

DEVELOPING AN ALS SERVICE DELIVERY PROGRAM
FEASIBILITY STUDY

Executive Leadership

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ABSTRACT

The problem was that, while the Palomar Mountain Volunteer Fire Department wanted to examine the potential for implementing an Advanced Life Support (ALS) service delivery program, it could not find sufficient information regarding how to determine the feasibility of implementing an ALS service delivery program, hampering its efforts to ascertain the feasibility of its providing ALS services to the community.

The purpose of this paper was to identify some of the issues that should be included in an Advanced Life Support service delivery program feasibility study.

Employing descriptive research methodology, the researcher attempted to answer the following questions:

- 1) What are some of the Issues that should be examined when considering implementing an Advanced Life Support program?
- 2) What are some of the issues that should be considered which suggest that implementing an Advanced Life Support program is feasible?
- 3) What are some of the issues that should be considered which suggest that implementing an Advanced Life Support program is infeasible?

The principle procedures included a review of books, journals and Internet sites containing information pertinent to organizational development, change management, fire service agency organization, fire department leadership, and governmental statistical analysis, as well as dissemination and analysis of a fire and government organizational survey.

Recommendations resulting from this research included:

1. Assessing current response capabilities.

2. Assessing the reasons for the lack of volunteer ALS service providers within San Diego County.
3. Assessing the costs associated with an ALS services provision.
4. Assessing community and organizational interest in an ALS service delivery program.
5. Assessing the decision-making process that will be used to determine whether or not to institute an ALS service delivery program.

Recommendations also included examining the potential for: instituting advance care procedures that do not require ALS certification and/or utilizing alternative ALS service providers, utilizing volunteers for ALS service delivery, developing sources of funding commensurate with the costs of employing paid ALS service providers, determining the PMVFD's ability to meet mandated staffing requirements.

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INTRODUCTION

Nestled amid the Cleveland National Forest, the Palomar Mountain Volunteer Fire Department (PMVFD) had for many years relied upon medical helicopters to ferry paramedics to the scene of a medical emergency. Subject to the caprices of mountain weather, helicopters proved unreliable on numerous occasions and, relative to the cost of ground ambulances, expensive as well. When, in 1999, the County of San Diego included the community of Palomar Mountain in a newly formed operating area for paramedic services, PMVFD Emergency Medical Technicians (EMT) began to routinely summon Advanced Life Support (ALS) services, which would arrive by ground ambulance, stationed some thirty minutes away.

However, as the demands for ALS services began to grow, the PMVFD took notice of a growing number of instances, in which the arrival of ALS services was delayed, oftentimes owing to the large geographical area included in the paramedic ambulance's operating area. These delays prompted the PMVFD to begin examining the feasibility of implementing its own ALS service delivery program. The problem was that, while the Palomar Mountain Volunteer Fire Department wanted to examine the potential for implementing an ALS service delivery program, it could not find sufficient information regarding how to determine the feasibility of implementing an ALS service delivery program, hampering its efforts to ascertain the feasibility of its providing ALS services to the community.

The purpose of this paper was to identify some of the issues that should be included in an ALS service delivery program feasibility study. Employing descriptive research methodology, the researcher attempted to answer the following questions:

- 1) What are some of the Issues that should be examined when considering implementing an Advanced Life Support service delivery program?
- 2) What are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is feasible?
- 3) What are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is infeasible?

BACKGROUND AND SIGNIFICANCE

In its master plan, the Palomar Mountain Volunteer Fire Department (PMVFD, 2000) identified five significant goals, the accomplishment of which the department deemed critical to the fulfillment of its mission: (1) increase its daily staffing; (2) increase its operating budget;(3) reduce response times; (4) lower the community's risk rating as defined by the Insurance Services Office (ISO), and; (5) adopt a comprehensive disaster preparedness plan (p. 5-10).

With regard to goal number (3), the stated desire to reduce response times included an assumption that the PMVFD would accomplish this goal with sufficient resources of a type appropriate for the emergency. In other words, in the instance of a medical emergency, the department envisioned reducing the average amount of time it took to arrive on the scene with paramedics if the particular emergency required ALS services.

The significance of examining the feasibility of implementing an ALS service delivery program took on even greater proportions when the Department considered the issue in light of the decision making skills explicated in the National Fire Academy's

Executive Leadership curriculum, particularly with regard to its admonishment against falling prey to “Groupthink” (Federal Emergency Management Agency [FEMA], United States Fire Administration [USFA], National Fire Academy [NFA], 2000, p. SM 3-4).

Additionally, when the Department looked beyond the horizons of its own particular circumstances, it also acknowledged its desire to follow the recommendation of the United States Fire Administration's (United States Fire Administration [USFA], National Fire Academy [NFA], 2001) fourth operational objective: "To promote within communities a comprehensive, multi-hazard risk-reduction plan led by the fire service organization." (p. II-2).

Desirous of achieving the goals established by its master plan and taking up mantle of an organization responsive to the needs of its community as defined by the USFA et al., the PMVFD concluded that it should at least examine the feasibility of implementing an ALS service delivery program as a way of reducing community risk to health related problems that can be exacerbated by delayed ALS intervention. Because the department could not find sufficient guidance to determine the feasibility of implementing such an ALS service delivery program, the researcher took to the task of determining some of the issues that the PMVFD should reasonably include in an ALS service delivery program feasibility study. The department considered this effort important for the following reasons: (1) implementation of an ALS service delivery program might prove the most effective means by which to reach response time goals; (2) the potential implementation of such a program implied the need for critical decision-making skills, which, according the National Fire Academy's Executive Leadership curriculum, suggested that the department's leadership should apply proven decision-

making skills; (3) and, by embracing the fourth operational objective promulgated by the USFA et al., the PMVFD could develop a more comprehensive community-wide risk-reduction plan that included ALS service delivery.

LITERATURE REVIEW

The literature review provided information from which to develop a solution to the research problem. This review focused on developing answers to the three research questions: what are some of the Issues that should be examined when considering implementing an Advanced Life Support service delivery program; what are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is feasible; and, what are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is infeasible?

What are Some of the Issues that Should be Examined When Considering Implementing an Advanced Life Support Service Delivery Program?

Because the PMVFD had heretofore not provided ALS services, it considered the provision of such services as constituting a new program, implying that the organization contemplated undergoing significant change. Apropos of organizational change, Roberts (2001) described several attendant challenges that the PMVFD could expect to encounter should it decide to implement an ALS service delivery program. These challenges included: an increase in the scope and volume of operating activity; an increase in the range and complexity of organizational tasks; and, an increase in the number and variety of people within the organization (p.1).

Roberts (2001), however, did not just confine to the organization his analysis of the challenges beget by growth; in fact, the bulk of his treatise centered on the changes caused by growth to the tasks of the organization's leadership. In this regard, Roberts defined three key elements of the leader's responsibilities, which included strategy and operations, organization, and staff (p.p. 2-3), and then described the art of fitting these elements together, along with the right people to which to delegate necessary tasks. To help organizational leaders craft a proper fit among these elements, particularly in an environment rife with change, Roberts recommended employing three techniques, which he termed: Anticipating, Acting and Reviewing (p. 7). Roberts defined the three techniques in the following manner (p. 7):

Anticipating- the practice of developing sales and financial forecasts, marketing and operating plans, policies and procedures, and job descriptions.

Acting- the practice of dealing with unanticipated consequences of change, along with confronting those situations that were deferred until such time as they had developed enough to be adequately assessed.

Reviewing- the practice of learning everything possible in order to apply it to the next round of events, as well as to reward (or punish) individuals who were a part of the change effort.

By applying each of the three techniques to each of the three key elements, leaders would gain, at least according to Roberts (2001), the ability to asses the degree of fit between them (p. 8).

To the degree that decisions regarding feasibility contain an element of rightness and wrongness, the following quote by McFarlin and Sweeny (2002) provided at least

the semblance of an objective standard by which to determine the feasibility of implementing an ALS service delivery program: “In defining what makes a good decision, many aspects come to mind, but certainly one would have to include features such as quality, timeliness, and acceptance” (p. 117).

With regard to quality, McFarlin and Sweeny (2002) clearly stated that an unwanted outcome does not necessarily indicate that the decision-making process was flawed. In fact, they even went so far as to state that arguing the merits of a decision by its outcome, while tempting though it may be, can lead the analysis of the decision-making process astray (p. 117). They did not, however, provide an unequivocal definition for “quality.”

Contrastingly, McFarlin and Sweeny (2002) did provide concrete definitions for “timeliness” and “acceptance.” According to them, timeliness refers to making a decision within a useful time frame, while acceptance implies that a good decision can be understood and accepted by those involved (p. 118).

Specifically with regard to implementing ALS services, Sachs (1997) recommended, as the first step, assessing the opinion of the organization’s membership:

The best place to start when determining how to upgrade from BLS to ALS is right at home. A most important step you can take is to generate the support of the troops--the firefighters who will be providing the service. They have a powerful voice, since they meet the public every day where the service upgrade will make a difference. A motivated firefighter’s

impact can be tremendous; when an entire department shares a vision or goal, the job is much easier (Electronic Version, ¶ 2).

Sachs (1997) also recommended determining the collective opinion of the organization's governing body and constituency (Electronic Version, ¶ 2-3) before embarking upon any new ALS services.

Perhaps speaking to the most basic issues, Rodenberg (2003) posed the question of whether all emergency medical service (EMS) providers should be ALS qualified:

We need to scientifically address the very difficult and emotional issues from which lesser souls shy away. Do ALS services make a difference? Does everyone in EMS need to be an ALS provider? Are there any dangers in an all-ALS world? (Electronic Version, ¶ 4).

Rodenberg (2003) continued by challenging the ubiquitous notion that ALS level services saves more lives than basic life support (BLS) level services:

A close examination of the literature indicates prehospital efforts can be proven to save lives in only two situations: the provision of electrical therapy to patients with pulseless cardiac arrhythmias (ventricular fibrillation, pulseless ventricular tachycardia) and the provision of airway management. (One might make a case for EMS systems preventing trauma deaths, but it seems that prehospital care only prevents death from injury as part of a system with designated trauma-receiving facilities. The

advantage to individual patients lies in airway management, as previously noted. In air-transport services, the main advantage is simply the speed to transport to the receiving hospital).

Despite this limited database, we can certainly make a case for the provision of EMS care. But note that neither electrical therapy nor airway management is exclusively the province of ALS services in this new millennium, and certainly the success of electrical therapy is more dependent on response times than anything else (Electronic Version, ¶ 6-7).

Rodenberg (2003) also cited several quintessentially ALS level skills which modern technology has now made available to BLS service providers, including the administration of epinephrine via auto-injectors, intubation via laryngeal mask airway (LMA) devices, and the non-invasive administration of bronchial dilating medications (Electronic Version, ¶ 9, 11).

Additionally, Rodenberg (2003) proffered the idea that, because new technology has blurred the once traditional line between ALS and BLS, perhaps a new class of EMS provider (one that is authorized to use technology to provide ALS without first becoming an ALS provider) is called for. He also contended that if various state laws governing the provision of EMS unified under a national standard, such class of EMS provider would already exist (Electronic Version, ¶ 15).

Lastly, Chiaramonte (2002) provided a laundry list of issues that should be addressed when considering the implementation of new emergency medical services.

This list included: Level of EMS service currently provided; level of EMS service desired by the community; current and future EMS load in the community; level of service that your department can provide; available equipment that can be used to adequately provide the service; personnel needed to provide the service; time requirements of providing such a service; and, available financial resources (Electronic Version, ¶ 4).

What are Some of the Issues that Should be Considered Which Suggest that Implementing an Advanced Life Support Service Delivery Program is Feasible?

Several authors spoke to the saliency of the decision-making process in determining an organization's strategic direction. Coleman (2000) warned against succumbing to the impulse to hedge against undesirable consequences by exhaustively ferreting out all conceivable pertinent facts, no matter how trivial, to the point where an organization ceases to make decisions. This syndrome of decision-delaying techniques Coleman termed "Analysis-paralysis." (electronic version, ¶ 4).

In their article, *What You Don't Know About Making Decisions*, Garvin and Roberto (2001) presented their case for designing and managing a sound, effective decision-making process, which they termed "Inquiry." (p. 110). They described inquiry as "...an open process designed to generate multiple alternatives, foster the exchange of ideas, and produce a well-tested solution." (p. 110). They disfavored inquiry's antithesis, which they termed "Advocacy," portraying it in the following manner:

When a group takes an advocacy perspective, participants approach decision making as a contest, although they don't necessarily compete openly or even consciously... Participants are passionate about their

preferred solutions and therefore stand firm in the face of disagreement. That level of passion makes it nearly impossible to remain objective, limiting people's ability to pay attention to opposing arguments. Advocates often present information selectively, buttressing their arguments while withholding relevant conflicting data (p. 110).

Additionally, Garvin and Roberto warned that people will likely "...drag their feet," (p. 114) if they sense that the decision-making process amounts to more than an exercise in going through the motions designed to validate the leader's preferred solution.

According to FEMA and the USFA (1998), trust plays a central role in enabling a fire department to implement new programs:

By gaining the trust of the citizens and the decisionmakers, the chief will be able to bring forward new programs and needs that are considered objectively. The public will trust the judgment of the chief, and will be willing to help facilitate the needed change (p. 21).

However, in large measure, the degree of trust between the community and its fire department is predicated on the fire department's efforts to understand the community's expectations:

In the future, every fire service organization will have to work to identify customer needs, and then do everything possible to meet those needs. This will not be simply a fad and then fade; it will become an expected

level of performance. Anything less will not be tolerated by the customer. In short, serving the community through effective, quality customer service will be an essential part of the fire service (FEMA and USFA, 1998, p. 21).

Neubauer (2003) echoed the theme of building client centered relationships in order to create an environment conducive to evolving services, citing five precepts which he considered critical to the organization's success. He termed the five precepts: surround yourself with good people; invest in them; listen to them; align culture and mission, and; keep your commitments (Electronic Version, ¶ 1).

Specific to EMS, Ludwig (2001), stated that all EMS delivery systems must have the following components:

Management. A management team must be in place to administrate the system. Clear lines of responsibility/authority need to exist and effective communications need to exist. System managers and leaders need to maintain the "system" perspective at the same time they are dealing with more focused issues.

Human resources. These are the people who actually make the system work on each call. Regardless of system structure, the goal is to recruit, educate and retain EMS personnel in sufficient numbers to provide service throughout the system that meets the performance standards agreed to by the community and the providers. These providers then need to be appropriately dispersed throughout the system and utilized efficiently.

Communications center. The public should have access to the communications center by using 911. The communications center should have the capability to provide pre-arrival instructions and priority dispatching. Common radio frequencies and equipment need to be in place so that system resources can talk to each other.

Money. The goal of any EMS system is a careful balance between quality care and response-time standards and operational efficiency. While it would be wonderful to park a paramedic-staffed ambulance on every street corner, it is extraordinarily expensive. Alternatively, it would be inappropriate to have unacceptable levels of mortality and morbidity in the system. A balance that is “right” for the community must be sought out and achieved.

Medical direction or protocols. Effective EMS systems provide a role for the physician EMS medical director. The physician is involved in many aspects of the operation from establishing the clinical standards of care to the performance improvement process and continuing education (Electronic Version, ¶ 11).

Additionally, according to Ludwig (2001) the National Fire Protection Association (NFPA) has set consensus standards by which fire departments should adjudge the efficacy of their EMS delivery system. For career departments, the NFPA 1710 standard requires the ability to get EMS resources on the road within one minute of the receipt of an alarm and the arrival of those EMS resources within four minutes, ninety

percent of the time. Specific to ALS services by career departments, the NFPA 1710 standard requires an eight-minute total response time to 90% of all incidents with at least two paramedic level trained responders. For volunteer agencies, the NFPA 1720 standard applies, which standard does not specify response time responses, licensure levels or staffing criteria for medical emergencies (Electronic Version, ¶ 7-12).

Focusing on the financial obligations attendant to providing ALS services, Evans (2002) proffered the idea of creating fire department positions for physician assistants, who could then bill for services rendered while at the same time providing expanded scope pre-hospital care along with in-service training to department members. Evans suggested that such a program would have particular saliency in rural areas, from which drive times to hospitals often complicate medical emergencies and for which typical clinical procedures such as suturing could be provided in the field (Electronic Version, ¶ 9-16).

With regard to local requirements, the San Diego Division of Emergency Medical Services (1999) established the following response time standards for transport ALS providers:

Transport ALS Responder:

Urban/Suburban 10 minute response, 90% of the time.

Rural 30 minute response, 90% of the time.

No response time standard was provided for non-transport ALS providers (p. 78).

Apropos of response times, the Task Force on Fire Protection and Emergency Medical Services (2000) established maps of drive times for numerous fire agencies within San Diego County. According to their assessment of the area served by the Palomar Mountain Volunteer Fire Department, all locations lie within a 20 minute drive-time of the Department's station (p. 30).

What are Some of the Issues that Should be Considered Which Suggest that Implementing an Advanced Life Support Service Delivery Program is Infeasible?

In his article, *Why Transformation Efforts Fail*, Kotter (1995) argued that organizational change proceeds through a series of definitive steps, and that making any one of eight critical mistakes amid stride threatens disastrous consequences for the entire change effort. (p. 59-60). Kotter's eight mistakes included: not establishing a great enough sense of urgency; not creating a powerful enough guiding coalition; lacking vision; under communicating vision by a factor of ten; not removing obstacles to the new vision; no systematically planning for and creating short-term wins; declaring victory too soon, and; not anchoring changes in the corporation's culture. (p. 59-67). Underscoring the significance of mistake number one, Kotter stated that unless 75% or more of an organization's management believed in the necessity for change, serious complications would crop up later in the process. (p. 62).

Staffing represents a particularly salient issue, particularly for volunteer organizations considering adding new services. Wilson (2002) stated that the fire service has seen a twenty percent drop in the number of volunteer firefighters and continues to see a two to three percent drop in volunteer firefighters each year (p. 1).

Specific to the nexus between adequate staffing and the provision ALS services, Schaeffer (2002) reported on volunteer staffing shortages in the Echo Hose Company's ALS ambulance service, which prompted the Connecticut Department of Health and the Shelton EMS Commission to investigate the Echo Hose Ambulance for coverage gaps compromising ALS services to city residents (Electronic Version, ¶ 1-4).

Additionally, the San Diego Division of Emergency Medical Services (1999) requires those agencies wishing to provide ALS services to do so on a continuous, twenty-four hour basis (p. 366), placing additional challenges on volunteer organizations.

Literature Review Summary

The literature review provided valuable insight into the three research questions. Sources examined for information regarding some of the issues that should be examined when considering implementing an advanced life support service delivery program included Roberts (2001), who described several potential challenges to organizational change, including potential difficulties faced by the organization's leader and Sachs (1997) who recommended several strategies for implementing ALS services designed to meet the challenges inherent to organizational change.

McFarlin and Sweeny (2002) provided guidelines for the decision-making process that should be included when determining the future of an organization, while, specific to the implementation of ALS services, Sachs (1997) recommended steps to take when determining whether or not to upgrade from basic life support services to advanced life support services.

Rodenberg (2003) posed the question of whether or not all EMS providers need to be ALS qualified, while proffering the idea that technology has now made it possible for basic life support providers to provide advanced level care.

Lastly, Chiaramonte (2002) provided a laundry list of issues that should be included in any assessment of whether or not to provide new emergency medical services.

Sources examined for information regarding some of the issues that should be considered which suggest that implementing an advanced life support service delivery program is feasible included Coleman (2000), Garvin and Roberto (2001) and McFarlin and Sweeny (2002), who provided guidance for the decision making process itself, which guidance would tend to make the implementation of organizational change more feasible.

FEMA and the USFA (1998) emphasized the need for trust between a community and its fire department in any effort to implement new programs, which point of view Neubauer (2003) echoed.

Ludwig (2001) explained some of the standards for EMS delivery systems, which if met, lend safety, effectiveness and credibility to the providing agency, while Evans (2002) offered a unique approach to meeting the financial obligations attendant to providing advanced life support and other services traditionally reserved for the clinical setting.

Finally, the San Diego Division of Emergency Medical Services (1999) established response time standards for transport ALS providers while the Task Force on Fire Protection and Emergency Medical Services (2000) provided drive times of area

served by the Palomar Mountain Volunteer Fire Department, which tended to fit the requirements promulgated by the San Diego Division of Emergency Medical Services.

Sources examined for information regarding issues that should be considered which suggest that implementing an advanced life support service delivery program is infeasible included Kotter (1995), who explained why efforts at organizational change often fail. Wilson (2002) provided evidence of the difficulty faced by volunteer fire departments in meeting staffing requirements, which issue Schaeffer (2002) chronicled in his article about the Echo Hose Company ambulance.

Lastly, the criticality of the staffing issues was underscored by the San Diego Division of Emergency Medical Services (1999), who requires those agencies wishing to provide ALS services to do so on a continuous, twenty-four hour basis.

PROCEDURES

Literature Review

The literature review targeted general circulation books, trade journals, magazines, textbooks and Internet sites containing information pertinent to organizational development, change management, fire service agency organization, fire department leadership, and governmental statistical analysis.

Survey

A survey (Appendices A and B) was developed to assist the author with analyzing the three research questions: what are some of the issues that should be examined when considering implementing an Advanced Life Support service delivery program; what are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is feasible; and, what

are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is infeasible?

The author developed this survey, which he then disseminated to thirty-three (33) fire departments within San Diego County. The total population for this study of thirty-three (33) agencies represented approximately fifty-two percent (52%) of the estimated sixty-four (64) fire agencies within San Diego County (incorporated and non-incorporated areas of the county), and one-hundred percent (100%) of the fire agencies comprising the fire protection and emergency services network in the non-incorporated areas of San Diego County.

Statistical Analysis

The author relied on descriptive statistics to calculate and interpret the data generated from the survey. The author reported the raw numbers and associated percentages.

Assumptions

The author assumed that the respondents answered each question honestly. Additionally, the author assumed that fire agencies serving the unincorporated portions of San Diego County were more similar to the Palomar Mountain Volunteer Fire Department with respect to funding, governance and current service provision than were municipal fire agencies serving incorporated areas of San Diego County.

Limitations

For purposes of this study, the author did not forward surveys to city fire departments within San Diego County.

Definition of Terms

Advance Life Support (ALS): a level of emergency medical service provision that includes invasive procedures such as intra-venous (IV) therapy, subcutaneous (SubQ) injection, endo-trachial intubation along with advanced cardiac care.

Basic Life Support (BLS): a level of emergency medical service provision that includes non-invasive procedures such as cardiac external defibrillation, wound dressing and in some cases, blind intubation (endo-trachial airway device or ETAD).

Emergency Medical Services (EMS): that grouping of medical procedures originally developed by the United States Department of Transportation (DOT) intended to provide life-saving medical care in the pre-hospital setting; and which now includes pre-hospital medical procedures approved by authorized local and state oversight agencies for pre-hospital care.

Reflex Time: the amount of time between receipt of an alarm and when the agency begins its actual response to that alarm. Reflex time usually includes the amount of time it takes for responding personnel to don appropriate gear and take their positions in the responding apparatus. For non-staffed stations, reflex time also includes that amount of time it takes for responders to arrive at the station from other locations.

RESULTS

Nineteen (19) questionnaires were returned for a response rate of 58%. Tables 1 and 2 (below) display the statistical analysis of the survey:

Table 1

Statistical Analysis of Agency Questionnaire: Agency Profile

Agency	Annual Budget	No. Stations	Budget/Station	Reflex Time (min)	% Volunteer	ALS
Volunteer 1	\$5,000.00	1	\$5,000.00	10	100%	No
Volunteer 2	\$8,000.00	1	\$8,000.00	5	100%	No
Volunteer 3	\$150,000.00	1	\$150,000.00	Not Provided	100%	No
Volunteer 4	\$40,000.00	1	\$40,000.00	1	100%	No
Volunteer 5	\$36,000.00	1	\$36,000.00	2	100%	No
Volunteer 6	\$30,000.00	1	\$30,000.00	9	100%	No
Volunteer 7	\$18,000.00	1	\$18,000.00	2	100%	No
Combination 1	\$1,300,000.00	1	\$1,300,000.00	1	66%	Yes
Combination 2	\$1,000,000.00	2	\$500,000.00	1	63%	Yes
Combination 3	\$1,000,000.00	12	\$83,333.33	3	60%	No
Combination 4	\$8,700,000.00	6	\$1,450,000.00	1	43%	Yes
Career 1	\$2,100,000.00	1	\$2,100,000.00	1	0%	Yes
Career 2	\$1,500,000.00	1	\$1,500,000.00	1	0%	Yes
Career 3	\$1,300,000.00	2	\$650,000.00	1	0%	Yes
Career 4	\$6,600,000.00	5	\$1,320,000.00	2	0%	Yes
Career 5	\$6,000,000.00	4	\$1,500,000.00	2	0%	Yes
Career 6	\$4,700,000.00	3	\$1,566,666.67	2	0%	Yes
Career 7	\$13,000,000.00	7	\$1,857,142.86	1	0%	Yes
Career 8	Not Provided	1	Not Provided	3	0%	Yes

Table 1 (agency profile) describes each agency with regard to its annual budget, number of stations, budget per station, reflex time, percentage of volunteer staff and whether or not the agency provides ALS services.

None of the seven volunteer agencies listed in Table 1 provide ALS services; 3 out of 4 combination agencies provide ALS service, while 100% of career agencies provide ALS service.

Agency budgets ranged from a low of \$5,000 per year to a high of \$13 Million per year. Because some of the agencies utilize more than a one station in their service delivery, Table 1 also describes the annual budget per the number of stations. The lowest amount per station is \$5,000 and the highest is \$2.1 Million.

Reflex time varied widely, as table 1 depicts, with the longest reflex time at 10 minutes for a volunteer agency and the shortest reflex time at 1 minute for a career agency. No agency providing ALS had a reflex time of over 3 minutes.

The percentage of volunteers utilized by each agency varied from between 0% and 100%. The percentage of volunteer staff utilized by the combination agencies ranged from a low of 43% to a high of 66%. Because none of the agencies responding to the questionnaire stated that they relied upon volunteers to provide ALS, the assumption can be made that those combination agencies which do provide ALS services rely exclusively upon career members to provide it.

Analysis of agency budgets per station revealed that every agency providing ALS services had a budget per station of greater than \$100,000.

Table 2

Statistical Analysis of Agency Questionnaire: Type of Staffing

Type of Agency	No. of Agencies	ALS	BLS	Vol. ALS Providers?
Volunteer	7	0	7	No
Career	8	8	0	No
Combination	4	3	1	No

Table 2 (above) describes the type of agency (volunteer, career or combination) with regard to the type of EMS it provides (ALS or BLS) and whether or not they rely upon volunteer personnel to provide ALS service.

None of the agencies responding to the questionnaire utilize volunteers to provide ALS services.

DISCUSSION

The questionnaire and resulting statistical analysis attempted to reveal information that would be salient to the development of an ALS service delivery program feasibility study conducted by the Palomar Mountain Volunteer Fire Department.

Because reflex time would be included in an assessment of an agency's overall-response time, and because the San Diego Division of EMS has established minimum response times, at least for ALS transporting agencies, an assessment of reflex time would have bearing on an agency's ability to provide ALS services. All of the agencies that provide ALS services had a reflex time of 3 minutes or less.

Of note was the fact that no volunteer agency currently provides ALS services and that, of the combination and career agencies that do provided ALS services, none of them utilize volunteers to provide that level of emergency medical care. When viewed in light of the fact that 100% of the combination agencies which provide ALS services have an annual budget per station of at least \$100,000, this fact would seem to indicate the saliency of including in an ALS service provision feasibility study the likelihood of successfully utilizing volunteers to provide ALS services.

The question of whether or not volunteers can be utilized to provide ALS services gains particular importance in light of Wilson's (2002) assertion that the fire service has seen a twenty percent drop in the number of volunteer firefighters and continues to see a two to three percent drop in volunteer firefighters each year (p. 1); as well as Sachs's (1997) admonition that any investigation into newly proposed EMS services begin with an assessment of the program's acceptance among the organization's members. However, if Rodenberg's (2003) supposition holds true (that not all EMS providers need

to be ALS qualified in order to provide definitive pre-hospital care), then perhaps at least some form of advance care could be provided by volunteer providers.

Alternatively, given the fact that none of the agencies listed as providing ALS services rely on volunteers to provide that level of EMS, the issue of developing a funding source commensurate with the cost associated with paid positions becomes particularly relevant to an ALS service feasibility study. Developing any such funding mechanism would require significant support from the community, bringing into sharp focus the role that trust could play in enabling the Palomar Mountain Volunteer Fire Department to implement a new program, as explicated by FEMA and the USFA (1998).

The statistical data revealed that no volunteer agencies within San Diego County provide ALS services, and that of those combination and career agencies which do provide ALS services, none do so utilizing volunteers for the provision of such ALS services. This fact would seem to place great emphasis on the need for closely scrutinizing the decision-making process that would be employed to determine whether or not to implement ALS services. And, while Coleman (2000) warned against seeking perfection prior to making a decision, Garvin's and Roberto's (2001) template for effective inquiry as a method for making decisions could provide the PMVFD with a methodology by which to conduct objective inquiry into the feasibility of providing ALS services. Given the statistical data, which could be interpreted as indicating that volunteer agencies are unlikely to be able to provide ALS services, the importance of developing a sound decision-making process takes on additional saliency.

RECOMMENDATIONS

Several recommendations arise from this research. Firstly, pursuant to the first research question, what are some of the Issues that should be examined when considering implementing an Advanced Life Support service delivery program; the Palomar Mountain Volunteer Fire Department should assess the following issues:

1. Current response capabilities, including reflex and drive times to determine the potential for complying with San Diego County Division of EMS response requirements.
2. The reasons for the lack of volunteer ALS service providers within San Diego County.
3. The costs associated with ALS services provision, including volunteer and paid positions.
4. Community and organizational interest in an ALS service delivery program.
5. The decision-making process it will use to determine whether or not to institute an ALS service delivery program.

With regard to the second research question, what are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is feasible; the Palomar Mountain Volunteer Fire Department should carefully examine the potential for instituting advance care procedures that do not require ALS certification, with a possible view toward implementing a program that utilizes alternative advanced care and/or alternative advanced care providers such as physician assistants. The PMVFD should also assess the feasibility of developing

revenue enhancements based on service delivery charges designed to pay for the costs associated with such alternative programs.

With regard to the third research questions, what are some of the issues that should be considered which suggest that implementing an Advanced Life Support service delivery program is infeasible; the Palomar Mountain Volunteer Fire Department should carefully consider its ability to recruit, train and retain volunteers willing to undergo ALS training. In this same vein, the Department should assess its ability to develop sources of funding commensurate with the costs of employing paid ALS service providers. Lastly, the PMVFD should assess its ability to meet staffing requirements set forth by the San Diego Division of Emergency Medical Services.

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APPENDIX A**Letter Accompanying Agency Questionnaire**

Dear Fire Service Professional:

As part of a research project for the National Fire Academy, and to help the Palomar Mountain Volunteer Fire Department provide better service to the community, I'd like to ask you a few simple questions pertaining to the development of an ALS service program feasibility study.

The questionnaire should take less than 5 minutes to complete and information regarding Department identity will not be divulged.

If you would, please complete the questionnaire and return it by mail to:

Karl Bauer

PO Box 91

Palomar Mountain, CA 92060

Thank you!

Karl Bauer

Fire Chief

APPENDIX B

Agency Questionnaire

Agency Name:

1. Is your agency (circle one): Career Combination Volunteer

2. What is your annual budget? _____

3. How many stations do you have _____

4. How many paid positions _____

5. How many volunteers/reserves _____

6. Does your agency provide ALS? Yes _____ **No** _____

8. What is your agency's average reflex time _____ **min**

9. Please provide the following:

	Firefighters	Firefighter (or Officer)/Paramedic
Paid:	_____	_____
Volunteer:	_____	_____