

Life-saving treatments learned from war being missed

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Trauma is responsible for more global deaths annually than HIV, malaria and tuberculosis combined. Yet healthcare systems in many countries are missing out on life-saving treatments learnt on the battlefield, according to a review by King's College London and published today in the *Journal of the Royal Society of Medicine*.

Medical advancements made by the military in times of conflict, are increasingly seen in the hospitals of high income countries but are being missed in poorer countries, where trauma is the leading cause of death in young people. Many innovations by frontline doctors in stabilising and treating severely wounded soldiers could be adapted for use in other healthcare settings.

The review was conducted by the Centre for Global Health at King's College London, in collaboration with the International Prevention Research Institute (IPRI). It calls for research and changes in policy to determine how innovations in military medicine can be transferred to civilian populations, particularly in low-resource regions where the more simple and cost-effective of these medical advances could be implemented

The King's review analysed eight studies covering a range of military medical advancements in managing pain, blood loss, brain injuries and other aspects of trauma care, some of which have emerged from the conflict in Iraq and Afghanistan.

Tourniquets are now considered a battlefield necessity and soldiers are issued with a tourniquet as part of a field dressing pack, which has led to a dramatic reduction in deaths from excess bleeding. A new wide-gauge tourniquet is being trialed to determine whether a wider surface area and adjustable pressure will control bleeding while preventing damage to the surrounding nerves and tissues. For low-middle income countries this cheap, effective device could have a major impact. Application of a tourniquet can be quickly and easily taught to as part of basic first aid training. Cheap material design also means mass production and distribution is possible.

In spite of often poor road networks, many patients in low-middle income countries are transferred by private cars or vans to hospitals. These patients need to be stabilised for what are often long journeys to reach a hospital. Intraosseous needles were originally developed for battlefield administration of fluids and pain relief in volatile or moving environments; these could be particularly useful for low-middle income countries where rough terrain causes normal IV or central lines to come out. Intraosseous needles are now routinely used in high-income countries for severe trauma, normally road traffic accidents, as a direct result of their proven military success. The relative ease of training and placement make them suitable for use by paramedical staff and community health workers who are often the first to provide care in low-middle income settings.

A shift in pain management has accompanied the evolving nature of traumatic injuries in war zones. Pain is increasingly being treated using a range of drugs, some of which work in synergy. Alongside opioids, ketamine, antidepressants and anxiolytics, local analgesics (such as epidurals) are being used to manage pain without compromising respiratory function or risking other side effects. Doctors in high-income healthcare systems are adopting this method for vulnerable patients such as the elderly with orthopaedic injuries and multiple health problems.

With increasing generics and national manufacturing capabilities, e.g. Cipla in India, the ability to make cheap multimodal medicines and even combine these in novel formulations could actually provide far better [pain relief](#) options in resource-constrained environments.

Another adaptation that has saved lives is the enhanced battlefield first aid training given to soldiers. Soldiers are taught a range of technique to control bleeding, including the use of tourniquets. If a non-medical can deliver care until medical help arrives, this dramatically increases the chances of survival. Following this principle, those working in places of frequent accidents, such as bus drivers, taxi drivers and the police force, could be trained in basic first aid, given equipment to use and given two-way radios in order to alert hospitals of incoming patients in many developing countries.

Professor Sullivan, Co-Lead of the Conflict & Health Research Group at King's College London, who led the review said: 'Trauma results globally in over five million deaths. Defence medical services have been at the leading edge of [trauma care](#) innovation but only some of this has made its way into the civilian arena. This is a missed opportunity. There is a clear need still for cost-effective interventions for dealing with trauma.'

Professor Peter Boyle, President of the IPRI added: 'Trauma care has been neglected in research. High-income civilian populations have already benefitted from battlefield innovations, but the relevance of these advancements to the global community has been so far ignored.'

More information: 'Lessons learnt from the casualties of war: battlefield medicine and its implication for global trauma care' [DOI: 10.1177/0141076815570923](#) , by Chatfield-Ball et al is published online in the *Journal of the Royal Society of Medicine* on Friday 20 March 2015.

Provided by King's College London

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