How might Wapakoneta improve the staffing of its EMS operation?

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ABSTRACT

For several years now, there has been a growing concern with the level of staffing and the level of training of the Wapakoneta Rescue Squad, which provides the EMS operations for the City. The number of available personnel has been declining and at the same time the medical community is raising the expectations for pre-hospital care. Providing quality service in a cost-effective manner is of primary concern in any tax based operation. As discussions were held concerning the best way to manage our EMS operation, it seemed that more questions were raised than were answered.

This research project aimed to identify how Wapakoneta could best provide quality emergency medical services to its citizens. The logistics, staffing needs and cost-effectiveness were examined. The following questions were focused upon to assist in this research:

- What is the long-range forecast for the current method of providing EMS for Wapakoneta?
- How are other communities in Ohio of similar size dealing with EMS?
- Why are our EMS professionals leaving the service?
- What are the needs and desires of today's medical control?
- Is "privatizing" our EMS a viable option?
- Is developing a fire-based EMS operation a viable option?
- What are the proper criteria for evaluating the situation and developing a solution?

A literature review found that there is still a wide range of methodology of dealing with EMS. Each community examines its own needs and situation and develops the best plan of action.

The research discovered that communities, which are of similar size and similar proximity to a hospital, have been able to meet their EMS needs in a variety of methods. Many

are utilizing a fire-based operation while others have chosen to operate a separate department with varying methods of maintaining adequate staff levels.

The results indicate that Wapakoneta should be able to continue to provide quality EMS in a cost effective manner as a government based operation.

It is recommended that Wapakoneta become more aggressive in recruiting personnel for its EMS operation while simultaneously developing a plan to move the EMS to a fire-based organization.

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INTRODUCTION

The Wapakoneta Rescue Squad, a stand-alone division of the City, is currently providing Emergency Medical Service (EMS) to Wapakoneta. As the staffing levels have been in steady decline over the past several years, Wapakoneta has reached a point where it needs to revaluated the method in which it is providing EMS to its citizens. Among the various suggestions for improvement are: combining the EMS and fire departments, contracting with a private EMS provider or continuing to find ways to improve the current method of operation. I am not aware of any formal research process that has taken place in recent years.

This research project was designed to give the leadership of our city the information needed to make an informed decision as to how to provide the best Emergency Medical Service in a cost-effective manner. All available information was considered in evaluating the current method of operation, examining the various options and projecting the cost-basis of providing this type of service.

Areas that were examined include past and present run volume, cost analysis of current method of operation, issues related to maintaining staff and the needs of the medical community.

Aspects of providing quality EMS were evaluated by focusing on the following questions:

- What is the long-range picture for the current method of providing EMS for Wapakoneta?
- How are other communities in Ohio of similar size dealing with EMS?
- Why are our EMS professionals leaving the service?
- What are the needs and desires of today's medical control?
- Is "privatizing" our EMS a viable option?
- Is developing a fire-based EMS operation a viable option?

- What are the proper criteria for evaluating the situation and developing a solution?

BACKGROUND AND SIGNIFICANCE

Prior to 1978, the local funeral directors provided emergency medical responses in part because they had a vehicle suitable for transport. The Wapakoneta Fire Department provided assistance because they had a resuscitator. The formal training consisted of basic first aid and CPR. Many citizens found their own way to a hospital or doctor as the need arose.

In 1978, due to new federal and state mandates for EMS transportation, the local funeral directors opted to not purchase vehicles that met the new standards, thus they would no longer provide this service. The City of Wapakoneta opted to buy two vehicles and contract with a funeral director to mange the operations. Approx. twenty people including some of the city's firefighters acquired the basic Emergency Medical Technician training and in August of that year was the first official run of the Wapakoneta Rescue Squad. Additional training classes were held and in within another year there were 35 – 40 EMTs staffing the operation. This method of operation worked fairly well for a number of years.

In 1987, Patrick Heinl, who was contracted to operate the squad, died suddenly. The City spent the next two years analyzing the situation while letting the Rescue Squad continue to operate under part-time leadership. In November of 1989, after discussing several options, the City hired a full-time director thus creating a new division of operation within the city. The members of the Rescue Squad were reclassified as "intermittent" employees of the city. Since that time the roster of available personnel has ranged from a high of 30 to a low of ten.

The geographical area that Wapakoneta EMS covers includes about 25 square miles and has in excess of 15,000 people and generates between 850 to 900 EMS calls per year. Due to the population growth within the coverage area and the aging of that population, the volume of calls is projected to increase each year.

The Wapakoneta Fire Department has always had a role to play since the inception of the Rescue Squad. Initially, the Fire Department provided personnel in a limited "backup" role. All firefighters hired after 1988 were required to maintain a basic EMT certificate. The Fire Department has always provided the extrication and other "rescue" services needed to free victims from the various hazards. In 1995, the City purchased a new rescue-engine for the Fire Department in order to enhance its capabilities. In 2000, at the behest of our medical director, the city council moved to require all future firefighters to maintain a paramedic certificate. The Fire Department currently has two paramedics, which are available to the Rescue Squad on an "as-needed" basis.

One issue that makes Wapakoneta somewhat unique is the distance required to travel to the nearest hospital. The closest hospital is in St. Marys, Ohio, which is 11 miles away. The next closest hospitals are Lima Memorial or St. Rita's Medical Center in Lima, Ohio, which are approx 16 miles away. St. Rita's is now a "level 2" trauma center and the preferred hospital by the majority of our population.

In recent years, the number of hours that Wapakoneta has been unable to staff more than one EMS unit is on the rise. Dependence upon mutual aid is increasing which has created some friction with neighboring communities. Greater dependence upon on-duty and off-duty firefighters has created a concern with the ability to maintain adequate staffing levels for firefighting and other emergency operations.

The general population, through our public education efforts, has come to expect that a call to 9-1-1 will result in an immediate, effective response to their emergency. Our medical control is steadily increasing its expectations of the pre-hospital care provided. The amount of hours required to maintain EMS certifications has also steadily increased. At the same time, there seems to have been a change in the way today's society prioritizes its time. There are many more activities today than there were in yesteryear that people desire to be a part of. The staffing problem is not going to go away on its own. It will take a very serious concerted effort to develop a strategy that will strengthen the EMS operations of Wapakoneta.

This research project aims to identify the advantages and disadvantages of the current operations of EMS in Wapakoneta as it pertains to staffing. In addition, the advantages and disadvantages of combining the EMS operations with the Wapakoneta Fire Dept. will be studied as well as the option of contracting a "private" provider. Then a set of recommendations will be developed to help the leadership of the city deal with this problem. Good research into this issue will aid the City in making the best decision for its citizens. This would provide factual and pertinent information that the Administration and the Council can utilize in formulating their overall strategy in providing this vital service to the community.

LITERATURE REVIEW

Spending time reading what others have discovered about similar issues is time well spent. So often we see our problems through "tunnel vision". Learning from others will broaden our horizons as well as get us out of the box in our thinking.

In the article, What's a town to do? (1989), Jim Page recounts the story of Pecatonica, Illinois. This small farming community developed a cadet program among the seniors in its high school to serve its EMS system as first responders. There they found a source of ready, willing and able volunteers right under their noses. This program has been very successful and has earned them state recognition. Rescue pp. 5-6

Rich Adams in his article, Crisis time in Rural EMS (1989), suggests that for many communities the solution to the staffing problem may be to hire career personnel to maintain the reliability of the EMS operation. He suggests that the ideal situation would be to have career ALS personnel supplemented by volunteers. This allows for more participation from those with varying life situations and goals. Firehouse pp. 12+

When determining which method of operation is best for a community, the following key factors must be considered: Which method will produce the best patient survival and satisfaction and what level of service can the community afford? EMS providers respond to a wide variety of situations: trauma of all types, burns, poisonings, medical emergencies and cardiac arrest. All share a critical need for rapid response. As noted by the International Association of Firefighters (IAFF), patient survival is directly related to response time, and is a measure of effective delivery of pre-hospital emergency medical care (1995). An EMS provider must be adequately staffed and familiar with the local community to effectively maximize patient survivability by responding as quickly as possible (Kirin, 1997).

Patient survivability as defined by industry standards is measured by a term coined the "golden hour". This refers to the sixty-minute period of time from a critical traumatic injury to the onset of surgical intervention. There is only a 15% chance of survival if the in-house surgical intervention begins after the "golden hour" (IAFF, 1995). Rapid response by EMS minimizes the amount of time for patient delivery, and maximizes the chance of onset of treatment within the golden hour.

Of all the EMS calls, the most time-critical is that of cardiac arrest. According to a recent National Institute of Health (NIH) study, of the 1.25 million citizens who will experience a heart attack in a given year, nearly 40% are potential fatalities (1993). The American Medical Association (AMA) and The American Heart Association (AHA) have established industry time standards for EMS response to a cardiac arrest. These standards are four minutes to initiate CPR and eight minutes to establish advanced cardiac life support (NIH, 1993). The American Ambulance association (AAA) is the industry trade group for private EMS providers and suggests response times of eight minutes and fifty-nine seconds (AAA, 1994), which may be beyond what is acceptable for patient survival when other interventions are considered. Comprehensive studies undertaken to examine response times versus cardiac patient survivability indicate that there is a direct correlation, the most comprehensive of which was examined by Eisenburg et.al. (1993). The Eisenburg model is used in predicting patient survival rates. This model predicts that with an initial survivability rate of 67%, the survivability rate is decreased by 2.3% for each minute added to initiation of CPR, 1.1% decrease each additional minute until defibrillation, and 2,1% for each minute before initialization of advanced cardiac life support (ACLS).

According to the International Association of Fire Fighters (1995), patient survival rates of fire-based EMS show that 17.1% of patients are discharged from the hospital while only 11.4% are discharged from non-fire-based EMS. The increased patient survival rates for patients treated by fire-based EMS with cross-trained personnel are expected when the experience, training and scope of the fire service is considered.

While quick response times are crucial, the training and capabilities of the responders are equally important. Individuals that are cross-trained at even the minimum level (EMT-Basic) appear to be more effective in terms of patient outcomes (Eisenburg, 1990). Patient satisfaction with their service and treatment is an important aspect of an EMS operation, and a commitment to quality care is crucial.

If patient survival and satisfaction are to be optimized, consideration must be given to the most effective and efficient EMS service. By examining the EMS components (projected revenue, call volume, response times, support costs, local government subsidy, etc.), the most cost-effective EMS operation that supports the best quality can be determined.

The International Association of Firefighters in Privatization of Emergency Services (1997) found that the public expects its local government to provide emergency services. Citizens want to know that they can get help when they are injured in a car accident, suffering from severe chest pains, or trapped in a house fire. And they want the help before it is too late to do any good. Citizens also want their governments to operate efficiently, to be "lean". It is up to elected and appointed officials to responsibly reconcile the wishes of those in their communities.

It may be tempting to just let a private provider deal with the challenging task of providing a high level of service while keeping costs to a minimum. This may be short-sighted.

Professor Gordon Chase of Brandeis University said, "The purpose of a private firm is to make money, while a public agency is supposed to serve society."

Fewer, not more, cities are choosing to privatize their fire and emergency medical services. Once costs are accurately assessed and levels of service are established, public departments repeatedly have underbid private companies. With public fire and rescue departments, citizens end up with high levels of service at the lowest cost – a tough combination to beat.

In summary, there has been much written about this subject from various points of view. There does not appear to be a limit to quality information on this subject. Every approach to managing EMS is a "work in progress". We can learn much from each other. It is important, however, to make sure that one fully understands each communities complete situation when evaluating their course of action.

PROCEDURES

The author utilized literature review, interviews and cost analysis. The literature review focused on staffing of EMS systems.

Interviews were conducted of Fire or EMS chiefs of communities of similar size and demographics. The focus was on communities without a hospital within in its boundaries. Key points of information collected were: population served, square mile of coverage area, EMS operation, staffing, number and type of transport units, compensation of staff, distance to hospitals and/or trauma centers, volume of calls and methods of financing. These were conducted over the telephone over a period of about three weeks.

An interview of our EMS chief and an EMS trainer was also conducted. The author endeavored to obtain information as to why "volunteer" retention and recruitment was becoming increasingly more difficult.

Two private ambulance companies were interviewed to obtain information as to an estimated cost of operations within our community.

A meeting with our medical director was held to understand the current needs of the medical establishment.

Statistical data was collected from a variety of sources. Statistics from the EMS chief as to call volume and staffing numbers were obtained. The City auditor provided information as to the revenue and expenses of the EMS system for the last five years. The City payroll clerk provided information as to compensation rates for fire department personnel. A review of the City ordinance regarding the EMS system provided the fee schedule as well as the compensation of EMS members. Once the data was collected, spreadsheets were developed to organize the data for future reference.

Once all the information was compiled and reviewed, the next step was to organize and type the information into a formal report. Once that was complete, and then the report was assembled into a "power point" presentation. An oral presentation was presented to the OFE class in April of 2002. Final touches were made, and then the written report was presented to the Ohio Fire Executive Task Force for evaluation.

RESULTS

In an effort to identify communities that are similar to Wapakoneta, a request was sent out via e-mail to my fellow OFE colleagues for assistance. As a result, Deputy Chief Don Cooper of Cuyahoga Falls sent Table 1 to me as a result of some research done by his department. This proved to be very helpful and quite a time saver. This gave me the resource I needed to interview departments in order to determine how there EMS systems were being staffed. In addition, another colleague, Chief Alan Kinnett responded that his community, Harrison, OH, somewhat fit the profile.

Table 1.

Community	Fire Department	Population	Miles to Hosp	Chief	Station Phone
Blacklick	Jefferson Twp FD	9,518	5	William Henestofel	614-861-3757
Celina	Celina FD	10,303	11	Doug Kuhn	419-586-2127
Girard	Girard FD	10,902	5	Daniel Merwin	330-545-0857
Heath	Heath Fd	8,527	5	Mark Huggins	740-522-4585
Hubbard	Hubbard FD	8,284	6	Timothy Kyle	330-534-1582
Macedonia	Macedonia FD	9,224	9	Tim Black	330-468-8339
Mentor on the Lake	Mentor on the Lake FD	8,127	5	Robert Mahoney	440-257-7223
Pataskala	West Licking Joint Fire District	10,249	10	James Webber	740-927-8600
Pickerington	Violet Twp FD	9,792	13	Kenn Taylor	614-837-4123
Coventry Twp	Coventry Twp FD	9,870	6	David Caldrerone	330-644-3228
Sheffield Lake	Sheffield Lake FD	9,371	7	Jeff Young	440-949-8183
Tipp City	Tipp City FD	9,221	11	Steve Kessler	937-667-3112
Tipp City	Tipp City EMS	9,221	11	Mark Sensman	937-667-1680
Trenton	Wayne Twp FD	8,746	5	Randell Mainous	513-726-6769
Vermilion	Vermilion FD	10,927	6	Eugene Kropt	440-967-3977

Table 2 details the results of the various interviews conducted of the selected communities. Not all of the communities in Table 1 were selected primarily because of the distance to the hospital factor. A greater emphasis was placed on trip time because of Wapakoneta's proximity to our closest hospitals.

Table 2.

EMS Systems in small communities without a hospital
Comparison report

	Wapakoneta *Auglaize Co.*	**Celina** *Mercer Co.*	**Harrison** *Hamilton Co.*	**Heath** *Licking Co.*	**Macedonia** *Cuyahoga Co.*
Population served	15,000	19,000	10,000	8,500	13,000
Coverage area (sq. miles)	20	144	32	10	18
EMS Operation	EMS based	Fire-based County sys.	Fire-based J.D. Paramedic	Fire-based	Fire-based
# of stations	1	1	2	2	1
EMS units	2 ALS	4 ALS	4 ALS	3 ALS	2 ALS
Staffing	1 FT 11 POC	16 FT 12 POC	16 FT 27 PT	18 FT 23 PT 23 VOL.	10 FT 19 PT
Distance to hospital (miles)	11	11	17	5	5
Distance to trauma center	15	30	22	30	15
Turn around time (minutes)	90	60	120	45	45
Number of EMS calls	850	1,100	1,470	1,400	1,000
Number of fire calls	330	270	330	400	400
Financing method	Income tax (1%) Billing (hard)	Income tax (1%) Billing (hard)	Income tax (1%) Fee for non-res. Fire levy (7.0) Fire levy (J.D.)	2 Fire levies Free service	Income tax (2%) Fee for non-res. Fire levy

Table 2. (cont.)

	West Licking J.F.D. *Licking Co.*	**Violet Twp.** *Fairfield Co.*	**Sheffield Lake** *Lorain Co.*	**Tipp City** *Miami Co.*
Population served	30,700	30,000	9,400	18,000
Coverage area (sq. miles)	109	42	City only	
EMS Operation	Fire-based	Fire-based	Fire-based	EMS based
# of stations	3	2	1	1
EMS units	4 ALS	3 ALS	1 ALS	3 ALS 1 First Responder
Staffing	35 FT 24 PT 2 VOL.	30 FT 22 PT 12 VOL.	13 FT 9 PT	13 PT 13 POC
Distance to hospital (miles)	10	13	7	11
Distance to trauma center	19	17	30	15
Turn around time (minutes)	90	90	60	90
Number of EMS calls	2,650	2,000	900	1,300
Number of fire calls	780	950	100	300
Financing method	Income tax Free service Fire levy	Fire levy (7.7) Free service	3 Fire levies Free service	Income tax (1%) Billing (soft)

It became evident fairly quickly that every community examined dealt with its EMS operations a little differently. Methods of compensation and methods of generating revenue were among the greatest differences. It was also evident that most communities were dealing with increased expenditures and declining or static revenues. In the fire-based departments, there

seemed to be trend toward "automatic mutual aid" to address adequate staffing on fire calls and multiple victim EMS incidents. Most communities experience a 3-4 to 1 ratio of EMS calls versus fire related calls. There are many situations in which fire and EMS must work together on the same call.

Another trend discovered was the heavy emphasis on advanced life support (paramedic) service. Given the distances to a hospital or trauma center, this is not surprising. This gives the patient the best possible care for the "golden hour".

Maintaining staff at the station is another trend discovered. In an effort to cut the response times, staffing is maintained either through part-time or full-time staff. Much effort is required to maintain positive relationships between colleagues who are compensated on a full-time basis, part-time basis or in some cases even volunteer their time.

An interview with Lois Souder, the Public Safety Coordinator at Apollo Career Center, was conducted in an effort to gain more insights into why it is getting more difficult to recruit and retain personnel into our EMS system. Apollo Career Center provides much of the initial and refresher training for our EMS personnel. Increasing demands upon time and increased training requirements were identified as part of the problem. In addition, there are financial concerns and in some cases either organizational or personality issues. Instilling a desire for personal development and community involvement was identified as effective motivators. Addressing financial considerations and providing for the most effective use of time was also identified as helping individuals become a part of the system. On the other hand, our training facilities continue to fill its classes involving EMS training. There seems to currently be an ample supply of people interested in becoming involved in emergency medical care in a variety of environments. Skillful management and effective motivators appear to be the key ingredients.

The author attended a conference last fall sponsored by Ohio legislators in an effort to obtain information as to how the State of Ohio can help. It has been identified that recruitment and retention of volunteers in the public safety services is a national problem. It has yet to be seen as to what the State of Ohio will be able to develop but there is certainly not a lack of ideas or suggestions for consideration.

A review of the financial records related to the Wapakoneta EMS was conducted. In consultation with the auditor of Wapakoneta, Gail Walters, and the EMS director, Lynn Miller, Table 3 was produced.

Table 3.

City of Wapakoneta
Rescue Squad
Revenue/Expenditure Report

	1997	1998	1999	2000	2001
Total calls	782	803	914	824	885
Total Revenue *	$118,444.00	$124,488.00	$147,770.00	$154,863.00	$170,917.00
Total Expenditures *	$130,315.00	$132,718.00	$146,289.00	$149,463.00	$174,014.00
Over/(under)	($11,871.00)	($8,230.00)	$1,481.00	$5,400.00	($3,097.00)

* figures provided by City Auditor of Wapakoneta

In 1998, the City initiated a program of annual increases in the fees for services rendered. Table 3 seems to show that this has been effective in providing adequate funds for the operation of the EMS.

Lima Allen County Paramedics and Medcorp was contacted in an effort to obtain information as to how a private contractor would approach the service in Wapakoneta. A "ballpark" figure of $260,000 - $300,000 would be required to provide and staffs a single ALS unit. In most cases, the community's government would provide some of these funds with the balance being recovered through fees for service. The overall costs would be contingent upon how much the contractor has to provide in the way of buildings and vehicles versus how much the community would provide. Based on the information provided, their fees for service would be $150 - $350 more than the fees we currently charge. This would have a dramatic impact on those who receive these services. These fees could be reduced by the amount the City would subsidize the operation. Both companies indicated that they would most likely try to operate with only one ALS unit. Additional units would have to be provided by either the City or mutual aid from other communities.

Our current EMS director, Lynn Miller, who has been with our system since its inception in 1978, remains concerned about the future of our EMS operation. It is hard to put this diplomatically, but many of our current EMS personnel are age 50 or more and several have experienced serious health issues. Several members are "on call" in excess of 100 hours per week. The desire is to be recruiting younger members, however this has met with little success in recent years. More and more reliance is being placed on both on-duty and off-duty fire department personnel. This past year, compensation rates for the EMS personnel have been increased and compensation for required training has been established. A noticeable improvement in attitudes has been observed in recent weeks. However, if we are to maintain the current method of operation, more must be done to increase the number of personnel available for duty.

Our medical director, Dr. Michael Humphrey, has expressed his desire for us to have at least one paramedic available around the clock. In addition, he has established standards for continuing education and critical skill reinforcement. One of our primary hospitals, St. Rita's Medical Center in Lima, OH, has recently been elevated to a "level 2" trauma center. This has created additional expectations on pre-hospital care.

A cost analysis was done regarding compensation of current EMS personnel and the potential costs if the EMS were fire-based. Given the current staffing of the Fire Dept., individuals would have to "called back" to maintain adequate staffing for a second EMS call or another emergency incident. Table 4 details this analysis based upon the last three years.

Table 4.

	2001 Total calls	Avg. OT rate	OT x 2 hours	Total OT x 2	EMT rate	EMT rate x 1	Total staff costs
Primary	767	$32.15	$64.30	$98,636.20	$30.00	$23,010.00	
Backup	118	$32.15	$64.30	$15,174.80	$30.00	$3,540.00	
Mutual aid	24	$0.00	$0.00	$0.00	$0.00	$0.00	
Totals	**909**			**$113,811.00**		**$26,550.00**	**$140,361.00**

Assumptions: 2 firefighters per squad (3rd EMT from part-time staff)
2 firefighters called back in per squad run
each callback results in 2 hours overtime per firefighter
overtime rate used is an average of all firefighters
overtime rate includes pension, BWC and Medicare
does not consider overtime for required training

	2001 Total calls	EMT Rate	EMT Rate x 3	Total EMT Pay	Total staff costs
Primary	767	$35.00	$105.00	$80,535.00	
Backup	118	$35.00	$105.00	$12,390.00	
Mutual aid	24		$0.00	$0.00	
Totals	**909**			**$92,925.00**	**$92,925.00**

Assumptions: 3 part-paid EMTs per squad
does not consider standby remuneration
does not consider fulltime director's salary

Table 4. (cont.)

	2000 Total calls	Avg. OT rate	OT x 2 hours	Total OT x 2	EMT rate	EMT rate x 1	Total staff costs
Primary	706	$30.45	$60.90	$85,990.80	$25.00	$17,650.00	
Backup	118	$30.45	$60.90	$14,372.40	$25.00	$2,950.00	
Mutual aid	22	$0.00	$0.00	$0.00	$0.00	$0.00	
Totals	**846**			**$100,363.20**		**$20,600.00**	**$120,963.20**

Assumptions: 2 firefighters per squad (3rd EMT from part-time staff)
2 firefighters called back in per squad run
each callback results in 2 hours overtime per firefighter
overtime rate used is an average of all firefighters
overtime rate includes pension, BWC and Medicare
does not consider overtime for required training

	2000 Total calls	EMT Rate	EMT Rate x 3	Total EMT Pay		Total staff costs
Primary	706	$25.00	$75.00	$52,950.00		
Backup	118	$25.00	$75.00	$8,850.00		
Mutual aid	22		$0.00	$0.00		
Totals	**846**			**$61,800.00**		**$61,800.00**

Assumptions: 3 part-paid EMTs per squad
does not consider standby remuneration
does not consider fulltime director's salary

Table 4. (cont.)

	1999 Total calls	Avg. OT rate	OT x 2 hours	Total OT x 2	EMT rate	EMT rate x 1	Total staff costs
Primary	914	$29.85	$59.70	$109,131.60	$25.00	$22,850.00	
Backup		$29.85	$59.70	$0.00	$25.00	$0.00	
Mutual aid		$0.00	$0.00	$0.00	$0.00	$0.00	
Totals	**914**			**$109,131.60**		**$22,850.00**	**$131,981.60**

Assumptions: 2 firefighters per squad (3rd EMT from part-time staff)
2 firefighters called back in per squad run
each callback results in 2 hours overtime per firefighter
overtime rate used is an average of all firefighters
overtime rate includes pension, BWC and Medicare

	1999 Total calls	EMT Rate	EMT Rate x 3	Total EMT Pay			Total staff costs
Primary	914	$25.00	$75.00	$68,550.00			
Backup	0	$25.00	$75.00	$0.00			
Mutual aid	0	$25.00	$75.00	$0.00			
Totals	**914**			**$68,550.00**			**$68,550.00**

Assumptions: 3 part-paid EMTs per squad
does not consider standby remuneration
does not consider fulltime director's salary

This analysis makes clear that there would additional costs related to personnel if the EMS were operated in a fire-based mode of operation. There may be other cost factors that this research did not address.

A review of the Wapakoneta Fire Department reveals that out of the fourteen full-time personnel, 6 are basic EMTs and 2 are paramedics. Out of the fourteen auxiliary firefighters there are none with EMS certifications at this time. It will be two years before there will be additional firefighter/paramedics hired through normal attrition.

The current facilities of the Fire Department would be woefully inadequate for managing EMS. All of the space available for apparatus is filled with fire vehicles. Housing facilities are limited to five personnel per shift. Today, there are four personnel per shift with one additional firefighter during the day. As Wapakoneta is cut in half by a very active railroad line, the desire to have a second fire station on the opposite side has long been on the drawing board.

DISCUSSION

This research project was approached as a fact-finding mission. It was not the intent to find fault or place blame for any of the problems identified. In as much as it could be, this was an attempt to examine the situation in an unbiased manner. There was no preconception as to what the outcome would be.

In his paper, "Improving EMS in the City of Fostoria." Fire Chief Russell Rife states, "The effectiveness of an EMS system must be based upon more than just the bottom line when evaluating the delivery of pre-hospital emergency care. Which system will produce the best patient survival rate within the communities ability to pay is the underlying question." This could not be stated more clearly. The operation must first be evaluated upon the standards of quality patient care. The cost to a local government is only one of many factors that should be considered. Other critically important factors include response times, patient survival rates, and quality of patient care and personnel capabilities.

Can the current method of operation and staffing of the EMS in Wapakoneta meet these criteria? History tells us that it can work provided that an adequate roster of personnel is maintained. The question remains as to whether this is a realistic expectation. Recent history has also taught us that the pool of available and willing people is dwindling. An aggressive campaign of recruiting mixed with the City's willingness to continue to upgrade the financial rewards will be required to gain additional qualified personnel. The current methodology will continue to struggle with response times unless mechanisms are put into place to provide for in-house standby of personnel. This would entail providing adequate facilities and, most likely, additional compensation.

Would privatizing our EMS meet the criteria? If the community can afford the additional cost, then privatization would be a viable option. The research indicates that the cost of staffing and maintaining one unit would be significantly higher that our current cost for operating two units. There are several variables that only time would provide the information to make an adequate evaluation. Would local personnel be willing to work for a private company or would their staffing be of non-residents? How would this affect their ability to find locations in a timely manner? How often would there need to be fee adjustments in order to meet the profit margin? How will the customers accept dealing with a non-local concern? How much interaction would there be between the local government and the private company? How will multiple victim incidents be dealt with? Will the customer continue to have a choice of hospitals? The research indicates, however, that several communities have found this to be the right choice for them.

Would developing a fire-based EMS operation meet the criteria? The research indicates that many communities have found this to be a very effective mode of operation. Fire-based operations tend to benefit from the unified control and clear, unquestioned command structure at the scene. Fire stations tend to be placed strategically with response times in mind.

Cross training of personnel is not very difficult as fire and EMS skills work together in many emergency incidents. The nature of firefighting is such that the basic EMT level of training is considered a necessity in many communities. The ability to use this training on a regular basis enforces the motivation to maintain the requirements.

Combining two revenue streams into one operation has enhanced the cost-effectiveness in many situations.

Fulltime firefighters tend to work at least twenty-five years due to the pension system. Many volunteer and part-time EMS personnel tend to serve shorter terms. The longevity rates of private EMS personnel are typically shorter.

Adding additional personnel to the fire department in order to effectively staff the EMS operation has a side benefit of providing for greater safety in firefighting operations.

As with most situations, there also some disadvantages to consider. There may be less time available for certain maintenance issues that the fire personnel are currently conducting. There may be an increase in on the job injuries and increased liability. Fire personnel taking on a new responsibility should be given additional compensation. Some of the current EMS personnel may not be willing to function under new management.

As with most issues, nothing is as simple as a collection of facts and figures. The human equation must be considered and can sometimes create variables that are difficult to predict. While we may have the patient's best interest at heart, the attitudes and behaviors of the personnel involved vary as circumstances and the work environment changes. While, intellectually, we may understand that "change is constant and part of life", emotionally it can be very unsettling. Many people have invested a lot of themselves since 1978 to make our current system work. Many of our EMS personnel would not want to cross train as firefighters and vice versa. Many of our older firefighters did not take on their roles with EMS as part of the equation. The current method of operation did not develop overnight and should not be expected to make major adjustments overnight.

The distance to the hospitals creates issues for us. The average turn-around time (the time from the call for service until the EMS unit is back in serve ready for another call) for an EMS call is ninety minutes. This places the City in a weakened position for a longer period of time than many other communities. Given the call volume (1200 –1300 call per year), the need to maintain adequate staffing is paramount. Once the community becomes accustomed to a 3-4 minute response time, there will be no going back.

RECOMMENDATIONS

The purpose of this research was to determine ways in which the EMS of Wapakoneta will be adequately staffed. After a careful review of the data, information and options available, I would suggest that the City utilize a two pronged approach. First, an aggressive campaign should be conducted to recruit additional "intermittent" employees for the EMS system. The research strongly indicates that it is too soon to declare that all our resources have been exhausted. Secondly and simultaneously, a plan should be developed to convert the EMS to a fire-based operation within the next five years. This would entail developing a detailed cost analysis of the impact of the increased staffing and additional housing and how additional revenues to cover these costs could be attained.

As additional housing space would have to be created, and the city is in need of resolving the issue of having the town cut in half by a busy railroad, it is further recommended that a second fire station be built on the east side of the railroad. This would provide satellite housing for fire, EMS and possibly law enforcement.

An additional six full-time firefighter/paramedics would need to be added to adequately staff the EMS and two stations. However, additional part-time or paid-on-call firefighter/paramedics would need to be maintained to ensure adequate staffing around the clock. In the short term, existing non-cross trained personnel could be utilized. In the long term, it would be desirous to develop a complete staff of cross-trained personnel. One additional administrative person should be added to assist with the tremendous paperwork load that both the fire and EMS service generate.

Contracting with a private service does not appear to be a very good option at this time. The need to make a "profit" would create additional costs in an already expensive business. This research indicates that government can and does operate an EMS in a cost-effective manner as long as there are people willing to serve. Wapakoneta is a growing, vibrant community that has the potential for developing its emergency services personnel for the indefinite future. Our citizens appreciate the ability to work with local officials for its basic services.

Providing quick, professional pre-hospital care in a cost effective manner is at the very core of this research project. As leaders and managers, we must consider all the various aspects of this issue. Are we utilizing are human, financial and capital resources to its best advantage? Are our patients receiving the best possible care for the overall cost? Research indicates that there may be deficiencies within the single-role EMS operation compared to utilizing cross-trained firefighters. Citizens expect a system that works in the field, not just on paper. We therefore must consider the issues of response time, personnel capabilities and system efficiency if we are going to make informed, positive decisions about a critical service for our community.

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