

Trauma training tends to focus on military or civilian emergency nurses. Critical care nurses would also benefit from a standardised, national trauma training programme

Training critical care nurses in trauma care

In this article...

- › Trauma care in military and civilian settings
- › Why critical care nurses would benefit from trauma training
- › Recommendations for trauma training for critical care nurses

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Abstract Carter C, Cumming J (2014) Training critical care nurses in trauma care. *Nursing Times*; 110; 22, 16-18. Trauma is the commonest cause of death in people aged under 40 years. Despite review and debate, the quality of trauma training and care varies. This article examines the literature relating to trauma training in UK military and civilian environments to identify current practice and recommendations for training. It also discusses the British Association of Critical Care Nurses Military Region's one-day trauma critical care skills workshop.

Trauma is the commonest cause of death in people aged under 40 years and the global "burden of trauma" is set to increase over the next 20 years (Trauma Audit and Research Network, 2014). Although trauma training and care have been widely reviewed and debated in England, the quality of it remains variable (Barleycorn, 2013).

Military and civilian trauma care

Trauma is a broad definition used to describe injuries caused by an external force due to accidents, violence or self-harm. It is categorised by mechanism of injury and includes penetrating trauma, blunt trauma or a combination of these (National Institute for Health and Care Excellence, 2004).

The mechanisms of injury found in military and civilian contexts differ. A review

of patients admitted to UK field hospitals in Iraq and Afghanistan with major trauma – those with an Injury Severity Score of >16 (Box 1) – found 53.8% had blast/fragmentation injury, 29.9% had gunshot wounds and 5.1% had been injured in road traffic collisions (Ministry of Defence, 2008). In contrast, of 183 major trauma cases dealt with in a UK civilian hospital, 56.3% were related to road traffic collisions (National Confidential Enquiry into Outcome and Death, 2007).

Nursing care in military environments is often provided in extremely challenging circumstances due to hostilities or natural disasters. Logistics are often difficult – medical facilities can be many miles away so provisions and equipment must be brought in by aircraft or through airdrops. Supplies may be limited and infrastructure damaged, resulting in inadequate supplies of water and electricity and an environment that is difficult to control; this includes the management of hospital waste, the dead and body parts (Byers et al, 2013).

The UK Defence Medical Services deploys a variety of clinical capabilities to hostile environments, and expects the care to be of the same standard as that in the UK. To ensure this, all secondary care facilities in Afghanistan and Iraq were inspected recently by the Care Quality Commission (2012). While the CQC found trauma care was of a high standard, to ensure this continues, we need staff to be trained and prepared for their role in the UK and deployment environments, or receive training to refresh skills.

Trauma training

Knowledge and understanding of trauma care in the UK has increased over the past

5 key points

1 Trauma is a leading cause of death and disability in both military and civilian environments

2 Recent military operations in Afghanistan and Iraq have increased the understanding of military trauma injury patterns and care

3 In the UK, there have been considerable changes in the care of civilian trauma patients, with the development of trauma centres

4 Training can prepare health professionals to deal with trauma patients

5 Civilian and military critical care nurses need to understand how to deal with trauma patients who are critically ill



Military hospital, Afghanistan: staff need special training for military environments

10 years. Recent military operations have provided a large cohort of patients, allowing injury patterns and trauma care to be researched and evaluated (Hodgetts et al, 2007), while the trauma system network in the UK has improved civilian trauma practices (Savage et al, 2011).

A variety of trauma training is available, including accredited courses such as advanced trauma life support (ATLS) and in-house training (Armstrong et al, 2013). Patient (2007) identified that the majority of courses were medically led and tended to focus on the pre-hospital environment and emergency departments; courses specifically for ward and critical care nurses were limited. The different injury patterns, patient population and clinical settings in military trauma services add complexity when preparing CCNs for a military role; preparing nurses for a deployment role requires specialist training not offered in civilian courses (Borzotta, 2011).

Training for military settings

UK military trauma training forms part of pre-deployment training and is role specific. Those working in pre-hospital environments attend a military multidisciplinary battlefield ATLS course, while those working in field hospitals attend mission-specific training delivered via large, simulated hospital exercises known as HOSPEX; additional role-specific courses such as the military operational surgical training for surgical teams may also be appropriate (Mercer et al, 2013).

Arora et al (2009) conducted large-scale, simulation-based training in non-technical skills for 280 personnel attending HOSPEX. The skills were assessed using the Imperial College clinical skills assessment tool for military personnel, which focuses on non-technical skills, including situational awareness, decision making, communication, team working and leadership. Other skills observed included environmental and clinical care skills.

Assessing competence

Arora et al (2009) found reliability was excellent for all subscales observed and concluded that "large-scale, full-immersion, simulation-based training is highly effective in delivering training in team-based, non-technical skills to expert surgical staff".

Barker (2003), however, said training did not finish once the trainee has achieved the required outcome, and that competence and performance should be demonstrated on an ongoing basis in the correct setting.

BOX 1. INJURY SEVERITY SCORE

Injury severity scoring is an anatomical scoring tool to calculate an overall score for patients with multiple injuries. Each injury is given an abbreviated injury score and allocated to one of six body regions:

- Head and neck
- Face
- Chest and thoracic spine
- Abdomen, lumbar spine and pelvic contents
- Bony pelvis and limbs
- Body surface (external)

The scores of the three most severely injured body regions are squared and added together to produce the ISS.

Sources: Woodford (2013); Baker et al (1974)

Dedicated training

A study by Franklin et al (2008), which sought to determine whether US Army family nurse practitioners thought they were competent in trauma care, found they needed additional training using national standards and hands-on experience. Franklin et al (2008) explored which course was "best" to deliver this. Many of the issues raised were supported by Patient's (2007) literature review of UK trauma training for emergency nurses, which found nurses could attend ATLS courses only as observers and had to attend nursing-equivalent courses for any certification.

Debate continues in emergency medicine over whether the American ATLS course would be the best one to use in the UK; others, such as the European Trauma Course, have been suggested as possible alternatives (Kinross et al, 2006). There is no national training for civilian and military CCNs in the UK; instead, they must rely on local hospital or network training.

In the UK Defence Medical Services, secondary care is provided through MoD hospital units or the Royal Centre for Defence Medicine. These are military medical units in NHS hospitals, giving nurses exposure to both civilian and military patients. The RCDM is the primary receiving hospital for all UK military patients injured on deployed operations and is based at the Queen Elizabeth Hospital Birmingham Trust. However, as not all MoD hospital units are level-one trauma centres, trauma training and hands-on skill development may vary among UK military CCNs as some do not regularly care for trauma patients who are critically

ill. Those working in level-one trauma centres may have more exposure to such patients but the mechanisms of injury for military and civilian patients are usually different. These factors could result in wide variations in practices, highlighting the need for a comprehensive pre-deployment training pathway for military CCNs.

In Schreiber et al's (2002) study, US Army surgeons, nurses, emergency medical technicians and operating-room technicians trained in a level one trauma centre for 30 days. This one-month training gave military general surgeons more experience than they had had the previous year at their home station; other staff, including nurses, also benefited from the experience.

Although traditional courses such as ATLS have been challenged, national courses, as Kinross et al (2006) identified, provide a standardised, structured approach to trauma care that results in a "common language" among practitioners.

World Health Organisation guidance (Mock et al, 2004) states that health professionals at all levels should have the skills to deal with trauma. There are national and local courses that nurses can attend; however, Tippett (2004) found that three months after attending the Advanced Trauma Nursing Course, emergency nurses' knowledge was not statistically significant from pre-course levels, suggesting skill retention is poor. This confirms Barker's (2003) view that training should not finish on completion of the course but that ongoing training in practice is required.

Trauma centres

Trauma centres have changed how trauma care is provided in the UK (Miller, 2010); a recent audit showed survival from severe trauma has increased since they were introduced in England (NHS England, 2013). This suggests a joint approach of training, clinical exposure and service provision would have a positive impact.

McInulty (2013) reported that, although much has been written about trauma centres from an emergency department perspective, little has been published on the later management of these patients, especially those who pass through the multi-staged system.

Trauma workshop

There is also limited evidence on the impact of specific trauma training for CCNs.

In the military, CCNs can access simulation training, such as HOSPEX, only if they are being deployed, and this often focuses on the area to which the team will be sent. To provide a generic course for military

BOX 2. TRAUMA WORKSHOP

The British Association of Critical Care Nurses Military Region's one-day workshop programme includes:

- Pre-course resource pack
- Introduction to the workshop
- Pathophysiology of trauma
- Catastrophic haemorrhage and hypovolaemic shock
- Chest injuries
- Abdominal injuries
- Neurological injuries
- Spinal injuries
- Pelvic and limb injuries
- Pain management
- Clinical decision making
- Trauma skills scenarios

CCNs who work in civilian and military environments, the BACCN Military Region developed a one-day trauma workshop (Box 2). This is comprised of short lectures on different topics; using case studies, delegates then discuss the nursing management of patients and practise trauma skills relevant to critical care nursing.

To achieve continuity between training and practice, the workshop focuses on best practice principles and uses trauma terminology used in other civilian and military courses. It has been awarded BACCN continuing professional development points. The workshop was designed to help nurses meet the Defence Operational Nursing Competencies – a national framework to demonstrate understanding of the deployment nursing environment. Box 3 briefly explores two sessions from the workshop.

While the workshop focuses on the care of military polytrauma patients, it covers trauma care principles, giving it a wider relevance; other staff including operating department practitioners, combat medical technicians, military emergency and ward nurses, and civilian CCNs have attended. Four workshops have been run and evaluation has helped develop them. It is too early to identify the workshop's impact on practice; this is an area for future study.

Recommendations for future trauma training

Through the literature review and workshop evaluations, we have made the following recommendations:

- » More courses should be developed for CCNs;
- » More studies into CCNs' competence and skills retention should be considered;

BOX 3. WORKSHOP SESSIONS

Clinical decision making

Delegates are given scenarios and asked to consider the care provided in a deployment military and a civilian intensive care unit. After positive evaluations, the scenarios are expanded with time to allow delegates to explore similarities and differences between the two environments and share practice and experiences.

Skills

This session uses specialist actors from Amputees in Action to allow delegates to

practise key nursing skills while facing the practical challenges and realities of nursing a critically ill trauma patient. Feedback has been variable, and demonstrates delegates' differing levels of skill. Given this feedback and the points raised in this article about nurses' trauma skills, the faculty felt the workshop should focus on basic skills to set a foundation level, which could be built on in practice or further training. Workshops continue to be evaluated.

- » Training should be relevant and responsive to injury patterns and nurses' clinical environments;
- » Demonstration of skill or attendance at a course does not equate to competence and needs to be consolidated with practical experiences and reflection and supported with competencies;
- » Training should be interdisciplinary and cross specialties.

Conclusion

The evidence base in military and civilian trauma care has evolved significantly in recent years, with emergency nurse training developing to enable them to use this evidence to improve practice.

Further work is needed to explore the impact of trauma care within critical care and the effect of training and skill retention.

The BACCN Military Region Trauma Workshop introduces the care of military polytrauma patients that complements other training provided to military nurses over their careers. The content translates to civilian practice, so the course is multi-functional and relevant to all CCNs. **NT**

References

- Arora S et al (2009) Large scale, simulation-based training in non-technical skills: efficacy of the British Army's HospEx simulation exercise. *Journal of the American College of Surgeons*; 209: 3, S108.
- Armstrong B et al (2013) Training nurses in trauma management. *Emergency Nurse*; 21: 4, 14-18.
- Baker SP et al (1974) The Injury Severity Score: a method for describing patients with multiple injuries and evaluating emergency care. *Journal of Trauma*; 14: 3, 187-196.
- Barker P (2003) Trauma training and the military. *Injury. International Journal of the Care of the Injured*; 34, 1-2.
- Barleycorn D (2013) Trauma nursing development in England: insight from South Africa. *International Emergency Nursing*; 21: 3, 190-193.
- Borzotta A (2011) Civilian and military trauma: does civilian training prepare surgeons for the battlefield? *American Surgeon*; 77: 1, 25-26.
- Byers M et al (2013) Trauma care in hostile

environments. In: Skinner DV, Driscoll PA (eds) *ABC of Major Trauma*. Oxford: Wiley-Blackwell and BMJ Books.

Care Quality Commission (2012) *Defence Medical Services: a Review of Compliance with the Essential Standards of Quality and Safety*. tinyurl.com/CQC-Defence

Franklin BE et al (2008) Self-assessment of trauma competencies among army family nurse practitioners. *Military Medicine*; 173: 8, 759-764.

Hodgetts T et al (2007) Operational mortality of the UK service personnel in Iraq and Afghanistan: a one year analysis 2006-7. *Journal of the Royal Army Medical Corp*; 153: 4, 252-254.

Kinross J et al (2006) ATLS versus ETC: time for decision? *Annals of Emergency Medicine*; 48: 6, 761-762.

McIntuity L (2013) Trauma co-ordinators. *Emergency Nurse*; 21: 4, 11.

Mercer SJ et al (2013) Military experience of human factors in airway complications. *Anaesthesia*; 68: 10, 1081-1082.

Miller S (2010) How trauma networks can improve patient care. *Emergency Nurse*; 18: 6, 14-18.

Ministry of Defence (2008) Mechanisms and epidemiology of trauma. In: *Battlefield Advanced Trauma Life Support. Joint Service Publication 570*. London: Ministry of Defence.

Mock C et al (2004) *Guidelines for Essential Trauma Care*. Geneva: World Health Organization. tinyurl.com/WHO-Trauma-guideline.

National Confidential Enquiry in Patient Outcome and Death (2007) *Trauma: Who Cares?* tinyurl.com/NCEPOD-Trauma

National Institute for Health and Care Excellence (2004) *Pre-hospital Initiation of Fluid Replacement Therapy in Trauma*. nice.org.uk/TA74

NHS England (2013) *Independent Review of Major Trauma Networks Reveals Increase in Patient Survival Rates*. Press release. tinyurl.com/NHSE-Trauma-survival

Patient L (2007) Trauma training: a literature review. *Emergency Nurse*; 15: 7, 28-37.

Savage E et al (2011) Tactical combat casualty care in the Canadian Forces: lessons learned from the Afghan War. *Canadian Journal of Surgery*; 54: 6, S118-S123.

Schreiber MA et al (2002) Military trauma training performed in a civilian trauma centre. *Journal of Surgical Research*; 104: 1, 8-14.

Tippett J (2004) Nurses' acquisition and retention of knowledge after trauma training. *Accident and Emergency Nursing*; 12: 1, 39-46.

Trauma Audit and Research Network (2014) *Trauma Care*. <https://www.tarn.ac.uk/Content.aspx?ca=2>

Woodford M (2013) Scoring systems for trauma. In: Skinner DV, Driscoll PA (eds) *ABC of Major Trauma*. Oxford: Wiley-Blackwell and BMJ Books