

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: *Adverse Events Relating to Prolonged Hard Collar Immobilisation*

Report By: *Team Off-Collar (Amy Hogan, Ashley Carruthers, Bryden Fitzgerald, Charles Macleod, Christian Crouse, Daniel McCarthy, Derrek Seamone)*

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Clinical Scenario: *Coming into a scene where a patient has been fitted with a C-collar that may be unnecessary, since some evidence suggests prolonged immobilization of the cervical spine may do more harm than good.*

PICO (Population – Intervention – Comparison – Outcome) Question:

P-Patients who have just experienced trauma.

I -C-collar application

C-No C-collar application

O-Will use of c-collars increase morbidity in patients?

Do patients with suspected cervical spine injury that may require immobilization benefit from c-collar application or does it cause more harm than good after hospital care.

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Search Strategy:

((("Emergency Medical Services"[mh] OR "Emergency Medical Technicians"[mh] OR paramedic*[tiab] OR "emergency medical technician*" [tiab] OR prehospital[tiab] OR pre-hospital[tiab] OR "out of hospital"[tiab] OR first responder*[tiab] OR emergency responder*[tiab] OR ambulance[tiab])) AND (cervical collar OR c-collar)) AND (trauma OR injury)

Search Outcome:

205

Relevant Papers:

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/ WEAKNESSES
Jamie F.M. Brannigan, BA, et al. 2022	1,170 patient outcomes and the mean duration of hard collar immobilisation ranged from 3.5 days to 84 days	Systematic review. A meta-analysis was performed on a subsection of 25 articles.	To evaluate systematically the complications of prolonged cervical immobilisation in a hard collar.	Prolonged immobilisation with hard collars causes a range of morbidity, including pressure sores, dysphagia, increased ICP and peripheral nerve palsies.	§ 119 articles fully reviewed, 25 were included. ¶ Most studies only reported on skin breakdown or ulceration (17/25)
Wietske H.W. Ham, et al. March 2016	342 patients were included	Observational study	Incidence and severity of pressure ulcers, indentation marks and pain.	75.4% of the patients developed a category 1 and 2.9% a category 2 pressure ulcer. Indentation marks were observed in 221 (64.6%) patients; 96 (28.1%) had severe indentation marks. Pressure ulcers and indentation marks were observed most frequently at	§ Study completed during observation instead of retroactively ¶ There may also be a risk for selection bias, a large proportion of eligible trauma patients were not included in this study.

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				the back, shoulders and chest. 63.2% experienced pain, of which, 38.5% experienced severe pain.	
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Comments: *The systematic review includes a forest plot meta-analysis making it a very reliable source. The second article is an observational study that was completed in real time also making for a very reliable source.*

Consider: *Although adverse outcomes were observed during the studies, most of the bad outcomes involved pressure ulcers. Although pressure ulcers are unpleasant, and increase chances of infection, alternatively, damage to the cervical spine could lead to lifetime disability or a handicap that could change lifestyle greatly.*

Clinical Bottom Line: *Use of a cervical collar may not be as beneficial as once thought, NEXUS criteria should always be initiated in a patient with a suspected cervical injury, and c-collars should only be applied after judicious consideration.*

References:

Adverse Events Relating to Prolonged Hard Collar Immobilisation: A Systematic Review and Meta-Analysis

Jamie F.M. Brannigan, BA, Esmee Dohle, BA, Giles R. Critchley, MA, MD, FRCS(SN), Rikin Trivedi, BSc, MRCP (UK), FRCS (SN), PhD, FHEA, Rodney J. Laing, MA, MD, FRCS(SN), and Benjamin M. Davies, BSc, MPhil, MRCS.

Pressure ulcers, indentation marks and pain from cervical spine immobilization with extrication collars and headblocks: An observational study

Wietske H.W. Ham, Lisette Schoonhoven, Marieke J. Schuurmans, Luke P.H. Leenen

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