparedness and response include the following:

- Development and maintenance of disaster medical response plans, policies and procedures;
- Provision of guidance and technical assistance to LEMSAs, county health departments, and hospitals for the development of local disaster medical plans, policies and procedures;
- Enhancement of state and local disaster medical response capabilities through the development of civilian disaster medical assistance teams (DMATs), response management teams, disaster medical communications systems, and a statewide medical mutual aid system;
- Testing disaster medical response plans through periodic exercises with local, state, and federal agencies and the private sector; and
- Management of California’s medical response to a disaster.

***Medical response within 8 hours***

Managing an EMS event or a hospital can be challenging in the confusion that often follows a

mass trauma event. Based upon data from the CDC (Center of Disease Control), research about mass trauma events shows patterns of hospital use.

It is possible to estimate initial casualty volume and pattern after a mass trauma event. Public health professionals and hospital administrators can use this information to handle resource and staffing issues during a mass trauma event.

Within 90 minutes following an event, 50-80% of the acute casualties will likely arrive at the closest medical facilities. Other hospitals outside the area usually receive few or no casualties. The less injured casualties often leave the scene under their own power and go to the nearest hospital. As a result they are not triaged at the scene by Emergency Medical Services (EMS) and they may arrive to the hospital before the most injured. On average, it takes 3-6 hours for casualties to be treated in the emergency department (ED) before they are admitted to the hospital or released.

Ambulance strike teams must be able to be rapidly mobilized and be self-sufficient for at least 24 hours under a scenario that involves mass casualties. Additional, mobile medical resources should be capable of response and treatment during the first 8 hours of a large event with significant casualties. A hospital must also be able to increase its capacity within a short period of time. When trying to determine how many casualties a hospital can expect after a mass trauma event, it is important to remember that casualties present quickly and that approximately half of all casualties will arrive at the hospital within a 1-hour window. This 1-hour window begins when the first casualty arrives at the hospital. In order to predict the total num-

ber of casualties a hospital can expect, double the number of casualties the hospital receives in the first hour.

### ***National incident management system (NIMS)/Incident command system***

The mandate for the use of NIMS strengthens America's response capabilities by identifying and integrating core elements and best practices for all responders and incident managers. Through a balance between flexibility and standardization, and use of common doctrine, terminology, concepts, principles, and processes, execution during a real incident will be consistent and seamless. Responders will be able to focus more on response, instead of organizing the response, and teamwork and assignments among all authorities will be clearly enhanced.

The Incident Command System (ICS) incorporated at the field level within NIMS outlines a standard incident management organization that establishes five functional areas—command, operations, planning, logistics, and finance/administration—for management of all major incidents. Every EMS responder, firefighter, and law enforcement officer must be trained to a standard field level of ICS. To ensure further coordination and during incidents involving multiple jurisdictions or agencies, the principle of unified command has been universally incorporated into NIMS.

Responder readiness to manage and conduct incident actions is significantly enhanced if professionals have worked together before an incident. NIMS recognizes this and defines advance preparedness measures such as planning, training, exercises, qualification and certification,

equipment acquisition and certification, and publication management. Standardized communications during an incident are essential and NIMS prescribes interoperable communications systems for both incident and information management.

### ***Multi-Hazard planning***

Disasters may be either natural or technological. Statistically, California is more likely to encounter a wildfire (60%) or flood compared to an earthquake or terrorist event. However, with new money to prepare for terrorism, emphasis is placed upon this component rather than another planning area specifically. Consequently, California subscribes to an “all-hazard” planning approach and uses operational planning that will work in multiple environments.

California’s medical care providers need to be prepared to respond to any disaster—intentional or accidental—that might arise. Following the terrorist attacks of September 11, 2001, and the subsequent anthrax epidemic, attention has been focused on the ability of hospitals and emergency medical services (EMS) systems to respond to bioterrorist events.

Traditionally, natural disasters have posed the greatest threat to people in the state. Chemical, Biological, Radiation, Nuclear, and Explosives (CBRNE) emergencies present new challenges. Education and training is necessary if California’s medical care providers are to respond effectively to these threats. CBRNE emergencies increasingly threaten the health and safety of people worldwide. Chemical and biological agents have been used to create fear and cause harm. Explosives are used almost daily to injure and kill large numbers of people. And although radiation dispersal devices, commonly

called “dirty bombs”, and nuclear weapons have not been used by terrorists to date, their potential use is a serious concern.

### ***Trends: from preparedness to products, and from plans to operations***

The current trend is a transformation from “preparedness” to “products”, and “planning” to “operations”. Historically, disaster planning was not based upon specific measurable objectives to achieve a given level of response. California continues to recognize that, in order to provide a state-level disaster medical response system designed to reduce injury and loss of life, multi-organizational coordination must be done. Current emphasis is on the NIMS model in the United States, and the Standardized Emergency Management System (SEMS) in California, using the principles of the Incident Command System, to meet this need as part of the response plan.

### ***Rough and ready 2004, Ukraine***

Rough and Ready 2004, which occurred in L’viv, Ukraine in June 2004 provided valuable experience in disaster planning and response. The event was geared toward a multi-disciplinary response to an earthquake. This event was sponsored by the California National Guard as part of the State Partnership Program between California and the Country of Ukraine. Military Support to Civilian Authority was demonstrated. Military and Civilian Teams from California, Ukraine and also from Georgia and Azerbaijan worked to respond to the simulated earthquake emergency, that also required hazardous materials teams and public health personnel to respond.

The use of the Civilian Military Opera-

tions Center (CMOC), using Incident Command System principles, demonstrated how interdependent different branches of responders, even different nations and countries are during “real world” disaster situations. Interoperability and professionalism of all international responders was an important part of the workshop. The CMOC worked together using principles that could be utilized by the united efforts of the world community to respond to the medical and health consequences of an earthquake.

### **EMS systems**

The foundation of medical disaster response is built on a strong “day-to-day” Emergency Medical System (EMS), using the basic components of an EMS System.

One of the primary tasks of both state and regional EMS organizations is development of a system plan. It should set overall goals for an optimal EMS system and should consider the financial, technical, and political constraints that prevent the system from attaining this optimum. Based on these goals and constraints, attainable objectives can be established. The plan should identify the resources that are available and needed to develop the system. It should also establish short- and long-range work plans to achieve the objectives and determine the roles and responsibilities of system participants .

Most EMS system models focus on functional components. The Federal EMS Act identified 15 components that grantees were required to address. Grantees were generally EMS councils and planning organizations. Other developers of EMS system standards also adopted this approach, although using various listings of system components. The federal com-

ponents were:

1. Manpower
2. Training
3. Communications
4. Transportation
5. Facilities
6. Critical care units
7. Public safety agencies
8. Consumer participation
9. Access to care
10. Patient transfer
11. Coordinated patient recordkeeping
12. Public information and education
13. Review and evaluation
14. Disaster linkage
15. Mutual aid

As with system stages previously noted, listing the components does not identify the individuals or the organizations that are involved. A system design can address the components generically, but an effective plan requires that the roles and responsibilities of specific participating organizations be addressed. California has created EMS system standards and guidelines to assist the EMS planner in developing a comprehensive EMS system.

California has further consolidated the EMS system components into eight main areas: (1) System Organization and Management, (2) Communications and Dispatch, (3) First Responders and Transportation, (4) Manpower and Training, (5) Hospitals and Critical Care areas, (6) Data Collection, Evaluation, and Quality Improvement, (7) Public Information and Education, and (8) Disaster Medical Response. Specific measurable standards for system planning have been developed for each component.

Financing of emergency services is simi-

lar to health care financing in general but is complicated by several factors. In the prehospital setting, a mix of health insurance and local tax sources is used to pay for ambulance services. Some communities use a competitive bid process to award an exclusive franchise for ambulance service. This process might include the setting of rates by a government body, a subsidy from local taxes, or other payment systems.

Sufficient funds must be made available to the administration of EMS. These funds can be from the general fund, fees, or grants. For example, in California, the EMSA has a staff of approximately 50 people and a budget of approximately \$5 million in order to plan, implement, and evaluate a statewide EMS system. Some states have attached additional fees onto traffic violations or drivers licenses. California has a population of approximately 35 million people (approximately \$0.15 per person). Additionally, grants to local EMS agencies, trauma centers, and poison control centers have been available for up to \$35 million annually. In addition, 32 local EMS agencies have specific staff members at the local level that provide additional EMS system coordination on a daily basis.

EMS Systems should be regularly evaluated to determine if they are taking a systems approach to readiness. The chart provided in APPENDIX A is summary of benchmarks when examining an EMS System.

### **Disaster Response Standards**

Historically, planning and preparedness have lacked specific products and measurable objectives to determine if a jurisdiction was ready to respond. The State of California Emergency Medical Services (EMS) Authority has taken a

leadership role in the development and implementation of measurable objectives and implementation of those objectives in the planning process to ensure that California is prepared for a medical response to both natural and technological disasters, as part of the United States Health Resources Services Administration Hospital Terrorism grant. Statistically, California is more likely to encounter a flood or wildfire than an earthquake or a terrorist event. However, with new federal money to prepare for terrorism, emphasis is placed upon this component as well, rather than earthquake or other natural disaster planning specifically.

The recognition that the medical response is time dependent (within 8 hours) has led to specific plans to obtain rapid mobile, medical response within a time-phased deployment. These plans have also included measurable objectives related to EMS and Ambulance Strike Teams, Disaster Medical Assistance Teams, Hospital Surge capacity, communications, lab interconnectivity, training, and exercises. These specific objectives form the benchmark for evaluation of the medical preparedness for EMS and hospitals.

When utilized as a system assessment tool, the specific benchmarks in APPENDIX B for disaster medical response can lead to continuous improvement in the overall readiness for EMS and hospital systems as they plan for earthquake response, and other natural or technological disasters involving mass casualties.

### **Conclusions**

In this period of increased demand for accountability from the media and politicians, the use of a formal method for independent system evaluation and identification of "best practices"

is necessary. The transformation from planning to operations using measurable products will serve to enhance disaster readiness. The use of benchmarks in developing a medical response to disaster events may serve as an assessment tool and blueprint for further development of strong EMS systems capable of liquidating the consequences of a significant situation that result in medical casualties.

## **APPENDIX A**

### ***Structure and Process Best Practices for Emergency Medical Services Systems Assessment Tool***

#### **Planning Standards**

##### **System Organization and Management**

- Identify a lead, coordinating EMS Office within Health Agency
- Designate an EMS Director
- Designate an EMS Medical Director
- Staff EMS Office with adequate personnel to include: EMS Division, Disaster Medical Services Division, and Support and Information Services (minimum of 1 staff member per 1 million population)
- Develop a written EMS plan every 5 years
- Appoint a Multi-Disciplinary Committee on EMS (Advisory) with approximately 15 members
- Enact a comprehensive EMS Statute with the legal authority to monitor and enforce standards.
- Consider the designation of a local EMS Agency in every County or region
- Convene meetings with local EMS Directors no less than two times each year

- Establish E-mail communication capabilities and maintain list
- Establish interoperable Cell Phone/Radio Communication capabilities and maintain list
- Identify Phone conferencing capabilities
- Ensure Physician Medical Control at the local EMS agency level with a local EMS agency medical director
- Fully Integrate the Incident Command System (ICS) and train all EMS personnel in its use
- Conduct a Comprehensive, Formal External Assessment of EMS System—Once every 10 years
- Develop a set of EMS system Standards and Guidelines for the EMS system, based upon the EMS system components of:
  - + System Organization and Management
  - + Manpower and Training
  - + Communications
  - + First Response and Transportation
  - + Hospitals and Critical Care Centers
  - + Data Collection, Evaluation, and Quality
  - + Public Information, Education, and Prevention
  - + Disaster Medical Response
- Coordinate EMS activities with Fire, Law, Emergency Management and Military Services and other organizations.
- Develop a EMS/Medical/Health Emergency Operations Center

#### **Communications**

- Establish standard and well-publicized emergency number (ie 9-1-1)
- Designate centralized Medical Dispatch Centers

- Ensure trained and certified EMS Dispatchers are available with a minimum 24 hour Emergency Medical Dispatch (EMD) program, who may give Prearrival instructions, using Medically approved protocols
- Designate Common and interoperable EMS Frequencies for Dispatch, Ambulance, and Hospital Communications
- Require the availability of Standard (interoperable) radio equipment and frequencies on every fire and ambulance unit for communication from, (1) Field to Hospital, (2) Field to Field unit, and (3) Field to Dispatch center
- Hospital Emergency Department Status (ie EM Systems) that includes a rollup into a statewide system
- Develop Emergency Medical Dispatcher (EMD) Training Guidelines
- Require the use of Pre-Arrival Instructions by EMDs
- Encourage Ambulance units be equipped with Global Position Satellite based vehicle locator systems for dispatch control to ensure that the closest unit gets responded to an emergency.
- Encourage Ambulance units be equipped with route guidance (navigation) systems
- Develop Ambulance status system for “real-time” ambulance capability using EM Systems
- Require EMT-I training (120 hours) and licensure for all firefighters and ambulance personnel who do transportation services and first responders where more than 50% of their job is medical response.
- Paramedic training (1200 hours) and licensure for both public and private ambulance personnel and fire department first responders
- Continuing education programs for emergency medical services personnel should be readily available.
- First Responder Standard Curriculum for Law Enforcement and Fire Service
- EMS Training Centers in metropolitan area of 1 million or more
- Develop First Responder training (40 hours), consisting of first aid and CPR, should be available for, (1) Law Enforcement/Police officers, (2) firefighters, (3) Lifeguards, (4) volunteers, and other first responders who are relied upon to respond in an emergency—but where less than 50% of their job is medical response.
- Medical Treatment protocols and policies should be created for EMT-I, EMTII, and Paramedics based upon a standard scope of practice.
- A National Paramedic Academy (university-based) should be available for standard paramedic training (1400 hours) using a standard paramedic curriculum of 450 hours of didactic, 250 hours of clinical experience, and 700 hours of supervised field experience.
- Use of EMS/Paramedic Standardized Protocols, including exposure to chemical, biological, or nuclear agents
- ICS training should be available and re-

### **Manpower and Training**

- Develop EMT (120 hr)—Curriculum and Licensure
- Develop Paramedic (1400 hr)—Curriculum and Licensure

quired for emergency responders as part of their primary training.

### **First Responders and Transportation**

- Designate Fire Service First Responders
- Develop minimum Medical Training Standards for first responders—40 hours
- Develop minimum Medical Equipment list for first responders
- Require Hazmat/Decon and Rescue Equipment for specified first responders
- Designate Ambulance Services for emergency response
- Create specific Standards for Vehicle construction and use (KKK 1822)
- Designate BLS (EMT), ALS (paramedic), and MICU (physician)
- Designations
- Create minimum Medical Equipment Listing
- Create minimum Personnel Staffing and training
- Require standard PPE and Safety Equipment List for all EMS personnel
- Create response time standards for Fire department first responders
- (preferably with EMT-I with Automated External Defibrillation) — should be dispatched to emergencies and should arrive within 5 minutes (90% of the time) whenever possible
- Create response time standards for Ambulance services (staffed with 2 personnel—minimum of 1 Paramedic and 1 EMT) — should be dispatched to emergencies and should arrive within 10 minutes (90% of the time) whenever possible to ensure service available
- Develop an Ambulance inspection and li-

censure program should be considered including an EMS Identification for security of Ambulance services

- Develop Aeromedical Capability
- Identify or create ALS Helicopter Services—1 helo per 1 million population
- Center
- Staff Rotary wing aircraft with 2 ALS personnel at a Physician/Nurse level
- Identify Fixed Wing Aeromedical Capabilities

### **Hospitals and Critical Care**

- Develop minimum staff and equipment standards for emergency departments and receiving hospitals
- Designate Base Hospitals for providing radio direction to paramedics
- Designate Trauma Centers using American College of Surgeon standards
- Identify a central poison control center system, with a national toll-free number
- Identify a Standard trauma triage criteria and patient destination policies
- Improve Surge Capacity for emergency departments and trauma centers
- Identify and Certify Burn Centers
- Ensure training of MDs and Nurses, including ACLS and ATLS and PALS (equiv)
- Require standard personal protective equipment (PPE) for Hospitals
- Require Hospitals to have decontamination capabilities
- Create regional hospital pharmaceutical supply caches
- Ensure emergency and trauma, critical care nurse training should be available.

### **Data Collection, Evaluation, and Quality**

- Require a single, standard prehospital field assessment/ Prehospital Care
- Report for all EMS response
- Create a single, central data collection system within the EMS Office
- Evaluate routinely specified quality indicators from the information system
- Create Systemwide Continuous Quality Improvement process
- Publish an EMS web page for public information, protocols, training, and news
- Create an EMS and Disaster research agenda

### **Public Information and Education**

- Encourage First aid and CPR training to be readily available
- Develop an Automated External Defibrillation program for the public
- Implement an injury prevention program
- Require First Aid and CPR Training for Automobile Drivers
- Place Information about first aid, CPR, disaster preparedness, and survival in each phone book
- Require school children to be trained in first aid, CPR, and disaster preparedness as part of the school curriculum
- Require First aid kits in businesses, buses, and taxis

### **Disaster Medical Response**

1. Write EMS and Medical Plan for Disaster Response
2. Create a regional medical mutual aid system between regions with Regional Disas-

- ter Medical/Health Coordinators
3. Identify a modern Medical/Health Emergency Operations Center (Medical/Health Operations Branch) and equipped with necessary communication and coordination supplies
4. Develop a Multi-Casualty plan using the Incident Command System Specify and utilize a standard Triage Tag (METTAG) and use START triage system
5. Practice MCI and triage for every incident with 5 or more victims
6. Develop Disaster Medical Assistance Teams with capability for response within State and for international disasters. Standard equipment and supplies should be provided.
7. Create a management support unit to support DMAT operations to ensure self-sufficiency
8. Develop Ambulance Strike Teams with rapid and self-sufficient response capability
9. Encourage Hospital Mobile teams (5 people—MD, Nurse, Paramedic) for rapid response and trained to integrate into the ICS system
10. Integrate the Military medical resources into the planning and response network
11. Develop a National Pharmaceutical Stockpile
12. Ensure participation by Medical and Health representatives in a State/National Emergency Operations Center
13. Set up a Mental Health Team (MH DMAT)
14. Establish Critical Incident Stress Debriefing (CISD) Teams and ensure cohesive response with mental health workers for

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15. Develop Metropolitan Medical Strike System teams (MMRS) for specialized response to chemical, biological, nuclear incidents
16. Consider additional specialty response for:  
(1) Hazardous Materials, (2) Chemical/Biological agents, (3) nuclear accidents
17. Integrate the Medical/Health response with a Response Information
18. Management System for day to day monitoring of health system including bed capacity and status
19. Develop swift water/flood rescue training capability
20. Practice disaster management with 2 drills per year (1 functional and 1 tabletop).
21. Consider the formation of mobile disaster units within communities that can deliver equipment and supplies in the event of disasters
22. Work with the public to ensure self-sufficiency for up to 72 hours
23. Set up one Disaster Mortuary Team (DMORT). It should NOT be integrated with the DMAT teams
24. Evaluate and consider improvement of hospital building standards, hospital operational standards (ie generator fuel), and non-structural hazard mitigation requirements
25. Work to integrate humanitarian aid organizations as part of any disaster response

## APPENDIX B

### ***Structure and Process Best Practices for Disaster Medical Response Assessment Tool***

**Critical Benchmark #1:** Develop and maintain a financial accounting system capable of tracking expenditures by priority area, by critical benchmark, and by funds allocated to hospitals and other health care entities.

#### **Products**

- \* Grants:
  - Hazardous Materials Emergency Preparedness Grant
  - National Bioterrorism Hospital Preparedness Program
  - FEMA Public Assistance Program

#### **Hospital Bed Capacity**

**Critical Benchmark #2-1:** Establish a system that allows the triage, treatment and disposition of 500 adult and pediatric patients per 1,000, 000 population (or no fewer than 500 patients per region)

#### **Products**

- \* START Triage
- \* Field Triage
- \* Multi-Casualty Incident Plan

#### **Isolation Capacity**

**Critical Benchmark #2-2:** Upgrade or maintain airborne infectious disease isolation capacity to have at least one negative pressure, HEPA-filtered isolation facility per region, to be placed in accord with the findings of the region's needs assessments. Such facilities must be able to support the initial evaluation and treatment of 10 adult and pediatric patients at a time having a clinical contagious syndrome suggestive of smallpox, plague or hemorrhagic fever, prior to movement to a definitive isolation facility.

#### **Products**

Create Isolation Capacity :

- \* In the field

- \* In transport or ambulances/helicopters
- \* In the hospitals (1 isolation room for 5 persons)
- \* Modify hospital structures
- \* Purchase equipment

### Health Care Personnel

**Critical Benchmark #2-3:** Establish a response system that allows the immediate deployment of 250 or more additional patient care personnel per 1,000,000 population in urban areas, and 125 or more additional patient care personnel per 1,000,000 of population in rural areas, that would meaningfully increase hospital patient care surge capacity.

#### Products

- \* Medical Mutual Aid System
- \* Ambulance Strike Teams
- \* DMAT
- \* Medical Reserve Corps (MRC)
- \* Medical Personnel Registry

### Pharmaceutical Caches

**Critical Benchmark #2-5:** Establish local or regional systems whereby pharmacies based in hospitals or otherwise participating in the local or regional health care response plan have surge capacity to provide pertinent pharmaceuticals in response to bioterrorism or other public health emergencies.

#### Products

- \* Strategic National Stockpile
- \* CHEMPACK Program
- \* Hospital Pharmaceutical Caches
- \* EMSA Response Station – Medical Supplies

### Personal Protection and Decontamination

**Critical Benchmark #2-6:** Ensure adequate personal protective equipment (PPE) to protect 250 or more health care personnel per 1,000,000 population in urban areas, and 125 or more health care personnel per 1,000,000 population in rural areas, during a biological, chemical or radiological incident.

#### Products

- \* Purchase Standard, interoperable PPE (Personal Protective Equipment)
- \* Grants:
  - HDER Homeland Defense Equipment Reuse
  - HRSA
  - DHS-ODP Department of Homeland Security – Office of Domestic Preparedness
  - UASI Urban Area Security Initiative

**Critical Benchmark #2-7:** Ensure that adequate portable or fixed decontamination systems exist for managing 500 adult and pediatric patients and health care workers per 1,000,000 population, who have been exposed to biological, chemical or radiological agents.

#### Products

- \* Purchase Standard decontamination systems
- \* Grants:
  - HDER Homeland Defense Equipment Reuse
  - HRSA
  - DHS-ODP Department of Homeland Security – Office of Domestic Preparedness
  - UASI Urban Area Security Initiative
  - CBRNE – CD(Chemical Biological Radiological Nuclear Explosive)

## **Mental Health**

**Critical Benchmark #2-8:** Establish a system that provides for a graded range of acute psychosocial interventions and longer-term mental health services to 5,000 adult and pediatric clients and health care workers per 1,000,000 population exposed to a biological, chemical, radiological or explosive terrorist incident.

### **Products**

- \* Develop Mental Health Preparedness Network
- \* Mental Health Team Specialty
- \* American Red Cross
- \* FEMA (Federal Emergency Medical Agency)

## **Trauma and Burn Care Capacity**

**Optional Benchmark #2-9:** For regions choosing to fund this section, enhance state-wide trauma care capacity to be able to respond to a mass casualty incident due to terrorism. This plan should ensure the capability of providing trauma care to at least 50 severely injured adult and pediatric patients per million of population per day.

### **Products**

- \* Trauma Centers 60 different (I-IV) levels trauma centers in California
- \* Burn Centers

## **Communications and Information Technology**

**Critical Benchmark #2-10:** Establish a secure and redundant communications system that ensures connectivity during a terrorist incident between health care facilities and state and local health departments.

### **Products**

- \* Communications: Phone; Pager; E-mail; Public (radio, TV);
- \* Special Radio Frequencies;
- \* Satellite communications.
- \* Hospital Status Systems (ReddiNet, EMSsystems)
- \* Ambulance Status Systems

**Critical Benchmark #3:** Develop a mutual aid plan for upgrading and deploying EMS units in jurisdictions they do not normally cover, in response to a mass casualty incident due to terrorism. This plan must ensure the capability of providing EMS coverage for at least 500 adult and pediatric patients per 1,000,000 population per day.

### **Products**

- \* Mutual Aid System and plan

**Critical Benchmark #4-1:** Implement a hospital laboratory program that is coordinated with currently funded CDC laboratory capacity efforts, and which provides rapid and effective hospital laboratory services responding to terrorism and other public health emergencies

### **Products**

- \* Special Terrorist Response Training
- \* Special Reference Labs
- \* Poison Control Center
- \* CBRNE – CD
- \* Atmospheric Monitoring Program: Air, Water

**Critical Benchmark #4-2:** Enhance the capability of rural and urban hospitals, clinics, emergency medical services systems and poison control centers to report syndromic and diagnostic data that is suggestive of terrorism to their associated local and state health de-

partments on a 24-hour-a-day, 7-day-a-week basis.

**Products**

- \* Local and State Database Reportable Diseases and Conditions (California Code of Regulations Sec 2500)

**Optional Benchmark #5:** For regions choosing to fund this section, develop education and training programs for adult and pediatric hospital, outpatient and prehospital health care professionals responding to a terrorist incident.

**Products**

- \* Develop CBRNE – CD
- \* Training and Educational programs and Exercises
- \* EMS Week
- \* Conferences
- \* Hospital Emergency Incident Command System (HEICS)

**Critical Benchmark #6:** As part of a written evaluation strategy of the region’s program, conduct at least one bioterrorism disaster exercise in the jurisdiction during FY 2003 that covers a large-scale epidemic scenario affecting both adults and children.

**Products**

- \* Disaster Exercises: Top-Table
- Field Disaster Exercises (plague, smallpox, anthrax)
- Rough and Ready

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