



EDITORIAL

## How can we improve the care of paediatric trauma?☆



### ¿Cómo mejorar la asistencia al trauma pediátrico

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In the field of Paediatrics, traumatic injury is the leading cause of death and disability in children aged more than 1 year. At present, falls and falls from heights are the leading mechanisms of injury, accounting for 53% of cases in a series of 330 children with traumatic injury admitted to the Paediatric Intensive Care Unit (PICU) of the Hospital Infantil ‘Niño Jesús’ de Madrid in the past 8 years. Following in frequency are being hit by a vehicle (20%), sports injuries (10%) and traffic accidents (9%), among many other mechanisms. The associated mortality ranges between 6% and 15% depending on the case series, with death occurring at the time of injury or in the 4 following days, mainly as a result of hypoxia and haemorrhage, and deaths at a later time being rare (5%).

The prognosis of traumatic injury depends on various factors, such as the severity and energy of the trauma, the age of the patient and the quality and timing of the provided care. The last two are modifiable factors. In recent years, there have been advances in our knowledge of traumatic injury and in the training of health care workers on the management of children with severe trauma; however, in Spain, due to the lack of a regulated and structured system with referral centres for severe paediatric trauma, care is

often provided in facilities without specially trained multidisciplinary teams or well-defined management protocols, and where medical professionals rarely face this type of condition.

The answer to the question of how we can improve or continue to improve paediatric trauma care is, needless to say, providing more and better training to all professionals that may ever manage children with traumatic injury in and out of hospital. The care plan for the severe trauma patient requires a quick assessment of the injuries and initiation of appropriate life support measures. Since time is an essential factor, a systematic approach to management that can be implemented easily and quickly would be advisable. To this end, courses on the initial care for paediatric trauma (AITP) have been and continue to be a paradigm when it comes to extending such training to a significant population of professionals, standardising the initial care of polytrauma patients in a practical learning environment by means of simulation. Studies like the one published by Ibañez Pradas and Pérez Montejano in the current issue of ANALES DE PEDIATRIA,<sup>1</sup> whose objective was to measure the impact of a training programme in paediatric trauma care on the quality of initial out-of-hospital care, are very valuable, besides being necessary. First of all, because not many studies have been done to date, and secondly, because they can help take action in terms of modifying or intensifying training programmes. The findings of the aforementioned study must be interpreted with care, as the authors themselves noted (given the retrospective design of the study, the lack of data on whether the professionals who managed

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the cases in either cohort had or not received training, and the time elapsed between the analysed periods), but inspire reflections on issues such as who should receive this type of training, how it could be institutionalised, how often a professional should get a "refresher" on this knowledge or how to supplement this type of training with other educational resources, issues that were also considered by the authors of the article. We ought to mention, for example, the TRAUMACAT project,<sup>2</sup> in which a strategy structured into collaborative projects and based on the participation of different organisations to promote the implementation of a specific set of good practices in the initial management of severe trauma patients proved to be efficacious, achieving increased adherence to the clinical indicators of the correct management of polytrauma patients after the training intervention.

In addition to the improvements observed after the implementation of any educational strategy, the number of actual patients that providers actually manage is unquestionably an essential factor in maintaining the necessary knowledge and skills to treat a given condition, so it is of vital importance that we pursue a greater and more efficient organisation of the care of paediatric patients with severe traumatic injury.

In Spain, the absence of a regional structure with trauma referral centres should be mitigated by the establishment of criteria to be applied to receiving centres, such as: 1) availability of specially trained multidisciplinary teams; 2) well-established and updated care protocols incorporating current approaches such as damage control surgery programmes and mass transfusion protocols; 3) sufficient experience, that is, the volume of such patients managed in the centre.

The close collaboration of pre-hospital and hospital care systems is of the essence. This would include an agreement on triage criteria, the definition of criteria for referral to a tertiary hospital other than proximity, and giving the out-of-hospital teams that provide initial care to patients the ability to activate the in-hospital multidisciplinary trauma team in the early stages of care. Direct communication between these two settings allows the seamless care of the patient from the outset, and the anticipation of the need for specific types of in-hospital care based on the pathophysiological condition identified at first contact.

The "Trauma Care Team" concept is very important in improving care at the hospital level, with a well-known impact on final outcomes in terms of mortality, complications and costs.<sup>3</sup> The team must be multidisciplinary, including emergency care and intensive care doctors, surgeons, nurses, auxiliary staff, radiology technicians, radiologists and blood bank personnel. The team

must be coordinated by a leader with extensive knowledge on paediatric trauma, with training or experience in communication, decision-making, resuscitation techniques and cardiovascular management in critical situations. Each team member must be knowledgeable of his or her role and have training in this multidisciplinary approach. Training in simulation environments and regular in-hospital trauma drills can be very useful in learning it.

There also need to be audits on the quality of the delivered in-hospital care, not only in statistical terms measured in outcome percentages (mortality, complications, etc) but also analysing each intervention by the multidisciplinary team with a joint debriefing with the purpose of reflecting on the provided care and detecting potential delays or errors in the initial care. Video recording systems, started at the time that the patient arrives to the life support bay where care is to be provided, can be very helpful for this purpose.

In addition to all of the above, quality improvement requires investing in trauma research and in assessing the overall situation of traumatic injury in the paediatric population in Spain. Although there are registers<sup>4</sup> at the local level in some hospitals, the establishment of a national standardised register with high methodological quality would be ideal for the purpose of describing paediatric trauma, from its epidemiology to its manifestations, care processes, and outcomes. This trauma patient register would be key in the evaluation of the quality of care as well as in the implementation of quality improvement systems.

In summary: continued education of health professionals, organisation of the transfer to referral hospitals, direct communication between in- and out-of-hospital services, training of multidisciplinary teams, systematic evaluation of outcomes, and a register for monitoring the situation of paediatric trauma in Spain.

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