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Emergency Medical Technicians and Paramedics in California

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Overview/Description of Workforce

Emergency Medical Technicians and Paramedics care for injured or ill people in emergencies and transport them to and from health care institutions.¹ The survival of trauma victims and ill persons frequently depends on the quick mobilization and efficient care of EMTs and Paramedics.² Typically, a 911 operator dispatches EMTs and Paramedics to an emergency, such as an automobile accident, heart attack, drowning, childbirth, or gunshot wound. Along with police and fire department personnel, these emergency service workers determine the nature and extent of individuals' medical and trauma-related emergencies and provide basic lifesaving care, such as opening and maintaining airways, controlling bleeding, immobilizing fractures, and administering certain drugs.³

EMTs, particularly at the entry level, mostly concentrate their efforts on transporting patients in nonemergency situations, such as from one health care facility to another, or from home to a health care facility.⁴ More experienced, highly trained EMTs and Paramedics carry out complicated procedures, often under the direction of a physician over a radio. Some EMTs and Paramedics work as members of flight crews of helicopters to transport critically injured patients to trauma centers. Increasingly, hospitals are also hiring EMTs to work in the facility or respond to calls in ambulances or helicopters to transport critically injured patients.⁵

History of the Profession

During the Civil War, mortality rates were much higher than they had been in previous wars, because weapons had become more destructive.

To reduce these mortalities, the military instituted the first ambulance service. This idea spread across U.S. urban centers, and, by the 1940s, smaller communities began volunteer ambulance services. People who drove the ambulances were known as "ambulance attendants," and their main purpose was to transport injured patients to hospitals. They were not medically trained and performed no medical care prior to hospital arrival.

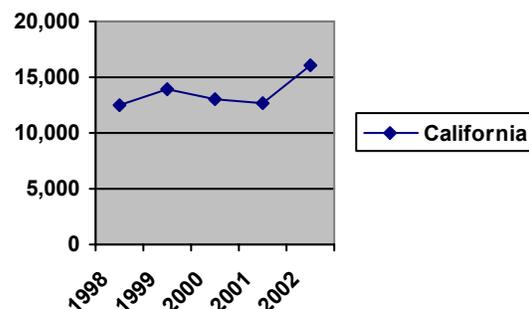
In 1966, the passage of the Highway Safety Act required states receiving federal highway construction funds to develop emergency services. The Department of Transportation developed a widely used training course in 1969. In 1970, the National Registry of EMTs was created to standardize EMT education, examinations, and certification nationally.

Also in 1970, the National Academy of Sciences Committee Subcommittee on Ambulance Service developed guidelines for an advanced training program to train two levels of EMTs: basic-level (EMT-I) and advanced-level (EMT-Paramedic).⁶ In 1980, an educational program and certification of intermediate EMTs (EMT-II) was added.

Growth of the Profession

The number of EMTs and Paramedics in California, who describe their primary occupation as EMTs or Paramedics, has grown over the past six years, from 12,530 in 1998 to 16,010 in 2002. There was a slight decline in 1999-2001, but since that time the numbers have been increasing.

Figure 1. Trends in EMT Employment⁷



Data from the U.S. Bureau of the Census and the U.S. Bureau of Labor Statistics suggest that there are proportionately fewer EMTs and Paramedics per capita in California than in the U.S. and in many other large states.

Table 1. Number of EMTs and Paramedics per 100,000 Population^{8 9}

	Number of EMTs and Paramedics per 100,000
CA	46
TX	51
NY	57
FL	49
IL	68
PA	113
OH	73
MI	56
U.S.	63

However, many jobs in California require an EMT certification or Paramedic licensure--firefighters, law enforcement, nontraditional emergency room technicians, water park employees, security guards, and industrial setting emergency response team members. Thus, there are approximately 60,000 certified EMTs¹⁰ and 13,500 licensed Paramedics¹¹ in the State of California, even though only 16,010 work primarily as EMTs and Paramedics.

The number of EMTs and Paramedics is projected to rise during the next seven years, due to population increases, aging of the population, increasing urbanization with homelessness and an increasing number of uninsured, and falling numbers of volunteer EMTs. California's Employment Development Department (EDD) projects that there will be a 25.8% increase in the number of EMTs and Paramedics in California between 2000 and 2010.¹²

The EMT employment sectors expected to experience the most growth in the next decade are those serving hospitals and private ambulance services.¹³ Demand for part-time, volunteer EMTs and Paramedics is predicted to remain unchanged in rural areas. The most employable EMTs are expected to be those with higher qualifications, such as EMT-II's and Paramedics.¹⁴

Work/Practice Patterns

There are four types of Emergency Medical Service providers.¹⁵ First Responders have rudimentary training in emergency medical care. EMT-Basics (EMT-I in California), EMT-Intermediates (EMT-II in California), and EMT-Paramedics have increasingly advanced qualifications in life-saving emergency medical procedures. The specific duties of each EMT depend on his or her qualification level.¹⁶

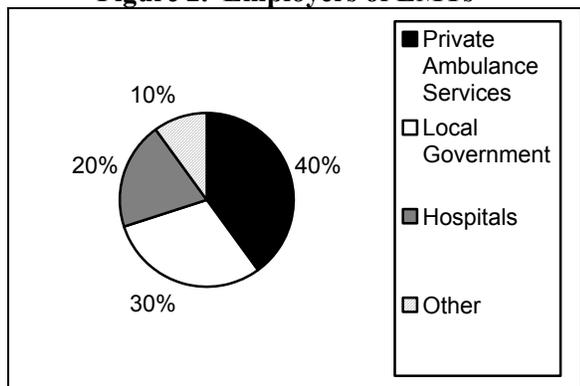
- A *First Responder* provides Basic Emergency Care. Many firefighters, police officers, and emergency workers are First Responders, because they are often the first people to arrive at an emergency. They do not work in ambulances.
- An *EMT-I* provides Basic Life Support (BLS): patient assessment, advanced first aid, use of adjunctive breathing aids and administration of oxygen, automated external defibrillation, cardiopulmonary resuscitation, and transportation of ill and injured persons.
- An *EMT-II* provides Limited Advanced Life Support (LALS): all EMT-I skills, as well as EKG monitoring, defibrillation and cardioversion, antishock trousers, intravenous infusion, esophageal airway support, venous blood draws, and the administering of nine medications (EMT-II scope of practice varies by area).
- A *Paramedic* provides Advanced Life Support (ALS): all EMT-I and II skills, as well as endotracheal (ET) intubation (adults), glucose measuring, needle thoracostomy, nasogastric intubation (adult), and the administering of twenty-one medications.

EMTs typically work long hours, and are on call for extended periods of time.¹⁷ Their schedules may include a 48-hour shift, followed by several days off.¹⁸ They are expected to work evenings, weekends, and holidays. According to the California EDD, a few EMT/Paramedic employers now have on-site child care for employees.¹⁹

Full- and part-time paid EMTs are employed in a number of industries. The largest employers are

private ambulance services, followed by hospitals, local government fire departments, public ambulance services, and emergency medical services. The remainder works in various industries that provide emergency services.

Figure 2. Employers of EMTs²⁰



EMTs and Paramedics in urban areas are usually paid employees, because there are enough emergencies occurring daily to warrant a paid employee. Rural areas tend to utilize volunteer EMTs and Paramedics, because they do not have the volume of calls that would warrant a paid position – they usually have only a few calls per month.

Most volunteer emergency service personnel train at the EMT I level, because the training program requires a short time commitment suitable to learning in the evenings and on weekends. Most paid emergency service personnel are Paramedics, who are required to take a two-year training program. Paramedics are compensated more than EMTs, which is an incentive for paid EMTs to become Paramedics.²¹

Demographics

Over the past thirty years, the EMT and Paramedic workforce has become more diverse in its racial/ethnic composition.²² However, on a national level, the ethnic composition does not fully reflect the U.S. population. As of 2001, ethnic minorities made up 26% of the US population, but only 15% of the EMT/Paramedic workforce. This is of some concern because EMTs are frequently involved in situations where

cultural understanding is vital, particularly in urban areas.

Table 2. Race/Ethnicity, EMTs/Paramedic Workforce and the U.S. Population, 2001.^{23 24}

	EMTs	U.S. Population
Race/Ethnicity	%	%
White, Non-Hispanic	83.3	74.0
Hispanic/Latino	4.7	10.0
Black, Non-Hispanic	6.0	10.0
Asian/Pacific Islander	1.7	4.0
Other	2.6	2.0

Gender

Historically, emergency medicine has been a male-dominated field.²⁵ In the early 1970s, when emergency medical services began to expand, many returning Vietnam War veterans, who had experience flying wounded soldiers in helicopters, became EMTs/Paramedics.²⁶ Another reason for male dominance in emergency medical services is that fire services played a large role in the development of EMS. Many localities chose fire departments to be responsible for emergency care provision in the early 1970s²⁷, and fire departments have traditionally been male-dominated. As of 1995, 34% of EMS workers²⁸ were based in fire departments in most cities. Today, men are overrepresented in the EMT/Paramedic population. Concerns have been raised about gender bias in officer selection. A study of 216 current members of nine upstate New York volunteer EMS agencies found that men are more frequently promoted than women to line and staff officer positions.²⁹

Table 3. Gender, EMTs/Paramedics and U.S. Population, 2001.^{30 31}

Gender	EMT	Population
Male	69%	48%
Female	31%	52%

Wages

Wages of EMTs and Paramedics vary greatly with employment setting, geographic location, educational qualifications, and experience.³² Generally, local government offers the highest salaries; hospitals pay less, and local and suburban

ambulance transportation services pay the lowest wage.

Nationally, the mean salary for all EMTs is \$25,450.³³ In California, the mean salary is \$30,394. However, salaries vary widely – ranging from a low of approximately \$19,000³⁴ for an entry-level EMT-I to \$50,000 for a fire department paramedic. Not only do local government and fire departments offer the most lucrative positions for EMTs and Paramedics, but also they usually offer the same benefits as firefighters or police officers, which include pension plans providing retirement at half pay after twenty-five years of service.³⁵ Thus, competition for EMT and Paramedic positions tends to be higher for local government positions in fire, police, and city-contracted emergency service departments.

Education and Training

California has approximately 200 EMT-I, 4 EMT-II, and 33 EMT-Paramedic training programs.³⁶ See Appendix 1 for detailed information on minimum eligibility, training, certification, licensure, and continuing education information for EMTs and Paramedics.

Certain local EMS agencies are phasing out EMT-II programs, because counties are not permitted to divert funds from Paramedics to EMT-II training programs. As a result, these agencies are upgrading to Paramedic programs.³⁷ Subsequently, California now has fewer than 200 EMT-IIs and only 4 EMT-II training programs, all located in rural areas

Career Ladder

It is relatively easy for an EMT-I to advance to an EMT-II or Paramedic level. An EMT-I certificate is a requirement for becoming an EMT-II or Paramedic. The articulation from one level to another is fairly well outlined in advance. EMT-Paramedics can also advance in their career by leaving the field to become supervisors, operations managers, administrative directors, executive directors of emergency services, instructors, dispatchers, physician assistants, or salespeople/marketers of emergency medical equipment.³⁸ A significant portion of EMTs continue their interest in health care and pursue

careers in nursing, medicine, firefighting, or as psychiatric technicians.

Licensure, Certification, and Registration

Certification is a designation of professional status, which verifies that a person has the necessary expertise to perform the functions of his or her profession, and is granted to individuals who have passed an exam in a particular specialization. Licensure is a designation of legal status, which permits licensees to practice their profession in a given state. Registration is placement upon a roster of an official organization.

- EMTs must be certified by their local Emergency Medical Services agency, public safety agency, or fire department.³⁹ Currently, the certification examination is devised by each local EMS county agency. However, the Emergency Medical Services Authority of California (EMSA) plans to standardize the certification examination to a national examination in 2006.⁴⁰
- Paramedics must be licensed by the Emergency Medical Services Authority of California (EMSA), which uses the National Registry of Emergency Medical Technicians (NREMT) Paramedic examination.
- In California, national registration is optional. Both EMTs and Paramedics have the option of becoming nationally registered by the National Registry of EMTs (NREMT).⁴¹ To register, applicants must pass National Registry examinations. To maintain NREMT registration, they must work as EMTs/Paramedics, meet a continuing education requirement, and reregister every two years (See Appendix 1 for details).

Critical Issues and Policy Concerns

High Turnover

EMTs have high rates of turnover⁴² for a variety of reasons: burnout, low compensation, and lack of professional recognition. EMTs responding to ambulance calls experience high levels of burnout because they confront people in life-or-death scenarios.⁴³ One study examined 79 rescue, fire, medical personnel and police officers who treated victims of an apartment building explosion and

found that 80% had at least one symptom of post-traumatic stress disorder.⁴⁴ Other factors that lead to burnout are irregular work hours,⁴⁵ and, for entry-level EMTs, the boredom of providing routine transportation for people who need minimal or no medical care while in transit.

Another reason EMTs experience a high turnover rate is that private sector employment does not compensate them well, compared to other occupations.⁴⁶ As part of the ongoing Longitudinal Emergency Medical Technician Demographic Study (LEADS) Project, Brown, Dawson, and Levine determined that 62% of EMT-Is do not have adequate retirement plans, 94% believe they should be paid more for the job they do,⁴⁷ most are not satisfied with the appreciation and recognition they receive from their employers, 35% are not satisfied with their benefits, and most feel they have minimal advancement potential.⁴⁸

Paramedics experience less job turnover than EMTs, perhaps because they experience more emergency calls, perform fewer routine transport services, and are more highly paid. However, the LEADS study also determined that 57% of Paramedics do not have adequate retirement plans, 94% believe they should be paid more for the job they do, and 30% are not satisfied with their benefits.⁴⁹

Rural Vs. Urban Providers

Rural areas are underserved by EMTs and Paramedics in comparison to urban areas. Rural emergency medical providers are more often volunteers than employees, have less education, and are less likely to become Paramedics because of the two-year training commitment.⁵⁰ Rural areas have difficulty recruiting EMTs/Paramedics, because of the longer hours, less available backup, fewer calls, and longer driving times to hospitals.⁵¹ Some areas average only one call a day and these communities cannot even support one full-time EMT. Also, in rural areas, injuries from car accidents are often more severe due to smaller and less well maintained roadways with few road safety barriers. Rural areas also have higher injury-related mortality due to longer distances between sites of injury and hospitals,

with transport time averaging hours rather than minutes as in urban areas.

Distance learning may be an effective alternative to increase the supply of EMTs and Paramedics in rural environments. One study compared traditional classroom training to instruction using a two-way graphic/audio computer network and satellite-based audio/visual networks, and found no difference between mean test scores or attrition rates among the three methods.⁵²

Modular instruction may also be an effective alternative to increase the supply of EMTs and Paramedics in rural areas. In recent years, rural EMS agencies have expressed concern with the two-year paramedic training commitment. These rural EMS agencies would like their volunteers to have more advanced training, but believe that the two-year Paramedic training commitment is not workable for their volunteers. In 2001, the California EMS Commission recommended that the EMT-II regulations be revised, so that advanced training could be offered in modules to allow rural EMT-Is to receive additional training.⁵³ The modular EMT-II training program includes six modules, which begins with the EMT-II Basic Module and adds additional modules if the local EMS system approves.

Advanced or Basic Life Support for Trauma

There has been considerable debate about whether EMTs and Paramedics should treat patients at the scene of the emergency (“stay and play”)⁵⁴ or transport them as quickly as possible to a hospital (“scoop and run.”)⁵⁵ Some believe that advanced life support (ALS) at the scene of the accident saves lives and improves health outcomes. There is some evidence that ALS is very beneficial for cardiac arrest.⁵⁶ Others believe that patients are better off being transported to a hospital as quickly as possible, where they will receive better overall care faster. There is some evidence that ALS slows down the patient’s trip to the hospital by 5 minutes. One study measured the increase in on-scene time for ALS at 18.5 minutes versus 13.5 minutes for BLS.⁵⁷

EMT Employment in Hospitals

Recently, EMTs have been moving into new roles in critical care units of hospitals. They are well trained in the skills required in acute care and may function at a higher level than traditional nursing support staff. EMTs also work as technicians in hospital emergency rooms.⁵⁸ Because EMTs/Paramedics are already trained medical personnel, hospitals are using them to perform simpler life-saving tasks under the direction of nurses in the emergency room, freeing up nurses to do more complicated procedures.⁵⁹

Violence and Infectious Disease

Threats of violence and potential exposure to infectious disease are concerns for this profession. The occupational fatality rate for EMS workers exceeds that of the general population.⁶⁰ One study estimates 12.7 fatalities per 100,000 EMS workers annually due to transportation-related injuries, air ambulance crashes, cardiovascular incidences and homicides. This compares to a rate of 5.0 per 100,000 for the general U.S. population.

There is a need for continuing education for EMTs, focusing on the transmission routes of infectious diseases, chances of exposure, appropriate use of CDC-recommended protective equipment, as well as the need for follow-up testing after exposure. Thirty-four percent of EMTs report that their knowledge of infectious diseases is inadequate to protect themselves.⁶¹

Bioterrorism

In California, the EMS Authority is implementing a bioterrorism project funded through the federal Health Resources and Services Administration (HRSA). Currently, EMSA is implementing the first phase of the grant, which involves spending \$9.9 million to improve communications among hospitals and clinics in the event of a bioterrorism attack.⁶² The second phase of the HRSA grant will involve spending \$38.7 million to develop and implement regional preparedness plans to improve the capacity of health care systems, hospitals, emergency rooms, outpatient clinics, poison control centers, free-standing and fire-based EMS systems, rural community health centers, and tribal facility centers to respond to bioterrorism incidents.

Biological threats could seriously impact EMTs.⁶³ EMS personnel have little training in appropriate response, treatment, and transport of patients exposed to smallpox/biological weapons. It is also questionable whether there are enough EMS personnel in California counties to handle a large-scale bioterrorist attack.⁶⁴ A terrorist incident would generate huge casualty loads that would overwhelm the supply of EMTs and Paramedics available in each county, as well as the health care system.

Summary

EMTs and Paramedics are essential members of the health care workforce. They are an intrinsic part of California's and the nation's emergency medical system. Lack of diversity among this workforce, low pay, high job stress, job dissatisfaction, lack of recognition, high turnover rates, and limited advancement potential in the private sector are areas for concern. However, many EMTs and Paramedics go on to pursue health-related careers after leaving. Lack of coordination among the public health, health care, emergency medical service, and protective service systems at the federal, state, regional, and local levels are problems that directly impact these workers. In the future, these issues should be addressed in order to assure an adequate number of EMTs and Paramedics to meet routine emergency needs as well as respond to mass casualty events.

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