American College of Radiology ACR Appropriateness Criteria®

Acute Trauma to the Foot

Variant 1: Adult or child older than 5 years of age. Acute trauma to the foot. Ottawa rules can be evaluated without exclusionary criteria. Ottawa rules are negative. No suspected abnormalities in regions not evaluated by the Ottawa rules. Initial imaging.

	Appropriateness								F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT foot with IV contrast	Usually not appropriate	Expert Consensus	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
CT foot without IV contrast	Usually not appropriate	Expert Consensus	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
CT foot without and with IV contrast	Usually not appropriate	Expert Consensus	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
MRI foot without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
MRI foot without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
US foot	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		13 (20943841)			3										
		14 (29876703)			4		_	_	_		_				
Radiography foot	Usually not appropriate	Strong	≎ <0.1 mSv		1	1	0	0	0	0	0	0	0	0	0
	References			Study	y Quality										

1 (12595378)	4
3 (15231460)	3
9 (12675622)	3
10 (15532344)	2
11 (14705761)	4
4 (21450433)	3
12 (11858921)	4
6 (8433468)	1
5 (9774943)	4

Variant 2: Adult or child older than 5 years of age. Acute trauma to the foot. Ottawa rules can be evaluated without exclusionary criteria. Ottawa rules are positive. Initial imaging.

n ,	Appropria	nteness	COF	4 1 14 DD		D I DDI	D (1	3.6.11			F	inal	Tabu	latio	ns		
Procedure	Catego	ory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography foot	Usuall appropr		Moderate	≎ <0.1 mS	Sv		9	9	0	0	0	0	0	0	0	1	16
			References			Study	Quality										
			1 (12595378)				4										
			9 (12675622)				3										
			10 (15532344)				2										
			8 (10350289)				3										
			15 (25887075)				2										
Radiography foot with weightbearing	Usuall appropr		Moderate	≎ <0.1 mS	Sv		8	8	0	0	1	0	0	0	3	5	8
			References			Study	Quality										
			16 (22451574)				2										
			20 (24617695)				4										
			19 (12435655)				1										

CT foot with IV contrast	Usually approp		Limited	 <0.1 mSv		1	1	16	0	0	0	0	1	0	0	0
			References		Study	y Quality										
			22 (15546842)			4										
			21 (15333345)			3										
CT foot without IV contrast	Usually approp		Limited	� <0.1 mSv		1	1	13	1	0	0	1	1	1	0	0
			References		Study	y Quality										
			22 (15546842)			4										
			21 (15333345)			3										
CT foot without and with IV contrast	Usually approp	y not riate	Limited	� <0.1 mSv		1	1	16	0	0	1	0	0	0	0	0
			References		Study	y Quality										
			22 (15546842)			4										
			21 (15333345)			3										
MRI foot without IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0
MRI foot without and with IV contrast	Usually approp	y not riate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0
US foot	Usually	y not riate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	12	1	1	0	2	0	1	0	0
			References		Study	y Quality										
			13 (20943841)			3										
		23 (25269589)				2										
		14 (29876703)			4											

Variant 3: Adult or child older than 5 years of age. Acute trauma to the foot. Ottawa rules cannot be evaluated due to exclusionary criteria. Initial imaging.

	Appropriateness	g 0.7							F	inal	Tabu	latio	ıs		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography foot	Usually appropriate	Strong	⊕ <0.1 mSv	€ <0.03 mSv [ped]	9	9	0	0	0	0	0	0	0	2	15
		References		Study	/ Quality										
		24 (16096591)			2										
		25 (8669741)			1										
		5 (9774943)			4										
CT foot without IV contrast	May be appropriate	Limited	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	5	5	0	0	1	0	10	3	0	3	0
		References		Study	Quality										
		22 (15546842)			4										
		21 (15333345)			3										
		26 (26797374)			3										
CT foot with IV contrast	Usually not appropriate	Limited	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	17	0	0	0	0	0	0	0	0
		References		Study	Quality										
		22 (15546842)			4										
		21 (15333345)			3										
		26 (26797374)			3										
CT foot without and with IV contrast	Usually not appropriate	Limited	⊕ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	15	0	0	0	0	0	2	0	0
		References		Study	/ Quality										
		22 (15546842)			4										
		21 (15333345)			3										
		26 (26797374)			3										
MRI foot without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	3	1	0	1	0	0	1	0

MRI foot without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	2	1	1	0	0	0	0	0
US foot	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	16	1	0	0	0	0	0	0	0

References	Study Quality
24 (16096591)	2
28 (11856673)	4
27 (9423650)	2

Variant 4: Adult or child older than 5 years of age. Acute trauma to the foot. Ottawa rules can be evaluated without exclusionary criteria. Ottawa rules are negative. Suspected pathology in an anatomic area not addressed by Ottawa rules (not involving the midfoot; eg, metatarsal-phalangeal joint, metatarsal, toe, tendon, etc). Initial imaging.

.	Appropriateness				35 31			F	inal '	Tabu	latio	ns			
Procedure	Category	SOE	Adults RRI	L Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography foot	Usually appropriate	Limited	 	v <0.03 v mSv [ped]	9	9	0	0	0	0	0	0	2	1	14
		References		Study	Quality										
		29 (23015979)			4										
		31 (25239377)			2										
		30 (23091286)			3		_								
Radiography foot with weightbearing	Usually appropriate	Limited	≎ <0.1 mS	v <0.03 v mSv [ped]	9	9	0	0	0	0	0	0	3	4	10
		References		Study	Quality										
		29 (23015979)			4										
		32 (22915389)			4										
CT foot without IV contrast	May be appropriate (Disagreement)	Expert Opinion	 	v ⊕⊕ 0.03- 0.3 mSv [ped]	5	5	2	1	0	1	7	3	2	1	0
		References		Study	Quality										
		33 (10584818)		2											

		21 (15333345)			3										
CT foot with IV contrast	Usually not appropriate	Limited	⊕ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	15	0	0	1	0	1	0	0	0
		References		Study	y Quality										
		33 (10584818)			2										
		21 (153333345)			3										
CT foot without and with IV contrast	Usually not appropriate	Limited	3 <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	15	0	0	1	0	1	0	0	0
		References		Study	y Quality										
		33 (10584818)			2										
		21 (15333345)			3										
MRI foot without IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	11	0	0	1	4	1	0	0	0
		References		Study	y Quality										
		38 (19048208)			4										
		34 (22619270)			2										
		36 (12496521)			1										
		37 (18820039)			3										
		35 (21645348)			3										
MRI foot without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	13	1	0	3	0	0	0	0	0
		References		Study	y Quality										
		38 (19048208)			4										
		34 (22619270)			2										
		36 (12496521)			1										
		37 (18820039)			3										
		35 (21645348)			3										
US foot	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	14	2	1	0	0	0	0	0	0
		References		C(1	y Quality										

		36 (12496521)				1										
		39 (22453857)				4										
		40 (15895226)				3										
Fluoroscopy foot	Usuall approp	Limited	� < 0.1 mS	Sv		1	1	14	1	1	0	0	0	0	0	1
		References			Study	Quality										
		29 (23015979)				4										

Variant 5: Adult or child older than 5 years of age. Acute trauma to the foot. Suspect Lisfranc injury, tendon injury, or occult fracture or dislocation. Radiographs are normal or equivocal. Next imaging study.

D 1	Appropriateness	COE	A L L DDI	D I DDI	D 4	3.6.11			F	inal '	Гаbи	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT foot without IV contrast	Usually appropriate	Strong	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	9	9	0	0	0	0	1	0	2	4	10

	[poa]
References	Study Quality
38 (19048208)	4
41 (21098178)	4
49 (17185672)	2
50 (17996620)	4
42 (19696279)	3
43 (9694121)	4
33 (10584818)	2
44 (19339574)	3
22 (15546842)	4
21 (15333345)	3
45 (22915209)	2
46 (18440481)	4
48 (28112555)	4
47 (27234977)	4

MRI foot without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	3	0	4	10
		References			Quality										
		55 (10464721)			4										
		54 (18287423)			3										
		38 (19048208)		4											
		41 (21098178)			4										
		29 (23015979)													
		42 (19696279)													
		43 (9694121)			4										
		33 (10584818)			2										
		44 (19339574)			3										
		37 (18820039)			3										
		21 (15333345)			3										
		45 (22915209)			2										
		46 (18440481)		4											
		39 (22453857)		4											
		51 (26888876)		2 4 3											
		56 (27336454)													
		52 (29112474)													
		53 (29570372)		3											
US foot	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	0	0	1	0	11	5	0	0	0
		References		Study	Quality										
		58 (17996621)			4										
		57 (18094286) 63 (18095247) 64 (16819605)			3										
					4 3										
		32 (22915389)		4											
		59 (19244072)			4										
		39 (22453857)			4										

		65 (16085620)			3										
		62 (26802947)													
		60 (27497976)		3 3											
		20 (24617695)		4											
		61 (23522739)			2										
CT foot with IV contrast	Usually not appropriate	Strong	⊕ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	14	1	0	0	0	1	1	0	0
		References			Study Quality										
		38 (19048208)			4										
		41 (21098178)													
		49 (17185672)													
		50 (17996620)													
		42 (19696279)													
		43 (9694121)			4										
		33 (10584818)			2										
		44 (19339574)			3										
		22 (15546842)													
		21 (15333345)													
		45 (22915209)													
		46 (18440481)													
		48 (28112555)													
		47 (27234977)			4										
CT foot without and with IV contrast	Usually not appropriate	Strong	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	14	1	0	1	0	0	1	0	0
		References		Study	Quality										
		38 (19048208)			4										
		41 (21098178)			4										
		49 (17185672)		2											
		50 (17996620)			4										
		42 (19696279)													

						_						
		43 (9694121)		4								
		33 (10584818)		2								
		44 (19339574)		3								
		22 (15546842)		4								
		21 (15333345)		3								
		45 (22915209)		2								
		46 (18440481)		4								
		48 (28112555)		4								
		47 (27234977)		4								
MRI foot without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	14	1	0 0	0	0 2	2 0	0
		References		Study Quality					•			
		55 (10464721)		4]						
		54 (18287423)		3								
		38 (19048208)		4								
		41 (21098178)		4								
		29 (23015979)		4								
		42 (19696279)		3								
		43 (9694121)		4								
		33 (10584818)		2								
		44 (19339574)		3								
		37 (18820039)		3								
		21 (15333345)		3								
		45 (22915209)		2								
		46 (18440481)		4		_						
		39 (22453857)		4		_						
		51 (26888876)		2		_						
		56 (27336454)		4		_						

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52 (29112474)

53 (29570372)

Variant 6: Adult or child older than 5 years of age. Acute trauma to the foot. Suspect penetrating trauma with a foreign body. Radiographs of the foot are negative. Next imaging study.

	Appropriateness	priateness GOV ALL DRY		D 1 DD1	- ·	3.5.31	Final Tabulations										
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9		
US foot	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	0	0		
		References			Study Quality												
		24 (16096591)		2													
		28 (11856673)			4												
		25 (8669741)	1														
		27 (9423650)		2													
CT foot without IV contrast	May be appropriate	Limited	� <0.1 mSv		5	5	0	0	0	0	0	0	0	0	0		
		References	Study	Quality		•											
		66 (22744349)															
MRI foot without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	0	0	0	0	0		
		References		Study Quality													
		28 (11856673)		4													
		66 (22744349)		2													
CT foot with IV contrast	Usually not appropriate	Limited	⊕ <0.1 mSv		1	1	0	0	0	0	0	0	0	0	0		
		References		Study	Quality												
		66 (22744349)		2													
CT foot without and with IV contrast	Usually not appropriate	Limited	⊕ <0.1 mSv		1	1	0	0	0	0	0	0	0	0	0		
		References		Study	Quality												

			66 (22744349)			2											
MRI foot without and with IV contrast	Usuall approp	-	Limited	O 0 mSv	/	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			References		Study Quality												_
			28 (11856673)		4												
			66 (22744349)				2										

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- Study Quality: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at www.acr.org/ac.