

## Paediatric Traumatic Cardiac Arrest – the development of a treatment algorithm

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### Introduction

Paediatric Traumatic Cardiac Arrest (TCA) is a high acuity, low frequency event with fewer than 15 cases reported per year to the Trauma Audit Research Network (TARN). Traditionally survival from TCA has been reported as low, with some believing resuscitation is futile. Within the adult population there is growing evidence to suggest that with early and aggressive correction of reversible causes, survival from TCA may be comparable to that seen from medical out-of-hospital cardiac arrests. Key to this survival has been the adoption of a standardised approach to resuscitation.

The aim of this study was, by a process of consensus, to develop a national, standardised algorithm for the management of paediatric TCA.

### Methods

A modified consensus development meeting was held. Statements discussed in the meeting were drawn from those that did not reach consensus (positive/negative) from a linked three round online Delphi study. Those participants completing the first round of the Delphi study were invited to attend.

19 statements relating to the diagnosis, management and futility of paediatric TCA were discussed in small groups. After five minutes the key points from the small groups were presented to the whole audience. Subsequently, using electronic voting devices, each participant anonymously recorded their agreement with the statement using “yes”, “no” or “don’t know”. In keeping with our Delphi study, consensus was set *a priori* at 70%. Statements reaching consensus were included in the proposed algorithm.

### Results

41 participants attended the consensus development meeting. Of the 19 statements discussed, 13 reached positive consensus and were included in the algorithm. A single statement regarding initial rescue breaths reached negative consensus and was excluded. Consensus was not reached for five statements, including the use of vasopressors and thoracotomy for haemorrhage control in blunt trauma. The proposed algorithm for the management of paediatric TCA is shown as Figures 1 and 2 for blunt and penetrating trauma respectively.

### Conclusion

In attempt to standardise our approach to the management of paediatric TCA and to improve outcomes, we present the first algorithm specific to the paediatric population.