SPECIAL REPORT

Primary Trauma Care: A Training Course for Healthcare Providers in Developing Countries

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Abstract

Outcomes of injury in low and middle income countries may be compromised by skill deficiencies of healthcare providers. Short subspecialty training courses can be a useful solution to skill-deficits. We report on the Primary Trauma Care programme, a 2-day course designed to train frontline health workers in resuscitation and early management of the injured with limited resources and equipment. Developed for use in weak health systems and now conducted in over 70 countries, the programme is cost-efficient with built-in design sustainability by way of early transfer of ownership to local partners to effect a cascade of trauma courses in their communities. Published studies report a significant improvement in both knowledge and skills of the participants with greater confidence in managing trauma victims. A trained health workforce could address the unmet needs identified by Global Surgery and thus contribute to achieving the Sustainable Development Goals.

Keywords: Primary trauma care, Injury, Low and middle income countries, LMICs, Healthcare providers, Education, Training course.

Introduction

Trauma is the leading cause of death in the first four decades of life in every country of the world, with more than 100 million persons affected by injury annually across the globe and close to 6 million deaths.[1] This burden of fatalities is escalating and it has been estimated that by 2020, the deaths from injury will rise up to 8.4 million, with 90% of these deaths in low-and middle-income countries (LMICs).[2] The report of the Lancet Commission on Global Surgery in 2015 has focused attention on the unmet needs for surgical care in the regions with the highest burden with trauma as a major contributor.[3] The provision of timely life-saving resuscitation and definitive injury care has been shown to improve survivals in mature health systems,[4] but trauma outcomes are compromised in the LMICs by deficiencies of adequate emergency facilities and appropriately trained health workforce.[5] A study that compared outcomes of seriously injured adults of three cities in nations with varying levels of development has confirmed the differentials of outcome by economic levels and highlighted the scope for improving trauma outcomes by training and system improvements.[6] In countries where the quality of medical education is variable and programmes for continued learning limited, short subspecialty courses are a useful solution to workforce skill deficiencies.[7]

The Primary Trauma Care (PTC) programme is a 2-day course of instruction designed to train frontline health workers in resuscitation and early management of severely injured persons in the pre-hospital setting or at facilities with limited resources and equipment.[8] It is modelled on the Advanced Trauma Life Support (ATLS) course, amongst others, that are well known in the developed countries and which have pioneered the systematic approach to managing the victims of injury by training healthcare workers.[9] However, the expense and complex logistics of mounting ATLS type courses has limited their adoption and penetration in LMICs whereas PTC is well-suited for dissemination to prepare frontline staff of weaker health systems to care for the injured. The course has been conducted extensively across Pakistan at varying levels of the health system and for all cadres of health workers.[10] The current study comprised course details retrieved from the archives of the PTC Foundation (PTCF) website,[10] informal interviews with the instructors of 2 recent PTC courses and feedback from the members of a PTC Instructor's chat group on social media, besides a literature review on the subject.

The Course: To be able to extend trauma training to remote Pacific islands, ATLS-trained physicians developed a module in 1996 to train nurses and doctors where resources and resuscitation skills were limited.[8] Though based on established trauma management principles, the

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course is different in being inherently flexible, allowing it to be offered to all levels of healthcare workers in any location and with limited resources. Participation is generally free of charge and the instructors are non-remunerated. The PTC course was endorsed by the World Health Organisation (WHO) and the course manual was incorporated into its publications in 2003.[10] The curriculum stresses a systematic, two-look approach with primary and secondary surveys across the body systems to detect and mitigate life-threatening injuries. The instruction is in the form of lectures, topic workshops, skill exercises and case scenarios spread over 2 days. This is followed by a 1-day Instructor Course on how to teach the course for those participants of the provider course who do well in the post-test and show interest in serving as instructors for future courses. The course materials, including the provider and the instructor manuals, and the set of slides for lectures are available for downloading free from the website of PTCF, UK, the registered charity which coordinates training activities worldwide. When PTC is being introduced to a new location, a visiting team of 4-6 instructors conduct the inaugural provider course, followed by the instructor course on the 3rd day. A follow-up 2-day provider course is conducted with the newly-minted instructors, mentored by the visiting instructors followed by further rounds of courses using the fresh local instructors. This '2:1:2' model of skill cascading ensures sustainability and has served well in dissemination of the training at regional and national levels in many countries. PTC courses have been run in over 70 countries and the course manual has been translated into 14 languages.[11]

PTC in Pakistan: It was in 2004 that the first PTC courses were held in Pakistan with a visiting team of instructors from the UK, led by Sir Terence English and Mr. John Beavis.[12] They collaborated with Prof Kabir of Gandhara Medical College, Peshawar and initiated the cascade that trained over a hundred providers during the team's stay. The courses subsequently spread to all the provincial capitals and further on to District Headquarter (DHQ) hospitals of Sindh and Punjab.[3]In an example of South-South collaboration, instructors from Karachi travelled to Delhi in 2005 and conducted inaugural PTC courses, establishing a robust local group.[13] Similar plans are set for introducing PTC to Afghanistan.

Literature Review: Estimates derived from the Global Burden of Disease data suggest that nearly 2 million lives could be saved every year if case fatality rates among seriously injured persons in LMICs were similar to those achieved in high-income countries.[14] Available evidence shows that training of frontline emergency healthcare workers is a critical element of the impact that trauma care systems can have in LMICs.[15] Recognising the benefits of training emergency staff in the systematic approach to the victims of injury, researchers devised an injury course designed to train doctors and nurses working in remote settings with limited resources, conducting the initial course in Fiji in 1996.[8] Within a decade, the course was being taught in countries of Asia, Africa and South America, with the involvement of the Ministry of Health in a number of them.[11] The PTC Foundation was established and registered as a UK charity in 2006 and this has been active in coordinating and disseminating courses with a reach that now extends to 76 countries across the globe.[16] The inherent flexibility of the course allows it to be adapted for offering to paramedical staff and even community health workers.[17]

Though the advantages of brief subspecialty courses as an education tool to fill the skill gaps in underserved locations has been well documented,[7] what is less clear is the improvements to trauma care outcomes accruing from short duration knowledge and skill courses. A study in Rwanda of the effect of the ATLS provider course did show a decline in injury mortality but the direct causal effect was not definitive.[18] Evidence for improvement of knowledge and skill of PTC course participants is more forthcoming. A study[19] reported an audit of a 2-day PTC provider course in Pakistan conducted in a standard PTC format and attended by 20 participants. They were evaluated before and after the course by 30 best-choice questions (BCQs) and a practical assessment. The performances on skill-stations were video-recorded and then marked on the basis of a checklist by 2 PTC instructors. The study reported a statistically significant improvement in both knowledge as well as trauma management abilities of the participants on completion of PTC course. An interventional study[20] in Iran reported that 64 participants who had attended a PTC course completed a multiple-choice question (MCQ) form and a procedural skills test before and after the course. There was a 26% improvement seen in the post-test performance, and knowledge was maintained for up to one year on re-testing. In their assessment of 345 new PTC providers trained in sub-Saharan Africa, a study[21] assessed trainees' confidence in managing trauma patients

besides knowledge measured by pre- and post-course MCQs. While all cadres of staff improved their knowledge as measured on the test scores (91% improved), the non-physicians showed a statistically higher change in score. All candidates expressed greater confidence in managing trauma victims with an average improvement of 20% on the assessment matrix.

Global Surgery initiatives increasingly are focussed on strengthening education and local healthcare systems to build surgical capacity. However, resources are more appropriately used through projects giving ownership to local providers and promoting education as a foundation of development.[22] In addition, sustainability of these initiatives is a financial and professional imperative.[23] The PTCF has from the outset, emphasised local sustainability by eliminating cost burdens for the health workforce trained, and rapid transfer of course ownership to the local partners for onward dissemination.[16] The merits of this approach have been documented in a report[24] of a PTC project to train 1080 frontline trauma healthcare workers in 10 African countries by conducting 45 courses over 3 years. A cascading course model, with a broadbased professional institution as local partner, was the key to the strength of the project and its sustainability. Not only has the course been shown to achieve lasting improvements in the knowledge and skills required for early trauma management[20] but 93% of the participants surveyed 6 months post-course reported positive changes to their management of trauma patients. In addition, 77% subjects had initiated departmental or institutional changes relating to trauma care with 26% reporting an increase in staffing of their trauma teams, thus indicating the far reaching beneficent effects such training can produce. Also, 68% respondents reported that they had been involved in training other staff at their respective hospitals, thereby contributing positively to the cascading model of PTC courses.[24] These findings were mirrored in the informal and unstructured interviews with the instructors of two recent PTC courses in Karachi and feedback from the participants of a PTC Instructors chat group.

A health workforce trained in the PTC programme can be the focus around which efficient and life-saving trauma systems can be organised in developing health systems,[25] thus addressing the unmet burden of trauma and injury and contributing to the achievement of the Sustainable Development Goals (SDGs).[26]

Conclusion

The PTC course has been found to be an effective educational tool to enhance trauma care knowledge and skills in diverse and challenging locations across the world for all cadres of health workers.

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