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REVIEW

Does nurse-led initiation of Ottawa ankle rules reduce ED length of stay?



Sarah Curr BA, BSc, RN, AKC (Clinical Teacher)^{a,*},
Andreas Xyrichis PhD, MSc, BSc, RN (Lecturer)^b

^a Department of Clinical Education, Florence Nightingale Faculty of Nursing & Midwifery, King's College London, James Clerk, Maxwell Building, 57 Waterloo Road, London SE1 8WA, United Kingdom

^b Department of Adult Nursing, Florence Nightingale Faculty of Nursing & Midwifery, King's College London, James Clerk, Maxwell Building, 57 Waterloo Road, London SE1 8WA, United Kingdom

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ABSTRACT

Introduction: Ankle injuries can account for up to 3.8% of UK Emergency Department (ED) presentations per annum and this figure is comparative to the 4.4% in North America. Growing ED attendance impacts on crowding, waiting times, patient satisfaction and service provision. One way to streamline service would be widespread use of the Ottawa Ankle Rules (OAR), which reduces the need to wait for radiography.

Aim: To examine the best available evidence on the impact of OAR on ED length of stay (LoS) following standard systematic review methodology.

Methods: A systematic search was undertaken in the CINAHL, EMBASE, MEDLINE, SCOPUS, and BNI databases. Studies that examined OAR use in the ED adult population were considered. Four studies met the inclusion criteria and were included in the narrative synthesis.

Results: All four studies point towards a reduction in LoS following OAR introduction. The quality of the body of evidence is considered to be low due to moderate risk of bias and indirectness between the studies.

Discussion: A strong body of evidence supports OAR use in reducing radiography but further research is needed to explore impact on LoS. This would inform clinical practice and potentially combat current pressures faced within EDs worldwide.

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Introduction

Ankle sprains and soft tissue injuries account for 3.8% and 3.5% respectively of presentations to the Emergency Department (ED) in the United Kingdom (UK) per annum (Health and Social Care Information Centre, 2013). This figure is comparative to North America where presentations with this injury account for 4.46% of all presentations (Centre for Disease Control and Prevention, 2013). As worldwide ED attendance increases there is increased crowding and waiting times, and a negative impact on patient satisfaction (Australian Institute of Health and Welfare, 2013; NHS England, 2013; Hing and Bhuiya, 2012).

In the UK emergency healthcare accounts for one third of activity in the National Health Service (NHS) and half of its cost (NHS Alliance, 2012) and these attendances affect overall service delivery. Since ED attendance continues to rise, from 17.6 million in 2011–12

to 22 million in 2012–13 (NHS England, 2013), ways to streamline the service, without compromising care, are being considered (Health and Social Care Information Centre, 2013).

One way to streamline the service would be the widespread use of the Ottawa ankle rules (OAR). These clinical decision rules were developed to ascertain the likelihood of a foot or ankle fracture (Stiell et al., 1992) (Table 1) and can be used by medical and nursing staff on acute ankle injury presentations. The implementation of these rules in the ED has reduced the need for radiography in an OAR negative (–ve) individual (Table 1) (Czajka et al., 2014; Gwilym et al., 2003; Marinelli et al., 2007; Papacostas et al., 2001; Stiell et al., 1995; Wang et al., 2013; Yazdani et al., 2006) and could also reduce length of stay (LoS). Bachmann et al.'s (2003) systematic review explored the accuracy of OAR in ankle and mid-foot fractures and established that employing the OAR could reduce unnecessary radiography by 40%, but it did not consider how this would impact on ED LoS.

Previous Cochrane reviews have looked at effective treatment for ankle fractures (Donken et al., 2012) and ligament injury treatment (Kerkhoffs et al., 2013) but have not considered the OAR as a diagnostic tool. Furthermore the National Institute for Health and Care Excellence (NICE) in England currently offers no specific guidelines for the use of the OAR. This review examines the best

* Corresponding author. Department of Clinical Education, Florence Nightingale Faculty of Nursing & Midwifery, King's College London, James Clerk, Maxwell Building, 57 Waterloo Road, London SE1 8WA, United Kingdom. Tel.: +44 (0)20 7848 3735.

E-mail address: sarah.1.curr@kcl.ac.uk (S. Curr).

Table 1
Ottawa ankle rules (Stiell et al., 1992).

Perform ankle X-ray if:	Perform foot X-ray if:
<ul style="list-style-type: none"> • Age 55 or over • Unable to weight bear, 4 steps, immediately and in ED • Bone tenderness at the posterior edge or tip of malleolus (if not present patient classified as OAR negative [-ve]) 	<ul style="list-style-type: none"> • Pain in midfoot • Bone tenderness at navicular, cuboid, or base of 5th metatarsal (if not present patient classified as OAR negative [-ve])

available evidence regarding the effectiveness of the OAR, compared with standard care, in reducing LoS within Emergency Care settings. It aims to answer the question: Does nurse-led initiation of the OAR reduce ED LoS?

Table 2
Database search.

Index terms/MeSH	Ankle injuries	A	Ottawa	A	Length of stay
Free-text terms	Ankle injury*	N	ankle rules	N	Length of stay*
	OR	D	Ottawa ankle*	D	OR
	Ankle fracture*		OR		LOS*
	OR		OAR*		OR
	Ankle sprain*				Department duration*
	OR				OR
	Ankle strain*				Transit time*
	OR				OR
	Twisted ankle*				Throughput*
	OR				
	Acute ankle*				

* Truncation.

Methods

To ensure that the most relevant evidence was identified standard systematic review methodology (Higgins and Green, 2011, National Institute for Health and Care Excellence, 2012) was utilised to inform the process. A systematic database search was developed using a combination of index and free-text terms (Table 2). Truncation (*) was applied where appropriate and Boolean operators were used to ensure the conduct of a sensitive and specific search. Limits of human, English language, and adults were also considered to increase the specificity of results following standard advice (Higgins and Green, 2011; National Institute for Health and Care Excellence, 2012). All studies published after the introduction of the OAR in 1992 were considered for inclusion. Randomised Controlled Trials (RCT), as the recommended study design for the efficacy of health-care interventions (Greenhalgh, 2010), were sought, but due to the dearth of available literature, other study designs, such as case control, were also considered.

A preliminary search of the Cochrane library and the University of York Centre for Reviews and Dissemination (CRD) found no relevant studies. Subsequently five electronic databases were searched: MEDLINE (1946 to January week 3 2015), BNI (1993 to January 2015), Scopus (1996 to January 2015), EMBASE (1980 to 2015 week 04) and CINAHL (1982 to January 2015). Reference lists of all relevant studies (n = 4) were also searched.

Results

The search was developed and conducted by SC and peer reviewed by AX. All search terms (Table 2) were used across all databases. A total of forty-one (n = 41) papers were returned (Fig. 1). Adjustment for duplicates left sixteen (n = 16) papers remaining. Following a review of titles by SC, eleven (n = 11) were removed as

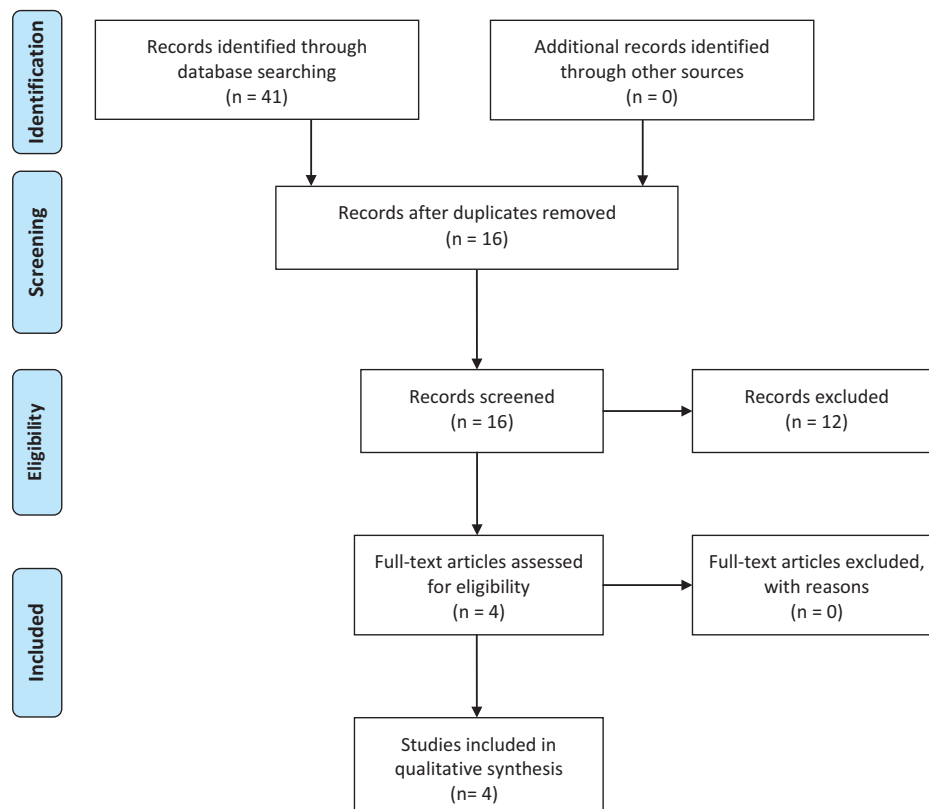


Fig. 1. Exclusion flow chart.

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