

Chapter VIII

Emergency Medical Service Delivery

The operation of Emergency Medical Services is an essential and integral part of any community. Countless studies have shown that early intervention in acute medical emergencies is the deciding factor whether a patient survives.

Benchmark

Today, a model EMS system has a number of clearly identified components that work together in a well-coordinated fashion to provide the public with a dependable, reliable, efficient, and cost-effective EMS system. These systems reduce mortality while providing effective stewardship of the public treasury. The basic elements of a modern EMS system include:

1. An educated public that knows how to effectively access the system and use its resources wisely.
2. A single, well-publicized method for the public to access or “turn-on” the system. This is a 911 public safety answering point (PSAP) that utilizes an Enhanced 911 (E-911) system that provides dispatch personnel with location information based on the telephone billing records for the caller. Dispatchers are trained in Emergency Medical Dispatch (EMD). Based on protocols, policies, and training, the dispatchers are able to provide initial emergency medical instructions to callers while help is on the way. The dispatchers are also able to mobilize all system resources to respond to requests for emergency medical assistance. The dispatch system uses state-of-the-art computer-aided dispatch (CAD) hardware and software that gives dispatchers real-time information about system resources and collects system data in a form that can be used to analyze and improve the system. The CAD automatically tracks response times and response time statistics are tracked using the fractal method, rather than the inappropriate “average” method.
3. The first critical step to saving lives and reducing morbidity in an EMS system is to

- provide basic and advanced-level emergency medical response within four (4) minutes of the request for assistance, with 90% reliability.
4. ALS transport with paramedic providers, with the full scope of advanced life support skills and equipment need to follow the initial first response. The ALS transport response must have a maximum response time of eight (8) minutes or less with 90% reliability.
 5. The entire system must have the active involvement of a physician medical director who is actively involved in system design, training, and quality improvement activities.
 6. The system will actively examine itself and make adjustments necessary, from a clinical and operations perspective.

Findings

Medical first response with advanced life support capability is provided by the Frontenac Fire Department. Advanced life support transport is provided by Abbott Ambulance under an agreement with the City of Frontenac. Abbott Ambulance recently was sold and became a for-profit operation.

Greater than 50 percent of the personnel from the Frontenac Fire Department are licensed paramedics in the State of Missouri. The Medical Control facility is St. John's Mercy Medical Center. Additionally, quality improvement and some continuing education are conducted by St. John's Mercy Medical Center.

When a 9-1-1 calls comes into the Frontenac Police Department and it is medically related, the call is transferred to Abbott Ambulance who provides pre-arrival instructions.

In some cases, Frontenac fire personnel indicate that they are not always dispatched immediately to a medical emergency. This especially happens with automobile accidents. Instead, occasionally, a police vehicle is dispatched who then confirms injuries. Only then is the fire department dispatched.

Recommendation: 7.1: Examine and review dispatching procedures to insure prompt emergency medical response to medical or trauma emergencies.

Abbott Ambulance

Abbott Ambulance serves as the ambulance transport provider for the City of Frontenac. The agreement dates back to May 1992 when Abbott Ambulance was a not-for-profit corporation. The term of the agreement automatically renews each 12 months since June 30, 1993 and provides for a ninety (90) day prior written notice if either party wishes not to extend the agreement.

The agreement calls for Abbott Ambulance to “locate an advanced life support ambulance within or in the vicinity of Frontenac” and respond if requested to the cities of Frontenac, Huntleigh, and Crystal Lake Park.

There is no cost to the City of Frontenac for Abbott Ambulance service unless Frontenac elects to use a dedicated ALS vehicle at a fire scene or other City event. That charge is thirty dollars (\$30) per quarter hours or portion thereof.

According to the agreement, Abbott Ambulance is required to “respond on Frontenac calls within six (6) to eight (8) minutes, completion of notification to arrival, ninety percent (90%) of the time, analyzed quarterly.”

According to documents regarding EMS response times, Abbott Ambulance had a greater than 8 minute response 31 times out of 285 in 2002 (10.87%); greater than 8 minute response 20 times out of 287 responses in 2003 (6.96%); and greater than 8 minute response 24 times out of 284 response in 2004 (8.45%).

What is not reflected in above data is that some of the responses were as long as 30 minutes. Additionally, on at least one occasion, an Abbott Ambulance took so long to respond that a Ladue ambulance had to be called to the scene

Abbott Ambulance for many years was a not-for-profit organization sponsored by BJC Hospitals and St. Louis University Hospital. This was the status of Abbott Ambulance during the signing of the agreement with Frontenac.

According to an October 1, 2004 edition of the St. Louis Business Journal (see Appendix E), Abbott Ambulance became a for-profit operation with the sale to a group of investors. According to the article, the investors expect to grow annual revenues at least 5-10% in the first year. As a result of this new business model, the future of the agreement between Frontenac and Abbott Ambulance is unknown. However, it is anticipated that owners of a for-profit organization would obviously seek opportunities to see a return on their investment. How that return is obtained is unknown.

Fire-based EMS Model

The scope of this study also examines other EMS delivery models for the City of Frontenac.

The other model possible for the City of Frontenac is a fire-based EMS model. Fire-based EMS models are essentially ambulance services that are operated under the auspices of a fire department.

Fire-based EMS models hold certain advantages over EMS models. One key advantage is that personnel who perform EMS can also be cross-trained and perform dual-role functions as a fire fighter. Thus, instead of two personnel performing one function, one person is capable of carrying out two different missions.

The operation of emergency medical services is an essential and integral part of many fire departments. Many similarities exist between fire suppression and medical emergencies. In both cases, rapid response and intervention by trained personnel are essential. Static deployment of a trained workforce and apparatus can also make the delivery of EMS more practical when done by a fire department.

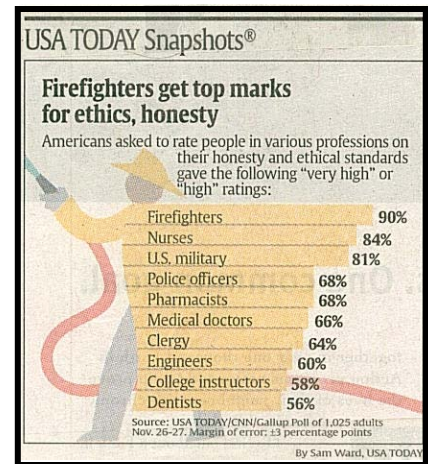
Fire departments are traditionally ideal to provide emergency medical services. The extremely low turnover rate among career fire fighters means that the personnel responding to an emergency are far more likely to have higher skill levels in emergency medical and trauma response because of tenure. Private ambulances, such as Abbott Ambulance can have personnel with lower experience skill sets because private ambulance companies are traditionally entry level positions for EMTs and paramedics.

The fire service in the United States has an extensive history and background with the delivery of emergency medical service. The first paramedic systems in the country developed in the late 1960's and 1970's. These paramedic systems were operated by fire departments in such cities as Seattle, Columbus (OH), Baltimore, Jacksonville, Miami, and Los Angeles County. Ironically, these systems were operational well before the signing of the 1973 EMS Act which established federal funding for EMS systems.

An independent EMS trade journal in a 1996 survey of the EMS market determined that the fire service comprised 45.3 percent of all transporting agencies. The next closest category of transporting agencies was non-fire-based volunteer squads at 17 percent. Clearly, the fire service is the predominant provider of EMS transport services in the country.

Another factor which makes the fire service excellent for providing EMS transport is the issue of public trust. A 2001 survey conducted by USA Today questioned people on professions and which was the most ethical and honest. The number one ranked answer was "fire fighters" at 90 percent.

Economies of scale can also be achieved with the fire service because of the Fair Labor Standard Act. Under the FLSA, a firefighter can work up to a 56-work week before overtime must be paid unless there is already established agreements. Under the 207(k) exemption, only firefighters and police officers qualify for these exemptions. Additionally, firefighters are multi-tasked. Besides doing EMS transport, they also provide fire suppression, educational services, fire inspection, fire prevention, vehicle rescue, and a myriad of other services. Single-role EMS providers merely provide one service -- patient care and transport. At the end of 2005, all EMS personnel in the Frontenac Fire Department are scheduled to complete their fire fighter training.



With all Frontenac Fire Department EMS personnel as fire fighters, the ability to effectively fight fire or complete a rescue from a burning building would increase dramatically as a result of increased manpower and staffing for a fire response.

Finally, according to the results of an Emergency Care Information Center (ECIC) survey, cross-trained/dual-role personnel have a lower clinical error rate than single-role EMS providers. Data from the study showed fire fighter/EMS providers had an average error rate of 0.99 in a six-month period while the error rate for single-role EMS providers was 1.69 in a six-month period.

Figure 7.1: Survival Rates

EMS Conclusion

As stated earlier in this document, effectiveness of an emergency medical response system is contingent upon two main components - response time and the level of service.

The decision whether to move to a fire-based EMS model in Frontenac will be based upon several factors - cost and community expectations.

The sooner the delivery of definitive advanced life support and transport occurs, the better the chances of survival for the patient who is suffering a cardiac arrest. Figure 7.1 from the Annals of Emergency Medicine supports this statement.

The City of Frontenac will bear additional costs from operating a fire-based EMS model. However, the citizens and visitors to Frontenac will have a dedicated community resource transport vehicle within four minutes, 90 percent of the time or greater when a medical emergency does occur. Other scenarios that the City of Frontenac could possibly pursue include contracting for EMS transport service with surrounding fire

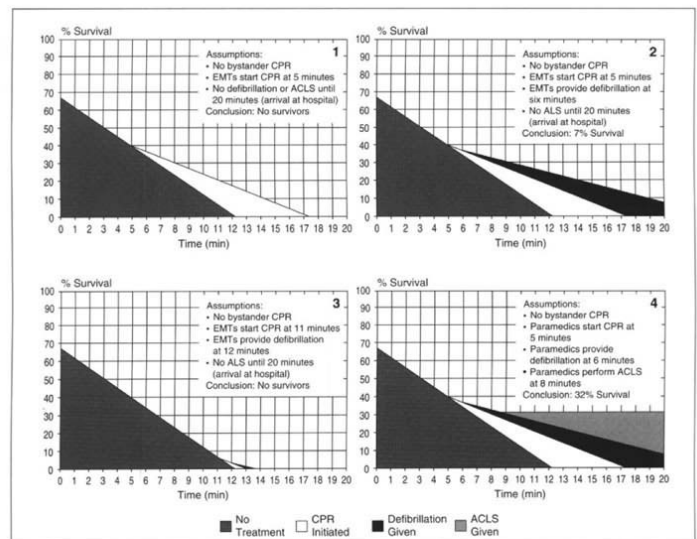


Figure 7.12. Survival from cardiac arrest for (1) emergency medical technician (EMT) system with response time of 4 minutes; (2) EMT with defibrillator (EMT-D) system with response time of 4 minutes; (3) EMT-D system with response time of 10 minutes; and (4) paramedic system with response time of 4 minutes. (From Larsen MP, Eisenberg MS, Cummins RO, Hallstrom AP: Predicting survival from out-of-hospital cardiac arrest: a graphic model. *Ann Emerg Med* 1993;22:1652-1658.)

departments or fire districts or starting their own service in conjunction with surrounding municipalities who also do not operate their own EMS transport service.