

**HISTORICAL FOUNDATIONS OF RURAL
EMS SYSTEM CHALLENGES**

by

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ABSTRACT:

This thesis studies the historical origins of ambulance services through their evolution to modern emergency medical services systems with an emphasis on the differentiation of urban and rural emergency services and eventually EMS systems in the United States. This study aims to provide a historical explanation behind many of the challenges faced by contemporary American EMS systems operated in rural environments by demonstrating a historical schism between rural and urban systems, and also advocates for increased federal support of EMS systems in order to ensure a uniform standard of emergency care in all parts of the country. This schism is found to be the root of many common challenges faced by rural EMS systems today. This is accomplished by the analysis of historical sources relevant to ambulance and EMS system operations in the United States as well as analyses of modern EMS system operations that examine the differences in operations of rural and urban systems. The challenges faced by rural ambulance services originate in the urban-centric origin of U.S. ambulance services and EMS legislation, despite the mainly rural, war-time origins of emergency services in general. This thesis concludes that the most promising method of establishing equal footing for both systems is stronger federal guidance and increased federal funding of rural EMS systems, so that a rural-centric model of EMS systems can be established.

Introduction

Acute illness and traumatic injury are not unique to modern times. Although the mechanisms of injury and specific illnesses have evolved over time, the responses to these emergencies have, for most of human history, remained mostly unchanged. Only since the late 18th and early 19th centuries has there been a consistent, concerted scientific effort focused on “bringing back the dead,” despite references to such feats in texts as ancient as the Old Testament.¹ Further, only over the last century have systems been specifically designed to handle rapid responses to quickly developing situations involving emergency patients. Military experiences such as the Vietnam War eventually resulted in a growing group of veteran combat medics putting their skills to use to benefit the civilian population at home.² Add to this the growing awareness of the importance of rapid response to accidents and acute illness, and by the 1960s the stage was set for the birth of what has slowly become the emergency medical services (EMS) system model that is almost taken for granted in the United States today.

However, even as the rudimentary services initially established in the late 20th century grew into professional and efficient systems, rural EMS systems have continued to face special challenges. While urban systems respond to calls across mostly even terrain and with the majority of the population in a relatively concentrated area, rural systems have always struggled to operate in their varied, unique environments. Over time, some of these

¹ 2 Kings 4:32-35, New International Version; J.D. Herholdt and C.G. Rafn, *An Attempt at an Historical Survey of Life-Saving Measures and Information of the Best Means by Which They Can Again Be Brought Back to Life*, (Aarhus: Aarhus Stiftsbogtrykkerie, 1960) 40-44. WorldCat (OCLC 871328308).

² John A. Brennan and Jon R. Krohmer ed., *Principles of EMS Systems*, (Sudbury, MA: Jones & Bartlett Learning, 2005) 10-15.

challenges have been alleviated even as new problems arise. Without a doubt, rural EMS systems still operate at a significant disadvantage compared to their urban counterparts, and despite EMS' rural, military roots, many rural systems in the United States continue to struggle in the face of unique challenges. Many of the problems faced by rural EMS systems today have distinct historical roots which lie mainly in the urban-centric origins of modern EMS systems, despite the varied war-time origins of the earliest emergency services.

Ultimately, this schism is not only historically founded, but remains the very root of many problems faced by rural systems today. For centuries, civilian emergency services were limited to only major cities capable of affording and sponsoring their care, even while military applications—by definition a federal enterprise—continued to fund emergency care in some of the most rural areas of the world during war-time. With the expansion of these systems in the mid-20th century, rural areas adopted the same model of EMS care that major cities had been developing for years. With the help of federal funding, rural systems were able to overcome the shortfalls caused by the deficiencies created by transferring the urban model to a rural setting. With the cessation of this aid, however, rural systems were left out to dry in the 1980s, with an unstable model, based off of urban settings, already firmly established in many areas. It is becoming increasingly clear that the only reliable method of establishing an equal standard of pre-hospital emergency care across the country is the renewed leadership of the federal government in funding and guiding rural EMS system development. Without this guidance, rural systems will continue to struggle, much to the detriment of patients across the country.

Chapter One

Pre-EMS History – Setting the Stage

Just a century ago, the idea of calling a three-digit number and confidently awaiting the arrival of a trained team of medical professionals in a well-stocked, pre-hospital vehicle was not only a pipe-dream, it was all but unheard of. Now it is commonly accepted that people facing an immediate threat to health, such as an accidental injury, need to be treated as rapidly as possible, but this was not always the prevailing method of thinking. Although civilian systems designed to deal with emergency illness and injury are quite new, militaries around the world have developed rapid treatment systems for their soldiers dating back centuries. Undoubtedly, one of the major themes of the slow march of progress of EMS systems in the United States has been the adaptation of wartime advances to civilian populations.³ To understand these adaptations, one must first understand the historical context within which they were developed.

In the 15th century, Queen Isabella of Spain made one of the first steps in Western history towards the eventual establishment of ambulance services. During her reign, portable medical tents were often erected where soldiers were taken after being injured in battles aimed at expelling the Moors from Iberia. These tents, and eventually the padded litters upon which soldiers were carried to them, were known as *ambulancias*, a word that would remain innately attached to the idea of EMS systems in the future. These systems were by necessity operated in some of the most rural terrain during fighting between the Spaniards and Moors. This is one of the first of many examples of (almost entirely rural) wartime necessity driving emergency service innovation.⁴

³ Gary Harmon. EMS History. Lecture. Caldwell Community College, February 23, 2015.

⁴ Ryan C. Bell, *The Ambulance: A History*, (Jefferson, NC: McFarland & Company, 2009), 11-15.

The next step in the evolution of emergency care made the jump to the urban setting, foreshadowing the vast majority of emergency service development throughout the coming centuries. The beginnings of what can be considered urban ambulance services occurred throughout the 17th century in a few cities fortunate enough to have hospitals, such as London and Paris.⁵ Some of these more fortunate cities such as Venice, for example, had established “plague hospitals” known as *lazaretti* as early as the 15th century as a means of dealing with the spread of the bubonic plague, but formally established ambulance services came much later.⁶ In London, for example, instead of picking up victims of acute illness or injury, these “ambulance” services would instead deliver the newly-well back to their homes, often by means of a vehicle little more complex than a wheelbarrow. Around this period, these early hospitals were primarily subsidized through charities, allowing investments in early carriages. Although it is a stretch to call the carriages used by these London hospitals “ambulances,” they are nevertheless an important milestone considering their task: to transport sick and recovering patients. Again, these services early precursors to the EMS systems of today. Even though hospital auditors were known to refer to their patients as “the naked and miserable poore,” the simple fact that these services existed is important to note, as the basic tenets of their tasks would eventually be roughly replicated in urban centers of the United States.⁷

The next well-known step in the development of emergency care and an “ambulance” system occurred in 1794. In the midst of the French Revolution, Baron Dominique-Jean Larrey, an officer in the French Army, was among the first to recognize the relationship

⁵ Tim McHugh, *Hospital Politics in Seventeenth-Century France: The Crown, Urban Elites, and the Poor*, (Burlington, VT: Ashgate Publishing, Ltd., 2007.) 4-8.

⁶ Jane L. Stevens Crawshaw, *Plague Hospitals: Public Health for the City in Early Modern Venice*, (Burlington, VT: Ashgate Publishing, Ltd., 2012.) 3-5.

⁷ Bell, *The Ambulance: A History*, 11-15, quote on page 13.

between time after injury to definitive treatment and morbidity and mortality. He then went on to establish a system designed to get wounded soldiers to medical professionals as quickly as possible, with positive results. Interestingly, Larrey invented two unique “flying ambulances,” as he called them, one with two wheels designed for even, level terrain, and one with four, designed for rougher rural terrain. Apart from being yet another military emergency care advance that would eventually be transferred to the civilian sphere, this is one of the first instances of the recognition of the unique challenges faced by operating an emergency transportation system in rural areas, as well as an excellent example of the rural, war-time origins of emergency care.⁸

Although British observers such as the Duke of Wellington noted Larrey’s attempts at saving the lives of his soldiers, it took the trials of the Crimean War in the 1850s to demonstrate the difficulties of emergency operations in rural terrain and to convince the British of the need for further advances in military ambulances and emergency care.⁹ Some of these advances, primarily the use of what was known as the “mule-ambulance,” would later be observed in turn by Americans. The *New York Times* reported on the French and British ambulances with a call to bring some of these advances to the Union Army during the Civil War: “We have repeatedly urged their use in our own armies, as being in the highest degree advantageous in the rough roads and difficult marches which our troops are likely to encounter.”¹⁰ This exposure appears to be an important step in the transferal of early ambulance and emergency care systems to the U.S. One correspondent noted that many of

⁸ Dominique-Jean Larrey, *Memoirs of Military Surgery and Campaigns of the French Armies*, (Baltimore: Joseph Cushing, 1814). Web. www.archive.org. Accessed April 11, 2015. 23-29; Bell, 18-20.

⁹ Robert L. Pearce, “War and Medicine in the 19th Century,” *ADF Health* 3, no. 1 (2002): 88-92.

¹⁰ “Mule-Ambulances,” *New York Times*, February 23, 1862.

the wheeled ambulances were unable to traverse the difficult terrain, and even when they could there was often no one around to attend to the wounded that were collected.¹¹

Later, during the U.S. Civil War, Larrey's model was replicated by Union military surgeon Jonathan Letterman to handle battlefield casualties.¹² However, this was only after a desperate plea for improvement in the army's ambulance service from Dr. Henry Bowditch in 1863.¹³ During the war, the problems associated with rural ambulance operations were already well-known and led to the previously mentioned outcry for a new system of transporting wounded soldiers. In a short summary of some of the challenges faced by rural operations, the *New York Times* managed to sum up (albeit in a very different context) many of the same problems faced by rural EMS systems today:

“Battles, as the Crimean experience taught them, are not always fought on well-laid turnpikes, or near large towns; the hard-contested field may be some rough hill-top, or some wild dell, which no vehicle can easily reach. The wounded man falls in one of these difficult places. His life depends on his being housed in comfortable quarters for the night. He cannot be carried by hand, and no vehicle can approach the battle-field.”¹⁴

In the aftermath of the Civil War, these systems were finally, if somewhat accidentally, applied to the civilian population for the first time in the U.S., first in Cincinnati, and again four years later in New York City. This expansion to the civilian sphere came in the form of ambulance services such as Philadelphia's "Rescue 1 Squad" and Bellevue Hospital's ambulance service in New York City, as well as various rescue squads around the country. These systems, born in war and transferred to the civilian sphere, would form the basis for the civilian ambulance system and ultimately an EMS system in the United

¹¹ Bell, 22.

¹² Institute of Medicine. *Emergency Medical Services: At the Crossroads*. (Washington, DC: The National Academies Press, 2007) 32.

¹³ Bell, 35-38.

¹⁴ "Mule-Ambulances," *New York Times*, February 23, 1862.

States.¹⁵ This milestone in emergency care in the United States again demonstrates the urban-centric focus of emergency care in the U.S., despite the rural, war-time environment where the applicable systems were developed.

Ultimately, one of the biggest pushes needed to establish a civilian ambulance service was simply to make people aware that such services existed and were entirely feasible for use in the civilian sphere. This push for emergency care, however, was almost entirely urban-centric, despite the war-time proof of the very same systems' effectiveness in rural areas. For example, in Philadelphia, a fire-department driven "Rescue 1 Squad" took over transportation of wounded soldiers through the city from army ambulance services in 1862 due to the huge patient load, and this service continued for a short time in the aftermath of the war.¹⁶ The ambulance made a return to the urban stage in wealthier municipalities such as in New York City, where an ambulance service was established out of Bellevue Hospital in 1869. Bellevue's early ambulance system was little more than a horse and buggy staffed by whatever hospital personnel were available, including even the cooks and janitors, if necessary. Dispatched by telegram, the service was often too slow to affect the outcome of many emergency patients, even in the relatively easily-navigable urban environment. However, the service represented the model urban ambulance system at the time, and was touted for its ability to sustain speeds of five to eight miles per hour on the streets.¹⁷ Despite these breakneck speeds, the *New York Times* reported multiple cases of extreme delays in the

¹⁵ A. Jackson Marshall, "Tells Development of Ambulance Service," *New York Times*, Feb. 28, 1915; Marshall, "Motors in Evolution of City Ambulance," *New York Times*, July 1, 1917.

¹⁶ Institute of Medicine, *Emergency Medical Services*, 31-33; Bell, 42-44.

¹⁷ Edwin Knights Jr., "The Tumultuous Past of Bellevue Hospital". *History Magazine*, January 2000, 33-40.; John S. Haller Jr. "The Beginnings of Urban Ambulance Service in the United States and England," *The Journal of Emergency Medicine*, Volume 8, (1990): 747-749.

dispatch or arrival of ambulances, often resulting in death, even well into the mid-20th century.¹⁸

Bellevue's example led other areas of New York, such as Brooklyn, to struggle to catch up and establish their own ambulance systems. Even with the relatively smaller coverage areas and easily accessed urban streets of the time, response times could be very long, again with often fatal results. A 1902 article in the *Brooklyn Medical Journal* detailed the appeal, in the early 1870s, for a modernized ambulance system, including horse carriages and telegraph dispatch, which would have been primarily available in cities. The article detailed the various methods of transporting patients in the absence of a real ambulance system, often including five to six hour long waits in the wake of major accidents that required immediate treatment. From hand-carriages, to horses, to simple stretchers, the variety of transportation forced upon the injured was often as great as the suffering these makeshift carriages caused to their unfortunate passengers.¹⁹ The development of these transportation methods and the call for improvements in dispatch via telegraph both point to an already existing strong bias towards urban areas in terms of emergency service development. Many of the key tenets of emergency responses, such as easy telegraph access and eventually motorized ambulances, necessarily excluded less-developed and generally poorer rural areas from replicating systems that had been adapted to wealthier, more advanced urban areas.

The struggles of urban systems to respond rapidly to emergencies in the late 19th century foreshadowed many of the extreme challenges that were faced by ambulance services

¹⁸ Lucy Moore, "How to Call an Ambulance," *New York Times*, Dec. 4 1926; "City Ambulances Get Two Way Radio," *New York Times*, July 16, 1949; "Ambulances Fail in Midtown Death," *New York Times*, January 4, 1951.

¹⁹ William Schroeder, "The History of the Ambulance System in Brooklyn, New York." *Brooklyn Medical Journal*. Volume 16, No. 9, (September 1902): 381-395.

in rural areas in the military and by later services in the most rural areas of the United States. By 1892, it was found that New York City ambulances could reach the furthest points in the largest districts within eight minutes, although availability and dispatch problems could still lead to wait times for patients of five or six hours in some cases.²⁰ This is a stark example of the advantage of urban systems: simple proximity to patients and hospitals. To contrast, even in the 20th century with the universal use of motorized ambulances, rural systems continue to face response times two to three times longer than in urban areas.²¹ Bellevue Hospital's ambulance system brought about a significant expansion of ambulance services in the United States due to its success, which was finally replicated across New York City in 1872 as the death toll from treatable injuries, often caused by the rising numbers of motor vehicles or industrial machines, rose.²² Bellevue Hospital's ambulance system is an excellent example of early urban ambulance systems in the United States as a whole, largely due to the fact that it was replicated by other urban systems. Its example of a hospital-run, telegraph-dispatched ambulance service, again excluded most rural areas from copying its example in the way as other urban centers.

As these basic ambulance services developed through the late 19th and early 20th centuries, rural communities lagged significantly behind in terms of emergency services—which is to say rural services did not exist. Instead, in a curious but somewhat morbidly straightforward arrangement, local funeral home directors and undertakers were often tasked with ferrying about the sick and injured. This is most likely due to the fact that their hearses were already vaguely shaped like contemporary ambulances, with a convenient space for

²⁰ Charles McBurney and Lewis A. Stimson, "City Ambulance Service," *New York Times*, March 28, 1892.

²¹ Stacy Vogel, "Emergency Response Time Two to Three Times Higher in Rural Areas," *GazetteXtra*, July 19, 2009. Web. <http://www.gazetteextra.com/news/2009/jul/19/emergency-response-times-two-three-times-higher-ru/>

²² Bell, 70-82.

patient transport on stretchers in the rear. The business opportunity that might present itself in the event of the death of a patient in transport was also of interest to funeral homes and undertakers. One *New York Times* interviewee stated the obvious concern in a 1973 article: “When you have situations like that, there’s not much inducement to get the patient to the hospital in time...The economics obviously work against it.”²³ This system of emergency transport was so prevalent that by 1960 approximately fifty percent of all ambulance services nationwide were provided by funeral homes. While in urban settings a physician, nurse, or some sort of medically-trained attendant might be present in the back of an ambulance with a patient, there was rarely such an arrangement for funeral home ambulance transports, and by the 1960s, a physician’s services was becoming rare even in urban settings.²⁴ By the mid-20th century, the desperate lack of emergency services and care in rural—and to a lesser extent urban—communities in the U.S., especially on the nation’s highways, set the stage for change on a massive scale. It appeared that lessons learned in wartime about operating emergency services in rural environments had been lost in favor of only operating emergency services in areas in direct proximity to hospitals, to the exclusion of rural areas.

²³ David A. Andelman, “Ambulance Aid Found Deficient,” *New York Times*, August 19, 1973.

²⁴ Richard Strouse, “Riding Bus with a Hospital Intern,” *New York Times*, January 2, 1949; Institute of Medicine, *Emergency Medical Services: At the Crossroads*, 32-33.

Chapter Two

Birth of the Modern EMS System

By the late 1960s, the pieces were finally coming together to set the stage for innovation in the world of pre-hospital emergency care. Higher numbers of patients were dying from accidents involving automobiles and industrial machinery, leading to intense demand in some circles for more efficient methods of emergency response and pre-hospital care.²⁵ Add to this crisis a burgeoning scandal involving the funeral home industry, and one can get a sense of the wave of change that was approaching in the early 1960s. Finally, for the first time, there was hope for the development of emergency services that could be applied in rural areas as well as urban.

The first step in modernizing ambulance services in rural areas was to make room for the new by replacing the old; in this case, the old was the outdated and ineffective practice of operating ambulance services from funeral homes. A key tipping point for funeral home ambulance services came in 1963 with a book titled *The American Way of Death*. Author Jessica Mitford wrote it in response to her frustration with the “creative” accounting solutions many funeral homes found to deal with the rising costs of funerals. These funeral homes, which had long provided ambulance services for free to the community, were struggling in the face of increasing federal regulation requiring higher pay to ambulance drivers. This in turn led to increasing funeral costs. With the release of Mitford’s book, agencies across the country were forced to drop these practices and lower prices, making the

²⁵ Bell, 75-83; “Physicians Dropped,” *New York Times*, July 16, 1960.

continuation of their ambulance services nearly impossible.²⁶ The increasing costs of providing ambulance services, combined with the controversy over whether police departments, fire departments, or hospitals should control them, also led to many hospitals abandoning ambulance services, and by 1957 only sixteen percent of hospitals provided ambulance services. In the hospitals' place were morticians, fire departments, the odd third party ambulance agency, and even police departments. The inconsistency in response, treatment, billing, and other relevant services was one key facet of a national frustration that finally provided the impetus for change.²⁷

Although wartime experiences such as emergency care technology and skills developed in the Korean War and in Vietnam continued to be a driving factor for the evolution of emergency care, the Department of Transportation took the lead in EMS development in the 1950s and 1960s. In 1965 the President's Commission on Highway Safety released a report, *Health, Medical Care and Transportation of the Injured*, detailing the importance of post-traffic accident care and treatment that highlighted the need for a rapid response. The Commission also recommended a certain minimum equipment standard for ambulances. Many urban systems already equipped their ambulances with adequate medical and rescue equipment, but this recommendation was among the first to fight to bring all services to the same level, including rural and community-based ambulance systems.²⁸ However, this report went largely unnoticed; a 1965 survey found that less than a quarter of municipal ambulance services met the regulation guidelines, and "a mere 8 percent...went so

²⁶ Jessica Mitford, *The American Way of Death* (Greenwich, Ct.: Fawcett Publications): 1963; Jim Crabtree, "Funeral Directors and the Ambulance Service," www.emsedsem.org, last modified February 1st, 2001. <http://www.emsedsem.org/ctemsi/ambulance-funeral-service.html>

²⁷ Institute of Medicine, 30-33; Bell, 240-246.

²⁸ Institute of Medicine, 30-33.

far as to require the Red Cross Advanced First Aid course for ambulance duty.”²⁹ That same year, and into 1966, falling profit margins were rapidly pushing funeral home ambulance services out of business, largely due to a Labor Department ruling ordering minimum wage and overtime pay for ambulance drivers and attendants. In his January 12, 1966 State of the Union address, President Lyndon Johnson addressed the “mounting tragedy” of the deaths of Americans due to traffic accidents on highways.³⁰ This led, as promised in the speech, to the next major step towards reform on September 9, 1966, with the creation of the National Highway Traffic Safety Administration (NHTSA) as a result of the Highway Safety Act of 1966.

However, the crisis was yet again compounded with the release, coinciding with the creation of the NHTSA, of what would come to be known as “The White Paper,” a twenty-three page report titled *Accidental Death and Disability: The Neglected Disease of Modern Society*. This groundbreaking paper focused on a shocking statistic: at the time, injuries were the leading cause of death for people between the ages of 1 and 37. This statistic, combined with something of an exposé on the “inappropriately designed, ill equipped” ambulances “staffed with inadequately trained personnel” was made more powerful with the support of military surgeons fresh from the Korean War, who attested that soldiers overseas had access to better trauma care than civilians at home.³¹ The report went on to emphasize the dire need for federal and state regulation of ambulances, and, most importantly, the necessity of “[ensuring] provision of ambulance services applicable to the conditions of the local

²⁹ Bell, 244-45; Alexander Kuehl, ed. *Prehospital Systems and Medical Oversight* (Dubuque, Ia.: Kendall Hunt, 2002), 10.

³⁰ Lyndon Johnson, “State of the Union,” January 12, 1966. *Miller Center*, University of Virginia, www.millercenter.org (accessed March 3, 2015).

³¹ Institute of Medicine, 32-33.

government.”³² Combined with the report’s recommendation for the development of a single phone number for calling emergency services, this one “White Paper” laid out the foundation for the very first rural EMS systems in the United States, finally evening the historically slanted playing field between rural and urban emergency services.

The NHTSA led the way in the late 1960s by developing a national Emergency Medical Technician (EMT) curriculum, as well as by offering funding to states to improve EMS systems in general. The curriculum addressed a major problem: in 1960, “only 6 states had standard courses for rescuers, only 4 states regulated ambulance design specifications, and fewer than half of all EMS personnel had received even minimal training.”³³ In 1969, the first nationally standardized curriculum was developed for rescuers, titled Emergency Medical Technician – Ambulance, and in 1971 the first National Registry of Emergency Medical Technicians certifying exam was passed by approximately 1,500 people. It came to be that this certification was just the beginning, with many more certifications, both new and revised versions, became available throughout the early 1970s. For example, the advanced Emergency Medical Technician – Paramedic certification trained its holders to make use of the latest portable defibrillator technology, as well as advanced airway management techniques.³⁴ These certifications were the beginning of what could be considered the modern system of emergency medical services, and created a period in time when rural and urban EMS systems were at their most similar, with the future wide-open in terms of systems development and opportunities.

³² Ibid., 33.

³³ Manish N. Shah. “The Formation of the Emergency Medical Services System.” *American Journal of Public Health*, Volume 96, No. 3, March 2006, 414-423;

³⁴ Dennis Edgerly. “The Birth of EMS: History of the Paramedic,” *JEMS*, Volume 38, No. 10, October 2013, 46-51.

As with the earliest rescue squad ambulance services in Philadelphia in the aftermath of the Civil War, the early 1970s also demonstrated the importance of awareness of the cause of emergency medical services systems development. The television show *Emergency!*, which ran on NBC from 1972 to 1979, exposed the public to the ideas of emergency medical care, as well as to the (admittedly dramatized) capabilities of the new paramedics. Beyond exposing Americans to the idea of EMS and thus boosting demand, the show (which lasted seven years) inspired many to pursue a career in emergency medical services.³⁵ An oft-cited, and very telling, statistic is told in an account of the show's production: "When the show premiered in 1972, fire department paramedic services were being piloted in just a handful of cities. By 1977 over 50% of the U.S. population was within 10 minutes of a paramedic unit."³⁶ The show's setting, urban Los Angeles, is also an early indicator of the urban-centric nature of early EMS systems. There was simply little to work with in terms of emergency care in rural settings at the time, apart from various, scattered rescue squad services; the show served as another indication that, in the public mind, emergency services were still primarily an urban phenomenon.

One of the terms most associated with EMS systems, "paramedic," remains for now the most highly trained pre-hospital emergency care specialist in the United States. As *Emergency!* demonstrated, there was a strong push for such specialists across the nation, especially as the "White Paper" raised awareness of their need. In at least one city, paramedics were trained to meet multiple needs. Phil Hallen, an English doctoral student and ambulance driver in Pittsburgh, was appalled by the care he saw—or rather, didn't see—at the pre-hospital level in the 1950s. The town was faced with racial division that meant large

³⁵ Ibid.

³⁶ Rozane Sutherland, *Emergency! Behind the Scene*, (Sudbury: Jones and Bartlett Learning, 2007), 410.

sections of the city, the ghettos in particular, received basically no ambulance service due to the prejudices (both racial and socioeconomic) of the owners of the ambulance services. At the time, much of the transport and pre-hospital emergency services in Pittsburgh and its surrounding suburbs were provided by mortuaries, an outdated oddity for such a large city. Hallen partnered with Freedom House Enterprises (FHE), a business in the city's neglected Hill District, to create an ambulance service that he hoped would both increase the quality and availability of ambulance services in the area and provide useful skills, jobs, and community pride in the oft-neglected area. By late 1967, Hallen had his first class of mostly African-American paramedics, who were ultimately equipped with "...exponentially more training than any non-physician civilian ambulance crew had ever obtained..."³⁷ By 1968 Freedom House Enterprises' ambulance service had approximately twenty trained paramedics, and their system was a role model for others around the country.³⁸ On the one hand, Freedom House's advances in pre-hospital care followed a model that was, for the most part, applicable to almost anywhere in the nation. On the other, it demonstrates once more the urban-centric origins of modern EMS systems.

Despite their clearly heavily urban origins, FHE's ambulance service came to demonstrate an important aspect of EMS systems that would eventually torment many rural systems: financing. FHE ambulance services faced the same problem as many rural areas: a severely impoverished clientele that could rarely hope to pay the ambulance bills required to run the service without external funding—funding that was only provided by the municipal government as a sort of charitable donation or anti-poverty project instead of as a concerted

³⁷ Bell, 260-265; Erika Beras, "How Pittsburgh's Freedom House Pioneered Paramedic Treatment," NPR, March 1st, 2015, Accessed March 5, 2015, <http://www.npr.org/blogs/codeswitch/2015/03/01/389798498/how-pittsburghs-freedom-house-pioneered-paramedic-treatment>

³⁸ Ibid.

effort to improve emergency care.³⁹ Ultimately, Freedom House Enterprises' ambulance service was an important harbinger of the coming development of paramedic units across the nation, as well as of the myriad obstacles yet to be faced by these nascent systems in poorer rural and urban areas alike.⁴⁰

Although the National Highway Traffic Safety Administration, the “White Paper,” and the early recommended Emergency Medical Technician – Ambulance curriculum were a strong start to the young, new EMS services, arguably the most important legislative boost to EMS systems development came under the presidency of Richard Nixon. Under Nixon, who stated, “By using new technologies to improve emergency care...we can save the lives of many...,” the federal government funded a number of regional EMS programs as demonstrations in 1972, but many areas (the vast majority of which were rural) remained without any real EMS system or advances.⁴¹ Around the same time, the National Academy of Science and the National Research Council released a report titled *Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services*, which emphasized the need of a federal effort to upgrade EMS systems. Somewhat paradoxically to this recommendation, and foreshadowing some of the EMS legislation trends of the 1980s, the report also emphasized the importance of centering services at the state and regional level instead of the federal level.⁴² Congress responded the next year by passing the EMS Systems Act of 1973. This landmark legislation earmarked more than \$300 million federal dollars for almost every aspect of the development of EMS systems. Beyond just the staggering dollar

³⁹ Erika Beras, “Freedom House”; Bell, 260-275.

⁴⁰ Ibid.

⁴¹ Richard Nixon, *President's Message on Health Care System*. Washington, DC: US House of Representatives, 92nd Congress, March 2, 1972, *American Presidency Project*, <http://www.presidency.ucsb.edu/ws/?pid=3757> ; Bruce Walz, *Foundations of EMS Systems*, (Delmar: Cengage Learning, 2011) 32-35.

⁴² Institute of Medicine, 33-34.

amount, the legislation also focused on the careful design of local, regional, and state EMS systems across the country. This moment was critical: as with the early EMT curriculum, EMS regulations, and recommendations of the mid-to-late 1960s, the legislation basically put rural and urban systems on the same footing.⁴³ Despite the historical imbalance between urban and rural ambulance and emergency services, the EMS Systems Act allowed rural systems to develop with almost the same opportunities to thrive and succeed as urban systems. The 1970s were arguably the most promising years ever in terms of the development of EMS systems. New rural systems were able to be established, and older rural services were finally able to afford the same quality of equipment and training as many urban centers had for years.⁴⁴

Federal support of EMS systems, however, and therefore the rough equality of urban and rural systems, reached its peak in the 1970s. In 1981, the Reagan administration successfully passed the Omnibus Budget Reconciliation Act, which systematically eliminated virtually every dollar previously allotted to EMS systems around the country in favor of state-specific block grants that were not required to be spent on EMS systems in particular. In 1985, the National Research Council released a report titled *Injury in America: A Continuing Health Problem*, which outlined the failures of EMS systems in the tumultuous previous two decades.⁴⁵

Since the end of the functional period of the EMS Systems Act, brought about by the Omnibus Budget Reconciliation Act of 1981, states, along with a growing number of non-legislative governmental organizations, have been left to define the future of emergency medical services systems on their own. Federal involvement in the development of state EMS

⁴³ Walz, *Foundations of EMS Systems*, 33-35; Institute of Medicine, 34-36.

⁴⁴ Bell, 280-283.

⁴⁵ Institute of Medicine, 34-36.

systems has mainly been limited to recommendations and guidelines, with relatively little financial input compared to the heyday of these systems in the late 1970s. Within these guidelines, the EMS safety net has evolved to become what can be seen on both city streets and rural and countryside back roads today. Without the guiding hand of federal government, however, there has been a growing schism between the capabilities and operational realities of primarily urban and primarily rural EMS systems. Having analyzed the historical origins of emergency care in the United States, it is clear that the rural roots of ambulance services in wartime slowly but completely gave way to the urban ambulance services of a young, industrialized United States. These urban services developed for decades before any sort of similar rural system was viable on a large scale, and the results are still being felt throughout the United States today.

Chapter 3

Contemporary Urban and Rural System Differences

Since the large scale elimination of federal EMS system funding in the 1980s, EMS systems across the U.S. have remained mostly unchanged, with the exception of continually

developing technology and practices. Historically, urban systems developed earlier and provided more advanced services, including the services of surgeons and doctors available within minutes to a few hours.⁴⁶ Rural systems, if they existed at all, usually provided relatively fewer services. Despite federal regulation to ensure equal care across the rural-urban continuum in emergency medical services, there remain today a variety of important differences between rural and urban EMS systems, often with important historical backgrounds.

Today, federal standards of care ensure that emergency workers are trained to roughly the same standard across the nation. Beyond this, however, rural EMS systems face a number of disadvantages compared to their urban counterparts. It is important first to define what is considered rural under 21st century standards. Population size and density are the defining numbers for this classification which, according to an NHTSA report in 2008, actually spans a continuum of five classifications, from “large metro” services which serve a population of over one million people, to “completely rural” systems, which serve a population of less than 2,500 people.⁴⁷ In between are small metro, large non-metro, and small non-metro areas. These designations are used to gauge the scale of each problem as population density changes.

Historically, rural emergencies have been handled by funeral home ambulance services or, in certain luckier communities that could support them, volunteer rescue squads.⁴⁸ At their core, many of the problems faced by rural EMS systems today stem from

⁴⁶ Schroeder. “History of the Brooklyn Ambulance System.”

⁴⁷ National Highway Traffic Safety Administration, *Configurations of EMS Systems: A Pilot Study*, by Ellen J. MacKenzie, Anthony R. Carlini, DTNH22-03-H-05170, (Baltimore, MD: Johns Hopkins Bloomberg School of Public Health, 2008), 4-6.

⁴⁸ William K. Atkinson, “Overview of Emergency Medical Services in North Carolina,” *North Carolina Medical Journal*. Volume 68, No. 4. July/August 2007, 233-238.

covering comparatively larger areas with fewer resources, compared to urban systems, which generally have smaller coverage areas and more resources due to the larger population base served by their EMS services. The comparatively low population of rural EMS districts has a variety of consequences. First, the overall call volume for rural areas is generally much lower. All of this, combined with the lower average pay of rural EMS workers, means that rural EMS services are widely faced with severe shortages of skilled EMTs and paramedics. Turnover in employees and volunteers alike has historically been an issue in rural areas, compounding the problem of maintaining a skilled, experienced emergency medical service system staff.⁴⁹ Many of these issues are further worsened by the lack of “tradition” for supporting emergency services in rural areas as opposed to the long history of established urban ambulance and EMS systems.

One of the logical consequences of operating in rural areas is that rural EMS systems run significantly fewer calls annually than urban areas. One 2008 study showed that, on average, systems in completely rural areas responded to approximately 2,500 calls per year, compared to approximately 42,000 calls per year in large urban areas.⁵⁰ This number has several implications. One problem that results from this is that fewer overall calls means paramedics and EMTs have less overall experience. Another major problem is that lower annual call numbers necessarily mean fewer earnings from service related fees paid by patients, which, according to research on rural EMS services, accounts for an average of twelve percent of rural EMS systems’ budgets, although this number can reach much higher;

⁴⁹ Ibid.; “A Quiet Crisis: Minnesota’s Rural Ambulance Services at Risk,” Minnesota Department of Health. December 2002, 26-29.; Victoria A. Freeman, Hilda A. Howard, Ruth Lavergne, “Rural Hospital Support for Emergency Medical Services,” Rural Health Research & Policy Centers. November 2010, 11-13.; John A. Brennan and Jon R. Krohmer ed., *Principles of EMS Systems*, 189-195.

⁵⁰ National Highway Traffic Safety Administration, *Configurations of EMS Systems: A Pilot Study*, by Ellen J. MacKenzie, Anthony R. Carlini, DTNH22-03-H-05170, (Baltimore, MD: Johns Hopkins Bloomberg School of Public Health, 2008), 4-6.

in 2002, some rural areas in Minnesota reported that almost forty percent of their income came from Medicare.⁵¹ Financial issues can be a major issue for many rural services. Combined with the fact that rural systems statistically and historically have relied on billing and fees for a larger percentage of their budget compared to the extensive tax breaks and municipal funding often enjoyed by urban systems, this presents a major problem.⁵² Another report, from 2002, claims that approximately forty-five percent of rural EMS systems self-report as “financially unstable.”⁵³ This problem has significant historical roots. As presented earlier, systematic emergency medical care in the United States was present almost solely in large cities, where the client (and tax) base existed to help finance the technology and personnel needed to make such a system possible. Even today, higher populations in cities and larger tax breaks and local public funding for larger systems in urban areas means a financial advantage in some ways over rural services operating in less populated areas.⁵⁴ This tradition of urban EMS care, combined with the financial disadvantages of rural EMS, makes for a significant, historically based challenge to be overcome by present day rural EMS systems.

Having shown the relative difficulty in funding rural EMS systems compared to urban systems, demonstrating the challenges faced by EMS systems regardless of district will help to show how difficult it can be handling *any* extra financing or system issues, and how these issues can be exacerbated in rural settings. A common concern among EMS providers is the

⁵¹ Astrid Knott, *Access to Emergency Medical Services in Rural Areas: The Supporting Role of State EMS Agencies*, (Minneapolis: University of Minnesota Press, February 2002) 2-16; “A Quiet Crisis: Minnesota’s Rural Ambulance Services at Risk,” Minnesota Department of Health, December 2002., 26-29.

⁵² *Ibid.*; U.S. Department of Health and Human Services, Health Resources and Services Administration, *Rural and Frontier Emergency Medical Services Agenda for the Future: A Service Chief’s Guide to Create Community Support of Excellence in EMS*, HRSA Contract # 250-03-0022, (Washington, DC: Office of Rural Health Policy, 2007) 16-22.

⁵³ Knott, *Access to Emergency Medical Services in Rural Areas*, 2-16.

⁵⁴ *Ibid.*

disparity in treatment of EMS services as opposed to police and fire agencies. This is voiced well by a New Jersey review of its EMS systems. One report explained, “Most fire and police agencies are funded based on readiness and the potential for need. In contrast, EMS is restricted to funding based on service provided (and transportation).”⁵⁵ This leaves, as previously stated, a large percentage of financing to be covered by billing for services and Medicare/Medicaid reimbursement. Unfortunately, in recent years Medicare and Medicaid reimbursements have been falling, with somewhat predictable results.⁵⁶ Add this to the finding, by a June 2008 NHTSA report, that rural areas statistically rely much more highly on Medicare and Medicaid funding, and the problem is compounded significantly for rural services compared to wealthier urban areas where Medicare and Medicaid account for a smaller percentage of financing for EMS systems.⁵⁷ On top of this issue, the U.S. Government Accounting Office reported in 2007 that, for transports at least, Medicare reimbursements fell between six to seventeen percent below costs.⁵⁸ This is an unavoidable issue for rural systems; in much of rural Minnesota, for example, “Medicare eligible patients are the single largest segment of ambulance service users.”⁵⁹ This is not a new issue for emergency systems. In the past, as discussed previously, the sheer cost of the personnel and equipment required for effective emergency services was a key factor in confining said services to wealthier, more populous urban centers. Now, instead of the concern being between whether or not a rural service can afford fancy motorized ambulances and two-way

⁵⁵ Schaenman, Phillip, *The State of New Jersey EMS System Review*, (Arlington, VA: TriData, 2007) 50-55, quote on page 53.

⁵⁶ Ibid.

⁵⁷ Chapman, Susan A., Vanessa Lindler, Jennifer A. Kaiser, Christine S. Nielsen, Timothy Bates, Laurie Hailer-O’Keefe, Susan M. Skillman, Davis G. Patterson, Drew Dawson, and Gamunu Wijetune. “EMS Workforce for the 21st Century: A National Assessment.” *EMS.gov*. NHTSA, June 2008. Web. Accessed 25 March 2015.

⁵⁸ Government Accounting Office, “Ambulance Providers: Costs and Expected Medicare Margins Vary Greatly,” (GAO-07-383) Report to Congressional Committee, 2007.

⁵⁹ A Quiet Crisis: Minnesota’s Rural Ambulance Services at Risk,” Minnesota Department of Health. December 2002. 4-6, quote on page 3.

radios, the issue lies in reimbursement for services. In extremely impoverished areas, a significant portion of the population may lack healthcare insurance coverage at all, further compounding the issue.⁶⁰ The message here is clear: even those issues in EMS which may appear to be very modern have significant historical roots. In this case, these historical roots greatly favor the development and operation of EMS systems in urban areas versus rural.

Personnel issues are another major thorn in the side of modern, rural EMS agencies. Like their financing issues, there also exists a significant historical precedent for this issue, stemming mainly from the urban-centric origins of emergency services in the United States. In rural areas in particular, one of the simplest personnel issues is simply a lack of qualified personnel available for emergencies, with many rural areas of the U.S. being covered by just one volunteer rescue squad, which may or may not have access to regularly and reliably available medical oversight by a physician.⁶¹ Even in rural areas that lie closer to the urban side of the spectrum, with established EMS services, many of these rural services still rely heavily on volunteers. As mentioned earlier, rural services already run fewer calls, leading to less experienced full-time paramedics and EMTs. A part-time volunteer would have even less experience. Unfortunately, volunteers are not only difficult to count, keep accountable, and rely upon for a stable emergency medical services system, but according to recent studies they are increasingly harder to find.⁶² Looking back barely more than half a century, it is easy to see the same problem. While some urban emergency services were able to send out physicians, interns, or other trained staff, the vast majority of rural areas sent out hearse

⁶⁰ Chapman, et.al, "EMS Workforce for the 21st Century: A National Assessment," 21.

⁶¹ William K. Atkinson, "Overview of Emergency Medical Services in North Carolina," *North Carolina Medical Journal*. Volume 68, No. 4. July/August 2007.

⁶² "Perspectives. Waning Volunteerism is Emergency for Rural EMS," *Medicine & Health*, Volume 55, No. 19, May 2001, 7-8; Chapman, et.al, "EMS Workforce for the 21st Century: A National Assessment." 21-22.

drivers with little if any first aid training at all.⁶³ Overall, personnel issues can be very complex for rural services, and these issues carry with them a variety of consequences, from the lack of volunteerism discussed previously to a shortage of skills training and experience stemming from the lower number of annual calls run by rural services. Regardless, it is clear that both of these issues have historical precedents that continue in different forms today.

Overall, it is easy to see the sheer scale and variety of problems faced by modern EMS systems operating in rural areas. Compared to their urban counterparts, rural systems struggle significantly more with finances, operations, personnel, and volunteers. Despite the complexity of these issues, it is not difficult to observe their significant historical roots in the urban-centric origins of emergency medical services systems in the United States. The prevailing system of operating emergency services depended too much upon the urban environment in which such systems had developed since the late 19th century, and until federal guidelines and funding allowed, this model was simply not applicable to most rural areas.

⁶³ Atkinson. 1-2; “Physicians Dropped,” *New York Times*, July 16, 1960.

Conclusion

The problems faced by rural EMS services today are as varied and complex as the areas that they serve. Financing, volunteerism, and personnel maintenance (not to mention the nearly innumerable operational challenges associated with operating in rural terrain) are three clear examples of the major challenges faced by many of these services today. However, these challenges are not new to the 21st century or to “modern,” post-*White Paper* EMS systems. It is clear, having extensively reviewed the background of emergency services in the U.S., that the problems faced by rural EMS systems today can be traced back to the urban origins of emergency care in the United States. Despite the first emergency care systems being implemented in the U.S. Civil War, across rural battlefields in the eastern half of the country, the first pseudo-EMS systems appeared almost solely in major urban centers, with the rare exception of the odd local emergency rescue squads. These early emergency systems relied upon their urban environments to provide both a clientele and tax base capable of supporting the latest technologies and most skilled physicians and healthcare workers. In rural areas, with larger coverage areas with comparatively few patients (and thus lower apparent statistical need for emergency coverage) and even fewer available physicians or responders, the prevailing model simply did not allow for the expansion of the urban systems into these areas. Having reviewed the development of emergency medical services systems in the U.S., it is clear that the development of urban emergency systems *to the exclusion of rural systems* is a critical root cause of many of the major challenges faced by modern rural EMS systems.

In more recent years, the gap between urban and rural EMS systems has closed considerably. National training standards have created a workforce of EMTs and Paramedics

capable of staffing ambulances in cities and the countryside alike. More financing options and mainstream municipal support for emergency care services have allowed even the most rural areas to afford the technology and personnel necessary to staff and equip functional and effective EMS systems.

Finally, it is important to note in this conclusion that a variety of issues still remain, with a few options available to address these problems. After examining the history of EMS systems in the U.S., the theme of urban-centric development is clear. Only in the 1970s and early 1980s were rural and urban systems close to operating on the same footing, with the help of national guidelines and federal funding. This period of EMS history demonstrates a logical path to re-establishing equal footing and opportunity for EMS systems in all areas of the United States and resolving many of the major, growing issues faced by rural systems across the U.S. The 1970s clearly illustrated the possibility of equal footing for rural and urban EMS systems. With federal aid, rural services can begin to form their own models of service for their communities without being forced to adhere to a model that has always been better adapted at serving urban communities. Without taking positive steps towards systematically funding emergency medical services systems at the federal level, it is almost certain that the gap between urban and rural systems will remain. National EMS certification guidelines and training standards are an important step in the right direction, but at the state level, financing, certification requirements, and regulations differ, often to the detriment of struggling rural communities. Although state EMS offices have done well to expand emergency care access to people in all areas across the U.S., the problems faced by rural systems appear to be at risk of making the system untenable. With proper national leadership and allocation of funds, rural EMS systems will finally have the opportunity to develop their

own models of EMS service to run alongside the long-established urban model of ambulance care in the United States. The urban-centric nature of EMS development in the U.S. is clearly at the root of many rural EMS struggles, but whether or not this remains the case is yet to be determined.

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