Civilian and military doctors’ knowledge of tranexamic acid (TXA) use in major trauma: a comparison study

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ABSTRACT
Introduction Tranexamic acid (TXA) administration within the recommended time of 3 hours has been demonstrated to improve outcomes following trauma. The aim of this study was to identify potential knowledge gaps in the administration of TXA in order to target further educational training in those doctors responsible for the management of acute trauma.

Methods 104 military and 852 civilian doctors were invited to complete a four-item web-based questionnaire pertaining to the indications, dose, side effects and evidence base for TXA administration in trauma. Doctors of all grades and surgical specialties including emergency trainees and anaesthetics were surveyed.

Results 65 military and 460 civilian doctors responded with a response rate of 62% and 54%, respectively. Responses were required for every question to allow progression and submission. 93% of military doctors knew the initial dose of TXA compared with 34% of civilian doctors. The Clinical randomisation of an Antifibrinolytic in Significant Haemorrhage (CRASH) 2 trial was known to 91% of military doctors compared with 24% of civilian doctors. The optimal time for delivery of TXA in under 3 hours was correctly identified by 91% of military doctors compared with 10% by civilian doctors.

Discussion Military doctors are more familiar with TXA and its side effect profile. Given the potential impact of TXA on patient outcome and the findings of this study, further education of all doctors is recommended including dose, timing and potential side effects.

INTRODUCTION
Trauma is one of the leading causes of mortality in the teenage and young adult population.1 Worldwide, there are around 480 000 deaths annually attributable to major haemorrhage.2 Clotting is the mainstay of the body’s defence to any compromise to the vascular system resulting in a haemostatic response.3 Major trauma can lead to propagation of the ‘lethal triad’ of hypothermia, acidosis and coagulopathy.4 It is known that in trauma, fibrinolysis occurs and antifibrinolytic agents have been shown to reduce blood loss in major haemorrhage.5

Since the Clinical randomisation of an Antifibrinolytic in Significant Haemorrhage (CRASH) 2 trial, tranexamic acid (TXA) has become a mainstay in trauma and its use has been investigated in many other settings.6–9 Prompt TXA administration within 3 hours improves outcomes by facilitating damage control resuscitation and surgery.9 There is also evidence to suggest a reduction in mortality by up to 6.5%, and an increase in postoperative haemoglobin in trauma patients with major haemorrhage.10,11 Similarly, there is increasing evidence that TXA can be used in major elective procedures.12–14

The aim of this study was to explore the TXA knowledge of civilian and military doctors in the use of TXA.

METHODS
One hundred and four military and 852 civilian doctors were invited to complete a four-item web-based questionnaire pertaining to the indications, dose, side effects and evidence base for TXA administration in trauma. The survey was sent in equal proportions to three groups which included Consultants, Registrars and Foundation Year (FY)1-Core Trainee (CT)2 (Juniors). The first military group were elements from Defence Medical Group North, elements of 16 Close Support Medical Regiment including the reserve squadron, 144 Parachute Medical squadron and Doctors from the ‘Northern Deanery’. Participants were asked to complete the survey alone and any time over 2 min were
We recognise potential limitations of this study, including that the sample consisted of doctors from one area in England and, second, the response rate for the study was lower from civilian doctors which potentially limits extrapolation of the findings. There is a need for these findings to be repeated in a larger study across a much broader geographical area to examine whether knowledge of TXA is being disseminated and to ascertain if these findings are comparable to other training regions.

Contributors JBT was the main author but all authors contributed to data collection, design of the paper, analysis and write-up and revision.

Competing interests None declared.

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Data sharing statement The data is completely anonymised and is available upon request to any persons approved by the MOD to view such data.

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REFERENCES

RESULTS
Responses were received from 65 military and 460 civilian doctors, with a response rate of 62% and 54%, respectively. Ninety-three per cent of military doctors (n=61) knew the initial dose of TXA compared with 34% (n=287) of civilian doctors. There was an awareness of the CRASH 2 trial in 91% (n=59) of military respondents, and 24% (n=202) of civilian doctors.

Ninety-one per cent of military doctors (n=59) knew the correct time of administration of less than 3 hours compared with 10% (n=84) of civilian doctors. Venous thromboembolism was the most frequently recognised side effect by both military (71%, n=57) and civilian doctors (52%, n=445). Military doctors recognised renal impairment (52%, n=34) as a complication, compared with only 4% of civilian doctors (n=33) and similarly, anaphylaxis (57%, n=37%) and 1%, n=8).

Civilian doctors were derived from Emergency medicine (40%), Anaesthetics (53%) and surgery (7%). No breakdown of specialties was available for the military doctors.

DISCUSSION
This survey highlights that many doctors’ knowledge of TXA administration in a major trauma setting is limited. This is important due to TXA being established as a mainstay of trauma treatment. Military doctors are more familiar with the drug and its side effect profile, which may be due to differences in training and exposure. This is as expected given the frequency of use among clinicians in the military who have served on operational duty. Given the impact of TXA and the findings in this study, it is clear that we would recommend further training in the indications, administration and side effects of TXA given in trauma.