University of Cincinnati TEMS: A RESIDENT PHYSICIAN EXPERIENCE

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The intense physical demands, as well as the dangerous nature of the situations SWAT teams are called into, put team members at risk for injury during both training exercises and missions.[1] Additionally, a significant rate of injury among bystanders and perpetrators has been reported during tactical operations.[2] This makes the proposition of having TEMS immediately available during tactical training and missions desirable. In addition to providing care to the injured, TEMS can be useful in the mission planning stage by forming a plan for the medical stabilization and evacuation of casualties to definitive medical care.

Medical support can also be instrumental in assisting with team health surveillance and preventative medicine. TEMS can also be useful in coordinating operator rehabilitation and fitness surveillance during extended missions. Additional roles include planning for and monitoring environmental issues that would affect an operation, such as weather and temperature; assessing hazardous materials issues that could affect mission safety; and monitoring the medical and mental status of suspects or hostages during negotiations. Overall, TEMS can be an invaluable asset to a tactical team, contributing to the successful completion of the team mission.

TEMS CONFIGURATIONS

There are several models for the provision of medical support to tactical teams, each with unique advantages and disadvantages.[3] A frequently used model is that of "tactical 9-1-1," characterized simply by calling for an ambulance in the event of a medical emergency during a tactical operation.[4] This strategy is sub-optimal for several reasons, including slow response times, variable capabilities of responders and requiring responders to enter areas that have not been secured. Another model for providing medical support for a tactical team is to have a tactical officer with medical experience perform this function. While there are many advantages to this approach, designating a tactical officer as the one responsible for medical care removes that officer from the mission objective if a medical emergency occurs. Additionally, appropriate medical training can require a significant time commitment.

The Newark Model has also been described for the provision of medical support to a tactical teams.[3] This model utilizes a three-person team to coordinate the treatment and evacuation of patients and facilitate communication between the tactical and medical elements of the operation. The team is composed of paramedics, nurses and physicians, all with EMS experience. This is an attractive system in that it brings high-level medical expertise close to the site of the tactical operation. However, medical team members do not operate in the hot zone of an active engagement, which could delay potential lifesaving care for the most severe and time sensitive injuries.

Another common model requires a licensed paramedic to obtain additional training or certification in order to be qualified to provide medical care in the tactical environment. This can be an effective model as it results in the availability of trained medical specialists to provide care for the tactical team, and can help develop a long-term affiliation between medical providers and SWAT. Yet there may be significant logistical barriers to establishing such an arrangement, including financial compensation, insurance and benefits for paramedics.

Ultimately, the best model for any tactical team depends on that team's available resources and the specifics of its operating protocols and environment.

PROGRAM DEVELOPMENT

The mission statement of the University of Cincinnati TEMS team "is to provide exceptional medical support to all SWAT and Special Response Team functions, provide tactical emergency medicine education to these teams and the greater Cincinnati area, and be a medical resource for the law enforcement community." The first TEMS team for the Cincinnati Police Department SWAT team was comprised of one University of Cincinnati Department of Emergency Medicine attending physician, serving as the medical director, and two tactical officers who were also paramedics.

As the team grew, EMS personnel from the Cincinnati Fire Department were recruited to help provide medical support. There were two major obstacles to this arrangement. The first was difficulty agreeing on an appropriate compensation model. There were no funds available to provide the paramedics overtime similar to what the law enforcement officers were receiving. The second obstacle was that the fire department leadership was uncomfortable with paramedics being seen in a law enforcement role. This resulted in an opportunity for the University of Cincinnati Emergency Medicine residents to become more involved. Residents first began working with the Cincinnati Police SWAT team in 2002. It started with one resident attending team training exercises. As he became familiar with the team, its equipment and tactics, he began providing medical support during tactical operations. As additional residents were recruited to the team, a standard for training team members needed to be codified.

TEMS TRAINING

Tactical medicine requires a combination of skills including the ability to rapidly evaluate and care for critically ill and injured patients in a low resource prehospital environment. A broad medical knowledge and ability to address routine medical complaints is also invaluable. Emergency medicine physicians, because of their critical care training and experience addressing all manner of medical complaints, are uniquely positioned to excel in this field.

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UC's emergency medicine residency program's intensive curriculum provides the appropriate medical training to prepare team members to work in the TEMS environment. Residents apply for team membership after starting

their second year of residency. Those seeking team membership submit a statement of interest that is reviewed by the attending medical director, the resident assistant medical director and law enforcement leadership.

The applicant must pass a physical fitness test, which is based on the U.S. Army's physical fitness test. Maintenance of a strict physical fitness standard is important to prevent TEMS providers from becoming a liability while operating in the rigorous tactical environment. Applicants passing the fitness test then complete a police department weapons training course. The goal of this course is to familiarize every team member with the variety of weapons used by the officers. Trainees must pass the police department firearms qualification drill to join the team.

Recruits then attend a team orientation delivered by the medical directors designed to prepare them to provide care in the unique environment of a tactical operation. The orientation includes a review of the basic principles of tactical medicine and simulation of cases that have been encountered by previous team members. Once these steps are accomplished, each new member must complete at least three team missions with a more senior member of the team. This allows members to gain practical experience operating with the team before completing missions as the sole medical provider.

Once training is complete, new recruits are typically six to eight months into their second year of residency education. By this time, they have completed rotations in the pediatric, medical and neurocritical care intensive care units, and on the trauma and orthopedic surgery services. Additionally, they have completed several months as the procedural specialist in the Emergency Department. This role requires them to perform all critical procedures including intubations, chest tubes, central lines, and assisting with medical and traumatic resuscitations. This training prepares team members for the emergencies they are likely to encounter in the prehospital tactical setting. The second year of training is also when residents become flight physicians for Air Care, the University of Cincinnati's helicopter medical transport service. This affords residents significant experience delivering prehospital care as approximately 40 percent of transports are directly from accident scenes. Additionally, all team members work as an assistant medical director for an EMS agency prior to joining the team in order to gain familiarity with EMS and learn to work efficiently within the prehospital system.

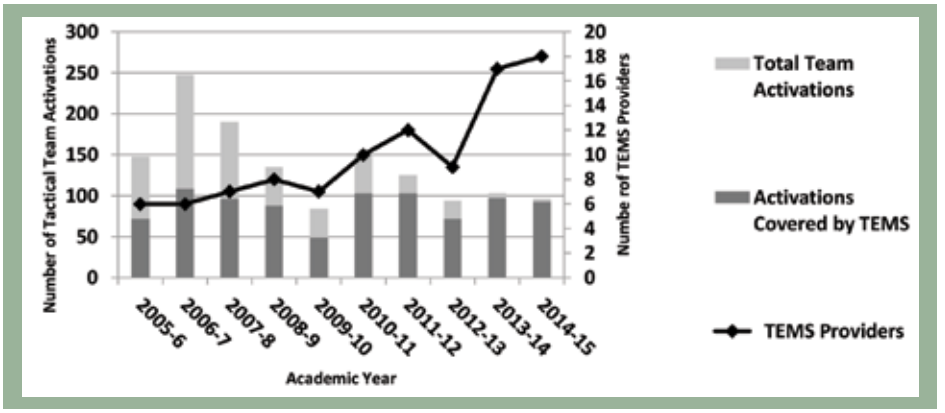

Figure 1. Team activations with a physician provider present compared to total team activations. "TEMS Providers" line shows total number of physicians on the team during each academic year.

One of the unique aspects of this TEMS team is that it is staffed and administrated primarily by resident physicians. The program also provides an opportunity for EMS fellows to gain experience in the field of tactical medicine. Currently there are 16 resident and two attending physician team members. One attending physician also serves as medical director. Principal duties of this role include working with and advising the resident assistant medical director in carrying out administrative duties for the team, training and ultimate approval of new recruits, coordinating medical training for law enforcement officers and working to secure funding to support the team. Additionally, the medical director is always available to provide advice and oversight to residents during tactical operations.

As the program is designed to provide resident physicians a robust tactical medicine experience, the goal is for residents to cover as many team activations as possible. For the 2014-15 academic year, residents covered 86 percent of TEMS team activations. The opportunity for physicians in training to participate in tactical medicine is invaluable to encourage further growth of the specialty of tactical medicine.

TEAM OPERATIONS

Typically, there are two circumstances in which the TEMS team is activated. The first is emergency activations for an unplanned crisis such as a barricaded suspect or hostage-taker. The second is planned search warrants. Physicians are notified of team activations through the same telephone notification system as officers. They then communicate with one another through an email chain to determine who will deploy with the team.

For emergency activations, the first available physician alerts the

TEMS team of his or her intent to cover the activation, then immediately rendezvous with the tactical team. For planned warrants, a physician is assigned to each operation within 30 minutes of notification of the warrant. Depending on circumstances, multiple physicians may deploy with the team. Using this system, we have provided a physician for 64 percent of call outs over the last 10 years (Figure 1). With an increase in the number of participating residents, we have been able to provide a physician for 95 percent of team activations over the past two years.

During tactical team activations, TEMS team members wear the official police department battle dress uniform and are outfitted with all necessary safety and medical equipment (Figure 2). Physicians wear protective gear including level IV body armor and a ballistic helmet. They also carry a radio and headset in order to communicate with the team. Additionally, physicians carry a load-bearing vest and backpack with medical supplies necessary to perform emergent lifesaving procedures and provide basic life support. Included are tools for airway management and endotracheal intubation, cricothyrotomy, needle decompression of pneumothorax, finger thoracostomy and pericardiocentesis. Also available are supplies for wound care and minor wound repair, as well as tourniquets and wound packing material for control of severe hemorrhage.

Typically, the physician responds to the warrant with the team and stages in the area where a threat exists but is not direct or immediate while the officers complete the tactical mission. Only under rare circumstances is the physician required to enter the area of direct and immediate threat. If the mission requires a TEMS member to enter the hot zone they are escorted by members of the tactical team.

Medical providers are unarmed during team activations. The pros and cons of arming TEMS providers have been previously discussed.[6,7] Our team believes that by keeping medical providers unarmed, we are able to avoid certain legal hurdles, insurance issues and perceived ethical dilemmas. To ensure the safety of the TEMS provider during team operations, an armed tactical officer is assigned to their protection at all times.

Once the tactical objectives of the mission are complete, TEMS members are sometimes called upon to evaluate suspects or bystanders with medical complaints. Having medical support available to perform this function has the potential to limit liability to the law enforcement agency and foster goodwill within the community, particularly in the event of a serious injury. Even for low acuity complaints, the availability of immediate medical evaluation for individuals being taken into police custody has the potential to prevent the increased resources, cost and risk to public safety associated with officer-supervised transport of suspects to an emergency department for evaluation.

Figure 2. Medical and protective equipment carried by TEMS providers during team activations.

KEYS TO SUCCESS

In developing a successful TEMS program, there are many financial and administrative issues that must be addressed. Identifying a source of funding to pay for medical supplies and equipment, protective equipment for TEMS team members, and financial reimbursement for team members is critical. Important administrative considerations include the determination of how medical liability coverage and insurance against injury during duty will be provided for the TEMS team. Another important consideration is the delineation of how the TEMS team will function within the command structure. It is prudent to document in writing how these issues will be addressed.

The University of Cincinnati TEMS program administrative protocol and memorandum of understanding between the Cincinnati Police Department and University of Cincinnati Division

of EMS address each of these issues. All safety equipment for medical providers, including body armor and helmets, is provided by the law enforcement agency. The TEMS team receives a yearly stipend, generously provided by the Department of Emergency Medicine, which covers the cost of medical equipment. Resident physicians work the majority of the hours needed to provide medical support to the team, as this is one way for them to fulfill the EMS-associated learning goals of emergency medicine residency training.

The TEMS team provided a total of 921 hours to cover SWAT team activations, training and administration in the 2014-15 academic year. Seventy-six percent of the hours were worked by emergency medicine residents and 24 percent of the hours were worked by EMS fellows or attending physicians. Professional liability coverage and insurance for the residents is covered by the hospital at which they train. Finally, the TEMS program memorandum of understanding identifies the TEMS team as being a resource for the tactical commander, responsible for providing advice on medical matters. The tactical commander is responsible for all decisions regarding the law enforcement operation and how to best accomplish mission objectives.

Another critical action in the establishment of a TEMS program is to successfully integrate the medical providers into the tactical team. The UC team accomplished this by requiring the TEMS team participate completely in all team activities including physical fitness training, firearms training and tactical exercises.

Each team member must demonstrate the ability to meet the physical fitness and firearms qualification standards annually in order to remain on the team. Requiring the TEMS members to meet the same physical fitness standard as law enforcement officers helps to demonstrate their commitment and reinforces the notion that everyone is a part of the same team. Requiring TEMS members to participate in firearms and tactical exercises familiarizes them with the weapons and tactics of the tactical team and helps to reassure officers that the TEMS team is able to operate in the tactical environment and deliver care when the need arises.

CONCLUSION

There are many advantages to this model of TEMS, which has been used effectively in the Cincinnati area for more than 14 years. It results in the availability of highly medically trained professionals to provide immediate medical aid. Providers are trained to enter unsecured sites of operation if needed to provide time-sensitive care. All team members have experience as prehospital care providers and can work with local EMS to facilitate transport of patients by ground or helicopter, or coordinate care during a hazardous materials or mass casualty event.

The providers practice at the regional level I trauma center and can facilitate care coordination and communication with the site of definitive care. This is particularly beneficial in cases of serious traumatic injury. This is also a relatively low-cost program, as there are few recurring expenses. The major barrier to instituting a program like this would likely be availability of a sufficient number of providers. It requires a group of highly trained physicians willing to commit a significant amount of time to provide adequate availability during team activations and training.

One of the unique aspects of this system is that it is a resident-led team. The residents have priority for covering all team activations, and are responsible for the coordination of new member recruitment and training. Despite the potential difficulties of implementing this model of TEMS, it is an effective and desirable option for any program that has the appropriate resources available. ■

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