

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Pelvic Binders for Patients with Suspected Fracture in the Pre-Hospital Setting: Clinical Effectiveness and Guidelines

Service Line: Rapid Response Service
Version: 1.0
Publication Date: July 11, 2019
Report Length: 7 Pages

Authors: Deba Hafizi, Hannah Loshak

Cite As: *Pelvic binders for patients with suspected fracture in the pre-hospital setting: clinical effectiveness and guidelines*. Ottawa: CADTH; 2019 Jul. (CADTH rapid response report: summary of abstracts).

Disclaimer: The information in this document is intended to help Canadian health care decision-makers, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. While patients and others may access this document, the document is made available for informational purposes only and no representations or warranties are made with respect to its fitness for any particular purpose. The information in this document should not be used as a substitute for professional medical advice or as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process. The Canadian Agency for Drugs and Technologies in Health (CADTH) does not endorse any information, drugs, therapies, treatments, products, processes, or services.

While care has been taken to ensure that the information prepared by CADTH in this document is accurate, complete, and up-to-date as at the applicable date the material was first published by CADTH, CADTH does not make any guarantees to that effect. CADTH does not guarantee and is not responsible for the quality, currency, propriety, accuracy, or reasonableness of any statements, information, or conclusions contained in any third-party materials used in preparing this document. The views and opinions of third parties published in this document do not necessarily state or reflect those of CADTH.

CADTH is not responsible for any errors, omissions, injury, loss, or damage arising from or relating to the use (or misuse) of any information, statements, or conclusions contained in or implied by the contents of this document or any of the source materials.

This document may contain links to third-party websites. CADTH does not have control over the content of such sites. Use of third-party sites is governed by the third-party website owners' own terms and conditions set out for such sites. CADTH does not make any guarantee with respect to any information contained on such third-party sites and CADTH is not responsible for any injury, loss, or damage suffered as a result of using such third-party sites. CADTH has no responsibility for the collection, use, and disclosure of personal information by third-party sites.

Subject to the aforementioned limitations, the views expressed herein do not necessarily reflect the views of Health Canada, Canada's provincial or territorial governments, other CADTH funders, or any third-party supplier of information.

This document is prepared and intended for use in the context of the Canadian health care system. The use of this document outside of Canada is done so at the user's own risk.

This disclaimer and any questions or matters of any nature arising from or relating to the content or use (or misuse) of this document will be governed by and interpreted in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein, and all proceedings shall be subject to the exclusive jurisdiction of the courts of the Province of Ontario, Canada.

The copyright and other intellectual property rights in this document are owned by CADTH and its licensors. These rights are protected by the Canadian *Copyright Act* and other national and international laws and agreements. Users are permitted to make copies of this document for non-commercial purposes only, provided it is not modified when reproduced and appropriate credit is given to CADTH and its licensors.

About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

Questions or requests for information about this report can be directed to requests@cadth.ca

Research Questions

1. What is the clinical effectiveness of pelvic binders for patients with suspected pelvic fractures in pre-hospital settings?
2. What are the evidence based guidelines regarding care of patients with suspected pelvic fractures in pre-hospital settings?

Key Findings

Four evidence-based guidelines were identified regarding the care of patients with suspected pelvic fracture in pre-hospital settings. No relevant clinical evidence was identified regarding the use of pelvic binders for patients with suspected pelvic fractures in pre-hospital settings.

Methods

This report makes use of a literature search strategy developed for a previous CADTH report. For the current report, a limited literature search was conducted by an information specialist on key resources including Medline via OVID, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were pelvic binders and suspected pelvic fractures. 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, 2014 and July 2, 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

Population	<p>Patients with suspected pelvic fractures (injury and pain related to pelvic fracture i.e. motor cycle injuries, falls etc.) in a pre-hospital setting</p> <p>Sub group:</p> <ul style="list-style-type: none"> • Multi-system trauma
Intervention	<p>Q1-Q2: Pelvic binders (also known as a pelvic sling, pelvic immobilization, pelvic circumferential compression devices)</p>

Comparator	<p>Q1: Pelvic sheets First aid (regular, advanced or wilderness); Other non-manufactured devices for immobilization; No comparator</p> <p>Q2: Not applicable</p>
Outcomes	<p>Q1: Clinical effectiveness (e.g., pain, vital signs, patient comfort, patient satisfaction)</p> <p>Q2: Evidence-based guidelines</p>
Study Designs	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.

Four evidence-based guidelines were identified regarding the care of patients with suspected pelvic fracture in pre-hospital settings. No relevant health technology assessments, systematic reviews, meta-analyses, randomized controlled trials or non-randomized studies were identified regarding the use of pelvic binders for patients with suspected pelvic fractures in pre-hospital settings.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

Guidelines from the French Society of Anaesthesia and Intensive Care Medicine recommend that all patients with suspected severe pelvic trauma in the pre-hospital setting receive external pelvic compression, namely pelvic binders, as soon as possible.¹ The guideline also recommends placement of pelvic binders around the greater trochanters for optimal efficiency.¹

Guidelines from the World Society of Emergency Surgery (WSES) also recommend early application of non-invasive external pelvic compression for unstable pelvic fracture and specifies pelvic binders as a superior method of hemorrhage control compared to sheet wrapping.² Moreover, the guideline states that commercial pelvic binders are more effective in controlling pelvic bleeding than “home-made” or makeshift ones. However, in low resources setting or when commercial devices are not available, “home-made” pelvic binders can be used safely and effectively.²

Guidelines from the National Institute of Health Care Excellence (NICE) recommend that if active bleeding is suspected from a pelvic fracture after high-energy blunt trauma in pre-hospital settings to apply a commercially-made pelvic binder or consider an improvised pelvic binder, but only if commercial devices do not fit.³

The London Faculty of Pre-Hospital Care (FPHC) also recommends early and liberal application of pelvic binders for high energy blunt trauma.⁴

References Summarized

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. Incagnoli P, Puidupin A, Ausset S, et al. Early management of severe pelvic injury (first 24 hours). *Anaesth Crit Care Pain Med.* 2019;38(2):199-207.
See: 3.3. When and how should pelvic stabilisation be performed in the prehospital setting, R3b
2. Coccolini F, Stahel PF, Montori G, et al. Pelvic trauma: WSES classification and guidelines. *World J Emerg Surg.* 2017;12:5.
[PubMed: PM28115984](#)
See: Role of pelvic binder in hemodynamically unstable pelvic fractures
3. National Institute for Health Care and Excellence. Major trauma: assessment and initial management. (*NICE guideline NG39*) 2016;
<https://www.nice.org.uk/guidance/ng39/chapter/Recommendations>. Accessed 2019 Jul 10.
See: 1.5.3 Pelvic binders in pre-hospital settings
4. Shackelford S, Hammesfahr R, Morisette D, et al. The use of pelvic binders in tactical combat casualty care: TCCC guidelines change 1602 7 November 2016. *J Spec Oper Med.* 2017;17(1):135-147.
[PubMed: PM28285493](#)
See: Who should receive a pelvic binder, page 136-137

Appendix — Further Information

Previous CADTH Reports

5. The use of pelvic binders for trauma patients: clinical effectiveness and cost-effectiveness and safety. (*CADTH Rapid response report: summary of abstracts*). Ottawa(ON): CADTH; 2011: <https://www.cadth.ca/use-pelvic-binders-trauma-patients-clinical-effectiveness-and-cost-effectiveness-and-safety>. Accessed 2019 Jul 10.

Systematic Reviews – Setting Unspecified

6. Bakhshayesh P, Boutefnouchet T, Tötterman A. Effectiveness of non invasive external pelvic compression: a systematic review of the literature. *Scand J Trauma Resusc Emerg Med*. 2016;18;24:73.
[PubMed: PM27193135](#)

Non-Randomized Studies

Hospital Setting

7. Hoch A, Zeidler S, Pieroh P, et al. Trends and efficacy of external emergency stabilization of pelvic ring fractures: results from the German Pelvic Trauma Registry. *Eur J Trauma Emerg Surg*. 2019;22;22:22.
[PubMed: PM31119322](#)
8. Agri F, Bourgeat M, Becce F, et al. Association of pelvic fracture patterns, pelvic binder use and arterial angio-embolization with transfusion requirements and mortality rates; a 7-year retrospective cohort study. *BMC Surg*. 2017;17(1):104.
[PubMed: PM29121893](#)
9. Fitzgerald M, Esser M, Russ M, et al. Pelvic trauma mortality reduced by integrated trauma care. *Emerg Med Australas*. 2017;29(4):444-449.
[PubMed: PM28616867](#)
10. Hsu SD, Chen CJ, Chou YC, Wang SH, Chan DC. Effect of early pelvic binder use in the emergency management of suspected pelvic trauma: a retrospective cohort study. *Int J Environ Res Public Health*. 2017;14(10):12.
[PubMed: PM29023379](#)

Guidelines and Recommendations – Methods Unspecified

11. Pelvic and acetabular fracture management guidelines. Middlesbrough(GB): South Tees NHS Foundation Trust; 2015:
<https://www.southtees.nhs.uk/content/uploads/Pelvic-injury-guidelines-James-Cook.pdf>. Accessed 2019 Jul 10.

Review Articles

12. Stewart SK, Khan M. Emergent management of the suspected pelvic fracture: challenges in the obese patient. *J R Army Med Corps*. 2018;164(6):432-435.
[PubMed: PM29794171](#)

13. Littlejohn L, Bennett BL, Drew B. Application of current hemorrhage control techniques for backcountry care: part two, hemostatic dressings and other adjuncts. *Wilderness Environ Med.* 2015;26(2):246-254.
[PubMed: PM25704877](#)