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The Effect of Triage-Based Application of the Ottawa Ankle and Foot Rules (OAR/OFR) on the Number of Radiographs Ordered: A Pilot Study

John V. Ashurst DO

Lehigh Valley Health Network, John_V.Ashurst@lvhn.org

Stephanie DiGiambattista MD

Lehigh Valley Health Network, Steph.Digiambattista@lvhn.org

Thomas M. Nappe DO

Lehigh Valley Health Network, Thomas_M.Nappe@lvhn.org

Avinash Kambhampati DO

Lehigh Valley Health Network, Avinash.Kambhampati@lvhn.org

Sarfraz Alam

Lehigh Valley Health Network, Sarfraz. Alam@lvhn.org

See next page for additional authors

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Authors John V. Ashurst DO; Stephanie DiGiambattista MD; Thomas M. Nappe DO; Avinash Kambhampati DO; Sarfraz Alam; Michele Ortiz RN; Paul Delpais BSN, RN, CEN; Bernadette Gl-Porter BS; Anita Kurt PhD, RN; Bryan G. Kane MD; and Marna R. Greenberg DO, MPH, FACEP

The Effect of Triage-Based Application of the Ottawa Ankle and Foot Rules (OAR/OFR) on the Number of Radiographs Ordered: A Pilot Study

John Ashurst, DO, Stephanie Digiambattista, MD, Thomas Nappe, DO, Avinash Kambhampati, DO, Sarfraz Alam, MD, Michelle Ortiz, RN, BSN, Paul Delpais, RN, MSN, Bernadette Porter, BS, Anita Kurt, PhD, RN, Bryan Kane, MD, Marna Rayl Greenberg, DO, MPH Lehigh Valley Health Network, Allentown, Pennsylvania

Introduction:

Reducing unnecessary testing is required to lessen the cost burden of medical care, but decreasing utilization will depend on consistently following evidence-based clinical decision rules. The Ottawa foot and ankle rules (OFAR) are longstanding evidence-based rules used to predict fractures. However, radiographs are frequently ordered for acute ankle injuries despite OFAR exam findings suggesting no fracture.

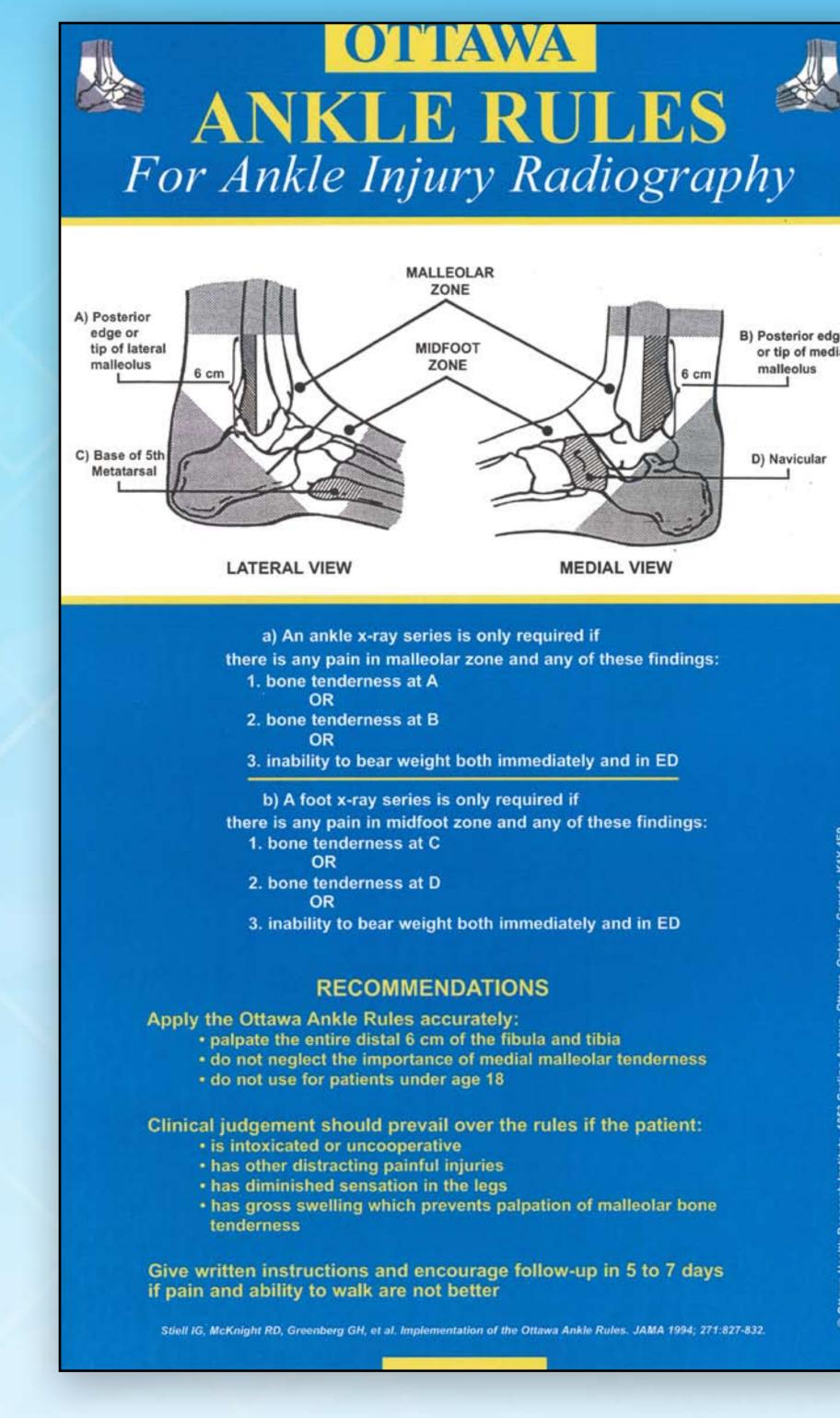


Study Objectives:

We set out to assess baseline OFAR use before radiographs were ordered. Then, after intervention (OFAR education), we assessed utilization of radiographs and length-of-stay (LOS). Secondarily, patient expectations and satisfaction were assessed.

Methods:

A prospective, two-stage, sequential designed pilot study was implemented. Triage nurses and providers performed their usual practice habits for radiograph use in the first arm. They subsequently were educated to appropriately apply the OFAR before radiograph ordering. Subjects who were OFAR positive at triage had radiographs ordered by nursing staff. Those who were OFAR negative at triage were assessed by the provider and had the OFAR applied again. Radiographs were ordered at the discretion of the provider. LOS for patients enrolled was monitored, and subjects and providers were surveyed regarding their expectations and satisfaction.



T'OI		ıry Radiogra	рпу
A) Posterior edge or tip of lateral malleolus C) Base of 5th Metatarsal	MI	DEFOOT CONE	B) Posterior or tip of malleolus
	LATERAL VIEW	MEDIAL VIEW	,
		ht both immediately and in ED	
	2. bone tenderness at E OR 3. inability to bear weig b) A foot x-ray series	ht both immediately and in ED is only required if ot zone and any of these findings:	
	2. bone tenderness at E OR 3. inability to bear weig b) A foot x-ray series there is any pain in midfor 1. bone tenderness at C OR 2. bone tenderness at E OR	ht both immediately and in ED is only required if ot zone and any of these findings:	
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	2. bone tenderness at E OR 3. inability to bear weig b) A foot x-ray series there is any pain in midfor 1. bone tenderness at C OR 2. bone tenderness at C OR 3. inability to bear weig RECOMME the Ottawa Ankle Rules are palpate the entire distal 6 cm do not neglect the important do not use for patients under al judgement should preval is intoxicated or uncooperate has other distracting painfue has diminished sensation in	ht both immediately and in ED is only required if ot zone and any of these findings: the both immediately and in ED NDATIONS curately: n of the fibula and tibia ce of medial malleolar tenderness er age 18 nil over the rules if the patient: tive I injuries	
Clinic	2. bone tenderness at E OR 3. inability to bear weig b) A foot x-ray series there is any pain in midfor 1. bone tenderness at C OR 2. bone tenderness at C OR 3. inability to bear weig RECOMME the Ottawa Ankle Rules at e palpate the entire distal 6 cr do not neglect the important do not use for patients under al judgement should preval is intoxicated or uncooperate has other distracting painful has diminished sensation in has gross swelling which prevalences	ht both immediately and in ED is only required if ot zone and any of these findings: that both immediately and in ED NDATIONS ccurately: n of the fibula and tibia ce of medial malleolar tenderness er age 18 iil over the rules if the patient: tive I injuries the legs revents palpation of malleolar bone courage follow-up in 5 to 7 days	

OTTAWA	din
ANKLE RULES For Ankle Injury Radiography	
a) An ankle x-ray series is only required if there is any pain in malleolar zone and any of these findings:	
1. bone tenderness at A	
OR 2. bone tenderness at B	
OR	
3. inability to bear weight both immediately and in ED	
b) A foot x-ray series is only required if	
there is any pain in midfoot zone and any of these findings:	
1. bone tenderness at C	
OR 2. bone tenderness at D	
OR OR	
3. inability to bear weight both immediately and in ED	

Results:

Sixty-two patients were consented and enrolled in the study, and two withdrew prematurely (not included in analysis), leaving 30 subjects in each arm. Fifty-eight of the 60 patients were radiographed (97%) and 85% of patients responded that they expected a radiograph. ED LOS decreased from 103 minutes to 96.5 minutes (p=0.297) for all patients after OFAR education. There was also a decrease in LOS in patients with a fracture (137 minutes versus 103 minutes [p=0.112]). Patients were equally satisfied amongst the groups (90%) (with no difference between arms) and 95% of providers felt subjects were satisfied with their treatment.

Conclusion:

Table 1. Patient Demographics Before and After Application of the Ottawa Foot

and Ankle Rules at Triage

Table 2. Median Length of Stay in Minutes Before and After Application of the

Ottawa Foot and Ankle Rules at Triage

33.5

16-85

12 (40.0)

18 (60.0)

137

AGE (years)

Median

Range

GENDER

Fracture

Total

No Fracture

Male [n (%)]

Female [n (%)]

OFAR

36.4+/-15.48

16-70

11 (36.7)

19 (63.3)

OFAR

103

85

96.5

Overall

36.5+/-16.58

16-85

23 (38.3)

37 (61.7)

P-value

0.112

0.751

0.297

There was no statistical evidence that application of the OFAR results in a decrease in the number of X-rays ordered or decreased LOS. This suggests that even when providers are being observed and instructed to use decision rules, their evaluation bias tends toward assessments that result in testing. Public campaigns to ensure the correct tests are ordered may have to emphasize the necessary conversations between provider and patient that change patient expectations.

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