Tranexamic acid to reduce head injury death in people with traumatic brain injury: the CRASH-3 international RCT

Ian Roberts,1* Haleema Shakur-Still,1 Amy Aeron-Thomas,2 Danielle Beaumont,1 Antonio Belli,3 Amy Brenner,1 Madeleine Cargill,1 Rizwana Chaudhri,4 Nicolas Douglas,5 Lauren Frimley,1 Catherine Gilliam,1 Amber Geer,1 Zahra Jamal,1 Rashid Jooma,6 Raoul Mansukhani,1 Alec Miners,5 Jason Pott,7 Danielle Prowse,1 Temitayo Shokunbi8 and Jack Williams5

1Clinical Trials Unit, London School of Hygiene & Tropical Medicine, London, UK
2RoadPeace, London, UK
3National Institute for Health Research Surgical Reconstruction and Microbiology Research Centre, Queen Elizabeth Hospital, Birmingham, UK
4Department of Obstetrics and Gynaecology, Rawalpindi Medical University, Rawalpinidi, Pakistan
5Department of Health Services Research and Policy, London School of Hygiene & Tropical Medicine, London, UK
6Department of Surgery, The Aga Khan University Medical College, Karachi, Pakistan
7Emergency Department, Barts Health NHS Trust, The Royal London Hospital, London, UK
8Department of Anatomy and Surgery, University of Ibadan, Ibadan, Nigeria

*Corresponding author Ian.Roberts@lshtm.ac.uk

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Plain English summary

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Traumatic brain injury is a leading cause of death and disability worldwide, with over 60 million new cases each year.

When the head is injured there is often bleeding inside the brain, which can continue for some time and worsen after hospital admission. This bleeding increases pressure inside the skull, causing further damage to the brain, which can be fatal or result in serious disability.

Tranexamic acid is a cheap drug that reduces bleeding in other conditions. A large trial of accident victims (other than those with head injury) found that it reduced the chances of bleeding to death. We wanted to find out if tranexamic acid would also reduce deaths among patients with head injuries.

We studied just under 13,000 patients with traumatic brain injury who did not have other major injuries to their bodies from 175 hospitals across 29 countries. Patients were assigned at random to receive either tranexamic acid or a dummy medicine called a placebo. Neither the clinical team nor the patient knew which medicine the patient received. All patients received the usual treatments given to head-injured patients.

Outcomes from 9127 participants were analysed. Among patients treated early, within 3 hours, the rate of head injury death was 18.5% (855/4613) in the tranexamic acid group and 19.8% (892/4514) in the placebo group. We found no evidence of an effect of tranexamic acid overall. However, in patients with mild or moderate traumatic brain injury, there was a 20% reduction in deaths. There were no side effects and no increase in disability in survivors when the drug was used. The economic analysis shows that tranexamic acid represents value for money for patients with mild or moderate traumatic brain injury.
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This report

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