Rescue proceedings in bodily injuries – how to train?

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Abstract
The presented systems of trainings – one designed for the activities in the prehospital, and the second adjusted to application in the hospital conditions are strictly related with each other, and, what should be emphasized – create a uniform entirety and complement one another. They offer the chance for the comprehensive management of the trauma patient, especially the critical trauma patient and the patient with multiorgan trauma.

The application of this very procedure has a profound and already proven influence on the decrease in deaths of trauma patients and significant increase of survivability.

Currently in Poland are introduced ATLS and PHTLS. The system of trainings will be available for doctors (in the case of ATLS and PHTLS) and for the prehospital care providers, medical care providers, nurses (PHTLS). For several years the course Basic Trauma Life Support has been taught. Also the system of work of the Hospital Rescue Teams and the shaping of Trauma Center is still being developed, as it takes place in the case of the provincial Hospital No. 5 in Sosnowiec.

Key words: Advanced Trauma Life Support(ATLS), Prehospital Trauma Life Support(PHTLS), Trauma System, Trauma Training
INTRODUCTION

Traumas are the worldwide problem. About 5.2 million people in the whole world die as a result of traumas. Injuries are still one of the main causes of death in all age groups. In the case of some age groups, in particular children, teenagers and young adults, traumas are the main cause of death. People die, who are professionally active, energetic, providing for the whole society.

Additionally more and more often we deal with the multiorgan traumas, which require specialized treatment and comprehensive supply. This makes providing help to trauma patients a crucially important element of contemporary medicine.

Work with post-traumatic patients requires prepared and proven schemes of behaviour, which may contribute to decrease in the number of deaths caused by the trauma. Trauma System deals with the problems with traumas.

TRAUMA SYSTEM

A trauma system is a pre-planned, comprehensive, and coordinated statewide and local injury response network that includes all facilities with capability to care for the injured. It is the system’s inclusiveness, or range of pre-planned trauma center and non-trauma center resource allocation, that offers the public a cost-effective plan for injury treatment. In such an effective system, trauma care delivery is organized through the entire spectrum of care delivery, from injury prevention to prehospital, hospital, and rehabilitative care delivery for injured persons.

A trauma center is a hospital equipped to perform as a casualty receiving station for the emergency medical services by providing the best possible medical care for traumatic injuries 24 hours a day, 365 days per year. Trauma centers were established as the medical establishment realized that such injuries often require immediate and complex surgery to save the patient.

In order to qualify as a trauma center, a hospital must have a number of complex capabilities including a well-stocked emergency department, a high-quality intensive care ward, and an operating room staffed around the clock. A trauma service is led by a team of trauma surgeons, including specialists such as neurosurgeons and orthopedic surgeons. Emergency medicine physicians are an optional helper group. The team has immediate access to advanced diagnostic equipment. Most importantly are the surgical specialists.

In order for the trauma center to fulfill its assumptions, apart from the mentioned capabilities in the form of operating rooms, specialists and the full and continuous readiness it needs to have worked out and observed strict principles of behaviour with the traumatic patient. The medical personnel should be trained in a uniform manner, and the method for the appropriate provision of the patient after a trauma should be the universal schemes of behaviour. For this we need a strong and proven system of trainings in the field of prehospital and hospital care. Such proven and international systems are ATLS and PHTLS.

ATLS

The idea of ATLS (Advanced Trauma Life Support) came into being in the USA in 1976, when the American orthopaedist James K. Styner had an accident while flying his plane. In this accident his wife died and children were hurt. Because the accident happened in the agricultural region of Nebraska, the access to emergency services and professional medical care was almost none. The observations gathered during the performance of rescue operation, the evaluation of the local medical protection and the manner of treatment of the trauma patient were the reasons for the thorough analysis of the topic. Within a short period of time, a group of doctors, acting under the influence of ideas and experiences of J.K. Styner elaborated the first ATLS course, which for the first time was carried out in Auburn, Nebraska. The system of training became the limelight of The American College of Surgeons Committee (ACSC). The promotion of ATLS by ACSC began in 1980. Since then it has undergone profound changes and is still evolving. Since the first course in Auburn, the training was completed by almost 500,000 doctors in 46 countries.

The program of ATLS training is aimed at teaching the simple and effective scheme of management of the trauma patient. This scheme is strictly systematized and supported with scientific researches and the analysis of constantly collected experiences worldwide. This makes the management of the patient with multiorgan traumas much easier and, above all, substantially contributes to the increase of their survivability. This system has become the common language in the management of traumas, regardless of their type and extension. It is fitted for application in the Trauma Center, Rescue Departments or district Admission Room. It is universal and uniform in all countries of the world, which implemented this system.

The subjects authorized to implement the ATLS program outside the United States are commonly recognized surgical associations in the given country. This contributes to the maintenance of the highest level of trainings regardless of the location in the world. In addition, such association exercises scientific tutelage over the training and may influence the further development of the training program through the continuous cooperation with the American College of Surgeons Committee. In Poland the tutelage over this course exercises the Polish Orthopedic and Traumatology Society.

The system of ATLS trainings has several types:

STUDENT – it is divided into a 2.5 day training. It covers tests, seminars, lectures and simulations and the exercises of the acquired skills. During this training, the participant learns the appropriate way of examining the patient, diagnosing the life threatening traumas and selection of the appropriate method of management – initial or final. The acquisition of knowledge is verified by the final test within the field of knowledge and practical skills. Its positive result is certified for 4 years.

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- STUDENT REFRESHER – this is a several-hour meeting aiming at refreshing the certificate, but above all, the verification of the gained knowledge and introduction of substantial changes.
- INSTRUCTOR COURSE – 1 day or 1.5 day course only for physicians who where identified as having “Instructor potential” in a previous Student course.
- INSTRUCTOR UPDATE COURSE – 1 day course offered to instructors to update to a new ATLS manual edition.
- APPROVED for PHYSICIANS EXTENDERS – Physicians extenders (PEs) are nurse practitioners and physician assistants. The courses approved for PEs allow non-physicians to participate in the course without expecting or receiving verification of successful course completion. The level of participation is at the discretion of the Course Director. The number of actively participating PEs is limited to 25% of active participants.

PHTLS
After the introduction of the ATLS program, the care of the trauma patients made a great step forward. The benefits resulting from the program and the distinct increase of survivability of those patients was the impulse to take another step. It was stated, that since the change of the manner of providing the patients after a trauma in the hospital conditions reaps so much benefit, it would be profitable to modify the same scheme and implement it in the prehospital care.

In connection with that, the American College of Surgeons Committee together with the National Association of Emergency Medical Technicians (NAEMT) devised the prehospital ATLS, which was named PHTLS (Prehospital Trauma Life Support). In 1983 was created the committee of PHTLS and its first version was established in Norwalk, Connecticut. The first training was carried out in 1984 in Denver. The course expanded rapidly. Starting from few enthusiastic members of the department, first tens, then hundreds and currently thousands of providers participate in the PHTLS courses in the whole world.

As the range of the course increased, the PHTLS committee became the department of NAEMT. The demand for the course and the necessity to maintain its continuity and quality gave rise to the need of establishing the network of members on the succursal, state, regional and national level. For each country there are coordinators, and in the particular countries are located the coordinators on the national level and equivalent to the province, as well as the affiliated members, whose duty is to ensure, that the information is distributed, and the programs maintain coherence, regardless of the location in the world.

During the development of the course, the trauma commission of the American College of Surgeons provided the medical consultation. For almost 20 years the cooperation between the American College of Surgeons and NAEMT has aimed at the assurance, that the participants of the course have the possibility to provide the victims of traumas all over the world with the greatest possible chances for survival.

The contents of PHTLS are designed for everyone providing help in the prehospital conditions. The universality of this program allows to use it in the conditions of ambulance service, HEMS as well as the activities of such services as TOPR, GOPR, WOPR and others.

The assignment of the course is to present the most frequent dangers and traumas, the manner of their identification and the appropriate method of management. It is planned in the way, so that that regardless of the profession (Emergency First Responder, EMT, Paramedics, Nurses Physicians, and Physician Assistants) the scheme of behavior was clear and easy to apply.

The uniform entirety of the course is the subject-matter of prevention included in it. It is related with the fact, that the prevention of trauma is the most efficient and effective way of fighting the injury. The employees of medical care on all levels play the active role in the prevention of traumas in order to achieve the best possible results not only for the community but also for themselves.

The students of the PHTLS course during the training learn how to appropriately evaluate the scene, protect themselves and the patient against the possible dangers. Attention is paid not only to the rules of giving first aid but also to the evaluation of the existing dangers, evaluation of the number of injured, analysis of the trauma mechanism, learning to organize the rescue operation and cooperation with the Trauma Center.

The next stage of the training is the presentation of appropriate way of examining the trauma patient, identification of respiratory disorders and the symptoms of shock. Great emphasis is put on the methods of clearing the respiratory system and the correct ventilation with the use of oxygen. This learning takes place through lectures and exercising stations on which are presented the methods of protecting the respiratory system, ventilation and oxygen therapy. For this purpose are used dummies, which are utilized for exercises with the use of the appropriate equipment e.g. Oxygen Mask, Bag-Valve-Mask or laryngoscope.

Successively are discussed the problems connected with the traumas of the particular areas of the body: head, spinal column, chest, abdomen etc. The most important message of the lectures and seminars on that topic is the distinction of the most frequent and, at the same time, the most dangerous traumas, that is, airway obstruction, open or tension pneumothorax, flail chest, cardiac tamponade and others. Then, after explaining the connection between the trauma and pathophysiology of the injury are presented the proper methods of managing the subsequent traumas. The practical activities such as, for instance, decompress tension pneumothorax may be learned during the exercise stations.
Altogether, there are 3 types of PHTLS courses:
1. PHTLS Provider Course
2. PHTLS Refresher
3. PHTLS Instruktor Course

PHTLS Provider Course lasts 2 days (16-20 hours). It consists of a series of lectures, seminars and practical exercises. Additionally, during such course is verified the efficiency of teaching through carrying out a pre-test and final reckoning made up of the pos-test and practical credit. The positive finishing of the course involves the reception of the international certificate, which is valid for four years.

PHTLS Refresher serves for the renewal of the certification of the PHTLS course and implementation of the changes and novelties in the contents of the training. The duration should fall within the limits of 8 hours.

PHTLS Instructor Course – the course is intended for the future PHTLS instructors, it lasts 8 hours. It contains mainly the methodology of teaching and the exercises of lecturing and teaching the practical exercises. It may be joined into 3 day training with the Provider Course.

The presented rules of training are the methods of proven efficiency. The results of the research published in the magazine “The Journal of Trauma: Injury, Infection, and Critical Care” show, that the skills acquired on the course may be associated with the diminishing of the indexes of mortality and incidence of disease. The researches revealed, that after carrying out of the PHTLS course was observed the further improvement of the index of total mortality of trauma patients from 15,7% to 10,6%. It is a very meaningful argument for the effectiveness and relevance of carrying out such trainings.