TRAUMA CARE AND THE ANAESTHETIST – A REALITY CHECK

Clinical A/Prof Marcus Skinner

Clinical Director, Department of Anaesthesia and Perioperative Medicine,
Royal Hobart Hospital, Tasmania

"Reality is merely an illusion, albeit a very persistent one."
Albert Einstein

Trauma anaesthesia is a significant part of the workload for many anaesthetists, particularly trainees. The management of trauma patients has matured significantly since a systematic approach to trauma care was introduced primarily by ATLS and the EMST programs, now nearly a half century ago. We are all aware that initial therapy begins with prompt pre-hospital medical care and efficient transportation to medical centres staffed by clinicians armed with a systematic approach to trauma management and well organised and designated trauma centres, where lifesaving procedures are immediately undertaken.

Trauma resuscitation with packed red blood cells and plasma, in parallel with surgical or interventional radiologic source control of bleeding, are the cornerstones of trauma management. Tranexamic acid is used in Europe with good results, but the drug is slowly being added to our pharmacy formulary. Recombinant factor VIIa can correct abnormal coagulation values, but its outcome benefit is less clear.

We ask questions such as "Does appropriately aggressive resuscitation with blood products, as well as adjunctive pharmacologic therapy, attenuate the systemic inflammatory response of trauma and improve outcome?" Such questions we hope, will be fully answered by appropriate trials and future investigations that determine whether for example, the concept of "early goal-directed therapy" such as used in sepsis may be applicable in trauma and if such an approach offers a similar survival benefit.

BUT…

How far have we come in a global sense? This talk is about Trauma and the anaesthetist – "a reality check." For the vast majority of the world's trauma cases patient transfer is not a therapeutic intervention, but a means of getting a patient to some form of care, with the reality that such care may be very limited. Oxygen and IV fluids, let alone blood, may not be available and the "golden hour" can be days. Often the anaesthetist is involved late in the patient's management.

This talk hopefully will allow you a "Reality Check" on your busy "trauma" days.

In 2010/11, 1,367 New Zealanders died as the result of injury and someone is injured every 20 seconds. The Accident Compensation Corporation (ACC) received 1.5 million claims and paid $2.2 billion in total claims costs.

Every year WHO reports there are 5.8 million deaths and more than 100 million people injured from violence and accidents. This causes a significant amount of disability and economic loss, especially considering that 90% of the problem occurs in low and middle-income countries (LMICs). Much of this burden could be decreased by prevention and improvements in trauma care. In 1990 road traffic accidents were the 9th leading cause of mortality worldwide with the 1.24 million deaths and 20-40 million people suffering injury. More than 90% of deaths that result from road traffic injuries occur in low- and middle-income countries.

It is projected that by 2030 road traffic accidents will be number 5. Regrettably the problem of road traffic trauma crashes and injuries does not "belong" to any specific agency, either at national or international level.

In May 2007 Ministers of Health from 193 WHO Member States met in Geneva for the Sixtieth World Health Assembly. The World Health Assembly is the governing body of the World Health Organization and WHA resolutions are the main policy mechanisms for directing WHO programs. These resolutions provide the WHO with a mandate to undertake activities in a specific area. The WHA assembly adopted resolution 60.22 on Trauma and Emergency Care Systems. The resolution was in 10 parts but its key message was to "urge" member states

to "do more in the area of trauma prevention and management." There were a further 10 requests to the Director General of the WHO for various assistances to the member states so that they could in fact "do more."

In order to promote such improvements globally, over 100 trauma care leaders from 39 countries from all WHO regions met two years later at a WHO Global Forum on Trauma Care in Rio de Janeiro. A large number of key stake holders attended, including 12 presidents and other officers from international professional societies, as well as 30 highly placed officials from national organisations.

Participants sought to "develop a strategy to promote greater political commitment to affordable and sustainable improvements in trauma care." The summary statement from the Rio meeting was that "WHO should take the lead in developing a Global Alliance for Care of the Injured," and the WHO's Department of Violence and Injury Prevention and Disability (VIP) was to explore internally within WHO the steps needed to set up such an alliance.

In the meantime and for 10 years *prior* to that WHA plenary meeting in Geneva in 2007 (and the subsequent WHO Global Forum on Trauma Care in Rio in 2009), the Primary Trauma Care (PTC) organisation has been teaching and training trauma care responders and providers in low and middle income countries. (www.primarytraumacare.org). The PTC mission has been to provide health care workers with the necessary skills and knowledge to improve trauma management and the outcome from accident and violence. PTC has been vigorously promoting and propagating a strategy of affordable and sustainable improvements in trauma care all since the first PTC course was conducted in Fiji in 1997.

There are significant differences in outcome following injury in countries of different economic levels. One study reports mortality in the seriously injured increasing from 35% in the US, to 55% in middle income Mexico, to 63% in low income Ghana. Similarly injured people are nearly twice as likely to die in a low income setting than in a high income setting. The effect of improving organisation and planning of trauma care in high income countries have shown survival gains of 8–50% through the improved organisation and planning that comes with trauma systems.

Many injury deaths in low income settings could probably be treated well, and economic constraints are only part of the reason for the disparities in trauma outcomes between countries at different economic levels. Several programs in low income countries have already documented decreased mortality through the establishment of cost effective sustainable improvements in training, equipment, organisation and planning.

A Reality Check for us all – there is much that can be done to strengthen trauma and emergency care services through improved organisation and planning.

References

1. http://www.who.int/violence_injury_prevention/services/traumacare/global_forum_meeting_report.pdf
2. http://www.who.int/violence_injury_prevention/road_safety_status/report/statistical_annexes_en.pdf
3. http://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_R22-en.pdf
4. Mock C N, Jurkovich G J, nii-Amon-Kotei D. et al Trauma mortality patterns in three nations at different economic levels: implications for global trauma system development. J Trauma 1998. 44804–814.
5. Mann N C, Mullins R J, MacKenzie E J. et al A systematic review of published evidence regarding trauma system effectiveness. J Trauma 1999. 47S25–S33.
6. Mock C N WHA resolution on trauma and emergency care services. Inj Prev. August 2007. 13(4): 285-286.
7. Mock C, Arreola-Risa C, Quansah R. Strengthening the care of injured patients in developing countries: a case study of Ghana and Mexico. Inj Control Saf Promot 2003. 1045–51.
8. Husum H, Gilbert M, Wisborg T. et al. Rural prehospital trauma systems improve trauma outcome in low income countries: a prospective study from North Iraq and Cambodia. J Trauma 2003. 541188–1196.
9. http://whqlibdoc.who.int/publications/2009/9789241563840_eng.pdf