$\begin{array}{c} \textbf{American College of Radiology} \\ \textbf{ACR Appropriateness Criteria}^{\circledR} \end{array}$

Chronic Extremity Joint Pain-Suspected Inflammatory Arthritis, Crystalline Arthritis, or Erosive Osteoarthritis

Variant 1: Chronic extremity joint pain. Suspect inflammatory (seropositive or seronegative arthritis), crystalline (gout or pseudogout), or erosive osteoarthritis. Initial imaging.

n ,	Appropriateness	COL	A L L DDY	D 1 DD1	D 41	3.5.11			F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography area of interest	Usually appropriate	Strong	Varies	Varies	9	9	0	0	0	0	0	0	0	2	14
		References		Study	Quality										
		8 (24450681)			3										
		12 (11145034)			1										
		10 (21278073)			M										
		9 (10366117)			1										
		13 (23520036)			4										
		13 (23320030)			2										
CT area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	15	1	0	0	0	0	0	0	0
CT area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	1	2	0	1	0	0	0	0
CT area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	16	0	0	0	0	0	0	0	0
MRI area of interest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	2	0	2	0	0	0	0
MRI area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	0	1	1	0	0	0

Bone scan whole body	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	15	1	0	0	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	16	0	0	0	0	0	0	0	0
US area of interest	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	2	2	0	0	0	1	1	0

Variant 2: Chronic extremity joint pain. Suspect inflammatory arthritis (seropositive or seronegative arthritis). Radiographs normal or inconclusive. Next imaging study.

	Appropriateness	GOT	4.1.1. DDI	D 1 DD1	5.4	3.5 31			F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI area of interest without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	3	11
		References		Study	Quality										
		22 (19671817)			2										
		23 (25636414)			3										
		21 (22723498) 13 (23520036)			2										
		13 (23520036)			4										
		18 (24528508)			4										
		18 (24528508) 25 (23192434)			4										
		24 (20966327)			4										
		19 (27134251)			3										
		20 (26681086)			3										
		26 (30770509)			3										
		28 (25537977)			3										
		28 (25537977) 27 (29490980)			1										
US area of interest	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	1	3	1	1	9
		References		Study	Quality										

44 (23997769)	3
43 (19714611)	2
45 (27219303)	1
12 (11145034)	1
29 (21538312)	2
21 (22723498)	2
13 (23520036)	4
18 (24528508)	4
41 (23553120)	3
25 (23192434)	4
34 (24356473)	3
42 (24488415)	2
30 (24445255)	2
11 (16848914)	2
35 (28340066)	Not Assessed
37 (31630207)	3
39 (33180165)	2
31 (31663417)	3
40 (33556758)	2
33 (26939710)	3
36 (31304659)	3
32 (32211929)	4
46 (32803573)	4
38 (15077292)	1
11	0.0 == 0.1

MRI area of interest without IV Contrast

Usually appropriate

Limited

O 0 mSv [ped]

7

7

0

0

1

1

1

5

4

2

2

References	Study Quality
23 (25636414)	3
13 (23520036)	4
18 (24528508)	4
25 (23192434)	4

			24 (20966327)			4										
			19 (27134251)			3										
			20 (26681086)			3										
			28 (25537977)			3										
CT area of interest without IV contrast	Usually approp		Expert Consensus	Varies	Varies	2	2	8	1	5	2	0	0	0	0	0
Image-guided aspiration area of interest	Usually approp		Expert Consensus	Varies	Varies	2	2	8	1	3	1	1	1	0	0	1
CT area of interest with IV contrast	Usually approp		Limited	Varies	Varies	1	1	9	1	6	0	0	0	0	0	0
			References		Study	y Quality		•	•		•	•	•		•	
			15 (33281053)			4										
CT area of interest without and with IV contrast	Usually		Limited	Varies	Varies	1	1	11	0	5	0	0	0	0	0	0
			References Study Quality					•	•		•	•	•	•		
			15 (33281053)			4										
Bone scan whole body	Usually approp		Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	2	0	1	1	0	0	0	0
			References		Stud	y Quality										
			9 (10366117)			1										
			14 (24315051)			4										
Bone scan whole body with SPECT or SPECT/CT area of interest	Usually approp		Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	0	5	0	1	0	0	0	0
			References			y Quality										
		14 (24315051)				4										
FDG-PET/CT whole body	Usually approp		Limited	≎≎≎≎ 10-30 mSv	0	1	1	12	3	0	0	1	0	0	0	0
		References			Study	y Quality										
			16 (21718320)		4											

14 (24315051)	4
17 (33476822)	4

Variant 3: Chronic extremity joint pain. Suspect gout. Radiographs normal or inconclusive. Next imaging study.

	Appropriateness	COF	A L L DDI	D 1 DD1	D (3.6.19			I	inal	Tab	ulatio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT area of interest without IV contrast	Usually appropriate	Strong	Varies	Varies	8	8	0	0	0	0	1	2	3	4	6
		References		Study	Quality										
		50 (25180122)			4										
		48 (28372824)		C	Good										
		47 (31089688)		(Good										
		15 (33281053)			4										
		55 (31167758)			4										
		51 (29679210)			1										
		49 (29725712)			Good										
		53 (32880052)			2										
		54 (26509070)			1										
		52 (30334984)			1						_				, ,
US area of interest	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	1	0	5	2	7
		References		Study	Quality								-		
		60 (24915980)			M										
		50 (25180122)			4										
		62 (23291387)			4										
		55 (31167758)			4										
		63 (32157468)			2										
		65 (32669301)			2										
		59 (32696059)			3										

		64 (30285127)			3										
		61 (30539275)			3										
		58 (25972391)			3										
Image-guided aspiration area of interest	May approp	Limited	Varies	Varies	6	6	0	0	0	1	7	1	4	1	2
		References		Study	y Quality										
		56 (856219)			4										
MRI area of interest without IV contrast	Usuall approp	Moderate	O 0 mSv	O 0 mSv [ped]	3	3	6	0	4	2	4	0	0	0	0
		References		Study	y Quality										
		57 (24080252)			1										
		55 (31167758)			4										
MRI area of interest without and with IV contrast	Usuall approp	Moderate	O 0 mSv	O 0 mSv [ped]	3	3	5	1	6	1	2	0	0	1	0
	•	References		Study	y Quality										
		57 (24080252)			1										
		55 (31167758)			4										
CT area of interest with IV contrast	Usuall approp	Expert Consensus	Varies	Varies	1	1	12	3	0	0	1	0	0	0	0
CT area of interest without and with IV contrast	Usuall approp	Expert Consensus	Varies	Varies	1	1	13	2	0	0	0	0	0	0	1
Bone scan whole body	Usuall approp	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	13	2	0	0	1	0	0	0	0
FDG-PET/CT whole body	Usuall approp	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0

Variant 4: Chronic extremity joint pain. Suspect calcium pyrophosphate dihydrate disease (pseudogout). Radiographs normal or inconclusive. Next imaging study.

ъ .	Appropri	ateness	COF	A L L DDI	n i ppr	D. /	34.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT area of interest without IV contrast	Usua approp		Limited	Varies	Varies	8	8	0	0	0	1	1	2	3	2	6
			References		Study	y Quality										
			69 (24703345)			4										
			71 (29622016)			2										
			70 (33131218)			3										
US area of interest	Usua approp		Strong	O 0 mSv	O 0 mSv [ped]	7	7	1	0	0	0	3	1	5	2	4
			References		Study	y Quality										
			73 (24115756)			2										
			75 (32988839)			1										
			74 (30738145)			2										
Image-guided aspiration area of interest	May approp		Limited	Varies	Varies	6	6	0	0	0	0	7	4	2	2	0
	•		References		Study	y Quality										
			68 (26886247)			3										
MRI area of interest without IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	3	3	5	1	7	1	1	1	0	0	0
			References		Study	y Quality										
			72 (34623546)			4										
MRI area of interest without and with IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	1	6	1	1	0	1	0	0
			References		Study	y Quality										
			72 (34623546)			4										
CT area of interest with IV contrast	Usually approp		Expert Consensus	Varies	Varies	1	1	14	0	1	0	1	0	0	0	0
CT area of interest without and with IV contrast	Usually approp		Expert Consensus	Varies	Varies	1	1	14	0	0	0	1	0	0	0	1

Bone scan whole body	Usually not appropriate	Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0

Variant 5: Chronic extremity joint pain. Suspect erosive osteoarthritis. Radiographs normal or inconclusive. Next imaging study.

Donaldon.	Appropri	iateness	SOE	A -114 DDI	D. J. DDI	D-45	M - 1!			F	inal '	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI area of interest without and with IV contrast	May approp		Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	7	2	1	0	1
			References		Study	Quality										
			23 (25636414)			3		_								
US area of interest	May approp		Limited	O 0 mSv	O 0 mSv [ped]	4	4	1	1	1	5	3	3	0	0	1
			References		Study	Quality		-							•	
		76 (21081530)			1		_									
CT area of interest without IV contrast	Usuall approp		Expert Consensus	Varies	Varies	3	3	5	2	5	3	0	0	0	0	0
MRI area of interest without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	4	4	2	0	0	0	0	0
CT area of interest with IV contrast	Usuall approp		Expert Consensus	Varies	Varies	1	1	13	1	1	0	1	0	0	0	0
CT area of interest without and with IV contrast	Usuall approp		Expert Consensus	Varies	Varies	1	1	13	1	1	0	0	0	0	0	1
Bone scan whole body	Usuall approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0

FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0
Image-guided aspiration area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	0	2	1	0	0	0	0	1

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.