Expanding Boundaries: A Medical Hazards Assessment for the East Alabama Fire District

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Certification Statement

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed:_____________________________
Abstract

Descriptive research was used to assess emergency medical needs within the proposed new service area of the East Alabama Fire District. The purpose was to identify medical needs, risks and hazards for the customers of the District. The following questions were answered: What are the housing and population characteristics of the proposed new service area? How many and what types of medical responses occur yearly within the newly proposed service area? What types of emergency medical resources are currently available? How would the implementation of a basic emergency medical response program by the East Alabama Fire District result in a reduced risk to customers? State and local data as well as published works of other authors were reviewed. The findings of the research revealed that a large percentage of emergency response agencies provide some form of medical response and that simple basic life support interventions can result in a reduced risk to customers. Recommendations include a study of the response need with Valley EMS and the ultimate implementation of a basic life support first responder program.
Introduction

The East Alabama Fire District, which operated under the charter and authority of the East Alabama Water, Sewer and Fire Protection District, traditionally operated as a fire suppression only department and provided no type of emergency medical service response other than providing basic care to victims during technical rescue incidents. Due to an increase in the boundaries of the East Alabama Water, Sewer and Fire Protection District and a reduction of the boundaries of the Lee-Chambers Utilities District the need for routine emergency medical response from the East Alabama Fire District has been considered.

The problem is that emergency medical needs within the newly proposed East Alabama Fire District have not been identified in order to determine risks and hazards for the area. The purpose of the research was to identify medical needs, risks and hazards for the customers within the District.

Descriptive research was used to answer the following questions: What are the housing and population characteristics of the newly proposed service area? How many and what types of medical responses occur yearly within the newly proposed service area? What types of emergency medical resources are currently available? How would the implementation of a basic emergency medical response program by the East Alabama Fire District result in a reduced risk to customers?
Background and Significance

Chambers County, Alabama was located in the east central portion of the State of Alabama. Fire protection in Chambers County was provided by thirteen volunteer fire departments and four combination fire departments (see Appendix A) which were dispatched by a centralized 9-1-1 center. Emergency ambulance transport was provided by two combination fire departments and one city operated “third service” ambulance provider. The two fire departments that provided ambulance transport were the Lafayette and Lanett Fire Departments. The non-fire based emergency ambulance service was provided by the City of Valley.

The East Alabama Water, Sewer and Fire Protection District (EAWS&FPD) was classified as a Public Utilities District under State of Alabama law. The authority of the EAWS&FPD to operate was granted by the Chambers County, Alabama County Commission. The EAWS&FPD operated as the water authority for unincorporated Chambers County, Alabama as well as the corporate limits of the City of Valley, Alabama. Potable water was provided to a large area of rural Chambers County, Alabama while sewer and fire protection services were primarily provided in an area which was approximately equivalent to the corporate limits of the City of Valley, Alabama although this was not the formal boundary of sewer and fire protection services. The EAWS&FPD was not affiliated with nor a political subdivision of the City of Valley, Alabama in any fashion. The EAWS&FPD received no monetary assistance from the City of Valley, Alabama other than normal user fees for water, sewer and fire protection that any other customer was required to pay.

The fire division of the EAWS&FPD, which was known by the abbreviated term East Alabama Fire District (EAFD), began fire protection services in 1977. The EAFD operated as a combination paid and volunteer fire department that served an estimated fifteen thousand citizens
that resided in a twenty-one square mile response area. The emergency services provided by the EAFD were fire suppression and technical rescue. Part of the technical rescue services was a swift water rescue team that functioned as the surface water rescue team for Chambers County, Alabama. This swift water rescue team was also an asset to the State of Alabama and could be utilized anywhere in the state if needed. Other aspects of technical rescue that were the responsibility of the EAFD included the following types of incidents: vehicle extrication, confined space rescue and high angle rescue.

The EAFD did not respond to medical emergencies on a routine basis unless specifically requested by the City of Valley Emergency Medical Services (VEMS). The request for emergency medical response by VEMS was usually limited to requests for lifting assistance or cardiopulmonary resuscitation and usually occurred when VEMS had only one ambulance available. Specific requests for assistance by VEMS numbered less than one dozen per year.

The EAWS&FPD boundaries were changing due to the purchase of the right to provide potable water service and fire protection services from the Lee - Chambers Utilities District (LCUD). The LCUD operated in Lee and Chambers Counties, Alabama. The LCUD provided potable water services and fire protection services in portions of Lee and Chambers Counties, Alabama. This change would result in the responsibility for fire protection services in an area of Chambers County, Alabama that the EAFD had not previously covered. This area received fire suppression and rescue services from the division of the LCUD known as the Lee-Chambers Volunteer Fire - Rescue Department (LCVFRD), which provided basic life support emergency medical services first response due to the longer response times of the VEMS ambulances. The LCVFRD had no station located in Chambers County.
The original service area of the EAFD was defined as approximately the city limits of the City of Valley, Alabama. This consisted of an area defined as the 74 mile marker to the 80 mile marker of the north bound lanes of Interstate 85 as the western boundary, the Chattahoochee River as the eastern boundary, the intersection of Interstate 85 and the Chattahoochee River as the northern boundary, and the addresses of 2355 Judge Brown Road, 3145 U.S. Highway 29, 2401 Ben Brown Road, 2349 Columbus Road, and 3265 Fairfax Bypass as the southern boundaries (B. M. Pigg, personal communication, July 6, 2005) (see Appendix B).

The proposed new service area of the East Alabama Fire District was defined as approximately the city limits and police jurisdiction of the City of Valley, Alabama. This consisted of an area defined as the 69 mile marker to the 80 mile marker of the north bound lanes of Interstate 85 as the western boundary, the Chattahoochee River as the eastern boundary, the intersection of Interstate 85 and the Chattahoochee River as the northern boundary, and the Chambers County line on U.S. Highway 29, Chambers County Road 271, Ben Brown Road, Lantuck Road, Fairfax Bypass and Columbus Road as the southern boundary (B. M. Pigg). The new boundary lines were equal to the Chambers County, Alabama operations of the LCVFRD and the old boundary of the EAFD combined. This proposed new EAFD service area mirrored the response area of VEMS (see Appendix C).

The research problem as related to the EAFD was linked to the United States Fire Administration operational objective number 2, improving local planning and preparedness, and objective number 4, the improvement of the fire and emergency services’ professional status.

The linkage between the research problem and specific content of the Executive Analysis of Community Risk Reduction course included the overall concept of community risk reduction as well as the associated course content in Unit 2, which addressed the concept of Assessing
Community Risk. If an emergency medical response program were to be implemented with the EAFD where there was none before the concepts from Unit 4, titled Leading Organizational and Community Change, would be important.

Literature Review

A literature review was performed to determine medical needs, risks and hazards for customers in the proposed new EAFD service area with the ultimate goal of determining the necessity for emergency medical response by the EAFD. Research was started at the National Fire Academy Learning Resource Center. A review of current textbooks, periodicals and internet resources was conducted as well. Local response data and information pertaining to available resources was obtained from state and local organizations. Personal communications were also utilized when researching state and local data.

Emergency Medical Services (EMS) were defined as a system in place to “provide a mechanism for an immediate response of trained persons to the public’s self-defined request for help” (Public Entity Risk Institute, 2008, p. 1). The International City/County Management Association further defines EMS as “delivery of pre-hospital medical care in the form of basic and advanced life support at the scene of a medical emergency” (International City/County Management Association [ICMA], 2002, p. 59). It was estimated that “approximately 85 percent of all fire and emergency services departments/organizations in the U.S. now provide some level of emergency medical care” (International Fire Service Training Association [IFSTA], 2004, p. 392).

Levels of care provided by emergency response organizations varied throughout the State of Alabama. Some response organizations provided basic life support, others provided advanced life support. Some response organizations provided ambulance transport, others did not.
Expanding Boundaries

According to the Alabama Department of Health Office of Emergency Medical Services and Trauma (OEMST) there were 6,300 Emergency Medical Technician (EMT) Basics, 614 EMT Intermediates, 3,756 EMT Paramedics and 1,345 Ambulance Drivers licensed in the State of Alabama (Blair, 2009). First Responder was not a certification level in the State of Alabama and was not regulated by the OEMST. For the purpose of this paper the author defined “First Responder” as a level of emergency medical training as outlined in the National EMS Scope of Practice (NEMSP) Model as Emergency Medical Responder. The NEMSP model defined the Emergency Medical Responders’ scope of practice as “simple skills focused on lifesaving interventions for critical patients” (National Highway Traffic Safety Administration [NHTSA], 2007, p. 22).

No data was available from the OEMST that revealed the number of EMT Basics, EMT Intermediates, EMT Paramedics or Ambulance Drivers that resided in Chambers County, Alabama. First Responder was not a certification level in the State of Alabama and was not regulated by the OEMST.

According to the OEMST there were 307 “licensed services” in the State of Alabama (Blair, 2009). A licensed service was defined by the OEMST as “any entity licensed in the State of Alabama to provide ground ambulance or other emergency medical response, whether basic life support (BLS) or advanced life support (ALS), and whether a non-transport or a transport service” (EMS Rules 2008, 2008, p. 4).

The licensed services in the State of Alabama consisted of 11 basic life support non-transport services, 108 advanced life support non-transport services, and 188 advanced life support transport services (Blair, 2009). Emergency response organizations which operated at the medical level of first responder were not regulated by the OEMST. There was no data available
on the number of organizations that provided this level of care statewide because this is not regulated by OEMST.

The licensed services in Chambers County, Alabama consisted of 1 basic life support non-transport service, no advanced life support non-transport services, and 4 advanced life support transport services (T. Yeldell, personal communication, November 24, 2009). Emergency response organizations which operated at the medical level of first responder in Chambers County, Alabama were not regulated by the OEMST. There was no data available on the number of organizations that provided this level of care in Chambers County because this is not regulated by OEMST.

The level of prehospital care that should be provided to patients has been debated in many different forums. The ICMA states that “BLS is the ideal baseline level of training and certification for firefighters” (ICMA, 2002, p. 22). While “always having paramedics respond to a call may better meet the expectations of most of the public” (Stout, Pepe, & Mossesso, Jr., 2000, p. 5) “the value of using FR’s is recognized and strongly endorsed” (Stout et al., p. 4). First responder crews can “routinely arrive much faster than an ambulance” “and thus provide more rapid basic medical care, ranging from oxygen administration and spinal immobilization to basic cardiopulmonary resuscitation (CPR) and automated external defibrillation (AED) use” (Key, Pepe, Persse, & Calderon, 2003, p. 340).

Every request for emergency medical assistance did not require an ALS level of response. An article published in the Journal of Emergency Medical Services states “just 20% of all EMS calls are ALS in nature, with probably 25-50% of that total representing critical patients who need an all-hands approach” (Heightman, 2009, ¶ 5). Other studies indicate that less than 5% of emergency medical calls require ALS care (Stout, Pepe, & Mossesso, Jr., 2000, p. 2). Some
communities, such as Denver, Colorado, developed a tiered response system to improve patient outcomes. This tiered response system of BLS fire units and ALS ambulances allows firefighters trained at the BLS level to arrive at the scene of an emergency in under 4 minutes a majority of the time (Denver Health, 2008, ¶ 9).

Some communities incorporated a priority dispatch system which aided in a tiered response system. In a priority dispatch system such as the system used in King County, Washington emergency medical assistance was dispatched “based on the recognition that the level of care (ALS vs. BLS) needed by the patient and urgency of patient care should be the determining factors in the level of response” (Culley, Eisenberg, Horton, & Koontz, 1993, p. 29).

One tool that was used in BLS care that has become expected by the community is the Automated External Defibrillator (AED) which was a treatment that was provided at the BLS level. It was noted that “many fire departments have an AED on every fire engine and ladder truck” (ICMA, p. 24). Possible reasons that the use of BLS and AED’s are so widespread was that the benefits of early cardiopulmonary resuscitation and AED application were well documented. Evidence provided by the American Heart Association (AHA) claims that “studies have repeatedly shown the importance of immediate bystander CPR plus defibrillation within 3–5 minutes of collapse to improve survival from sudden VF (ventricular fibrillation) cardiac arrest” (American Heart Association [AHA], 2010, ¶ 4). The AHA goes on to compare the survival rates of cardiac arrest in two cities, Seattle, Washington and New York City. The AHA points out that Seattle has a witnessed ventricular fibrillation cardiac arrest survival rate of about 30 percent due to the widespread use of citizens trained in CPR, widespread use of AED’s, and prompt arrival of EMS. In contrast, the survival rate for the same event in New York City was around 1-2 percent due to less instances of bystander CPR, less widespread use of AED’s, and
longer EMS response times (AHA). The AHA (2008) goes on to say that while BLS is important, an advanced level provided by paramedics is vital in cardiac arrest.

Sudden cardiac arrest is only one instance in which citizens benefit from a prompt initial medical response. AHA addresses the benefits of stroke care stating “there has to be appropriate care at the scene” and “prompt emergency care can reduce disability and the risk of death in stroke victims” (American Heart Association [AHA], 2008). The World Health Organization promoted organized trauma care and stated “considerable good may be accomplished by ensuring that victims receive life-sustaining care within a few minutes of injury” (World Health Organization [WHO], 2006, ¶ 4).

Citizens have come to expect prompt and efficient emergency response as customer service concepts from the business community have found their way into the emergency services arena. The basis of customer service is “providing a product or service that meets the needs of a group of people who are called customers: the people who use and consume the product or service” (International Fire Service Training Association [IFSTA], 2004, p. 221). Brunacini states that the “essential mission and number one priority is to deliver the best possible service to our customers” (IFSTA, p. 221).

Public expectation of the rapid response and ultimate success of EMS response was influenced by television (ICMA, 2002, p. 21). The television show titled Emergency! debuted in 1972 (Emergencyfans.com, n.d., ¶ 2). It was estimated that 7 years later “more than half of all U.S. residents were within ten minutes of a paramedic unit” (ICMA, p. 22). The expectations created by this television drama and television shows that followed forced many emergency response organizations to increase their roles in emergency medical response.
High public expectation was also defined by the term “911 Syndrome” used by Rescue 3 International. The premise of the “911 Syndrome” was that “if someone gets into trouble simply dial 911 and the fire department or search and rescue team will come save us” (Rescue 3 International, 2006, p. 5). While this example by Rescue 3 International was intended to reference technical rescue incidents it could be connected to medical rescue incidents as well.

The literature review revealed basic key points that influenced the research. Through research it was noted that the simple timely intervention by BLS personnel can save lives. It was also noted that citizens have come to expect prompt emergency medical response during an emergency. The fact that 85 percent of emergency response organizations provide some type of EMS response was significant as well.

Procedures

The procedures utilized would provide descriptive research to identify the housing and population characteristics, the number of emergency medical responses, emergency medical response resources available and potential associated hazards if the East Alabama Fire District did not respond to medical emergencies in the proposed new service area.

Housing and population characteristics were researched through the United States Census Bureau. Specific boundaries regarding census information were determined by viewing census maps. These maps allowed the author to determine the census tracts that constituted the proposed new service area of the East Alabama Fire District. After specific boundaries were determined the population and housing data for each census tract was extracted from the census records. Limitations of the census data were the age of the information. The most current information for the research area was from the 2000 census. According to East Alabama Water District records the growth of the community from 2000 to 2008 was less than 1 percent (B. M. Pigg, personal
communication, January 13, 2010). This was determined by the total number of accounts on record from 2000 to 2008. While the limitations of the data may be the age of the 2000 census, there was not a large swell in the population of the research area from 2000 to present.

The United States Census Bureau information was compared to billing information from the East Alabama Water District. The limitations of the information provided by the water department included the following: account information was only available for active accounts and those residents utilizing a well for potable water use were not included.

Emergency medical response data was researched by contacting VEMS and LCVFRD. Specific response data was requested by the author and provided by each organization. Limitations of the VEMS response data included the age of the information and the specific functions of the EMS reporting system. Due to the reporting system in use by the VEMS the most current figures available were from the years 2005, 2006 and 2007. Limitations of the LCVFRD data were the limited amount of data that only covered 1 year, 2009.

Available emergency medical resources were researched by contacting the OEMST. Information was requested that would outline the resources available throughout the State of Alabama and specific information was requested that would outline the resources available to Chambers County, Alabama. This included the number of personnel trained at all levels of EMT. Limitations included the lack of regulation of first responder services or first responder certification by the OEMST.

The benefit of providing emergency medical response in the proposed new EAFD service area and therefore reducing the risk to customers was researched by utilizing periodicals, textbooks, and internet resources. The limitation of the research was the lack of a variety of information to be found.
Results

Research Question 1

What are the housing and population characteristics of the newly proposed service area?

Specific information on housing and population characteristics was determined using data from the United States Census Bureau from the 2000 census. Using the United States Census Bureau website it was determined that the proposed new service area (which was defined as the 69 mile marker to the 80 mile marker of the north bound lanes of Interstate-85 as the western boundary, the Chattahoochee River as the eastern boundary, the intersection of Interstate 85 and the Chattahoochee River as the northern boundary, and the Chambers County line on U.S. Highway 29, Chambers County Road 271, Ben Brown Road, Lantuck Road, Fairfax Bypass and Columbus Road as the southern boundary) consisted of Census Tracts 9543, 9546 and 9547 in Chambers County, Alabama (see Appendix D).

According to census data the total number of housing units in Census Tract 9543 was 1,951 units (United States Census Bureau, 2000, p. 1). According to census data the total number of housing units in Census Tract 9546 was 1,680 units (United States Census Bureau, p. 1). According to census data the total number of housing units in Census Tract 9547 was 2,076 units (United States Census Bureau, 2000, p. 1). According to census data the total number of housing units in Census Tracts 9543, 9546 and 9547 combined was 5,707 units.

According to the East Alabama Water Department billing records the number of residential water customers in the proposed new service area was 5,606 (D. Lott, personal communication, January 13, 2010).

There were several possible reasons for this discrepancy in number of housing units between the United States Census Bureau and East Alabama Water Department (EAWD) billing.
records. One reason was that some housing units were not connected to the municipal water supply, but rather depended on a well for a potable water source (B. M. Pigg, personal communication, January 13, 2010). A second possible reason for the difference in numbers was the water department billing software was only capable of showing an active account. If a housing unit did not have potable water connected that particular housing unit would not be a part of the listed customer count (D. Lott). A third possible reason for the difference in numbers was the age of the census data. EAWD records were current on the date the data was requested, while the census data was from the year 2000.

According to census data the total number of persons that resided in Census Tract 9543 was 3,425 persons (United States Census Bureau, 2000, p. 1). According to census data the total number of persons that resided in Census Tract 9546 was 3,592 persons (United States Census Bureau, p. 1). According to census data the total number of persons that resided in Census Tract 9547 was 4,838 persons (United States Census Bureau, 2000, p. 1). According to census data the total number of persons that resided in Census Tracts 9543, 9546 and 9547 combined was 11,855 persons.

Research Question 2

How many and what types of medical responses occur yearly within the newly proposed service area? Emergency medical response data was sought from the EMS Director of VEMS and the Fire Chief of the LCVFRD.

Tim Hughes was the EMS Director of the VEMS. Mr. Hughes was interviewed because he could provide factual response data for VEMS. Mr. Hughes stated that the method of reporting care that his service used changed and that he could only provide broad information. He could not supply information that specified if an ambulance response call was for a traumatic
injury or medical emergency. The information he was able to provide was broken down into two categories: emergency calls and transfers.

VEMS responded to 1,084 emergency requests for ambulance assistance between January 1st and December 31st, 2005 (T. Hughes, personal communication, January 20, 2010). This included calls for traumatic injuries and medical emergencies (T. Hughes, personal communication, January 20, 2010).

VEMS responded to 1,193 emergency requests for ambulance assistance between January 1st and December 31st, 2006 (T. Hughes, 2010). This included calls for traumatic injuries and medical emergencies (T. Hughes, 2010).

VEMS responded to 1,492 emergency requests for ambulance assistance between January 1st and December 31st, 2007 (T. Hughes, 2010). This included calls for traumatic injuries and medical emergencies (T. Hughes, 2010).

Lee Kelley was the Fire Chief of the LCVFRD. Mr. Kelley was interviewed because he could provide factual response data for the LCVFRD. The information that was provided from the LCVFRD included some of the same response area as the information that was provided by VEMS but was valuable because it provided specific insight to a response area that the EAFD had not covered.

The LCVFRD call data was divided into broad categories for the purpose of this research. Data provided by the LCVFD included fire responses. The data provided by Mr. Kelley included only data for the Chambers County portion of the LCVFRD response area at the request of the author. Response data for the LCVFRD Lee County, Alabama operations was not needed because the LCVFRD response area in Lee County was not a part of the proposed new EAFD response area.
The categories of calls the LCVFRD responded to were Structure Fires, Woods Fires, Vehicle Fires, Motor Vehicle Accidents, Medical Calls, Hazardous Materials and Miscellaneous. The LCVFRD response categories that were selected for the purpose of this research were the Medical and Motor Vehicle Accident categories of response data.

LCVFRD responded to 42 medical calls for service between January 1st and December 31st, 2009 in Chambers County, Alabama (L. Kelley, personal communication, January 5, 2010). LCVFRD responded to 15 motor vehicle accident calls for service between January 1st and December 31st, 2009 in Chambers County, Alabama (L. Kelley, 2010). This was a total of 57 emergency medical response events the LCVFRD responded to in Chambers County, Alabama for the year 2009.

Research Question 3

What types of emergency medical resources are currently available? In Chambers County, Alabama there were a number of different EMS resources available. These resources included a BLS non-transport service, ALS transport services, and first responders that were not regulated by the OEMST.

OEMST records identified one licensed basic life support (BLS) non-transport service and four licensed advanced life support transport services (T. Yeldell, personal communication, November 24, 2009). The licensed BLS non-transport agency was identified as Mount Olive VFD - Chambers County. The four advanced life support transport services were identified as Lafayette Emergency Medical Services, Vines Ambulance Service, Valley Emergency Medical Service and Lanett Fire & EMS. Other volunteer and career emergency response organizations in Chambers County operated at the medical level of first responder and were not regulated by the
OEMST, though some of these organizations had members who were trained and licensed above
the first responder level of medical care.

The BLS non-transport service that was available in Chambers County included the
Mount Olive VFD. The Mount Olive VFD responded to medical emergencies within their fire
jurisdiction but was not licensed to transport patients.

The ALS ground ambulance transport services that were available in Chambers County
included the City of Lafayette Fire Department Emergency Medical Services. The Lafayette Fire
Department operated two ambulances in the City of Lafayette. They also operated emergency
ambulances in the western portion of unincorporated Chambers County under contract with the
Chambers County Commission.

The ALS ground ambulance transport services that were available in Chambers County
included Vines Ambulance Service. Vines Ambulance Service operated ambulances in and
around Lafayette, Alabama.

The ALS ground ambulance transport services that were available in Chambers County
included the City of Lanett Fire & Emergency Medical Services Department. The Lanett Fire
Department operated two ambulances in the City of Lanett. They also operated emergency
ambulances in the eastern portion of unincorporated Chambers County under contract with the
Chambers County Commission.

The ALS ground ambulance transport services that were available in Chambers County
included the City of Valley Emergency Medical Services. The Valley Emergency Medical
Services operated two ambulances in the City of Valley. They also operated emergency
ambulances in the southeastern portion of unincorporated Chambers County under contract with
the Chambers County Commission.
Additional emergency medical resources that were available but not based in Chambers County included two air ambulance transport services. The ALS air ambulance transport services that were available to respond to Chambers County included Alabama LifeSaver based out of Auburn, Alabama and Air Evac Lifeteam based out of Columbus, Georgia. Both air ambulance services were available for emergency medical flights into Chambers County, Alabama.

Research Question 4

How would the implementation of a basic emergency medical response program by the East Alabama Fire District result in a reduced risk to customers?

The AHA “chain of survival” was well documented. The links in the AHA chain of survival were defined as early access to the 9-1-1 system, early CPR, early defibrillation with an AED, and early advanced care. A prompt response by providers trained in first responder BLS skills could implement the early CPR component if not accomplished by bystanders. The early defibrillation component could also be initiated because front run EAFD apparatus were equipped with AED’s.

In terms of geography the LCVFRD portion of the proposed new EAFD service area was, in some cases, up to a 10 to 12 minutes response time for VEMS (T. Hughes, 2010). An emergency medical response by BLS personnel could positively impact outcomes on these patients who were in need of emergency medical care.

Emergency medical response services, especially if provided by an emergency response agency which had not provided them before, could be perceived as a “value added” service. ICMA (2002) defines “value added” as “additions to or enhancements of existing services that add value for the benefit of the community, the customer (patient), and/or the customer’s insurers.”
Discussion

The study results agreed with the findings of others in the literature review. A true discussion on the first three research questions was not possible. The data obtained came from local resources and there were no published works specifically related to the proposed new EAFD service area.

One of the results that were possible to discuss was the question of whether the implementation of a medical first response program would result in a reduced risk to the customers of the EAFD. The Literature Review and results suggest that implementation of a medical first response program would result in a reduced risk to the customer.

It was noted in the literature review that EMS was defined as “delivery of prehospital medical care in the form of basic and advanced life support at the scene of a medical emergency” (ICMA, 2002, p. 59) and “that about 85% of fire departments provide some form of medical response” (IFSTA, 2004, p. 392). The scope of practice for a BLS First Responder was identified as “simple skills focusing on lifesaving interventions for critical patients” (NHTSA, 2007, p. 22). There was no response organization providing BLS response in the proposed new service area. These types of responses and interventions were the type of service EAFD could provide which in turn would reduce risk to our customers.

The EAFD was faced with an opportunity to expand their boundaries. With this expansion would come the responsibility to examine whether a first responder program would be warranted and whether this program would be beneficial to the customers the EAFD served in the proposed new EAFD response area. EAFD fire suppression personnel, in some cases, could be of benefit to certain patients due to the longer response times of VEMS to the southern portion of the proposed EAFD territory (T. Hughes, 2010). Since EMS responses were
sometimes 10-12 minutes to certain parts of the proposed EAFD boundaries the benefit of EAFD companies responding to life threatening medical emergencies is evident. Early CPR and defibrillation, usually within 3-5 minutes, increased chances of survival in cardiac arrest (AHA, 2010, ¶ 4). Some EMS systems have seen success with this tiered response. Denver, Colorado utilizes BLS fire companies to reach patients in under 4 minutes most of the time (Denver Health, 2008, ¶ 9).

Implications to the organization include several areas. Who will respond to these emergencies? Currently the EAFD staffing level is 2 persons per shift in the overnight hours with call-in personnel utilized any time a call is received. With response to medical emergencies, even those which are deemed life threatening by a priority dispatch system, the call volume for the EAFD would increase significantly. If the EAFD were to respond to 25 percent of the calls for the VEMS the call volume for the EAFD would increase by a significant amount which would need to be defined through further research. With this increase in call volume there would be an increase in overtime as well as an increased work load to the on duty and on call personnel.

How will this service be funded? The EAFD was funded by a fire protection fee on each customer’s water bill. With an increase in operational cost and a larger budget an increase in fire protection fees would have to be levied.

Training would have to be addressed as well. The EAFD has 2 EMT’s on staff. Additional personnel would have to receive medical training to implement a first responder program. If the program were to be implemented at the BLS level, personnel could be trained to the first responder level though that level of training is not regulated by the OEMST. Higher levels of training could be sought for personnel, including certification at the EMT Basic level. If
paramedic level response was desired a higher amount of training and equipment would be needed.

Recommendations

The results revealed that there would in fact be a need for a basic emergency medical response by EAFD personnel serving an increased housing and population base in the proposed new service area. The benefit of prompt prehospital care for medical and trauma patients was evident throughout the research. Citizen expectations also played a role in the need for emergency medical response, as this would be a new “value added” service to most EAFD customers. If the EAFD continued to not respond to medical emergencies some customers would actually receive a decreased level of services than prior to the implementation of the newly proposed EAFD service area. These specific customers would be those that were previously served by the LCVFRD.

VEMS provides an adequate emergency ALS transport service to the citizens of the EAFD response area. This service does not currently need to be replaced or duplicated, but rather complimented. The EAFD should partner with VEMS to study ways to provide a more efficient response and rapid care service to our customers. ALS non-transport response is not currently practical for the EAFD nor does it appear to be needed. BLS non-transport response could provide benefit to the customers, especially those customers who suffer a medical emergency or traumatic injury in the lower portion of the response area where ambulance response times are extended.

Each employee should receive current emergency medical training at the level of first responder as a minimum. All new employees should be required to acquire and maintain certification as an EMT Basic to enhance the level of care provided. Existing employees should
be offered the opportunity to achieve and maintain EMT Basic training and certification as opportunities arise.
Appendix A
MEMO TO:  ALL FIRE DEPARTMENT PERSONNEL
MEMO FROM:  CHIEF BYRON M. PIGG
SUBJECT:  JURISDICTION LINES AND ADDRESSES
DATE:  JULY 06, 2005

The following is a list of addresses that are the last address on that particular road that is in our jurisdiction. The list is as follows:

Judge Brown Road: 2355 Judge Brown Road. Any address higher than 2355 is out of our jurisdiction.

Highway 29: 3145 Highway 29. Any address lower than 3145 is out of our jurisdiction.

Ben Brown Road: 2401 Ben Brown Road. Any address lower than 2401 is out of our jurisdiction.

Columbus Road: 2349 Columbus Road. Any address lower than 2349 is out of our jurisdiction.

I-85: 74 mile marker on I-85. Anything address lower than the 74 mile marker is out of our jurisdiction.

Fairfax Bypass: 3265 Fairfax Bypass. Anything address lower than 3265 is out of our jurisdiction.

This list will be used to determine if a call is in or out of our jurisdiction. If we receive a call to an address that is close to the one's listed above (Example: 2330 Columbus Road) double check the address and make sure it is not in our jurisdiction. If a positive identification of whose jurisdiction cannot be made respond to the jurisdiction line as usual to verify location. Do not respond to a call that you know is outside our jurisdiction. If another department needs our help they will call.
Appendix D

http://factfinder.census.gov/leg1/48/148781148.gif
References


