The future of trauma care

Caroline Dover

Abstract

Trauma affects over 135 million people every year worldwide. With predictions that trauma will soon be the third leading cause of death, the global social and economic burden is only expected to worsen. Reorganization of the trauma network came into effect in the UK in 2012, with the introduction of consultant-led major trauma centres serving local trauma units. Although shown to significantly reduce the morbidity and mortality associated with trauma, there are still large areas of the country not benefiting from this network. Further steps are needed to improve trauma service provision for future generations. This should include a review of our trauma management training, education of the public and the use of modern technology to improve our services and accessibility, enabling us to take major steps in the prevention of trauma.

Keywords education; major trauma centres; prevention; regionalization; trauma; virtual reality

The **BOTA and *Orthopaedics and Trauma* Journal Trainee Essay Prize** is a national essay competition run by the British Orthopaedic Trainees Association in conjunction with *Orthopaedics and Trauma* journal. For 2016, essays were invited on the topic '*The future of trauma care*'. All submitted essays were reviewed by members of the BOTA Committee, who selected three winners.

First place went to Caroline Dover, from the West Midlands deanery, whose prize was £100 of Elsevier book vouchers and a subscription to *Orthopaedics and Trauma* journal. We are delighted to publish the winning essay below.

Second place was awarded to Alison Kinghorn, from the Wales deanery, who won copies of Miller's *Review of Orthopaedics* and McRae's *Orthopaedic Trauma and Emergency Fracture Management*.

Third place was awarded to Luke Farrow, from the North of Scotland deanery, who won a copy of McRae's *Orthopaedic Trauma and Emergency Fracture Management*.

> "Without continual growth and progress, such words as improvement, achievement, and success have no meaning" — Benjamin Franklin

The cost of trauma

Trauma is a global public health issue, affecting over 135 million people a year, resulting in the loss of 180 million disability adjusted life-years annually.[1] In the United Kingdom alone, trauma accounts for 6 million attendances at accident and emergency departments and 720,000 hospital admissions per year.[2] Of these, 37,000 patients are seriously injured. Trauma is the leading cause of death in patients aged under 40 years of age, accounting for 17,000 deaths every year.[3] In addition to the enormous social consequences of trauma, it also has major financial repercussions. The National Audit Office estimates that the annual economic loss from trauma, through death and serious injuries, is in the region of £3.3 to £3.7 billion.[4] In 2009, the cost to the NHS budget was around 7%.

With the "global burden" of trauma expected to increase over the coming years, to become the third leading cause of death worldwide,[2] and the enormous financial and social implications highlighted above, the importance of trauma preventative strategies and the delivery of good trauma care is clear.

The history of trauma care delivery

In 2010, the head of the National Audit Office reported that trauma healthcare required better organization, through "trauma networks", and that the available services were simply "not good enough".[4] In the same year, the NHS Clinical Advisory Group on trauma published guidelines for the implementation of new evidence-based trauma networks, and it was in 2012 that regional networks went live across the United Kingdom (Figure 1).

Key recommendations included the designation of one major trauma centre per region, defined by the Royal College of Surgeons of England as a hospital with the capacity to admit 400–600 patients per year, and serving a population of 2–3 million.[1] These would connect with local trauma units within the network and treat patients, assessed as having major trauma, by a consultant-led dedicated trauma team, on duty 24 hours a day.[1]

In 2014 the NHS England Chief Executive announced a "major NHS success story", with figures reflecting an improvement in trauma care over the preceding 2 years. Research, conducted by the Trauma Audit and Research Network, demonstrated a 30%

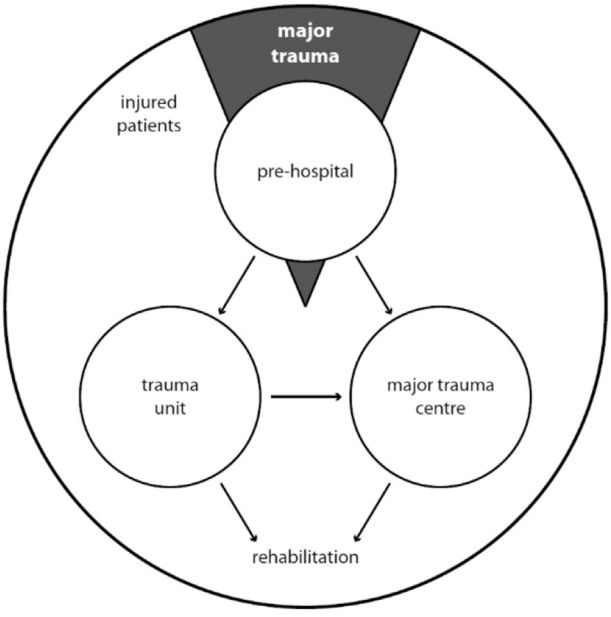

Figure 1 The regional trauma system. Reproduced from Ref. 1 with permission of The Royal College of Surgeons of England.

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improvement in survival following major trauma, equivalent to 600 more patients surviving every year.[3]

Regionalization has been shown to have been a key factor in reducing trauma-associated mortality rates. We can see on the map in Figure 2 that, despite the creation of trauma networks, there are still areas with no major trauma centre in close proximity. About 30% of deaths from trauma have been found to be avoidable, in the absence of such trauma systems.[1] In 2009, the Royal College of Surgeons of England found that, without regionalization, the mortality and morbidity rates associated with trauma had remained the same since 1994. This is despite improvements in education and training.[1]

Education and training

In addition to the provision of care in an organized health system, trauma patients also benefit from organized, specialist-led, management. The Advanced Trauma Life Support course, or ATLS, was first introduced into the United Kingdom in 1988, based on an American model. Although the use of ATLS principles has been widely adopted and has shown to provide a more structured approach to managing trauma, we have already seen that such training had no appreciable impact, in the absence of trauma networks, on overall mortality and morbidity rates. J P Nolan, in his article in the *Emergency Medicine Journal,* discusses the efficacy and cost effectiveness of the ATLS course within a NHS setting. With increasing staffing and financial strain, it is becoming increasingly hard to deliver this training in its current format. The development of an equivalent course for the United Kingdom, which reflects our healthcare system, population needs, and resources would be one way to improve trauma care education and training, whilst still ensuring a safe and organized approach to managing major trauma.[5]

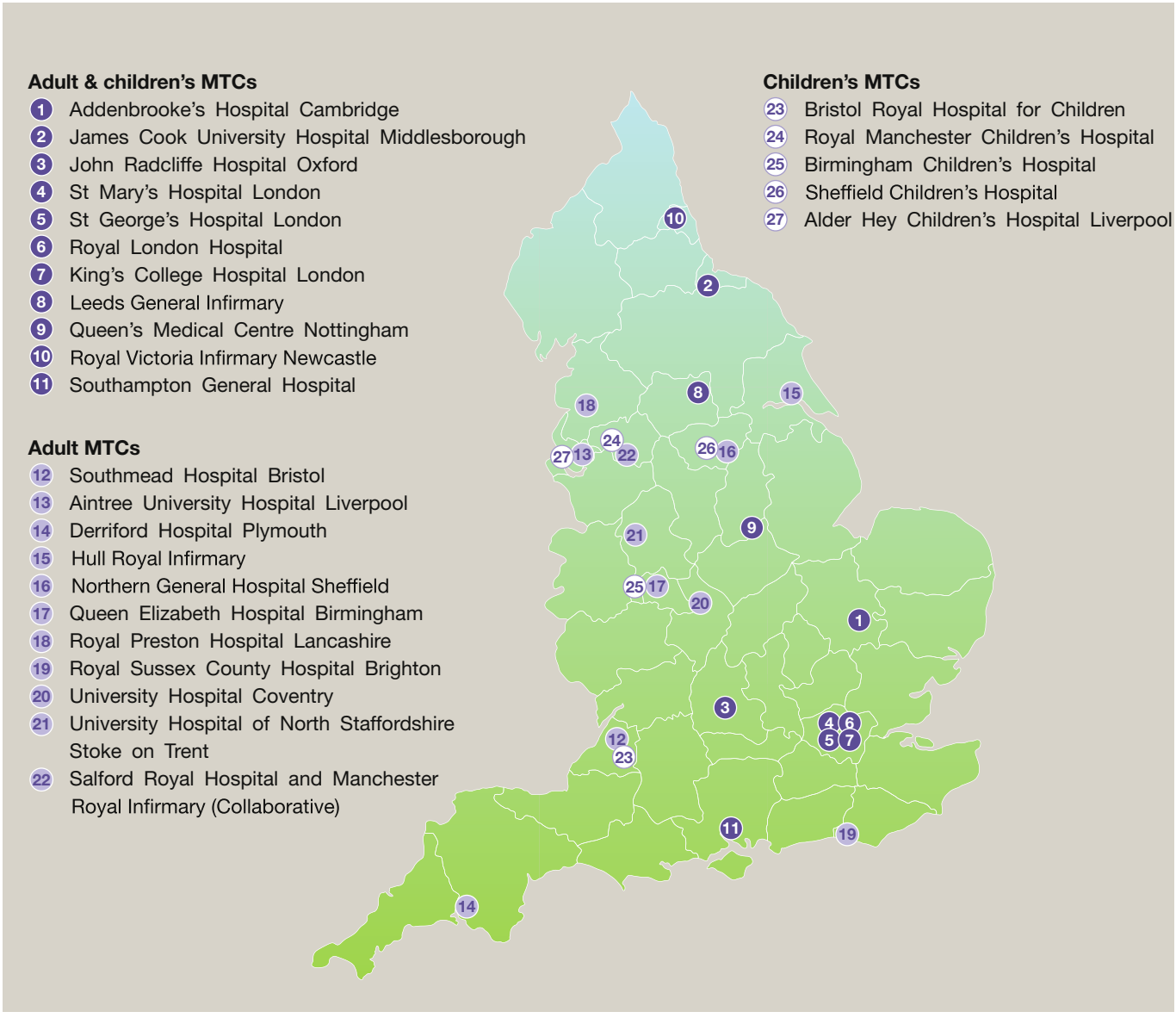

Figure 2 Major trauma centres in England. Data from NHS England. MTC, major trauma centre.