

STUDENTS CORNER COMMENTARY

Trauma Management: Should it be a part of Medical Curriculum?

Marvi Mahesar¹, Hira Salman², Neha Khatri³, Sarah Zafar⁴, Umaima Dhamrah⁵, Aamir Sabih Hydri⁶

ABSTRACT:

Trauma management is an approach to assess and treat multiply injured patients. Casualties that present within the first two hours of injury are deaths that can be prevented. Medical professionals need to be trained to appraise and manage these patients during this period. A variety of courses are available, designed entirely to teach medical professionals to treat trauma patients. Many countries have adopted these programs and now they are being taught in over 60 countries worldwide. In developing countries, injuries due to trauma are regrettably neglected, and accounts for more than five million deaths each year. This is nearly equal to combined number of deaths from tuberculosis, malaria and HIV/AIDS. Medical graduates are supposed to be able to handle all types of emergencies, common or traumatic. Lack of ATLS, BCLS and ACLS certified doctors in emergency departments lead to improper and un-necessary delay in provision of medical care to patients.

Keywords: Trauma management, Medical students, Medical curriculum.

INTRODUCTION:

Trauma management is an approach to assess and treat multiply injured patients. Casualties that present within the first 2 hours of injury are deaths that can be prevented, therefore, medical professionals need to be trained to appraise and manage these patients during this period, if they are not frequently exposed to trauma casualties.¹ A variety of courses are available, designed entirely to teach medical professionals a systematic and condensed approach to treat trauma patients. Advanced Trauma Life Support (ATLS), Basic Life Support (BLS) and Advanced Life Support (ALS) are examples of such courses; certification of these courses is acquired by medical health professionals in both developed and developing countries. Advanced Trauma Life Support (ATLS) is progressively becoming the basis of care for traumatically injured patients. ATLS was developed by the American College of Surgeons (ACS) Committee on Trauma (COT) and was first introduced in the United States and internationally in 1980. As its impact grew globally, many countries adopted this program and now it is being taught in over 60 countries worldwide.² The basic principles of the course are: "treat first what kills first" and "do no further harm". Rapid assessment of

the injuries and treatment is given systematically. In patients who are severely injured, an overall patient assessment has to be made so that logical sequential priorities can be established³. This process is known as primary survey and constitutes the "ABCDEs" of trauma care.⁴

The sequence is as follows:-

- (A) Airway maintenance with cervical spine protection
- (B) Breathing and ventilation
- (C) Circulation with hemorrhage control
- (D) Disability: neurologic status
- (E) Exposure/environmental control

In developing countries, injuries due to trauma are regrettably neglected⁵ and account for more than five million deaths each year, which is nearly equal to the combined number of deaths from tuberculosis, malaria and HIV/AIDS.⁶ Pakistan is facing unprecedented and repeated attacks of terrorism, which claim large number of lives and leave scores injured. This puts an enormous load on an almost non-existent pre-hospital medical care system.⁷ Although Karachi, the largest city of Pakistan has a few organized private ambulance response systems, yet the medical treatment imparted by the first responders to trauma patients at the scene or in the ambulance during transfer to a hospital is minimal or unscientific at best. In majority of the situations, patients are taken to the nearest hospital by relatives or by standers; this may lead to an even poorer outcome as transport of the trauma patient is by an untrained person. Moreover, the absence of trauma centers in every major city is a major disincentive to provision of timely definitive care.⁸ Therefore, there is a dire need of implementation of standardized trauma management training, as well as the presence of trauma centers to cater to the increasing numbers of trauma patients. If the person at the scene of disaster or accident is a medical student trained in trauma management, he or she will definitely perform better than the first responder (stretcher bearer of an ambulance).

Trauma is the second leading cause of death in the age group of 15-44 years.⁹ WHO estimates that till 2030, a further 40% increase will result in trauma fatalities. Therefore, paramedics and first responders play a pivotal role in decreasing trauma mortality, especially in case of long prehospital transit

Students Supervisor

✉ **Dr. Aamir Sabih Hydri**

Assistant Professor
Department of ENT
PNS SHIFA Hospital
Bahria University Medical & Dental College
Karachi

✉ **Marvi Mahesar**

Email: marvi1992@hotmail.com

✉ **Hira Salman**

✉ **Neha Khatri**

✉ **Sarah Zafar**

✉ **Umaima Dhamrah**

4th Year MBBS Students
Bahria University Medical & Dental College
Karachi

Received: 18-08-2015

Revised: 02-10-2015

Accepted: 10-10-2015

times.¹⁰ Mortality rate escalates by 3 times for every 30 minute increase from time of injury to conclusive care¹¹. One principle in medicine is the “golden hour” of trauma, which specifies that patient outcomes are improved when patient is transported to a trauma center within an hour of injury as trauma patients have significantly better survival rates if their injuries are treated within 60 minutes¹².

This expectation is quite different from reality in developing countries such as Pakistan. According to a study in Karachi, 58% patients die before they even reach a hospital¹³. A study was conducted to evaluate prehospital care in low to middle income countries of Asia, Africa and Latin America¹⁴. All sites had some measure of training available for first responders, with the exception of Pakistan and Gujarat State of India. Access to services within 1 hour varied exceedingly, despite availability of an emergency number, and was found to be very low in Pakistan. This indicates that despite there being a system for the provision of emergency medical services, it is barely functioning. Possible causes of this could be inadequate funding, absence of legislation to establish standards, lack of assimilation of multiple systems as well as absence of standardization of emergency procedures among medical personnel¹⁵. The problem cannot be resolved just by constructing isolated trauma centers. Instead these trauma centers need to have an integrated system of prevention, prehospital evacuation of injured, hospital care and rehabilitation. The proclaimed 7 minute response time of the ambulance service becomes irrelevant when medical facilities are not equipped for the definitive care of the injured¹⁶. Little can be hoped to be achieved unless the government takes the initiative and grants trauma management its due importance, which as yet has not happened. National health policy of Pakistan 2009 does not acknowledge injury prevention and control¹⁷. Even in medical curricula, Emergency Medicine as a specialty has not received recognition in Pakistan, which affects not only undergraduate training but also the quality of care provided in emergency rooms^{17, 18}. Medical graduates are supposed to be able to handle all types of emergencies, common or traumatic but little has been done to ensure that this competence can be achieved¹⁹. In a nutshell, lack of ATLS, BCLS and ACLS certified doctors in emergency departments leads to improper and delayed medical care.

American College of Surgeons developed Advanced Trauma Life Support (ATLS) with a purpose to train the doctors to evaluate, and manage injured patients systematically. An ATLS program for physicians was carried out in Trinidad and Tobago which resulted in a significant augmentation of in-hospital trauma patient outcome. A study has demonstrated that senior medical students perform better in trauma simulation scenarios after completion of the ATLS training. Even attendance at only lectures about ATLS results in an increase in trauma management knowledge among medical students. Another study showed that medical staff who had either undertaken either full ATLS course or a contracted form of the course was more effective in

their management of trauma cases²⁰.

In order to significantly lower mortality rates due to trauma, widespread implementation of standardized trauma training is necessary. This need not be ATLS, but could be a locally introduced program based on the same principles. Society of emergency medicine in Pakistan provides these courses in different cities of Punjab, Sindh and KPK with same policies and procedure as provided by level 1 trauma centers in USA. Educational training is given to 1st responders and to doctors and nurses in Emergency Departments⁶. There are certain hurdles in acquiring ATLS training. One problem commonly associated with ATLS is that there are far more applicants for ATLS programs than available places, resulting in long waiting lists. It is quite evident that the funding for ATLS-type programs in developing countries is grossly inadequate, making it financially inaccessible for quite a few candidates who would like to get trained. These problems could be addressed by implementing alternate programs based on ATLS but conceptualized, developed and validated by trained instructors.

Moreover, knowledge and skills gained through ATLS participation decline after 6 months, with a maximum decline after 2 years if skills learnt are not put to use². Numerous studies have verified that the ATLS course is an effective teaching program despite its limitations. A study evaluated the effects of a trauma training course on medical students in Taiwan. It concluded the confidence of final year medical students after completion of their training was improved by the course. Based on these results, the study recommends that trauma training be taught to final-year medical students before they practice in hospital. A similar study was performed on senior medical students at the University of Toronto. Comparison was made between medical students who received ATLS training with those who did not receive ATLS training. The ATLS-trained students had higher scores than the control group. The study suggests that consideration should be given for including ATLS in the medical curriculum²⁰.

CONCLUSION:

Trauma management training should be made compulsory for all medical students so that an adequate number of properly trained individuals are available to rapidly assess and stabilize severely injured patients in emergency situations.

REFERENCES:

1. Berkenstadt H, Ben-Menachem, E, Simon D, Ziv A. Training in Trauma Management: The Role of Simulation-Based Medical Education. *Anesthesiology Clinics*. 2013; 31(1):167-77.
2. American College of Surgeons. About Advanced Trauma Life Support. Available from: <http://www.facs.org/quality-programs/trauma/atls/about>.
3. van Olden G, van Vugt A, Biert J, Goris R. Trauma resuscitation time. *Injury*. 2003;34(3):191-5.
4. ATLS: Advanced Trauma Life Support for Doctors (Student Course Manual). 8th ed. 2008.
5. Jamison D. Disease control priorities in developing cou-

- ntries. Washington, D.C: World Bank; 1993.
6. Jawaid M, Memon A, Masood Z, Alam S. Effectiveness of the Primary Trauma Care Course: Is the outcome satisfactory? *Pak J Med Sci.* 2013;29(5):1265-8
 7. Jamali A. Trauma Care in Pakistan. *J Pak Med Assoc.* 2008; 58(3):102-3
 8. Khan A, Zafar H, Naeem S, Raza S. Transfer delay and in-hospital mortality of trauma patients in Pakistan. *IntJ-of Surg.* 2010;8(2):155-8.
 9. Dhalberg L, Mercy J, AB Z, Krug E. The world report on violence and health. WHO. 2002;1-20.
 10. Murad M, Larsen S, Husum H. Prehospital trauma care reduces mortality. Ten-year results from a time-cohort and trauma audit study in Iraq. *Scand J Trauma Resusc-Emerg Med.* 2012;20(1):13. doi: 10.1186/1757-7241-20-13
 11. Cowley R, Hudson F, Scanlan E, Gill W, Lally R, Long W et al. An economical and proved helicopter program for transporting the emergency critically ill and injured patient in Maryland. *J Trauma.* 1973;13(12):1029-38.
 12. Anand LK, Singh M, Kapoor D. Prehospital trauma care services in developing countries. *AnaesthPain& Intensive Care* 2013;17(1):65-70
 13. Chotani H. Patterns of violence in Karachi, Pakistan. *Injury Prevention.* 2002;8(1):57-9
 14. Nielsen K, Mock C, Joshipura M, Rubiano A, Zakariah A, Rivara F. Assessment of the Status of Prehospital Care in 13 Low- and Middle-Income Countries. *Prehospital Emergency Care.*2012;16(3):381-9.
 15. Ministry Of Health, Government of Pakistan. Stepping towards better health. National Health Policy of Pakistan, 2009 [cited 25 June 2015]. Available from: http://www.wfpak.org/pdfs/policies/draft_health_policy_zero_draft_19_Feb_2009.pdf.
 16. Razzak JA, Ahmed A, Saleem AF, Nasrullah M. Perceived need for emergency medicine training in Pakistan: A survey of medical education leadership. *Emerg Med Austral* 2009; 21: 143-6.
 17. Mehmood A, Baqir S, Shahid M, Razzak J. Undergraduate clerkship in emergency medicine: Experience from Pakistan. *J Pak Med Assoc.* 2011;61(11):1120-2
 18. Ali J, Cohen RJ, Gana TJ, Al-Bedah KF. Effect of the Advanced Trauma Life Support program on medical students' performance in simulated trauma patient management. *J Trauma.* 1998;44:588-91.
 19. Ali J, Cohen R, Reznick R. Demonstration of acquisition of trauma management skills by senior medical students completing the ATLS program. *J Trauma.* 1995;38:687-91.
 20. Lin H, Chen C, Lee W, Kuo L, Cheng Y, Lin Y et al. Effects of the Emergency Trauma Training Course on the Confidence of Final-Year Medical Students Dealing with Trauma Patients. *The Kaohsiung J Med Sci.* 2009;25(1):1015.

