Reanimating Patients After Traumatic Cardiac Arrest

A Practical Approach Informed by Best Evidence

Chris Evans, MD, MSc, FRCPC[a], David O. Quinlan, MD, MSc, FRCPC[b], Paul T. Engels, MD, FRCSC[c,d], Jonathan Sherbino, MD, MEd, FRCPC, FAcadMEd[b,*]

KEYWORDS

• Trauma • Cardiac arrest • Resuscitation • Resuscitative thoracotomy • Emergency thoracotomy

KEY POINTS

- Patients arriving at the emergency department with signs of life and/or evidence of cardiac contractility on point-of-care ultrasonography deserve aggressive resuscitative efforts.
- Chest compressions are unlikely to be effective in traumatic cardiac arrest and resources are better directed at addressing treatable causes of the cardiac arrest.
- Empiric bilateral chest decompression should be performed in all traumatic cardiac arrests, preferably via open thoracostomy.
- Simple, temporizing hemorrhage control measures to be considered in all patients include digital pressure, the use of a tourniquet, and empiric pelvic binding.
- Resuscitative thoracotomy should be considered for all patients with traumatic cardiac arrest with signs of life or point-of-care ultrasonography evidence of cardiac contractility, so long as the provider is competent in the procedure and the institution has an established protocol and the required resources.

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[a] Trauma Services, Department of Emergency Medicine, Queen's University, Kingston General Hospital, Victory 3, 76 Stuart Street, Kingston, Ontario K7L 2V7, Canada; [b] Division of Emergency Medicine, McMaster University, Hamilton Health Sciences, Hamilton General Hospital, 2nd Floor McMaster Clinic, 237 Barton Street East, Hamilton, Ontario L8L 2X2, Canada; [c] Trauma, General Surgery and Critical Care, Department of Surgery, McMaster University, Hamilton General Hospital, 6 North Wing - Room 616, 237 Barton Street East, Hamilton, Ontario L8L 2X2, Canada; [d] Department of Critical Care, McMaster University, Hamilton General Hospital, 6 North Wing - Room 616, 237 Barton Street East, Hamilton, Ontario L8L 2X2, Canada
* Corresponding author.
E-mail address: sherbino@mcmaster.ca

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INTRODUCTION

Traumatic cardiac arrest (TCA) is not the same as cardiac arrest from coronary ischemia. Although this statement seems obvious, a clear distinction between the origins of cardiac arrest is essential to reorder and change management priorities. The 2015 International Liaison Committee on Resuscitation (ILCOR) makes this distinction.[1] However, in our experience, health care professionals who infrequently care for patients with TCA often follow standard resuscitation protocols that do not effectively address the pathophysiology of TCA. Management goals for medical cardiac arrest resulting from coronary ischemia are to support coronary perfusion to promote transition from a circulatory to electrically responsive phase to facilitate effective defibrillation.[2] In contrast, the management goals for TCA are to address massive hemorrhage and relieve obstructive causes of shock.

This article synthesizes the best available evidence to guide the management of TCA. Where the evidence is imprecise, and if appropriate, the article describe the authors' practice. This article compliments the 2015 ILCOR guidelines, providing more helpful detail and description of practice to aid health care professionals who infrequently care for patients with TCA.

This article emphasizes 5 key principles to guide management. Although these principles are arranged in a hierarchical fashion (a function of a traditional manuscript layout), the authors are not providing an algorithm. Algorithms can be helpful as memory aids in situations of high cognitive load.[3] They can also help structure learning for novices encountering complex tasks. However, algorithms are simplistic representations of patient management and do not account for the tacit knowledge required of expert trauma management. Most importantly, algorithms ignore natural decision-making processes, in which experts reorder management priorities in a dynamic fashion, responding to patient context and the unique complexity of each situation.[4] The authors encourage health care professionals to regularly consider these principles, prioritize them for action, and pause implementation when appropriate (**Fig. 1**). These principles should not be considered as a series of consecutive steps toward a linear conclusion of a trauma resuscitation.

A 54 -year-old woman was the restrained driver in a high-speed, rollover, motor vehicle collision. She is rapidly transported to the closest community hospital by

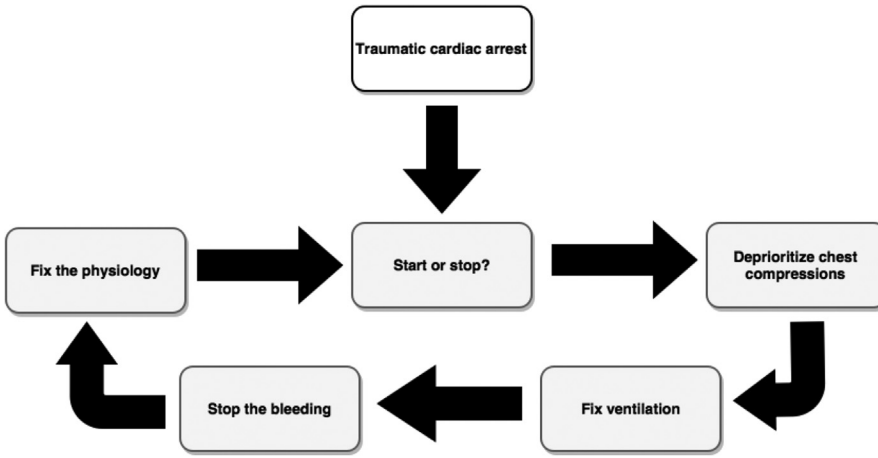

Fig. 1. Principles of traumatic cardiac arrest resuscitation.