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To assess the level of merit and practicality of an innovative and specialized course with the objective to reduce mortality in trauma patients

European Trauma Course in Poland. Evaluation of implementation

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Abstract: **Introduction:** Trauma is one of the leading causes of death in the European Union. The European Trauma Course (ETC) is a training course that focuses on administering aid to trauma patients in a Hospital's Emergency Department by creating an effective and well-organized trauma team. The purpose of the study is to analyze how the ETC training is evaluated by its participants and whether it is tailored to local needs.

Materials and Methodology: The study includes eight courses conducted between 2010 and 2015, involving 109 medical professionals. Participants were given questionnaires where they could evaluate the various aspects of the course and comment on each of them, using a four-level scale. Finally, 78 surveys were qualified for the study.

Results: The exercises were very highly rated (average 3.79 points), mainly for their interesting scenarios and station preparation. Equally well-evaluated was the short and concise method of instruction. The lowest ranked aspect was the course fee (2.41 points). There were often negative comments about the use of English during the training (lectures and manuals).

Discussion: The opinions of Polish students were similar to those of ETC participants in other European countries. There are many interesting advantages of workshop scenarios, while the downside is the time constraint. Nevertheless, the ETC has been very successful. High ratings and positive feedback affirm the high demand for such courses in Poland.

Key words: medical education, trauma team, traumatology, European Trauma Course.

Introduction

The European Trauma Course (ETC) is a training course dedicated to the topic of providing aid to trauma patients in a hospital emergency department. In the European Union, trauma is the fourth leading cause of death. The percentage of deaths is increasing alarmingly among young people — it is now the most common cause of death in this demographic. In Poland, the standardized death rate for trauma in 2012 was 10.6 (per 100,000 inhabitants under 65) [1] making it the third highest score among all EU countries. According to police reports from 2014, approximately every 12 road accidents resulted in at least one fatality, with a total 2,954 fatal road accidents occurring in the country [2]. Nearly 70% of individuals died on site, the remaining fatalities were deaths within 30 days of the accident. This means that 30% of accident fatalities made it to hospitals where aid was administered. European statistics from the World Health Organization show that comprehensive high-level medical care can reduce mortality by up to 30% in trauma patients [3].

The first ETC was organized in Malta in 2006 [4]. The courses appeared in Poland for the first time in 2009. The training is certified by the European and Polish Resuscitation Council, European Society for Anesthesiology, European Society for Emergency Medicine, and the European Society for Trauma and Emergency Surgery.

ETC was created as a training program with the main priority being the training of a well-organized and effective trauma team. The emphasis is on improving the soft skills associated with team management and teamwork. This is the first such course in Europe where less emphasis is placed on technical skills; instead, a program of exercises and workshops primarily focuses on team communication, decision-making, planning, task-sharing, and situational assessment. Learning is based on trauma scenarios grouped into thematic workshops (Table 1). Each workshop and scenario is devoted to both technical and non-technical learning outcomes. The structured method of teaching manual skills is based on a four-step technique (observation, observation and listening to commentary, verbalization, and execution).

The classes were conducted by experienced specialists in general surgery, pediatric surgery, emergency medicine, anesthesiology, and intensive care. All instructors have previously completed the ETC, earned an instructor nomination, completed

the Generic Instructor Course ERC, and completed a training internship. All instructors use a unified feedback structure.

The course consists of two and a half days of classes with two lectures, one demonstration, and nine practice sessions. Topics covered during the exercises are listed in Table 1. Each four-member group is run by two instructors certified by the European Resuscitation Board.

Table 1. European Trauma Course.

| Day 1 | Day 2 | Day 3 |
|---|------------------------------------|--|
| Lecture: Initial assessment of a patient with bodily injury | Lecture: Interpretation of Head CT | Exercises: Transfer of patients with bodily injury |
| Demonstration: Evaluation of the patient — a trauma team | Exercises: Head trauma | Practical exam |
| Exercises: Securing the airway | Exercises: Abdominal trauma | |
| Exercises: Chest trauma | Exercises: Spinal trauma | |
| Exercises: Shock | Exercises: Trauma in children | |
| | Exercises: Limb trauma | |

The concept of training, through its departure from the traditional teaching model based on technical skills, is highly innovative. In available literature, however, there are no reports of how the course was accepted by its participants and how they assessed its merit and practical level.

The main objective of the study was to validate the adoption of the European Trauma Course by analyzing the opinions of participating Polish medical staff gathered in questionnaires filled out at the end of the course. ETC has been very well received in other countries [3]. ETC has already been introduced in more than 20 European countries and each year the number of courses is growing rapidly; between the years 2010 and 2014, completed ETC training has quadrupled [4]. Despite such dynamic growth, there are no studies evaluating the quality and the manner in which this training is provided by the participating medical staff.

Materials and Methodology

The European Trauma Course has been available in Poland since 2009. The study covers courses that took place between 2010 and 2015. During this period, the Polish Resuscitation Council organized 8 training sessions in which 109 people participated.

Completed feedback forms were submitted by ninety-three participants — 64 men and 29 women. Most were doctors (more than 80% of all participants in the course)

with different specializations — anesthesiology, general surgery, trauma surgery, orthopedic surgery, emergency medicine, pediatrics, pediatric surgery, and cardiology. The remaining students included medical, nursing, and midwife graduates.

The questionnaires assessed individually the various aspects of the course according to a four-point scale (4 = excellent, 3 = good, 2 = fair and 1 = weak). It was also possible to add a comment for each assessment and to include additional comments at the end of the questionnaire. Surveys related to each workshop, lecture, demonstration, and final exam. Respondents were also asked to evaluate the work of the instructors, the format of the course, the location it was administered, the food provided, and the overall organization of the course. Financial issues (participation fee) and quality of materials provided before the course were also discussed.

Of the 109 participants in the survey, 93 responded. Participants that provided responses to less than 50% of questions in the survey were excluded. Finally, we analyzed 78 (71% of all trainees) questionnaires completed by participants in the course. If the respondent gave dual points: 2 and 3 or 3 and 4 — the mean of the two points was calculated and they were treated as 2.5 or 3.5 points, respectively.

The questionnaire contained 22 closed questions and one open-ended question, where respondents could include additional opinions and comments.

Due to the total anonymity of the questionnaire, it was not possible to take into account the extent to which the evaluation of the course was influenced by respondent's gender, age, occupation, or specialization.

Results

Every aspect of the training was analyzed. Respondents had a chance to assess the practical and theoretical value of the exercises, the organization of the classes, and the competence of the instructors.

Evaluation of exercises

The exercises were highly rated by respondents (mean = 3.79 points) and gained a lot of positive feedback. Participants were receptive to the clear and visual form in which the exercises were carried out. Also, a considerable number of interesting scenarios were appreciated, thanks to which practical and theoretical knowledge was more easily grasped. A great advantage has been the ability to practice medical procedures on properly prepared and selected equipment. Of the two days in which the workshops were held, the first day was rated better (3.82 vs 3.78 points). The lowest rating on the first day of the course was 3.71, on average, for workshops on maintaining a patent airway. Workshops on the management of patients with shock received high marks, especially the exercises involving establishing intraosseous access. The highest marks

were awarded to workshops devoted to chest injuries. Participants in the comments praised the opportunity of practicing techniques to insert a drain into the chest.

Slightly worse were the exercises of the second day. The main problem was the time spent on each station. According to the participants, it was too short; as a result, it did not allow the respondents to get acquainted with the presented subject in a meticulous and satisfactory manner. Negative comments appeared especially in topics of pediatric injuries and limb injuries. Lack of exercise time limited the number of scenarios and did not cover all key issues.

Respondents also stated that during the second day of the ETC there should be more imaging diagnostics. More X-rays or CT scans would greatly increase the value of these workshops. A head injury exercise was a good example — although the scenarios were described as “fantastic”, the lack of additional diagnostic imaging materials was noticeable and perceived as a major drawback. The highest rating of the day was given to abdominal trauma exercises, regarded as a fascinating topic with interesting scenarios. A positive aspect of spinal injury exercises has been the practical approach to the subject by presenting a neurological study that the participants described as “worthy of remembering.” Detailed results are presented in Table 2.

Table 2. Survey results of the European Trauma Course.

| | Average (1–4 pts.) | Examples of the most frequent comments |
|----------------------------------|-----------------------|---|
| Organization of the course | | |
| Manual | 3.24 | Materials should be in Polish. |
| Information about the course | 3.73 | E-mail is a good way of passing information |
| Fee | 2.41 | The course is too expensive |
| Instructors | 3.92 | Very well prepared for classes |
| Format | 3.82 | Good classes, though tiring |
| Organization | 3.95 | “A good formula and a very good organization” |
| Meal | 3.70 | Lack of food for vegetarians |
| Lectures | | |
| Assessing the patient | 3.81 | The lecture should be conducted in Polish. |
| Interpreting the head CT results | 3.80 | The lecture should be conducted in Polish. |
| Demonstrations | | |
| Preliminary examination | 3.82 | Short, concise and to the point |
| Repeat assessment | 3.70 | Information worth remembering and applicable in professional life |

Table 2. Cont.

| | Average (1–4 pts.) | Examples of the most frequent comments |
|-----------------------|-----------------------|--|
| Exercises | | |
| Securing airway | 3.71 | Very good idea of using animal parts |
| Chest trauma | 3.91 | Good idea providing the opportunity to placing a chest drain |
| Shock | 3.86 | Establishing IO access was great |
| Head trauma | 3.86 | There should be more X-ray images |
| Abdominal trauma | 3.90 | A lot of scenarios, interesting exercises |
| Spinal trauma | 3.81 | Very well presented neurological examination |
| Limb trauma | 3.62 | There should be more X-ray images |
| Trauma in adolescents | 3.68 | Classes were too brief |
| Practical exam | 3.80 | Very interesting cases |

Evaluation of lectures

The European Trauma Course primarily focuses on practical activities, limiting the theory to a minimum. There are two lectures in this course: 45-minute patient assessment and cranio-cerebral injury interpretation based on computerized tomography (30 minutes). Both were highly rated (average for both lectures = 3.8 points). Participants appreciated their quick and concise format that presented the most important information in an interesting way. The interpretation of computerized tomography images turned out to be so interesting that the students wanted the contents of this lecture to be included in the course material. English as the language of instruction has been identified as the main drawback of both lectures. The exact assessment of lectures is shown in Table 2.

Rating of other aspects of the course

Submission of course details by e-mail was well evaluated by respondents. However, the electronic form of the manual was rated much worse. Most of the participants would prefer a paper book. Once again, a major problem was the use of English, in which some of the lectures and exercises were conducted. Most participants preferred the Polish language, which would allow faster and perhaps even better comprehension of the material. The lowest evaluated aspect of the course was the fee for participation in the training. Despite the excellent reviews and favorable comments about the course

preparation, the fee was deemed too high. Respondents rated the implementation of the ETC by the instructors very highly — based on their knowledge, substantive preparation, and willingness to help participants during the course. Overall the ETC training has received high marks (average = 3.54 points).

Discussion

The main purpose of the study was to validate that the European Trauma Course is suited to the needs of Polish emergency medicine personnel. In other words, how does it rank among Polish participants in the course? This course has been very well received in other countries [3]. ETC has already been introduced in more than 20 European countries and, each year, the number of courses is growing rapidly — between the years 2010 and 2014, completed ETC training has quadrupled [4]. The Polish Resuscitation Council has organized four courses since 2009 and more are planned. With growing interest, it was necessary to check whether this course also fulfilled Polish expectations. Representatives of various medical professions who have had the opportunity to participate in this training have rated ETC well. Workshops are a strength of this course. Participants in ETC training around Europe similarly rated this item highly [5]. This is primarily due to interesting scenarios. They are effective when it comes to conveying knowledge and practicing the correct skills. They also allow you to assess the soft skills of the students and their ability to cooperate. Despite the high overall marks, the course organizers did make mistakes. A major problem was the time constraint that negatively influenced the assessment of the second day. This is a widespread problem — also participants in other countries have concluded that the time spent on the second day workshop is too short [5]. Insufficient number of scenarios and limited discussion of some topics were indicated as faults and shortcomings. Attention should also be paid to the practical preparation of the workshop — appropriate selection of equipment and use of appropriate materials. Respondents positively rated the ability to practice their skills on animal tissues but also drew attention to the small number of diagnostic imaging available.

Participants in other European courses had mixed feelings about submitting materials electronically [5]. Opinions on this subject in Poland were divided as well. However, in the case of the surveyed population, financial difficulties turned out to be the biggest problem. According to the majority of respondents, the fee for the course of 2,400 PLN was too high. Another frequently discussed problem was the use of English. In the opinion of the respondents, it would be better to present materials, lectures and practice exercises in their native language. This would allow for better and quicker comprehension of material.

Despite these negative aspects, overall the course received a very good grade. Polish students were very satisfied with the training, as evidenced by the multitude of

positive reviews. ETC has been very successful in Europe and is being implemented in more countries as it continues to grow [6]. In Poland it was subject to modifications and improvements in subsequent years of its publication. The course is currently run entirely in Polish, unfortunately we have not been able to translate the manual that prepares participants for the course into Polish. These changes were not included in the results of the above analysis. This was not possible due to the insufficient amount of data that could accurately verify these differences. Due to the full anonymity of the questionnaire, the results of the study could not be analyzed based on independent variables such as sex, profession, medical specialization, or seniority.

The European Trauma Course utilizes proven techniques and the experience of instructors as the future of emergency education. It is an excellent example of the tremendous need for this type of training in Poland, as evidenced by the unusually high results on the surveys and the large number of positive comments. Not only is clinical experience and knowledge developed, but also soft skills that meet the needs of employers and medical staff. In our opinion, it is therefore necessary to continue to develop and refine the training to better meet these needs. A good option is increasing the range of practical exercises at the expense of theoretical lectures. These expectations fit perfectly well in Polish realities. Equally, negative feedback may serve as a guide for further improvements to this course in the future. It can be safely said that the ETC has been a success in Poland. However, following the example of Europeans, the Polish edition of European Trauma Course should be continually refined and adapted to local needs. The combination of innovative methodology, good organization and well-trained instructors seems to be a source of that success.

Conflict of interest

None declared.

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