

## The challenges and advances of polytrauma care in 2012

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The comprehensive care of polytraumatised patients is an ultimate challenge for the clinicians, the trauma centres and trauma systems. The current issue of the *European Journal of Trauma and Emergency Surgery* summarises some of the recent key developments of our understanding of the complexity of the polytrauma patients' response to injury [1, 2] and some recent paradigm shifts in treatment [3, 4].

The unique characteristic of the polytrauma patient is that the surgical care is beyond the restoration of the anatomy. The trauma clinicians should be considered as surgical/clinical physiologists who are able to navigate the management of patients in homeostatic disaster. Basic science advances on the understanding of the immunological response helped us to describe better the pathophysiology of complex syndromes like post-injury multiple organ failure (MOF). Unfortunately, the potentially promising laboratory advances of immune modulation to prevent MOF regularly failed in clinical trials. Based on current understanding, this is partially due to the individual differences among the injured patients. Some of the patient factors such as the currently evident epidemiological shift to an older trauma population pose a new challenge to traumatology; the specifics of this global problem on trauma care are updated by Dimitriou et al. [1].

The fundamentally new approach to understand polytrauma patients' response to injury is led by the Glue Grant Collaborative. This major project granted by the National Institutes of Health (NIH, United States) aimed to describe the genetic polymorphism and acute gene activation in major trauma patients in order to describe better the population at risk for post-injury complications and potentially help to define interventions to prevent them. Cuenca et al. [2] provide a succinct overview of this major project.

It is impossible to cover polytrauma management in the current era without mentioning some recent paradigm shifts in clinical care. The timing of surgical intervention in polytrauma patients is not necessarily a very new topic [3] but, most likely with our current approach of haemostatic resuscitation [4], will allow more severely injured patients (especially those with borderline physiology) to be treated with early total care. Haemostatic resuscitation simply does make sense; although there is no high level of evidence behind it, there is a tendency that it has rapidly put the crystalloid/colloid-based resuscitation with delayed blood and blood product administration into history. Due to the rapid acceptance and clinical application of the concept, it will be difficult to prove its validity by randomised controlled trials.

Prospective randomised controlled trials represent the gold standard in making an impact on medical care. Unfortunately, studies aiming to enroll large numbers of patients are time-consuming, very expensive and logistically difficult. To address this partially, the number of meta-analyses (of potentially lower quality studies) has increased substantially over the last decade. This was further supported by the availability of computerised data collection and statistical analyses. None of these approaches changed the main underlying principle that the quality

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of the original data set is crucial. Obviously, mathematical corrections can reduce the likelihood of inherent flaws, but the quality of the original data set always remains as a limiting factor. Although huge numbers of patients can be included, one must bear in mind that the variations in the inclusion criteria, study designs, timeframes and collected variables all play a role in the results obtained. It is important to consider how much new information meta-analyses can provide. A recent review by Court-Brown et al. [5] summarised all meta-analyses dealing with orthopaedic trauma since 2000. Interestingly, only 6.7% of the meta-analyses had contained new, clinically useful information. Moreover, 36.7% had no conclusions at all and 41.7% had conclusions that were already in the standard orthopaedic trauma practice. They also looked at Cochrane Collaborations and found that 70% of its reviews had no conclusions which would impact clinical care. This highlights the importance of the quality of original studies.

The editors believe that the current bouquet of reviews in this polytrauma-focused issue provide a useful update to the readers. The aim of the selection was to create a stimulating reading material of the current key areas

without going over all of the anatomical areas of management with many unavoidable overlaps.

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