Anesthesia “Go Team” for Trauma Patients: Field Based Anesthesia

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Accidental injury and trauma are the fifth leading cause of death in the United States. Emergency medical systems have traditionally been given the task of providing both basic and advanced life support care at the scene of a given accident site. In the United States, severely injured patients are treated by the paramedic team for only as much time as is necessary to protect the airway, administer oxygen, stabilize the spinal cord, immobilize a potential fracture site, and control hemorrhage. Patient transport to more definitive care is accomplished as rapidly as possible.

Unfortunately, there is little information in the literature concerning patients who cannot be quickly transported due to reasons of entrapment. Examples of these types of patient situations include difficult extrication from a damaged vehicle, entrapment by some sort of farm or industrial machinery; a mine or construction site cave-in; collapsed buildings, and other such events. In these cases, more definitive care (blood products, onsite amputation, chest tube insertion, and administration of anesthetics) may be needed at the accident site.

In recognition of the need for surgical and anesthetic services in the field, the R Adams Cowley Shock-Trauma Center, in Baltimore, Md, created the “Go Team” to deliver anesthetic support and complex surgical treatment to patients who cannot be rapidly transported to a medical facility. The remainder of this article focuses on establishment and maintenance of such a team for those considering this potentially valuable emergency care alternative.

The R Adams Cowley Shock Trauma Center, operated by the University of Maryland Medical System, is the core element of Maryland’s Emergency Medical Services. It serves as the state’s primary adult resource center for the treatment of trauma. Its mission is to save lives and to reduce morbidity and mortality among critically ill and injured trauma patients throughout the state of Maryland. The trauma center recognizes the fact that prolonged accident victim entrapment will delay transport to definitive care and can potentially have an adverse impact on both patient morbidity and mortality. As a result, the center has the ability to send a team of medical personnel that can deliver advanced surgical and anesthesia services in the field as an adjunct to the prehospital providers on the scene.

Prehospital providers at the scene of an accident can request this team, known as the “Shock Trauma Go Team.” The Go Team is indicated for dispatch in 3 general scenarios: (1) Priority 1 or 2 patients who are expected to exceed 1 hour total scene time, (2) hemodynamically unstable patients with an undetermined extrication time, and (3) mass casualty incidents with multiple patients of varying acuity.

The Go Team consists of an attending physician (typically an orthopedic surgeon) and a Certified Registered Nurse Anesthetist (CRNA). The members of the Go Team all possess the following basic training: hazardous material awareness, vehicle extrication, incident command system, and helicopter safety. The attending physician is certified in advanced trauma life support. The physician and the CRNA are involved in ongoing field operations training conducted on an annual or semiannual basis. The CRNA is available 24 hours a day and 7 days a week from the in-house location at the trauma center. The attending physician is available from either in-house or from a location outside of the trauma center.

The mode of response, be it by helicopter or ground ambulance, is determined by well-defined protocol guidelines and based on the specific needs of the incident. Once a Go Team request has been received by the trauma center, the attending physician and CRNA are mobilized. The providers take the fol-

Sedation, and even general anesthesia, is sometimes required in field settings. This article focuses on a unique Certified Registered Nurse Anesthetist (CRNA)-surgeon team that is able to provide definitive operative services to patients injured in the field who are unable to be rapidly transported to a trauma center or other medical facility. Basic considerations in establishing and maintaining such a system are addressed.

Key words: Go Team, field anesthesia, prehospital, surgery, trauma.
lowing 3 prepackaged supply bags and a cooler containing the blood supply:

1. “Anesthesia Go Team” bag that contains airway management equipment, intravenous access supplies, and resuscitative medications (Figure 1).

2. “Narcotic Go Team” bag that contains narcotics, sedatives, intravenous general anesthetic agents, and paralytic agents (Figure 2).

3. “Surgical Go Team” bag that contains cricothyrotomy/tracheostomy supplies, chest tube insertion tray, amputation tray, and supplies to control hemorrhage (Figure 3).

4. “Blood Supply” consists of 2 to 4 units of uncrossmatched O positive blood, taken in a cooler and packed on ice (Figure 4). The Go Team equipment is only used for a specific Go Team call and for periodic training. The equipment is stored in a secure, designated area and ready for rapid deployment 24 hours a day (Figure 5). The equipment is checked on a monthly basis to ensure readiness and completeness of all supplies and pharmacological agents. Each provider has to don appropriate protective turnout gear and take all supplies to the specific point of departure (heliport or ambulance bay). Turnout gear consists of fire department quality coats and pants, boots, helmet, gloves, and hearing and eye protection. The Go Team members follow the direction of either the flight crew or the ambulance crew in terms of personal safety, positioning, patient loading, patient off-loading, and radio communication. Upon arrival to the accident scene, the Go Team members report to the incident commander for a briefing and update of the patient’s status. Following the briefing, the team enters the rescue scene under the incident commander’s direction.

Key issues to consider with respect to mobilization to an accident site include the potentially hazardous
nature of the accident site; the required monitoring devices, as well as the battery or generator power required; the amount of equipment necessary to bring to the accident site; the form of communication used to stay in touch with all principle components of the trauma system; and the types of patients who would benefit most from the use of the Go Team system. Ideally, there is ongoing quality improvement evaluation of the entire system.

In general, many of the monitoring devices have become more streamlined and lighter. Basic monitoring equipment should include pulse oximeter, oxygen analyzer, some type of capnography, respiratory monitors, noninvasive blood pressure, and continuous electrocardiograph monitoring. The capability to monitor continuous arterial blood pressure and patient core body temperature should be considered particularly in patients suffering from impending hemorrhagic shock, traumatic brain injury, and spinal shock. The use of waveform capnography has been proven to be very effective in terms of rapid recognition of an unrecognized esophageal intubation, as well as to guide quality of ventilation.

Once at the actual rescue site, the team members obtain a verbal report from the emergency medical service (EMS) personnel administering patient care. When the medical care of the patient has been assumed by the Go Team, it is not relinquished until the patient has been delivered to the designated trauma center. The Go Team physician assumes responsibility for all medical decisions involving direct patient care. The physician’s basic responsibilities include assessment and overall evaluation of the patient, control of active hemorrhage, performance of any indicated surgical procedures, collaboration with the CRNA in the performance of patient care duties, and overall decision making regarding the care of the patient. The CRNA’s primary responsibilities at the scene include initial patient assessment, airway management, initiation of intravenous access and ongoing fluid management, initiation of vasoactive and appropriate resuscitative drugs, and the administration of analgesia, sedation, and general anesthesia (total intravenous anesthesia), if indicated.

Some simple considerations can greatly enhance field-based anesthesia. For example, great care must be taken to protect the patient and the anesthesia provider from situational hazards. Areas of concern to all providers are hazardous material awareness, accident scene danger awareness, extrication equipment awareness, and use of existing command and communication systems. A little bit of forethought and planning goes a long way in making the event a safe and effective one.

Conclusions
The success or failure of a highly specialized Go Team to provide prehospital anesthesia and surgical care truly depends on a unified and structured approach to issues such as coordination of communication from the accident scene to the hospital where the team is based, coordination of transportation of the team via ground or air, acceptance of the surrounding emergency care providers, and financial investment toward all the necessary equipment and training of providers as well as an ongoing assessment of the quality of care provided in a field environment.

This article has attempted to provide an overview of the concept of provision of anesthesia and surgical type services in a prehospital (field) environment. This could prove to be an invaluable adjunct to current emergency medical services systems in any municipality. The ability to provide potentially life saving care to an accident victim that otherwise could not be transported to a definitive care facility is an area that deserves serious consideration. Hopefully, future research by hospitals and emergency medical services systems will be forthcoming.

REFERENCES


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