INTRODUCTION

By definition, the term volunteer means “without pay.” Thus, a volunteer EMS system is one in which the EMS personnel are not paid.\(^1\) There are a multitude of different types and combinations of EMS systems as noted by both the 2006 Institute of Medicine report and the EMS Agenda for the Future.\(^2,3,4\) The issues associated with each EMS system can be significantly different between urban and rural, fire service and third service, or paid and volunteer. Being the medical director of a volunteer EMS system can be a very rewarding experience, but it does present some unique challenges. Indeed, volunteer EMS systems are very different from career, paid systems for many reasons. These differences include education, quality management, system planning and evolution, funding, and medical oversight. One of the greatest distinctions between volunteer and paid systems is the people (see Chapter 37, “Volunteers”).

The mere mention of the term “volunteer” automatically evokes a picture of an EMS system in a rural environment. It is true that most volunteer systems exist outside of urban settings. However, volunteer services are not exclusively confined to rural communities. Studies have indicated that approximately 75% of providers in rural areas are volunteers, as are 30% in urban areas.\(^3\) Some urban systems employ volunteers in the same way that some rural areas pay for EMS personnel.\(^5\) Data suggest that EMS volunteers care for 25% of the U.S. population, although the numbers of volunteers continue to decrease.\(^4\) The objective of this chapter is to describe the issues unique to volunteer EMS systems in order to optimize prehospital emergency care.

EDUCATION

One might incorrectly assume that the initial education for all EMS personnel throughout the United States is identical for each level based on the Department of Transportation national standard curricula for EMT-Basic, EMT-Intermediate, and EMT-Paramedic. But this is not the case, because many states have not yet adopted these standards.\(^3\) Consequently, there is significant variation from state to state.\(^2\) But even if the initial didactic training is identical, the same cannot be said about field experience in a volunteer EMS system. As already noted, 75% of providers in rural areas are volunteers. Thus, volunteer systems often have low annual patient call volumes. This translates into a decreased number of patient encounters during the field portion of the initial training program. In addition, the low patient volumes further decrease the number of exposures to low-volume, high-risk skills such as endotracheal intubation (ETI), intraosseous catheterization, cardioversion, needle thoracostomy, needle cricothyrotomy, and surgical cricothyrotomy.

A significant training problem for EMS volunteers is getting them to advanced levels. The ability to commit time and energy is the overriding factor, as most states require over 1,000 education hours to obtain paramedic-level certification. For this reason, volunteer EMS systems are less likely than paid systems to function at the paramedic level.
Wang noted that in the state of Pennsylvania in 2003, the median annual number of ETI performed by EMS professionals was only one (range, 0–23). Of 5,245 rescuers, more than 39% (2,054) had not performed any ETIs, and more than 67% (3,551) performed two or fewer ETIs. Paramedic students in the United States are required to perform only five ETIs before graduation based on the national standard paramedic curriculum. This figure contrasts with higher numbers recommended for residents in emergency medicine (35 ETIs) and anesthesiology (25–50 ETIs). Research data examining learning curves for anesthesia residents suggests that for learning ETI, a minimum number of 27 is recommended. The numbers are even more concerning for pediatric procedures. In one urban study, ALS providers averaged pediatric intubation 0.3 times and intraosseous access 0.06 times per provider per year.

Once initial training is completed and the individual is certified, skills maintenance and continuing education are an ongoing challenge. Low patient volumes have the potential to result in degradation of critical care skills over time. Some authors have particular concerns regarding skills decay of ETI in EMS agencies with low call volumes. Yet, in the study by Jemmett et al., paramedics serving urban and suburban areas did not perform ETI significantly better than intermediate-level providers serving areas that were more rural.

Nevertheless, the American Heart Association (AHA) guidelines have suggested that advanced life support (ALS) providers should have “regular field experience,” defined as 6 to 12 intubations per year, as a prerequisite to maintain the skills necessary to perform endotracheal intubation. Based on a study by Burton et al., rural providers rarely use ETI skills, particularly in pediatric patients. So if AHA intubation guidelines are to be followed in rural settings, then only a small number of EMS providers will meet these AHA requirements. Furthermore, research data from the state of Pennsylvania suggests that limiting ETI to rescuers with at least 5, 10, and 15 ETIs per year would result in a relative reduction in statewide ETI of 32%, 79%, and 93%, respectively.

In contrast to most career professionals, volunteers usually work less than 40 hours per week performing EMS duties, and they typically have other primary paying jobs. Thus, the problems of recurrent exposure to critical situations and skills are compounded. On-duty time is reduced or limited and the rate of cases per period of duty is lower than in urban communities. This means that continuing education for volunteers may require more frequent hands-on skills review every 3 or 6 months, instead of the standard 48 months recommended by some.

Providing continuing education within a volunteer system can be a significant challenge. Coordinating schedules of people with other jobs and careers and helping them dedicate 24 to 36 hours each year to maintain their credentials can be a considerable task. This time commitment has been identified as a deterrent to both recruitment and retention of volunteers. Furthermore, some authors suggest that experience is more important than the number of hours in a classroom. Thus, in volunteer systems where patient volumes are low, providers should log their calls and create a portfolio of their skills. In this way EMS providers can map their field experiences (or lack of cases) so one can better determine their training needs.

To help reduce time commitments as barriers to continuing education and volunteer service, online educational projects have gained widespread acceptance. Among other advantages, they provide volunteers with opportunities to fulfill educational requirements at times convenient for them. For paid, career EMS personnel, increased knowledge through education is often associated with possibilities for promotion and advancement and the accompanying economic advantages. For volunteers, the incentives are not economic, but instead are based on giving back to the community, internal satisfaction, and most importantly, improved patient care. These distinctions can be important to acknowledge when designing educational experiences that are engaging and motivating.

Both the paid and volunteer EMS professionals’ primary goal is improved patient care. Yet, for the paid EMS professional repeatedly failing to administer aspirin to chest pain patients may eventually have employment consequences. Volunteers typically do not have these risks. They require other methods to help encourage and convince them to change their behavior. Understanding the intrinsic motivation that drives volunteers to continue their EMS activities is crucial. Incorporating such an understanding in educational offerings is important for the success of attempts to improve care through changing behaviors and practices of volunteer EMS providers.
QUALITY MANAGEMENT

There are many issues unique to quality management in a volunteer system. Volunteer EMS systems in rural areas may lack efficient 9-1-1 operations. In fact, the availability of 9-1-1 is not yet universal in the United States, and enhanced 9-1-1, providing automatic number and location identification, is available even less widely. Thus, dispatch processes can be adversely affected as incident locations are deciphered. In some areas, rural route numbers and post office boxes, which are of little help to emergency responders, are still in use as mailing addresses.

Even before 9-1-1 is called, significant delays can occur in discovering emergency situations. Take for example the time required to discover a motor vehicle crash on an infrequently traveled rural road. This delay may be the single largest contributor to prolonged response times and subsequent arrival of trauma patients at an appropriate hospital. One study in rural Missouri determined that only 39% of calls alerting EMS came within 5 minutes of the collision, compared with 90% in urban study areas. In a study by Bailey et al., only 27% of public safety answering points (9-1-1 centers) were capable of providing wireless enhanced 9-1-1. In the same study, it was estimated that the cost to upgrade one state to provide wireless enhanced 9-1-1 service to be as high as $20 million.

The same issues of lower patient volumes and recurrent experience that affect educational needs also influence quality management. As mentioned above, low call volumes can result in erosion of complex skills. This can directly affect the quality of patient care provided and the need to monitor certain conditions and interventions. Many volunteer EMS systems still use a paper-based, noncomputerized ambulance call reporting system. These noncomputerized patient medical records make data collection and analysis difficult. This, in turn, can add difficulty to monitoring the system and identifying and addressing important issues.

Among the most important quality management issues for volunteer systems is recruitment and retention of personnel. Not having sufficient personnel to staff a shift or drive the vehicles can be a very real problem, rendering a service unable to respond when a 9-1-1 dispatcher requests an ambulance. These failures to respond are often incorrectly captured within the system as mutual aid requests. Thus, it is important to differentiate mutual aid requests that are due to failure to respond, as opposed to a need for additional resources because of multiple needs in a given area. Over-reliance on mutual aid agreements to ensure an adequate EMS response results in significant delays in ambulance response times and arrival to definitive care.

Failure to respond is not a new issue or problem, but one that has been addressed in many different ways by many different volunteer systems. One approach to address this issue is to improve recruitment and retention through educational scholarships offered to EMS volunteers. A study by Bajez in Santo Domingo noted that salary and work hours were important factors for paid providers, whereas occupational health and life insurance appear to affect volunteer satisfaction. Other authors suggest that pension programs may benefit volunteer retention. Another strategy that has been successful is paying personnel when volunteers are typically unavailable, such as daytime hours when volunteers are working their paid jobs or on weekends.

Many believe that recruitment and retention of volunteers is a difficult process. Data from Margolis et al. suggest that the volunteer rates of EMT-Paramedics and EMT-Basics have been relatively stable from 1999 to 2005 at 3% and 30%, respectively. This would suggest that new volunteers replace retiring ones. Although this may be true nationally, all EMS professionals know of systems that have gone from completely volunteer to completely paid. Others believe that the main cause for retention issues in volunteer systems is one of management not meeting the needs of its members, and not empowering its members to perform to their highest level. Undoubtedly, many factors, often personal and specific to the individual volunteer, come into play. Some volunteers, having acquired valuable credentials through commitment to education, transition themselves to career paid EMS professionals. See Chapter 39, “Recruitment and Retention” for further information about recruitment and retention of EMS personnel.

TRANSITION/EVOLUTION

As volunteer manpower decreases, at least relative to needs, EMS systems turn to career staffing to supplement or replace existing systems. Staffing shortages, increased response times or service failures, inadequate ALS personnel, and increased supervision or administrative tasks have been reported as the main
reasons to hire paid staffing. Transitions from an all-volunteer system to one with career staffing can be internally contentious for both paid and nonpaid staff. It can also result in external controversy with effects on public perception and the politics of local government. The opinion of the medical director should be valued and sought on this topic. A safe, defensible stance is one of patient advocacy, continuing to strive for consistent, professional quality medical care regardless of provider employment status.

Various permutations exist among all volunteer systems and full-time paid career systems. Integrated crews consisting of paid and nonpaid staff on the same ambulance are one such example. Paid staffing may also be provided by a second agency such as a fire department, when necessary. Career crews may supplant volunteer crews entirely during identified times of high demand or low volunteer staff availability such as daytime or weekend shifts. Medical oversight should be applied as a standard. Both types of providers should be included in quality management and improvement programs. Every effort should be made to ensure that availability and content of all education and training is equitable between the two groups.

Yet the most difficult aspects of transitioning from a fully volunteer to a fully paid system are the discussions, arguments, and confrontations over funding. Indeed, the costs can escalate by a factor of 10 or more when volunteers disappear and are replaced by paid career personnel.

**FUNDING**

The major difference in the cost of operating a volunteer EMS agency compared to other types of agencies is the lower cost of manpower. Personnel costs usually comprise approximately 75% of annual costs at an average EMS agency. The considerable savings associated with volunteer services provide a major inducement to retain volunteer services in communities that lack the resources to fund a career agency or to contract with a private entity.

Direct funding for volunteer agencies comes in the form of budgeted support from government entities or from billing for services. The latter form of funding is often controversial among volunteer EMS providers who are interested in continuing to provide free medical care and transportation for the members of their communities. Volunteer agencies frequently rely on local fundraising activities like auctions, raffles, and barbeques. Fund drives, including mass mailings to request donations and direct appeals to area businesses and select benefactors, also occur. In addition to gaining financial support, this facilitates outreach and education regarding the agency and its activities within the community.

A survey of state EMS directors in 2003 found that as many as 45% of rural EMS agencies, many of them volunteer, would be classified as financially unstable. However, financial viability that enables maintenance of a building with comfortable accommodations and upkeep of modern vehicles can play a role in job satisfaction and retention of personnel. Acquisition and maintenance costs for medical equipment are another concern. Cardiac monitors with 12-lead transmission capability, waveform capnography, positive pressure airway systems, and automated CPR compression devices can be expensive technologies when incorporated into patient care protocols. The financial burden of these technologies should be weighed against their potential benefits when protocol revisions will affect a financially strapped agency. Advancement to higher levels of care, such as intermediate to paramedic, can be a financial hardship on many volunteer agencies. One must consider the cost of education associated with provider level advancement as well as the costs to implement new technologies and care.

**MEDICAL OVERSIGHT**

Medical oversight of volunteer EMS systems presents a number of challenges that may not be specific to volunteers, but may occur with increased frequency and complexity than noted with other system types. One significant issue for volunteer EMS systems is a lack of sufficient economic resources to pay for medical oversight. Medical directors are then faced with the challenge of providing the time required for proper medical oversight while maintaining their responsibilities at their primary employment. This time balance is obviously not foreign to the volunteer provider. Good communication in the forms of continued identification of needs for education and quality improvement, responsiveness to time-sensitive concerns, and occasional “face time” on scenes or crew quarters is the minimum effort necessary to retain a positive working relationship with many volunteer agencies.
An important issue is the independent spirit of EMS volunteers that may affect the relationship with a visionary medical director. In many cases the precedent has been for "rubber stamp" medical direction. Change rarely comes easy, nor is it automatic in any EMS system, including those perpetuated by volunteers, just because the medical director has expertise or vision. Whether the volunteer agency is part of a fire service-based system or not, to overcome 200 years of tradition unimpeded by progress requires good communication. Understanding motivations that drive volunteers to continue their EMS activities is crucial. Being part of the culture is invaluable. Patient-centered education, supported by outcomes information, is a key.

Another significant issue facing volunteers and rural systems is difficulty in recruiting EMS medical directors. Knott et al. surveyed EMS directors and identified specific medical oversight concerns as follows: recruitment of medical directors, the EMS medical directors’ applicable qualifications, and a lack of involvement in squad activities, quality improvement, provider training and education, and indirect medical oversight. Many of these issues are directly addressed in formal medical director training programs available through NAEMSP or state-level organizations. This type of training, along with diligent attention to the current EMS literature, is therefore recommended for all EMS medical directors regardless of their prior EMS experience or residency training.

**SUMMARY**

There is significant variation in the type and quality of EMS provided. As noted, EMS systems staffed largely by volunteers often have highly variable levels of expertise by virtue of training and experience. There are many unique challenges facing volunteer EMS systems, which will continue for years to come. To be the medical director of a volunteer EMS system can be very rewarding in the sense of pride and accomplishment in helping highly motivated and spirited people do good work that is vital for the community. Understanding the unique challenges presented in these volunteer systems is crucial for the medical director’s success in enabling the best possible EMS system and excellent prehospital emergency care.

**REFERENCES**


