



THE TACTICAL EDGE

SUMMER, 1993



TRIAGE AND TRANSPORT: *The Golden Hour Begins*

by Lawrence E. Heiskell, M.D.

Trauma is the leading cause of death during the first four decades of life in the United States. The number of disabling injuries and trauma-related deaths occurring each year is staggering. The cost in human suffering and life is incalculable. Fifty million injuries occur annually, ten million of which are disabling. More than 140,000 deaths occur each year from injuries. Law enforcement is not exempt, and according to the Federal Bureau of Investigation's 1991 Uniform Crime Reports, 23,650 law enforcement officers received personal injuries as a result of felonious assaults while in the line of duty. As tactical officers, each time we are deployed we face the very real possibility of trauma, not only to ourselves, but to the suspects, hostages and even bystanders. The cost of

trauma care is staggering. Trauma-related injuries account for one of the most expensive health care problems, costing 75 to 100 billion dollars annually.

Unfortunately, trauma has no respect for age, is swift in onset and slow in recovery, and presents many pitfalls for the responsible tactical emergency medical support officer. Trauma is merciless in its lethal pathways through our young and potentially productive members of society. Prevention is the best cure, but when prevention fails, the tactical medical officer must be sufficiently knowledgeable to meet the injured patient's needs and reduce the chance of death and injury to the patient.

Trauma is a time-limited disease. Historically, a lot of emphasis has been placed on the "golden hour" of

trauma, particularly that aspect which occurs in the emergency department or trauma center. The golden hour refers to the importance of providing advanced emergency medical care to a critically injured person within the first hour. However, the injured patient's outcome is often determined by those decisions made at the scene of the injury. Knowledge of prehospital issues is essential for tactical medical officers who treat injured patients, because appropriate medical direction into triage and transport is equally, if not more important to a trauma system as is proper resuscitation and in-hospital treatment. The tactical medical officer must be well versed in the roles of various levels of hospital care, including non-trauma centers and trauma center care. He must be aware of the various pathways by which a patient ultimately reaches a trauma center, including the modes of transportation that can be utilized for patient delivery. The tactical medical officer must have a plan for the integration of the trauma system in which triage and rapid transportation to an appropriate treatment facility can be accomplished.

Identification of the Injury

Beginning with the first moments after an injury, several events must take place to bring together the injured individual and the prehospital providers. In our environment, this is the tactical medical officer. Of primary importance is the discovery of the incident. Delayed discovery may lead to increased morbidity and even death. This is especially true during a dynamic entry or building clearing operation. All team members should be aware of the status of each member at all times. No team member should be left behind for any reason, or even out of direct visual contact. Just

TEMS Physicians Complete SWAT Training Program

From April 26 through May 7, 1993, four emergency physicians assigned to the Riverside County (CA) Sheriff's Department's Emergency Services Team (SWAT) were involved in an intensive 2-week, 80-hour, POST-certified training program entitled, **TACTICAL NEUTRALIZATION FOR SPECIAL WEAPONS TEAMS**. Lawrence Heiskell, M.D., David Tang, M.D. and Brian Gordon, M.D. are members of the Emergency Services East Team, and Brian Hoynak, M.D. is a member of the West Team. All four physicians are sworn peace officers and hold commissions of reserve deputy

sheriff. Having physicians complete this program was a first for the Riverside County Sheriff's Department. The course was conducted at the Academy of Justice and the Sheriff's Training Center in Riverside, as well as other undisclosed locations used to train for covert operations.

The Riverside County Sheriff's Department is one of an increasing number of agencies nationwide which are committed to the maintenance of Tactical Emergency Medical Support (TEMS). Anyone interested in discussing the Riverside County program should contact Captain Randall Yankee at (714) 275-2500.

because you don't hear gunshots doesn't mean all team members are safe. Edged weapons and booby traps can kill silently.

First Response

For those tactical teams which have a tactical emergency medical support component, response will be measured in seconds instead of the usual minutes in the civilian sector. Being able to provide advanced life support within seconds at law enforcement special operations by having tactically trained medical personnel cannot be emphasized enough.

Transportation Options

Ground vehicle is the time-honored method of emergency medical services transportation. Most trauma patients will be transported by ground when the severity of the illness and proximity to a facility does not make air transportation a reasonable alternative. Helicopter transfer is an advantage when the trauma patient is a distance away from the trauma center, or other considerations, such as terrain or geography might impede transport by ground. (See "Aeromedical Evacuation in The Tactical Environment," *The Tactical Edge*, Spring 1992.) The use of fixed-wing aircraft is rarely, if ever, indicated for the initial treatment of a trauma patient.

On-Scene Treatment

The effective treatment of the trauma patient requires rapid transport to an appropriate trauma center, because most severely injured patients have suffered an extensive

loss of blood (hemorrhagic shock), and require the services of a surgeon. Extensive time at the scene only allows for the deterioration of the patient, because blood loss continues and surgical intervention is delayed. Most data seem to support the "scoop and run" theory, in which the patient is extricated, packaged and transported rapidly. The mandatory intervention at the scene is establishing a patent (open) airway. The initiation of intravenous lines is controversial, but most experts agree that these procedures are best managed in the vehicle en route. Several studies have led to the conclusion that the patient should be immediately transported rather than stabilized at the scene.

The first priority of on-scene medical treatment is the establishment and maintenance of the airway. Intravenous lines can be established, but initiating these lines should not hinder or delay the transport of the patient. If intravenous access can be achieved while the patient awaits transport, during immobilization and packaging, then such access may be valuable for the administration of drugs and fluids. Intravenous lines can be started on the way to the hospital in either the ambulance or the helicopter.

Patient Monitoring

Monitoring of the trauma patient is becoming relatively simple. Compact battery powered monitors are available, and have the capability of monitoring the pulse rate, blood pressure, and providing a graphical tracing of the heart (ECG). These miniaturized complex medical devices are contained in one small, lightweight unit with a liquid crystal display. Also, the use of portable pulse oximetry in the field has become very useful. This sensitive device can be attached to a finger, and indicates how well the blood is or is not oxygenated. This information is critical in patients with heavy blood loss (hemorrhagic shock), as well as with head injuries.

Patient Triage

Triage is the sorting of patients to prioritize medical care. Triage may occur on various levels. If, for example, only one or two patients are involved, triage is the decision as to which medical facility the patients will be transported. This decision involves whether to directly trans-

port a patient to a trauma center, or to stabilize the patient at a non-trauma center before transfer. Triage decision making also involves the mode of transportation of patients and whether ground or air transport is more efficient. Another level of triage occurs if there are multiple patients, and whether these patients can be managed by the resources in the area. Triage may then involve sorting out the appropriate patients to be removed from the scene more rapidly. For example, the more severely injured patient as assessed by the airway, breathing, circulation and neurological injury or disability (ABCD's). Effective triage also involves the sorting of patients to appropriate hospitals, including which patients should go to trauma centers and which patients might be taken care of at non-trauma centers.

Classification of Trauma Centers

The system of classification, as described by the American College of Surgeons Committee on Trauma, calls for three levels of trauma centers. Level I and Level II centers are categorized for the more severely injured patients. A Level I center is usually involved in medical education and research, and is staffed by a trauma team that includes one or more surgeons in house, 24 hours a day. A Level II center is a non-teaching hospital and, rather than having a surgeon in house, a surgeon is on call and immediately available. A Level III center basically has plans and protocols, as well as the capability for emergency care of non-life-threatening trauma, and the ability to stabilize and transfer patients who have life-threatening injuries.

The Trauma Region and Triage Systems

The size of the trauma region varies according to the population and number of hospitals. The ideal trauma region should consist of an area of no more than a 75- to 150-mile radius, or approximately 30 minutes by helicopter. Ideally, triage to trauma centers should be mandated, rather than allowing prehospital personnel to decide at the scene whether or not to take the patient to a trauma center. There is no perfect triage system. In some states, law

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CORRECTIONS NOTICE

The following corrections should be noted in the article entitled, *Profiling and Predicting the Suicidal Subject*, by Dr. Lawrence Heiskell, which appeared in the Spring 1993 issue: On page 43, first column, on line eleven after the word "will," add "All of a sudden he tells the officers, 'I'd be better off dead'."

In the chart on page 43, under **High Risk**, the last word should be "unemployed." Under **Low Risk**, the last word should be "employed."

On page 44, first column, last line, second paragraph, the word "three" should read "these."

Triage And Transport

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mandates the use of a scorecard mechanism for triage into trauma centers. If the patient's condition fits the triage criteria for transport to a trauma center, the law mandates that the patient go to that center.

Most trauma agencies use the American College of Surgeons Committee on Trauma triage scheme or a modification of it. Once prehospital personnel have determined that the patient falls within the trauma triage criteria, the nearest appropriate trauma center is selected. The decision is then made as to the method of transport. Those who meet the physiologic threshold for transport to a trauma center (blood pressure less than 90mm Hg, respiratory rate less than 10 or greater than 29) should be considered for transport to a trauma center by helicopter. Patients in geographically inacces-

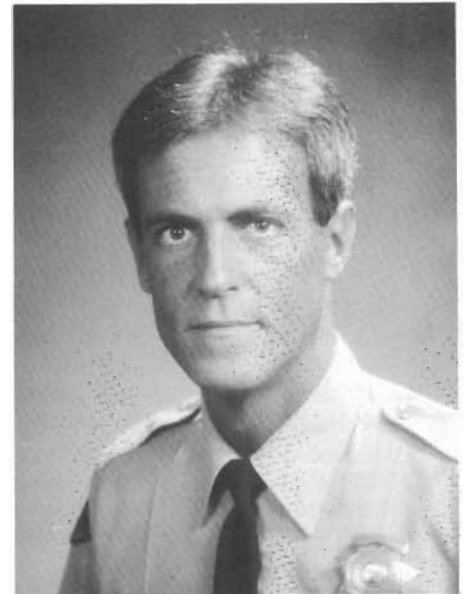
sible areas, or who will have a long ground transport time, should also be transported by helicopter.

Conclusion

Extremely rapid on-scene emergency medical care with short scene times, coupled with the appropriate triage concerning transportation modalities and trauma center selection, will greatly alter the ultimate outcome for the patient injured during law enforcement special operations. The importance for every tactical team to incorporate some form of emergency medical support cannot be emphasized enough.

About the Author

Lawrence Heiskell is an Emergency Physician in the Department of Emergency Medicine at Loma Linda University Medical Center, Loma Linda, California. He is residency trained in Emergency Medicine and Family Practice. A peace officer in the State of California, he holds a commission of Reserve Deputy Sheriff. Doctor Heiskell is the SWAT team physician for the Riverside County Sheriff's Depart-



ment East Team, Palm Springs Police Department, and the Kern County Sheriff's Department. Doctor Heiskell is the Chairman of the Sub-Committee on Tactical Emergency Medicine for the California Chapter of the American College of Emergency Physicians.

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