



Tactically trained medical personnel are a critical element in SWAT operations.

First AID

Lawrence E. Heiskell, M.D., FACEP, FAAFP

The scene is a fixture in many war movies. A wounded soldier cries out, "Medic!" then another soldier, one who carries a medical kit and not a weapon, crawls out from his foxhole and braves the fury of a firefight or an artillery barrage to render aid to his wounded buddy.

Medics and corpsmen have been officially assigned to American Army and Marine units since World War I. And with good reason.

Research shows that 90 percent of all battle deaths occur in the field, prior to any medical intervention. In a landmark review of wounds and death in battle, retired Army colonel Ronald F. Bellamy noted that many combat deaths were potentially preventable, including deaths caused by blood loss from extremity wounds, deaths caused by tension pneumothorax, and deaths caused by airway obstruction.

The lessons of Bellamy's research were not lost on the U.S. military. They also haven't been lost on American law enforcement agencies, as many now have medically trained personnel attached to SWAT teams.

Seconds Count

Before 1989, there existed great diversity in the way in which emergency medical care was provided during law enforcement tactical operations. Most law enforcement agencies relied on regular civilian EMS providers who staged at a safe location removed from the area of operation. Some simply called 911 to request paramedics when officers or civilians were wounded.

From an operational standpoint, these agencies were taking advantage of an established pre-hospital care system. It made sense.

Medically speaking, however, this practice left a lot to be desired. The first five minutes are critical in the care of a seriously wounded person. So the time that it took to transport wounded officers to safe areas for treatment could often lead to tragic results.

Today, more and more police tactical teams have added emergency medical personnel. For example, some have trained full-time SWAT officers as EMTs or paramedics. Others have trained medical personnel in tactical police operations.

Principles of Tactical Medicine

Tactical medical care can be provided by EMTs, paramedics, registered nurses, mid-level providers (such as physician assistants and nurse practitioners), or even physicians who serve on police tactical teams. The tactical medic's level of training will determine what actions he or she can take in the field. For example, mid-level providers and physicians traditionally have training in advanced surgical and medical procedures beyond what is normally allowed for traditional EMS personnel.

Regardless of the tactical medic's professional standing, he or she will quickly learn that medical care in a tactical environment can be extremely challenging.

Traditional EMS doctrine maintains

that when a tactical medic is participating in the operation, care can generally be rendered to the victim in a more timely manner.

However, it should be understood that both traditional EMS and tactical EMS have their place. Tactical medics

cannot carry all the equipment into the field that a traditional paramedic has access to in his or her vehicle.

Access to equipment is just one of the

is to assist a tactical team in accomplishing its mission. This is achieved primarily through team health management, which means keeping the tactical team members healthy before, during, and after operations.

One of the duties of a tactical police

Most law enforcement agencies once relied on regular civilian EMS providers who staged at a safe location removed from the area of operation.

medic is to make sure that each member of his or her team maintains the conditioning necessary for effective SWAT deployment. A comprehensive plan of proper nutrition and exercise must be established and maintained.

SWAT conditioning should include a balance of aerobic exercise, anaerobic exercise, and stretching. Cardiovascular workouts such as running or swimming are excellent for cardiovascular fitness. Circuit weight resistance training is excellent for strength training, but it must be a total body workout. Many tactical operators train some parts of their bodies, but ignore others. This can lead to buff-looking operators who aren't really as fit as they seem, and it can result in injuries.

In addition to his or her role as conditioning coach, the team medical officer essentially becomes the family physician for the tactical unit and should be prepared for this role. Regardless of his or her professional qualifications, the team medic will likely become the medical advisor for his or her tactical unit.

The tactical medic should be prepared to act in this capacity because it is one of the greatest benefits that he or she can provide to the team. As medical advisor, the tactical medic can foster better team health overall. He or she can persuade officers to maintain their health with regular physical exams and treatment where appropriate. Smoking cessation, alcohol and drug counseling, and stress management are also health issues that the team's medical officer is in position to address.

In his or her role as team "physician," the tactical medic is well advised to take a cue from other medical providers and



Maintaining and knowing medical records on team members allows a tactical medic to effectively render aid in the field.

that rescuer and scene safety are first priorities, and that patient care is a secondary concern. What sets tactical EMS apart from standard EMS is the ability to render immediate care in the operational area.

When a SWAT team relies on traditional EMS personnel to provide medical care and an operator or civilian is acutely injured during the mission, the EMS unit must wait until either the victim is brought out to a safe area or until the entire scene can be secured by law enforcement before moving to the pa-

limitations faced by tactical medics. They also must work under difficult and potentially fluid conditions. For example, a tactical medic may have to render aid to a wounded officer or civilian while maintaining light or sound discipline.

Team Health Management

Although rendering aid under combat conditions is what most officers envision when they think about the role of tactical medics in law enforcement, such actions are really only part of the job.

The primary goal of tactical medicine

keep detailed records. Records should be stored for a minimum of 10 years. This is both for benefit of the patient and the protection of the medic. Such records have proven to be indispensable as defense documents in several anti-police liability lawsuits. Without a medical record, there is no proof that appropriate medical care was given to the team members.

Medical Threat Assessment

One of the most important duties of the tactical medic is to create a formal medical threat assessment (MTA) for each training and operational deployment. A typical MTA includes consideration of issues such as environmental conditions, fatigue, nutritional issues,

Tactical Medics and Weapons Handling

Tactical medics have to be more than just emergency medical personnel; they have to be tactically aware and well versed in the weaponry used by their teams.

Tactical medics can be sworn officers whose primary duties are as an operator on the unit or they can be medical professionals who work with the team. Either way, tactical medics are going in harm's way, and they should be qualified to carry arms so they can protect themselves.

Even if your medic is a civilian who is not permitted to carry a weapon during your operation, he or she needs weapons training. One of the duties of a tactical medic is to take charge of an officer's weapon when his condition requires that he be disarmed. For example, if the officer becomes disoriented, he may become a danger to himself and anyone around him if he is left in charge of his weapon. In this case, the medic needs to take charge of all of the officer's weapons and render them safe.

A tactical medic should be familiar with every handgun, shotgun, rifle, submachine gun, assault rifle, chemical launcher, and less-lethal weapon used by his or her team. All tactical team members, whether providers or not, should be able to use any weapon a team member carries and render it safe.

Injuries From Breaching Charges and Flash-Bangs

When developing a medical threat assessment for his or her team, a tactical medic should consider not just the threats presented by the bad guys but also injuries that can occur from the use of SWAT tools, including breaching and distraction charges.

Before each mission, the medic should consult with the team's breaching expert regarding the types of explosives he plans to use and the blast forces that may be encountered.

Some of the medical problems that can be caused by flash bangs and breaching explosive even when they are used properly include:

- Burns, both minor and major.
- Smoke-induced bronchospasm.
- Vestibular dysfunction.
- Transient visual disorientation.
- Emotional upset and anxiety.
- Eardrum rupture has not been reported in general use, but it is possible.



Tactical medics can render aid while still in the operational area, saving valuable time for injured officers. Traditional EMS personnel would need time to get there and to have the scene secured before reaching the patient.

plant and animal threats, and a plan for extrication and transport of patients.

Medical intelligence should be gathered prior to or during the mission. This assessment includes details such as who is involved, ages of those involved, medical history, background, any pre-existing medical conditions, geographical location, and even the weather.

The MTA is not just essential for the tactical medic's operations; it is also a critical tool for the team commander as he plans the mission.

SWAT commanders consider information from many sources when they create a tactical plan for a mission, including manpower, building layouts, street layouts, support equipment, nature of the mission, available weaponry, and the

reliability of the sources of intelligence. The team medic's assessment should be part of this analysis and planning.

It is the responsibility of the tactical medic to provide a concise and accurate medical briefing to the commander. Medical threat assessment forms should be used on every mission to ensure a systematic approach to the assessment process because only a systematic approach ensures complete assessment of the situation. ☉

Lawrence E. Heiskell, M.D., FACEP, FAAFP, is a practicing emergency physician, a reserve police officer, and a tactically trained SWAT team physician with the Palm Springs (Calif.) Police Department, as well as a member of the POLICE Advisory Board.



EQUIPPING *the Tactical* MEDIC

Weight, bulk, and the medic's level of medical training must be considered when stocking his or her kits.

**Lawrence E. Heiskell, M.D., FACEP, FAAFP
and Bohdan T. Olesnicky, M.D.**

The tactical medic must be able to effectively carry equipment and be able to operate in a tactical situation without hindering the rest of the team. So he or she must decide what items and tools will be carried into the field and what equipment will be left in a vehicle or in a larger kit.

In general, medics carry two sets of medical equipment. One set is carried for immediate care, typically worn in a small backpack or load-bearing vest. The second set is carried in a larger backpack or duffel bag in the support vehicle.

Here's a guide to what gear, solutions, and tools should be in each pack.

Personal Protective Equipment (PPE)

Universal precautions against infectious diseases must be used by tactical medics. Masks, eye protection, gloves, and perhaps even gowns must be considered. The basics for protection should be carried on the medic's person in an easily accessible location.

For example, some medics don surgical gloves underneath their shooting gloves prior to an op-



Each member of the tactical unit should carry a “self help kit” with medical supplies. This Personal Supply Module reduces the equipment carried by the medic and allows team members to help themselves.

at least basic EMT certification, a BMM could be used by any team member to provide initial care to a victim. The BMM should have basic splinting material and dressing material.

Basic airway tools such as nasal airways and a pocket mask should be included. A bag valve mask or more compact alternative is advisable in the tactical environment. A simple bag-valve mask alternative device (BVMAD) can be constructed out of respiratory supplies to combine a one-way valve, flexible tubing, and mouthpiece. This is the preferred ventilatory device in the tactical environment, as it allows a rescuer to provide ventilation without unnecessary bulk.

Oxygen rarely is useful in the immediate tactical environment, so leave

A tactical medic must be proficient in both firearms handling and administering medical aid under less than ideal circumstances.

eration so they will be ready if the need arises. Although not sterile, the surgical gloves do provide protection from body fluid-borne pathogens.

Personal Supply Module (PSM)

To reduce the equipment carried by the medic and so that the team members can help themselves, each member of the tactical unit should carry a “self help kit” with medical supplies.

A typical personal supply module is

vacuum-sealed and contains supplies for basic trauma care and for IV access. Vacuum sealing these contents provides protection from the elements. It also cuts down greatly on bulk, but adds some weight.

Basic Medical Module (BMM)

In addition to a PSM, a Basic Medical Module (BMM) should be carried by team medics. Since every team member on a tactical unit should have





While medics carry a set of equipment for immediate care on their person, a more extensive bag of supplies that often includes an AED and a collapsible litter is usually kept in the support vehicle. The BlackHawk Products Group S.T.O.M.P. II medical bag, pictured above, can be used for either purpose.

the O₂ cylinders in the support vehicle with a regular BVM that can be retrieved when necessary. An automated external defibrillator (AED) should also be carried in the support vehicle. A small collapsible litter for extrication of a downed person should be a part of every BMM.

Intermediate Medical Module (IMM)

Paramedics and registered nurses can use the equipment in an intermediate level module (IMM). This kit differs from the BMM, as it includes equipment and supplies suitable for advanced life support (ALS).

Under “standing orders” from a team physician, ALS-qualified medics may provide advanced cardiac life support to a victim. So an IMM is much more extensive than a BMM and contains medications, IV tubing, IV fluids, endotracheal tube, combi-tube, laryngoscope, light wand, and, if protocol allows, cricothyrotomy kit.

A cricothyrotomy kit facilitates placement of a definitive airway prior to transport. When a definitive airway is combined with the use of a BVMAD, it allows hands-free ventilation of a patient, making it possible for one or two team members to extricate the patient. If a cricothyrotomy kit is carried, the

medic should be proficient in its use, as conditions in the tactical environment are difficult at best.

Many intermediate-level medics include hemostatic dressings in their trauma kits, but the benefits and potential hazards of their use are the subject of debate.

Direct pressure with a sterile dressing

is the best initial approach to hemorrhage control. And pressure point compression and tourniquets are useful adjuncts to any bleeding problem. So these materials should be included in the major trauma module (MTM): a set of combine dressings, gauze, petrolatum gauze, tourniquets, and Israeli dressings.

Support Vehicle Module




Additional supplies and equipment should be stored in the support vehicle module (SVM). For example, ready supplies of consumable items should be kept in the SVM so that other modules can be restocked.

The SVM should contain equipment such as oxygen cylinders, an AED, airway adjunct devices, fiber optic scopes, nebulizers, surgical trays, chest tubes, cervical collars, backboards, peroxide, povidone-iodine, liter bags of crystalloid IV fluid, replacement filters for gas masks, and fiberglass splinting material.

For Advanced Providers

Field care is limited only by the equipment that can be transported and the training of the providers. Some of the items carried by advanced providers include:

- Central line
- Tracheotomy set
- Retrograde intubation set
- LMA
- Chest tube set


Personal Supply Module Sample Contents		
	Trauma Dressings	Bandages such as the Israeli Bandage that can be easily self administered by the victim on most extremity wounds.
	Minor Dressings	Adhesive bandages.
	IV Start Kit	100cc IV fluid, an alcohol wipe, tourniquet, IV catheter (3), IV tubing, tape, flush and saline lock.
	Saline Bullets	Foreign bodies in the eyes are very common on entries, so a bottle of eye drops or saline bullets may save the day and allow an operator to continue on a mission.
	Medications	Pain: acetaminophen, ibuprofen, narcotic analgesics. Antibiotics: ciprofloxacin, metronidazole, cephalexin.
	Wound Closers	Surgical staples or liquid tissue adhesive.

- Fiberoptic intubation set
- Blood products or blood substitutes

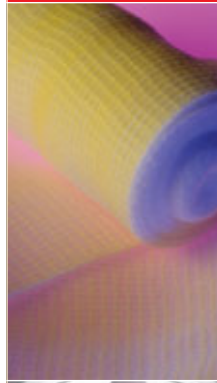
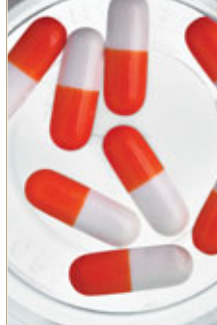



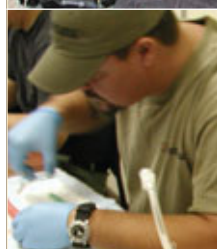
WMD Specialty Gear

Depending on the role of the tactical unit, chemical, biologic, radiological, or nuclear (CBRN) threats may be encountered. These incidents require tactical emergency medical care because they are large crime scenes with many casualties.

Tactical medics are much more familiar with evidence collection and preservation, and typically already have necessary security clearance to enter such an area. So until the scene is cleared, the tactical medics may be the only medical care available to

Basic Medical Module Sample Contents		
	Splints	Two Sam splints.
	Airway	Pocket mask, BVMAD or BVM, oral and nasal airways.
	Litter	Fold-up stretcher.
	Wound Care	Various trauma dressings.
	Other	ACE wraps and cravats.

Major Trauma Module (MTM)

	Israeli Dressing	May be self administered by the patient with one hand. Combines an ACE wrap, combine dressing, and tourniquet in one device.
	Combine Dressings	To control heavy bleeding or cover eviscerated bowel and open fractures.
	Gauze Pads	Multiple uses.
	Antibiotic Packs	Predetermined medication packs for major trauma, containing pain medication and antibiotics.
	Tourniquet	Several excellent devices are available for tactical use.
	Wound Closers	Sutures, staples, and wound adhesives.
	Minor Surgical Tray	For performing surgical procedures that cannot wait for extrication or transport.
	ACE Wraps	For strains, sprains, and fractures, which are common.
	Splinting Material	Sam Splint or a short sealed roll of fiberglass casting material. Bullet wounds frequently fracture long bones.
	IV Fluids	For infusion of medication and management of shock as needed. Also used for wound irrigation and eye irrigation. Several IV start kits should also be on hand.
	Supplies	Gloves, tape, trauma shears, tweezers, adhesive bandages, roll gauze, cravats, nasal airways, 60 cc syringes, headlamp.
	Other	Duct tape, biohazard bags, medical record sheets, and trauma tags for multiple casualties.

victims inside.

The chemical and biologic environments are specialized depending on what agent is released. Various civilian and military protective gear and respirators or supplied air sources may need to be worn. Operating in CBRN protective gear requires extensive training in addition to regular tactical training.

Antibiotic prophylaxis with ciprofloxacin, as well as agent detection equipment, may be carried by the medic in this case. Several biologic and chemical diagnostic kits and meters are available, but costly.

Radiological incidents would likely involve the dispersal of a radiological agent with conventional explosives, a "dirty bomb."

Learning how to work in a radioactive hot zone produced by a dirty bomb, nuclear detonation, or atomic reactor release requires lots of additional training. But it's not beyond the realm of tactical emergency medicine.

Finally, while chemical weapon attacks are not (yet) common occurrences for law enforcement, many officers are exposed to chemical hazards from clandestine drug labs. So it's a good idea for tactical medics to learn how to work in chemical protection suits. ☯

*Lawrence E. Heiskell, M.D., FACEP, FAAFP, is the founder and director of the International School of Tactical Medicine in Palm Springs, Calif., as well as a member of the **POLICE** Advisory Board.*

Bohdan T. Olesnick, M.D., is the vice-chairman of the emergency department at Christ Hospital in New Jersey and a tactical physician for the Clifton (N.J.) Police Department. He is also on faculty at the International School of Tactical Medicine.