Paediatric traumatic cardiac arrest - a Delphi study to establish consensus on management. A PERUKI study

Background
Paediatric traumatic cardiac arrest (TCA) is associated with low survival and poor outcomes. The mechanisms that underlie TCA are different from medical cardiac arrest; the approach to treatment of TCA may therefore also need to differ to optimise outcomes. The aim of this study was to explore the opinion of subject matter experts (SMEs) regarding the diagnosis and treatment of paediatric TCA, and to reach consensus on how best to manage this group of patients.

Methods
Following topic-specific literature reviews which demonstrated a lack of evidence, an online Delphi study was conducted over three rounds, with the aim of achieving consensus (defined as 70% agreement) on statements related to the diagnosis and management of paediatric TCA. SMEs were invited from PERUKI, (Paediatric Emergency Research in the UK and Ireland), paediatric major trauma centre leads, paediatric anaesthetists, paediatric ICU clinicians, paediatric surgeons, and representatives from the Resuscitation Council UK. Statements were informed by the literature reviews and were based on elements of Advanced Paediatric Life Support resuscitation algorithms as well as some concepts used in the management of adult TCA; they ranged from confirmation of cardiac arrest to the indications for thoracotomy.

Results
73 SMEs completed all three rounds between June and November 2016. Consensus has been reached on 14 statements regarding the diagnosis and management of paediatric TCA.

Conclusion
Paediatric TCA is one of the most challenging presentations that we face in paediatric emergency medicine. This study has given a consensus-based framework to guide protocol development in the management of paediatric TCA, though further work is required in other key areas including its acceptability to clinicians. A consensus dissemination meeting will be held in March 2017 where those statements which came close to consensus will also be discussed.