



## ISSUE: EMERGENCY MEDICAL SERVICES



### From Humble Beginnings

Few people realize that modern emergency medical service (EMS) has only been around for the last 40 years. In the first half of the 20<sup>th</sup> Century, many ambulance services were operated by community funeral homes. The hearses were used to transport sick and injured persons to the hospital, as well as those individuals who died, to the funeral home. The funeral home attendants had little first aid training. The funeral homes were in the ambulance business simply because their vehicles were large enough to accommodate the long stretchers.



After World War II, a number of civilian rescue squads and ambulance services began to emerge in the United States. Most of the rescue personnel,

while well intentioned, were untrained, poorly equipped, unorganized and unsophisticated. The systems were unregulated. There were no minimal training standards for ambulance personnel and no training programs existed beyond basic first aid. Pre-hospital care in the U.S. evolved into a patchwork of well intentioned, but uncoordinated, efforts. This all began to change in the mid-sixties.

In 1966, the National Academy of Sciences published a report entitled *Accidental Death and Disability: The Neglected Disease of Modern Society*. This report quantified the magnitude of traffic-related death and disability while vividly describing the deficiencies in pre-hospital care in the United States. The

"white paper" made a number of recommendations regarding ambulance systems, including a call for ambulance standards, state-level policies and regulations, and adopting methodology for providing consistent ambulance services at the local level.

Also in 1966, the Highway Traffic Safety Act established the U.S. Department of Transportation (DOT) and awarded that agency the authority and responsibility to improve EMS education, including the development and implementation of training standards. States were encouraged to develop state EMS offices with part of the costs paid by the Highway Safety Programs.

These two historic milestones spearheaded the evolution of emergency medical services in the United States. The significant events that followed are listed in the "History" section of this paper.

### A snapshot of "Then and Now"

In the 1960s pre-hospital care generally was limited to a "scoop and run" operation. Additionally, ambulances transported patients back to the hospitals in which they were based, regardless of whether another hospital was closer or better equipped to handle that specific patient's medical condition. This often left whole areas of a community without ambulance coverage. Furthermore, ambulances would be tied up in performing transfers, and none would be available for emergencies.

There was a lack of uniform and adequate federal, state and local laws and standards concerning EMS (only six states had written standards). Both the ambulance and equipment carried on board (if any at all) were of poor quality and design. The vehicle offered little room for patient, attendant or equipment.

Radio communications between emergency services and hospital was seriously lacking. Only 5 percent of the nation's ambulances had radio contact with a hospital.

Personnel were sadly lacking in training for emergency care of patients. Only about 50 percent of the nation's EMS personnel had even American Red Cross certificates and many had no training at all. Hospitals themselves were staffing emergency rooms with part-time physicians, who may or may not have training or experience in emergency care or trauma.

In 1974 the first aid boxes weighed about 100 lbs. and were similar to large tackle boxes. They looked like the old tube caddies carried by TV repairmen. Early radio communication was also very unreliable.

Today, EMS equipment is specially designed to be portable and lightweight. The technology is accurate and sophisticated. Most equipment is compact, which helps when carrying down an embankment to a crash scene or into a wooded area some distance from the nearest highway.

Ambulances can be high-tech, mobile emergency rooms or specially equipped vans used for non-emergency transport. There is no longer one "type" of ambulance. Services change and adapt to various needs.

Computers, cellular telephones, and fax machines have also revolutionized EMS care. For example, and EMT can do a comprehensive EKG at the scene and the computer inside the *LifePak* tells them what kind of arrhythmia they may be dealing with and even gives suggestions for treatments. These reports are transmitted by fax from the scene to the emergency department.

Not only has computer technology helped save patients' lives, it has also made paperwork much easier. Reports, statistics, medical records, log sheets are all easier because of computer technology. Soon Palm-Pilot technology could eliminate handwritten reports.

EMS in the United States had enjoyed many successes. Not only did EMS systems grow, EMS became a career and volunteer activity for hundreds of thousands of talented, committed and dedicated individuals. Emergency medical

care is available to virtually every citizen in the country by simply dialing 9-1-1 from any telephone. This was an extraordinary accomplishment in a relatively short period of time.

The greatest accomplishment of EMS, however, is the fact that more lives are being saved. EMS providers treat nearly 20 million patients a year in the United States. Many of these have complicated medical or traumatic conditions that require considerable knowledge, skill and judgment. Some are critically injured and the proper care can literally make the difference between life and death. Today, EMS is accepted as one of the "Big Three" public safety responders: Police, Fire and EMS, and for its lifesaving capability.

### **History of EMS (source: NHTSA)**

The delivery of emergency medical care, as we know it today, was born as a result of numerous milestones. The following are several of those:

**1964** - The President's Commission on Highway Safety called for emergency care and transportation of the sick and injured as one of its community action programs.

**1965** - More people died this year in auto accidents (50,000) than in eight years of the Vietnam War.

**1966** - (1) "Accidental Death & Disability: The Neglected Disease of Modern Society" was published by the Division of Medical Sciences, National Academy of Sciences/National Research Council (NAS/NRC). This publication explicitly outlined the severity of the emergency medical care situation in this country. (2) President L. Johnson signed Public Law 89-563 "National Traffic and Motor Vehicle Safety Act of 1966." It was the first national effort to focus on improving deficiencies in EMS systems. This Act mandated: (a) the U.S. Department of Transportation (DOT) to promulgate minimum standards for provision of care for accident victims and established the National Highway Traffic Safety Administration; and (b) that states can be penalized up to 10 percent of their federal highway funds if they do not comply with this law. The emphasis of the law was on victims of highway traffic accidents. (3) The U.S. DOT/ National Highway Traffic Safety Administration (NHTSA) published the first guidelines (Highway Safety Act, Standard 11) for development of EMS systems. It's interesting to note that the first publication of these guidelines called for raising the training of EMS personnel

to the highest level possible - American Red Cross Advanced First Aid.

**1967** - The American Academy of Orthopedic Surgeons (AAOS) began creating "Emergency Care and Transportation of the Sick and Injured." This was the modern EMS system's first well-designed and authoritative textbook for EMS personnel.

**1968** - (1) The Task Force of the Committee on EMS of the NAS/NRC was the first to attempt standardizing, on a national level, basic training requirements of EMS personnel. The result was a series of presentations, slides, manuals, etc. from Dunlop and Associates called "Training of Ambulance Personnel and Others Responsible for Emergency Care of the Sick and Injured at the Scene and During Transport." (2) The American Telephone and Telegraph started to reserve the digits **9-1-1** for emergency use.

**1969** - (1) Up until this time, the focus of EMS systems was on treatment and transportation of accident victims. In great part, this was because the original studies and Acts were through the eyes of highway safety and transportation. However, this singular focus, on highway traffic injuries changed at the Airlie House Conference on EMS. The conference called for expanding the scope of EMS and developing basic definitions of care and establishing workable guidelines for rendering care. (2) The Committee on Ambulance Design Criteria published a report, "Medical Requirements for Ambulance Design and Equipment" which it submitted to DOT-NHTSA. This report called for sweeping changes in both the design of vehicles and medical equipment carried aboard.

**1970** - (1) A survey of emergency response services in 37 states determined that only 5 percent of ambulance attendants had minimum first aid requirements, and only 6 percent of all ambulances had any type of radio communication to the in-coming hospital. As a sub-specialty, trauma medicine was non-existent. As a rule, hospital emergency rooms were staffed with medical students and on-call physicians from various specialties whose knowledge of trauma was limited. (2) Five demonstration areas were selected to explore the feasibility of using military helicopters and service paramedical personnel in civilian emergencies (Military Assistance to Safety and Traffic or MAST). (3) The National Registry of Emergency Medical Technicians was established to attempt unification of EMT exam and certification on the national level.

**1971** - (1) The television show "*Emergency!*" debuted. This show contributed to changed public attitudes concerning the fire service and emergency medical care. At the start of the show, there were only 12 medic units in the entire country. Four years later at least 50 percent of the population of this country was within 10 minutes of a medic unit. (2) The American Medical Association's Commission of EMS published "Categorization of Hospital Emergency Capabilities." It established hospital guidelines for providing comprehensive emergency medical care and also the means to measure and classify the capabilities of a hospital for providing emergency care. (3) The Committee on Injuries of the AAOS hosted a national workshop on the training of EMTs. It tied previous efforts together by making the following endorsements and recommendations related to training, texts, physician responsibilities, and evaluation of proficiency.

**1972** - The U.S. Department of Health, Education and Welfare (DHEW) was directed, during President Nixon's State of the Union message, to develop new ways to organize EMS. Five demonstration areas were awarded \$16 million.



**1973** - (1) The blue Star of Life was designed by Leo R. Schwartz, Chief of the EMS Branch, National Highway Traffic Safety Administration (NHTSA). (It was officially registered Feb. 1, 1977.) Just as pharmacists have the mortar and pestle and doctors have the caduceus, Emergency Medical Technicians have a symbol. Each of the bars or six "points" of the blue "Star of Life" represents the six-system function of the EMS: detection, reporting, response, on scene care, care in transit, and transfer to definitive care. The staff on the star represents Medicine and Healing. (2) The EMS Systems Act (public law 93-144) was passed by Congress, which funded 300 regional EMS systems.

**1974** - (1) A federal report disclosed that less than half of the nation's ambulance personnel had completed the Department of Transportation 81-hour basic training course or its equivalent. (2) The EMS System Development Guidelines were published. These guidelines addressed basic operations through research and evaluation of system performance,

including impact of EMS on mortality and morbidity.

**1975** – (1) The American Medical Association recognized emergency medicine as a specialty. (2) The University of Pittsburgh and Nancy Caroline, MD, was awarded a contract to develop the first nationwide paramedic training course. (3) The National Association of EMTs was formed.

**1976** - Renewal and continued funding of EMS at the federal level was granted.

**1977** - The National Council of EMS Educators was formed.

**1979** – (1) The Journal of Emergency Medical Services (JEMS) began publication. (2) The American Ambulance Association was formed. (3) Renewal and continued funding of EMS at the federal level was granted.

**1980** - The National Registry of EMTs published its first national standard exam for EMT-Intermediate.

**1981** - (1) Direct funding of EMS systems by the federal government was replaced by block grants. (2) A study showed that 73 percent of all American fire departments, career and volunteer, are involved in some level of EMS service.

**1982** - Federal funding of EMS ended: Authority and responsibility for EMS was vested in the states and local governments.

**1983** - Public Law 98-555, "The EMS for Children Act," passed.

**1985** - The National Association of EMS Physicians was formed.

**1986** - The Comprehensive Omnibus Budget Reconciliation Act (COBRA) was passed by Congress. This affected transfers of patients from emergency department to emergency department and prevented "dumping" (financially motivated transfers of patients).

**1987** - Automatic Vehicle Locators (AVL) debuted.

**1990** – (1) The Trauma Care System Planning & Development Act was passed by Congress. (2) Fire department organizations joined together in a resolution to expand into EMS.

**1991** – The Commission on Accreditation of Ambulance Services set standards and benchmarks for ambulance services to obtain.

**1992** – (1) American Medical Response started selling stock on the NYSE and began a nationwide consolidation of the private ambulance industry. (2) A public opinion survey conducted for the American College of Emergency Physicians found that nearly half of adult Americans could not identify 9-1-1 as the

emergency number, or confused it with 4-1-1, the directory assistance number. (Today, by having the universal number 911 for an emergency, and having a 911 Call Center, emergency medical services have shaved an average of five to six minutes off response time. The number is now widely recognized.)

**1993** - It was proposed that EMT-Ps assume an expanded role in primary care of non-emergent patients by learning expanded skills.

**1990s-2004** - Cooperation and Sharing: Iowa is experiencing an unprecedented level of cooperation between these EMS agencies and the other highway safety programs in a wide range of programs - from technical data collection to public policy development to information campaigns. The agencies involved have found numerous ways to work smarter, harder, and more cost-efficiently by working together to solve problems in the state. Funding and technical assistance from the Iowa Safety Management System, Iowa Department of Public Health, Iowa Governor's Traffic Safety Bureau, Iowa Fire Service Training Bureau, and Center for Transportation Research and Education at Iowa State University is allowing for the development of an Emergency Response Information System (ERIS), which is documenting the boundaries and assets available in various EMT and fire rescue districts throughout the state. Iowa SMS and Iowa Governor's Traffic Safety Bureau have also funded local multidisciplinary team development and distribution of "incident management" handbooks to coordinate resources and reroute traffic following highway crash incidents.