Canadian Agency for Drugs and Technologies in Health

RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

TITLE: Removal of Spine Boards Prior to X-Ray Clearance for Patients in the Emergency Department: Clinical Evidence and Guidelines

DATE: 15 April 14, 2011

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the removal of patients from hard spine boards prior to confirmation of cervical spine clearance via x-ray in emergency departments?

2. What are the evidence-based guidelines regarding the safety and improved patient comfort resulting from the removal of patients from hard spine boards prior to confirmation of cervical spine clearance via x-ray in emergency departments?

KEY MESSAGE

Evidence suggests that patients may be removed from hard spine boards as soon as possible upon arrival at the emergency department; one guidelines states radiographic assessment is not required for the assessment of the cervical spine in asymptomatic patients after trauma.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (Issue 3, 2011), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI (Health Devices Gold), EuroScan, Canadian and major international health technology agencies, and a focused Internet search. The search was limited to English language articles published between January 1, 2001 and April 4, 2011. No filters were applied to limit the retrieval by study type. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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.

One systematic review, one non-randomized study, and two evidence-based guidelines were identified regarding the removal of patient from hard spine boards prior to confirmation of cervical spine clearance via x-ray in emergency departments. Additional articles that may be of interest can be found in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review[1] aimed to determine optimal methods of immobilization for patients with acute spinal cord injury in the pre-hospital. The authors of the review presented recommendations regarding patient immobilization, patient transfer from spinal board as soon as possible in the emergency department, and training of emergency personnel to determine if these patients were clear of spinal injury. The recommendations made by the authors were not presented in the published abstract of the review. More information may be available from the full text document.

One non-randomized study[2] had triage nurses apply the Nexus clinical decision rules in the emergency department to assess patients and determine whether cervical collars or spinal boards could be removed after triage. More than half (59 of 112) of the patients assessed were determined to be low risk and were removed from immobilization. None of these patients went on to be diagnosed with a significant spinal injury or experience adverse effects after removal.

The identified evidence-based guidelines[3,4] recommend patients should be transferred from spinal boards onto a firm padded surface as soon as possible after arrival in the emergency department.[3] Spinal alignment should be maintained at all times. The second guideline states that radiographic assessment is not required for the assessment of the cervical spine in asymptomatic patients after trauma.[4]

REFERENCES SUMMARIZED

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses

1. Ahn H, Singh J, Nathens A, Macdonald RD, Travers A, Tallon J, et al. Pre-Hospital Care Management of a Potential Spinal Cord Injured Patient: A Systematic Review of the Literature and Evidence-Based Guidelines. J Neurotrauma. 2010 Jun 16.
PubMed: PM20175667

Randomized controlled trials
No literature identified.

Non-randomized studies

2. Pitt E, Pedley DK, Nelson A, Cumming M, Johnston M. Removal of C-spine protection by A&E triage nurses: a prospective trial of a clinical decision making instrument. Emerg Med J [Internet]. 2006 Mar [cited 2011 April 4];23(3):214-5. Available from:
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2464447
PubMed: PM16498160

Guidelines and recommendations

3. Consortium for Spinal Cord Medicine. Early acute management in adults with spinal cord injury: a clinical practice guideline for health-care professionals. J Spinal Cord Med [Internet]. 2008 [cited 2011 Apr 4];31(4):403-79.
Summary available from:
http://www.guideline.gov/content.aspx?id=14281&search=immobilization
See: Spinal Stabilization during Emergency Transport and Early In-Hospital Immobilization Following SCI, point #7

4. Hadley MN, Walters BC. The guidelines for management of acute cervical spine and spinal cord injuries. Joint section on disorders of the spine and peripheral nerves of the AANS/CNS. American Association of Neurological Surgeons. 2010 Jan 17 [cited 2011 Apr 4]. Available from: http://www.spineuniverse.com/professional/acute-cervical-spine-injury-guide
See: Summary, page 99 of pdf

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APPENDIX – FURTHER INFORMATION:

Hospital guidelines and treatment pathways

5. Royal Children's Hospital Melbourne. Clinical practice guideline: Cervical spine injury [Internet]. 2008 June 11 [cited 2011 Apr 4]. Available from: http://www.rch.org.au/clinicalguide/cpg.cfm?doc_id=5167
   See: Spinal boards

6. Victorian Department of Health. Cervical spine acute care guidelines [Internet]. 2009 Nov [cited 2011 Apr 4]. Available from: http://www.health.vic.gov.au/trauma/publications/cervical_spine_guidelines.pdf

7. Practice Guideline: Nursing management for care of patient in spinal precautions [Internet]. Deaconess regional trauma center. Evansville, Indiana. 2004 Feb 17 [cited 2011 Apr 4]. Available From: http://www.deaconess.com/pdfs/TraumaGuidelines/AcuteCare/NursingProtocolSpinalPrecautions.pdf
   See: 7e. Transportation, 8. Comfort, 9. Positioning

Review articles

8. Dalley MW. Selective immobilization: current research and practice. EMSWorld [Internet]. 2011 Jan 12 [cited Apr 4]. Available from: http://www.emsworld.com/print/EMS-World/Selective-Immobilization--Current-Research-and-Practice/1$2221

9. Vickery D. The use of the spinal board after the pre-hospital phase of trauma management. Emerg Med J [Internet]. 2001 Jan [cited 2011 Apr 4];18(1):51-4. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1725508
   PubMed: PM11310463

Additional references

10. Vaillancourt C, Charette M, Kasaboski A, Maloney J, Wells GA, Stiell IG. Evaluation of the safety of C-spine clearance by paramedics: design and methodology. BMC Emerg Med [Internet]. 2011[cited 2011 Apr 4];11:1. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3040719
    PubMed: PM21284880

11. Stiell IG, Clement CM, McKnight RD, Brison R, Schull MJ, Rowe BH, et al. The Canadian C-Spine Rule versus the NEXUS Low-Risk Criteria in Patients with Trauma. N Engl J Med [Internet]. 2003 Dec 25 [cited 2011 Apr 4];349(26):2510-8. Available from: http://www.nejm.org/doi/pdf/10.1056/NEJMoa031375
    PubMed:PM14695411

12. Hauswald M, Braude D. Spinal immobilization in trauma patients: is it really necessary? Curr Opin Crit Care. 2002 Dec;8(6):566-70.
    PubMed: PM12454543