

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

# Chest Wound Management in Pre-Hospital Settings: Clinical Effectiveness and Guidelines

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## Research Questions

1. What is the comparative clinical effectiveness of a wet seal versus basic first aid for management of traumatic chest wounds in a pre-hospital setting?
2. What are the evidence-based guidelines regarding emergency management of traumatic chest wounds in a pre-hospital setting?

## Key Findings

Three evidence-based guidelines were identified regarding emergency management of traumatic chest wounds in a pre-hospital setting. No relevant clinical evidence was identified regarding the comparative clinical effectiveness of a wet seal versus basic first aid for management of traumatic chest wounds in a pre-hospital setting.

## Methods

A limited literature search was conducted on key resources including PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and July 16, 2019. Internet links were provided, where available.

## Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

**Table 1: Selection Criteria**

<b>Population</b>	Patients with traumatic chest wound (e.g., open pneumothorax) in a pre-hospital setting (e.g. out-of-hospital emergency situations)
<b>Intervention</b>	Wet seal or chest seal (brand names: Asherman chest seal, Halo Chest Seal, SAM chest seal, North American Rescue Hyfin chest seal)
<b>Comparator</b>	Q1: Basic first aid skills/non-commercial device (e.g. sealing wound with gloved hand, a piece of plastic taped down) Q2: Not applicable
<b>Outcomes</b>	Q1: Clinical effectiveness (e.g., mortality, forced expiratory volume, infection) Q2: Guidelines
<b>Study Designs</b>	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies and evidence-based guidelines

## Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

Three evidence-based guidelines were identified regarding emergency management of traumatic chest wounds in a pre-hospital setting. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials or non-randomized studies were identified regarding the use of a wet seal versus basic first aid for management of traumatic chest wounds in a pre-hospital setting

Additional references of potential interest are provided in the appendix.

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

No literature identified.

### Guidelines and Recommendations

1. National Clinical Guideline Centre (UK). Major trauma: assessment and initial management. Methods, evidence and recommendations. (*NICE guideline NG39*). London (UK): National Institute for Health and Care Excellence; 2016: [https://www.ncbi.nlm.nih.gov/books/NBK344252/pdf/Bookshelf\\_NBK344252.pdf](https://www.ncbi.nlm.nih.gov/books/NBK344252/pdf/Bookshelf_NBK344252.pdf). Accessed 2019 Jul 25.  
*See: Assessment and management of chest trauma, 7.4.6 Recommendations and link to evidence*
2. National Institute for Health and Care Excellence. Major trauma: assessment and initial management. (*NICE guideline NG39*) 2016; <https://www.nice.org.uk/guidance/ng39>. Accessed 2019 Jul 25.  
*See: Management of chest trauma in pre - hospital settings, 1.3.7*
3. Butler FK, Dubose JJ, Otten EJ, et al. Management of open pneumothorax in Tactical Combat Casualty Care: TCCC guidelines change 13-02. *J Spec Oper Med*. 2013 Fall;13(3):81-86.  
[PubMed: PM24048995](https://pubmed.ncbi.nlm.nih.gov/24048995/)

## Appendix — Further Information

### Non-Randomized Studies – Alternative Comparator

4. Kotora JG, Jr., Henao J, Littlejohn LF, Kircher S. Vented chest seals for prevention of tension pneumothorax in a communicating pneumothorax. *J Emerg Med.* 2013 Nov;45(5):686-694.  
[PubMed: PM23921173](#)

### Review Articles

5. Walthall K. Towards evidence-based emergency medicine: best BETs from the Manchester Royal Infirmary. BET 3: in a penetrating chest wound is a three-sided dressing or a one-way chest seal better at preventing respiratory complications? *Emerg Med J.* 2012 Apr;29(4):342-343.  
[PubMed: PM22420002](#)