

ADVANCED TRAUMA LIFE SUPPORT® *and*

PREHOSPITAL TRAUMA LIFE SUPPORT® *on the road:*



An educational imperative

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hat began as a response to the restoration of the medical system to a city under water for weeks, and to provide trauma education to the involved region of the storm, has developed into a program offering Advanced Trauma Life Support (ATLS®) and Prehospital Trauma Life Support (PHTLS®) in rural communities throughout the state of Louisiana. This educational format provides up-to-date trauma patient care at the local community hospital to physicians and their prehospital providers.

Because of the need for trauma education and the lack of teaching facilities, Tulane Life Support Training Center (TLSTC) developed an “on the road” educational program designed to provide the same quality education on the road that is available in trauma centers. We include in this teaching format ATLS and PHTLS simultaneously on the road to local rural and urban community hospitals. The mission of “ATLS/PHTLS on the Road” is as follows: (1) to offer education to physicians and prehospital providers that do not have easy access to either class from their rural location; (2) to pro-

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mote the team concept of trauma care, combining the two major (independent but interdependent) trauma educational programs for the emergency providers; (3) to demonstrate to both provider groups the roles, duties, and responsibilities of the other; and (4) to determine how both entities can work together in order to provide the best patient care.

The impact of ATLS/PHTLS

Several studies have already shown the effectiveness of the ATLS course, such as decreased mortality in the first hour of admission and improved survival in high-risk patients in rural trauma hospitals when these specific ATLS interventions were performed.¹ Other studies have shown improved outcomes in trauma patients, along with improved knowledge and demonstrable skills among ATLS participants.²⁻⁴ ATLS has even been shown to be a factor contributing to lower per capita trauma death rates in a population review of the U.S.⁵

The PHTLS course has been shown to be valuable as well, with decreased mortality and morbidity in established emergency medical services (EMS) systems.⁶ Arreola-Risa and colleagues suggested the effectiveness of PHTLS courses was in an increase in the use of life-saving interventions en route to the hospital, producing a decrease in patient mortality from 8.2 percent to 4.7 percent after introduction of the course. This improvement was produced without an associated increase in on-scene time.⁷

The need for ATLS on the road

Before Hurricane Katrina, TLSTC, which is housed in the department of surgery of Tulane University School of Medicine, trained more than 250 students in ATLS each year, along with 2,880 Advanced Cardiac Life Support students. Most of the fall 2005 courses had been filled when Hurricane Katrina forced evacuation of the city. Katrina hit one week after the eighth course out of 14 ATLS courses scheduled for 2005; furthermore, a full year of courses had been planned for 2006. The hurricane's devastation left many physicians without a place for ATLS training for the upcoming months. In addition, many physicians in rural Louisiana had not been trained in trauma care, when the need to participate in

the management of injured patients suddenly became necessary. As a result, the demand in Louisiana for ATLS training increased, while the largest ATLS training provider in the region was temporarily out of commission.

As the population of southern Louisiana scattered throughout the surrounding parishes, communities absorbed quite an unexpected population shift and medically needy patients significantly increased. The aftermath left local physicians and other health care providers overburdened with work. It also highlighted the need for specialized casualty/trauma care training for people and facilities that might not use it regularly. At the same time, Hurricanes Katrina and Rita destroyed or decommissioned the majority of the other medical educational resources in southern Louisiana.

To respond to the need, TLSTC created a mobile training unit for ATLS with the goal to take it on the road where it was necessary. It became apparent that training for the prehospital providers was as needed as physician training. The offshoot was a program to train providers and physicians together in order to add their skills as a team for trauma care and not as isolated personnel working without the knowledge of the jobs of others. There is a need for continuity of care from the time of the incident to the discharge from the hospital. The principles of care are the same—only the preferences of care are different because of the situation, condition, skills, and fund of knowledge and equipment available.⁸

The impetus for the creation of ATLS was the need to establish a uniform system of trauma care delivery that could be implemented in rural communities. James Styner, MD, FACS, identified the need for the course in 1978 after his plane crash in the cornfields of Nebraska. The EMS staff provided better care for his patient than did the personnel in the hospital. The idea was to take urban trauma center-level treatment algorithms to low-volume trauma clinics and hospitals in order to achieve a positive impact in outcomes. This approach, not surprisingly, has shown that rural physicians benefit from ATLS training significantly more than those practicing in urban trauma centers where those care plans are frequently used. The ATLS, however,

did set the standard for emergency trauma care in both large and small hospitals, just as PHTLS has set the standard for prehospital care. In the larger facilities that have a large volume of trauma patients, care sometimes is carried out automatically by a multidisciplinary team⁹ with responsibility for decision making based on ATLS details, and when the operating room is immediately available and the patient can be in that operating room within five to 20 minutes after arrival. The majority of courses are taught in or near these large urban trauma centers.

The aftermath of the hurricane forced the recognition of the need for this training in more rural areas where educational resources are not readily available. Consideration of alternatives was necessary. The use of uniform educational process and accepted ATLS/PHTLS patient care principles were used in the training.

Site visits were first conducted by the ATLS coordinator with subsequent approval by the American College of Surgeons ATLS division. Previously, TLSTC had used live, anesthetized animals for all of the skills laboratories under Institutional Animal Care and Use Committee approval. Simulaid Corporation donated two Trauma-Man systems for the surgical skills portion of the course. The Louisiana Department of Health and Hospitals advertised the availability of the course. The visiting facilities offered their space to hold the courses without charge. A total of six courses in Louisiana and two in Austin, TX, were held.

The courses allowed physicians to establish new bonds and referral resources for critical patients. The course evaluation questionnaires demonstrated a significant improvement in knowledge, skills, and professional interactions as a result of the participant having taken an ATLS course “on the road.” The experiences reinforced studies showing that attitudes and confidence toward trauma scenarios is improved after proper training.³

The addition of PHTLS

Since its induction in 1980, the ATLS course has grown in popularity worldwide, now being adopted in more than 55 countries. The course addresses the management of an injured patient immediately upon arrival at the hospital. ATLS

represents one link on the chain of care. The PHTLS course addresses the same needs of the patient before arrival in the hospital.

Trauma is a surgical disease from beginning to end. The beginning is when the injury occurs, not when the patient arrives in the hospital emergency department door.⁸ The PHTLS course teaches the knowledge and skills necessary to treat trauma patients in the prehospital environment—components that are now included in the curriculum of “Trauma on the Road.”

The Louisiana Emergency Response Network (LERN) was developed to coordinate statewide trauma care from a recognized need. In consultation with TLSTC, the LERN and FLEX (Medicare rural hospital flexibility grant) programs helped increase awareness for the integration of rural EMS operations into local, regional, and statewide networks and other activities designed to strengthen education of rural EMS providers. PHTLS courses were not available after the hurricane, so the decision was made to bring both courses on the road at the same time.

Combining the ATLS and the PHTLS has the potential to offer a better team approach than when they are taught separately. Three ATLS and PHTLS courses were held simultaneously at the different locations. These courses were offered to critical access hospitals physicians and EMS medics who transport to those facilities, allowing the physicians and medics to interact during lunch presentations on both days. On the first day, the two groups were given a presentation of the LERN goal and vision. On the second day, both groups received a lecture on the critical care transport teams by EMS. Allowing and fostering interaction between different medical personnel has its own benefits. Interdisciplinary training has shown to lead to high levels of participation, group skills, information sharing, networking, and sense of community.¹⁰

ATLS and PHTLS have been offered at the same site with combined breaks and luncheons for interaction between the physicians and the EMS providers. The next step will be to develop a prototype educational format that will combine lectures with the approval of the ATLS subcommittee and the PHTLS Committee, which should assist in the understanding of the same care at different locations but using the same principles.

ATLS/PHTLS

As noted previously, trauma is a surgical disease from beginning to end. The beginning is not when the patient arrives in the emergency



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department, but when the incident occurs. The beginning of patient care is not when the emergency physician or surgeon sees the patient, but when the emergency medical technician arrives on the scene and begins to provide care. Unless the prehospital provider and the surgeon think alike, speak the same language, and manage patients in the same way, the patient will not necessarily receive a continuum of care from the scene to the emergency department to the operating room to the intensive care unit.

For this continuity to happen, the prehospital provider and the surgeon must follow the same protocol principles and standards of care. The PHTLS course was developed in cooperation with the Committee on Trauma of the American College of Surgeons so that the PHTLS would be based on ATLS principles and correct surgical preferences. Therefore, teaching the PHTLS and the ATLS courses together highlights the same principles to both groups. More importantly, however, having two groups together at the same time and interacting builds a framework for team patient care. It allows the surgeon and the prehospital provider to know each other and be able to exchange ideas and teach each other about the uniqueness of each environment so that the patient receives the best possible care. Teaching PHTLS and ATLS courses together achieves these goals. The combined ATLS/PHTLS program has received good reviews from physicians and prehospital providers. The number of participants in the courses to this date has not been sufficient for a scientific assessment, but the approval rating is certainly high enough to continue the program.

Conclusion

There has been acceptance of the program by the physicians and the prehospital providers. Developing a mobile course that uses manual simulators has made the program portable so that it can be easily transported to rural physicians. In the past, the rural physicians had to visit the major trauma center, either in the northern part of the state (Shreveport) or the southern part of the state (New Orleans) to have access to live animals. Currently this program is available on an as-needed basis throughout the state. Therefore, participants from smaller

communities with only a few physicians do not have to travel a distance and leave their patients without care while taking the course. The portability makes the course available to rural physicians in adjacent states. This trial model has been very successful as a prototype and is being expanded throughout Louisiana, and such a prototype could be used for other rural communities throughout the U.S.

What began as a temporary response to a disaster that was expected to continue only until the buildings were repaired developed into a vital advancement in the offering of ATLS and PHTLS together. This approach is a new tradition of trauma education for the ATLS and PHTLS training team in Louisiana. This advancement in trauma education can be replicated in other educational centers. 

References

1. Van Olden GD, Meeuwis JD, Bolhuis HW, et al. Clinical impact of Advanced Trauma Life Support. *Am J Emerg Med.* 2004;22:522-525.
2. Ali J, Adam R, Butler AK. Trauma outcome improves following the advanced trauma life support program in a developing country. *J Trauma.* 1993;34(6):890-899.
3. Ali J, Adam R, Stedman M, et al. Cognitive and attitudinal impact of the Advanced Trauma Life Support program in a developing country. *J Trauma.* 1994;36:695-702.
4. Ali J, Cohen R, Adam R, et al. Attrition of cognitive and trauma management skills after the Advanced Trauma Life Support (ATLS) course. *J Trauma.* 1996;40:860-866.
5. Rutledge R, Fakhry SM, Baker CC, et al. A population-based study of the association of medical manpower with county trauma death rates in the United States. *Ann Surg.* 1994;219:547-563.
6. Ali J, Adam RU, Gana TJ, et al. Trauma patient outcome after the Prehospital Trauma Life Support program. *J Trauma.* 1997;42(6):1018-1022.
7. Arreola-Risa C, Mock CN, Lojero-Wheatly L, et al. Low-cost improvements in prehospital trauma care in a Latin American city. *J Trauma.* 2000;48(1):119-124.
8. McSwain N. Prehospital care from Napoleon to Mars: The surgeon's role. *J Am Coll Surg.* 2005;200(4):487-504.
9. Ben-Abraham R, Stein M, Shemer J, et al. Advanced Trauma Life Support (ATLS) courses: Should training be refocused towards rural physicians? *Eur J Emerg Med.* 1999;6(2):111-114.
10. Gilkey M, Earp J. Effective interdisciplinary

training: Lessons from the University of North Carolina's Student Health Action Coalition. *Acad Med.* 2006;81(8):749-758.

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