The development of emergency medical dispatch in the USA: a historical perspective

B.S. ZACHARIAH1* and P.E. PEPE2

1The University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Boulevard, Dallas, Texas 75235-8890, USA
2City of Houston EMS, 410 Bagby, Suite 300, Houston, Texas 77002, USA

Emergency medical dispatch has evolved over the last 25 years from a system designed to limit abuse of the emergency medical services (EMS) to a sophisticated part of the total EMS response. Its current goal is to send the right thing to the right person at the right time in the right way and to do the right thing until help arrives. The historical development of emergency medical dispatch in the USA is outlined decade by decade. In addition, the current state of emergency medical dispatch is reviewed and future directions are discussed.

Keywords: emergency medical dispatch; emergency medical services; medical history; protocols

INTRODUCTION

Specialized care and transportation of the acutely ill and injured prior to arrival at hospital dates back at least as far as the Napoleonic wars and the care rendered by Drs Percy and Laray. The modern era of the emergency medical services (EMS) dates at least as far back as the 1960s with the field defibrillation attempts of Dr Pantridge in Belfast, North Ireland. However, it was not until the 1970s that any thought was given to the important concerns of how and why to dispatch prehospital providers to the scene.

THE 1970s: THE EARLY YEARS

Beginning in the early 1970s there were sporadic discussions regarding the process of EMS dispatching coincident with the rapid evolution and implementation of emergency medical technician (EMT) and paramedic programmes throughout the United States.

Then around 1975 in Phoenix, Arizona, a paramedic, Bill Tune, who just happened to be in dispatch at the time, gave unplanned and unscripted prearrival instructions to the mother of a non-breathing baby. The child survived and the Phoenix Fire Chief, Allen Brunacini, instructed the dispatch centre to begin routinely offering such prearrival instructions. This programme was known as ‘medical self help’ and used no formal dispatch protocols or scripts.

In 1976, a doctoral thesis by a graduate student evaluating paramedic unit placement in Utah raised questions concerning EMS abuse and the role of dispatch in preventing it. In 1977, Dr Jeff Clawson, in Salt Lake City, began to develop protocols for use by dispatchers. These protocols became known as Medical Priority Dispatching and were introduced throughout the Salt Lake City Fire Department in 1978. There were three essential components to Clawson’s Medical Priority Dispatching: interrogation questions, known as key questions, telephone help, known as pre-arrival instructions, and response determinants for the level of response and the use of warning lights and sirens. Clawson’s early efforts have now developed into the Medical Priority Dispatching System which is the market leader in dispatch programmes and related hardware and software.

Meanwhile, referring back to an earlier study dealing with EMS abuse and the solutions to the abuse problems available at the dispatch centre, Dallas Assistant Chief, Bill Roberts, produced a report which identified dispatch as the point of control for EMS abuse and suggested screening patients for the necessity of an EMS response.

In 1979, the first formal training programme for dispatchers began. Dispatchers in the state of...
Utah were trained in Clawson’s Medical Priority Dispatch System and were, for the first time, given the title emergency medical dispatcher. In 1978, Karen Kabat and Robert Von Elling extended dispatch protocols to the state of Illinois with the Illinois Medical Advisory Flip File.

THE EARLY 1980s: GROWING PAINS

In 1980, acting on Chief Roberts, earlier report and the master’s thesis of work of the nurse Debra Cason (Cason, 1979), the Dallas Fire Department initiated their Telephone Nurse Screening Program. Meanwhile, in the early 1980s a number of places throughout the country, including Aurora, Colorado, King County, Washington, and Salt Lake City, Utah, began using preprinted prearrival instructions for major problems such as cardiopulmonary resuscitation (CPR), choking, and childbirth.

In 1983, Utah, always a leader in dispatch science, became the first state to formally require the use of medically approved dispatch protocols and established the first certification programme for emergency medical dispatchers. This was followed very shortly by the United States Department of Transportation issuing both a curriculum and sample protocol for emergency medical dispatcher training. This nationwide protocol was based on a combination of the Salt Lake Protocol, the Illinois Medical Advisory Flip File and the Utah State Curriculum. Of note, in 1984, almost ten years after the first prearrival instructions and seven years after the first priority dispatch protocols, the first quality assurance programme for emergency medical dispatch was started in Salt Lake City.

One year later, in early 1985, the first of several medico-legal bombs went off, in Dallas, Texas. A nurse screener employed by the Dallas Fire Department was recorded arguing with a man begging for an ambulance for his mother, which was refused. The patient subsequently died and there were multiple firings and resignations as a result of this incident. This event was called by some ‘the Hiroshima of medical dispatch’ and received worldwide publicity. However, the end result was fortunately not the destruction of the emergency medical dispatch system but rather a movement toward better organized, better trained and better equipped dispatchers.

In 1986, automation struck the emergency medical dispatch world with the first computerized protocols developed by Medical Priority Dispatch for use on a Macintosh computer. There were four initial sites for this new technology. Currently there is widespread computerization of dispatch protocols, although flip files are still used by some systems. In 1988, Prentice Hall published the first textbook for emergency medical dispatcher training called Principles of Emergency Medical Dispatch (Clawson and Dernocoeur, 1988).

In 1987, the second major legal incident relating to emergency medical dispatch occurred in Los Angeles, California. There a fire department EMT dispatcher diagnosed a 45-year-old woman as having hyperventilation. Actually suffering from an acute myocardial infarction, she suffered a cardiac arrest while getting into her car. At that point a paramedic ambulance was dispatched, that being her third request for assistance. The patient died and the case was again widely publicized, including on the CBS show 60 Minutes. The result again was not a destruction of the emergency medical dispatch programme, but rather Los Angeles Mayor, Tom Bradley, ordered a complete overhaul of the dispatching process.

THE LATE 1980s AND EARLY 1990s: PROTOCOL REVIEW AND STANDARDS DEVELOPMENT

Recovering from the two earlier legal episodes, in the late 1980s the emergency medical dispatch community moved into a time of standards development and protocol review. In 1988 the National Academy of Emergency Medical Dispatchers formed as a certifying and standard development organization for both emergency medical dispatch protocols and curriculum. Currently the National Academy of Emergency Medical Dispatch has over 12 000 certified members (J. Clawson, personal correspondence, April 1995). In 1989, a quality assurance tracking and reporting system was added as an integral part of dispatch function with the release by Medical Priority of the artificial intelligence version of priority dispatch protocols known as ProQA. Finally, in 1989, the medical community formally entered the realm of emergency medical dispatch with the publishing of a position paper by the National Association of EMS Physicians (1989). This position paper stated that prearrival instructions were a mandatory component of every medical dispatch centre. Furthermore, unlike hospital-based telephone instructions and advice, prearrival instructions by properly trained emergency medical dispatchers were safe, effective and a moral necessity.

By 1990, it was clear that trained emergency medical dispatchers were becoming the standard throughout the United States. In 1990, the American Society for Testing and Materials, under a
mandate from the United States Department of Transportation, issued a practice standard for emergency medical dispatch. This, along with the National Association of EMS Physicians, Position Paper, sealed the importance of a national standard for emergency medical dispatch. Continuing on the standardization track, in 1990 the National Association of Emergency Medical Dispatchers established its College of Fellows; review and consensus by this panel of expert dispatchers, EMS providers and medical directors is required to approve changes to the medical priority dispatch system protocols.

**CURRENT STATE OF EMERGENCY MEDICAL DISPATCH**

Currently emergency medical dispatch programmes based on these standards are in use in hundreds of places across the country. Some are in-house systems, while some have been purchased from Dr Clawson's firm or his competitors. The exact number of EMS systems using emergency medical dispatching is unknown. It is estimated that 94% of dispatch centres run by the EMS use prearrival instructions. However, if the dispatch centre is run by the police department or fire department, only approximately 70% use such instructions (Cady and Scott, 1993). Therefore there is some room for improvement.

We turn now to some very recent developments in emergency medical dispatch history. In 1994, the Department of Transportation announced the revision of the EMT curriculum and earlier this year the American Society for Testing and Materials approved two practice standards dealing with emergency medical dispatch training, certification and curriculum, and emergency medical dispatch management and quality assurance. These documents are currently in press.

As medical dispatch developed in the last 25 years, several things have become ingrained in the programme, although perhaps these are not obvious from this review as presented so far. First, emergency medical dispatch has evolved from an attempt to stop abuse by not sending EMS when it’s not needed to a programme that attempts to send the right thing to the right person at the right time. Secondly, emergency medical dispatch has become properly viewed as part of the medical care system and as only the first step in a multi-step process of emergency medical care. Like all medical care, and like all of the EMS, this requires physician input and oversight. Thirdly, emergency medical dispatch has moved the dispatch centre from a point of EMS control to a centre of EMS assistance. The modern dispatcher not only assists the public, but the EMS provider itself as well. This assistance role has been explicit in the use of prearrival instructions throughout the history of emergency medical dispatch.

It has also been implicit in the early attempts by Dr Clawson and a handful of others to utilize the Medical Priority Dispatch System to decrease the number of EMS responses using warning lights and sirens (Clawson, 1981, 1987). Clawson's protocols, while not including a 'do not send' response, do include responses judged to be of a significantly non-acute or non-time-dependent nature that a response without warning lights and sirens is justified. Such a 'cold' response is preferable to decrease the rate and severity of EMS collisions. Again, this has been one of Dr Clawson's interests since the early days of emergency medical dispatch; other authors are only just now picking up this banner (Beck, 1987; Elling, 1989).

**CONCLUSION**

In conclusion, we have spent the last 25 years developing a system of emergency medical dispatch that is dedicated to sending the right thing to the right person at the right time in the right way and doing the right things until help arrives. The emergency medical dispatcher is rightly viewed as the first First Responder, a trained certified professional, held to high national standards, and an important first link in the chain of emergency medical care.

**REFERENCES**


Cason, D.J. (1979) Telephone triage of emergency patients by a nurse. Thesis submitted in partial fulfilment of the requirements for the degree of Master of Science in the graduate school of the Texas Woman's University, Denton, Texas, USA.


