

American College of Radiology
ACR Appropriateness Criteria®

Joint Pain: Idiopathic Arthritis-Child

Variant 1: Child. Appendicular joint pain or swelling. Suspected idiopathic arthritis. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography area of interest	Usually appropriate	Limited	Varies	Varies	9	9	0	0	0	0	1	0	5	2	9
		References		Study Quality											
		25 (23983057)		2											
		24 (35233961)		4											
		23 (34020469)		4											
		22 (29582130)		4											
		6 (27931964)		4											
		8 (23283407)		4											
		4 (32399709)		4											
US area of interest	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	1	0	0	1	2	5	3	2	3
		References		Study Quality											
		32 (29437586)		3											
		31 (36182106)		4											
		30 (30223838)		1											
		29 (36754113)		4											
		27 (33374013)		2											
		28 (37221153)		4											
		4 (32399709)		4											

MRI whole body without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	2	1	0	0	0	1	0
Bone scan whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
Bone scan whole body with SPECT or SPECT/CT area of interest	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	2	1	1	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
Bone scan with SPECT or SPECT/CT area of interest	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	11	2	2	1	1	0	0	0	0
US area of interest with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	2	1	2	0	1	1	0	0

References	Study Quality
33 (33783575)	4

Variant 2: Child. Back pain. Suspected idiopathic arthritis. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI spine area of interest without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	2	3	2	1	6	3
		References		Study Quality											
		4 (32399709)		4											
		34 (24593886)		4											
MRI complete spine without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	1	1	0	2	4	9	0	0

		References	Study Quality													
		4 (32399709)	4													
		34 (24593886)	4													
		35 (34115188)	3													
Radiography spine area of interest	May be appropriate	Limited	Varies	Varies	6	6	0	0	1	1	5	7	1	1	1	
		References	Study Quality													
		4 (32399709)	4													
		23 (34020469)	4													
MRI spine area of interest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	3	4	6	4	0	0	0	
		References	Study Quality													
		7 (38015293)	4													
		27 (33374013)	2													
Radiography complete spine	May be appropriate	Limited		☹☹☹ 0.3-3 mSv [ped]	5	5	0	0	1	3	6	4	2	1	0	
		References	Study Quality													
		4 (32399709)	4													
		23 (34020469)	4													
MRI complete spine without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	0	1	3	6	4	3	0	0	0	
		References	Study Quality													
		7 (38015293)	4													
		27 (33374013)	2													
Bone scan whole body	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	13	0	2	2	0	0	0	0	0	
Bone scan whole body with SPECT or SPECT/CT area of interest	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	12	1	2	2	0	0	0	0	0	

FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
CT spine area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	10	3	1	1	2	0	0	0	0
CT spine area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	13	3	0	0	0	1	0	0	0
CT spine area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	2	2	1	0	0	1	0	0
CT complete spine without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	2	0	0	1	0	0	0	0
CT complete spine without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	4	0	1	1	0	0	0	0
CT complete spine with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	13	2	1	0	1	0	0	0	0
US spine area of interest	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	2	1	1	0	1	0	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
Bone scan with SPECT or SPECT/CT area of interest	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	10	2	3	1	0	1	0	0	0

Variant 3: Child. Sacroiliac joint pain. Suspected idiopathic arthritis. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI sacroiliac joints without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	2	0	1	4	3	7

		38 (25892309)			4												
CT pelvis with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	2	1	0	0	0	1	0	0		
CT pelvis without IV contrast	Usually not appropriate	Expert Opinion	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	10	1	2	2	1	0	0	1	0		
		References			Study Quality												
		37 (36629936)			4												
		39 (30976556)			4												
CT pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	2	0	0	0	0	1	0	0		
Bone scan whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	10	3	3	1	0	0	0	0	0		
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	2	1	1	0	0	0	0	0		
US sacroiliac joints	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	0	0	1	0	0	0	0		
Bone scan with SPECT or SPECT/CT sacroiliac joints	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	9	2	3	2	0	1	0	0	0		
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	2	1	1	0	0	0	0	0		

Variant 4: Child. Temporomandibular joint pain. Suspected idiopathic arthritis. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI temporomandibular joint without and with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	1	2	2	2	10

		References	Study Quality													
		11 (29134239)	4													
		45 (36944679)	4													
		46 (29766249)	4													
MRI temporomandibular joint without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	4	7	0	0	0	0	0	0	0
		References	Study Quality													
		4 (32399709)	4													
Radiography temporomandibular joint	Usually not appropriate	Limited		☼☼ 0.03-0.3 mSv [ped]	2	2	6	3	2	5	1	0	0	0	0	0
		References	Study Quality													
		22 (29582130)	4													
		47 (36782277)	3													
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	14	0	1	1	0	0	0	1	0	0
CT maxillofacial without IV contrast	Usually not appropriate	Expert Opinion	☼☼ 0.1-1mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	12	1	1	1	1	1	0	0	0	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	16	0	0	0	0	0	1	0	0	0
Bone scan whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	0	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	1	0	0	0	0	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	15	0	1	1	0	0	0	0	0	0
Bone scan with SPECT or SPECT/CT maxillofacial	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	1	0	2	0	0	0	0	0

MRI complete spine without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	2	8	5	1	0	0
		References		Study Quality											
		7 (38015293)		4											
		27 (33374013)		2											
Radiography spine area of interest	Usually not appropriate	Limited	Varies	Varies	2	2	4	5	3	1	2	1	1	0	0
		References		Study Quality											
		4 (32399709)		4											
		7 (38015293)		4											
		22 (29582130)		4											
		54 (34945094)		2											
Radiography complete spine	Usually not appropriate	Limited		☹☹☹ 0.3-3 mSv [ped]	2	2	5	5	1	4	1	0	1	0	0
		References		Study Quality											
		4 (32399709)		4											
		7 (38015293)		4											
		22 (29582130)		4											
Bone scan whole body	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	13	1	1	2	0	0	0	0	0
Bone scan whole body with SPECT or SPECT/CT area of interest	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	13	1	0	3	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	12	1	2	0	2	0	0	0	0
CT spine area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	1	1	2	1	0	0	0	0
CT spine area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	14	0	1	1	0	0	0	1	0

MRI sacroiliac joints and lumbar spine without and with IV contrast	May be appropriate	Expert Opinion	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	2	6	3	2	3	1
		References		Study Quality											
		55 (24127385)		2											
MRI sacroiliac joints and lumbar spine without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	3	6	5	2	0	0
		References		Study Quality											
		7 (38015293)		4											
CT pelvis without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	7	0	3	4	1	2	0	0	0
		References		Study Quality											
		37 (36629936)		4											
		39 (30976556)		4											
Radiography pelvis	Usually not appropriate	Limited	☼☼ 0.1-1mSv	☼☼ 0.03-0.3 mSv [ped]	3	3	5	3	4	4	0	0	1	0	0
		References		Study Quality											
		4 (32399709)		4											
		43 (29996925)		2											
Radiography sacroiliac joints	Usually not appropriate	Limited	☼☼ 0.1-1mSv	☼☼ 0.03-0.3 mSv [ped]	3	3	6	2	3	3	2	0	1	0	0
		References		Study Quality											
		4 (32399709)		4											
		43 (29996925)		2											
FDG-PET/MRI whole body	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	6	2	4	1	4	0	0	0	0
		References		Study Quality											
		49 (20523983)		1											
FDG-PET/CT whole body	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	6	4	4	1	2	0	0	0	0

		References		Study Quality											
		49 (20523983)		1											
MRI sacroiliac joints without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	2	7	6	0	1	0	0	0	0
		References		Study Quality											
		38 (25892309)		4											
		41 (26201675)		1											
CT pelvis with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	1	1	2	1	0	1	0	0
CT pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	1	1	0	0	0	1	0
Bone scan whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	1	1	1	0	0	0	0	0
US sacroiliac joints	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	1	0	1	1	0	0	0	0
Bone scan with SPECT or SPECT/CT sacroiliac joints	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	3	1	1	1	0	0	0	0

Variant 8: Child. Temporomandibular joint pain. Idiopathic arthritis. Follow-up imaging.

CT maxillofacial without IV contrast	May be appropriate	Limited	☢☢ 0.1-1mSv	☢☢☢ 0.3-3 mSv [ped]	4	4	5	1	2	7	2	0	0	0	0
		References	Study Quality												
		4 (32399709)	4												
		56 (27649720)	3												
		57 (36515761)	4												
MRI temporomandibular joint without IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	3	1	5	4	2	1	0	1	0
		References	Study Quality												
		4 (32399709)	4												
Radiography temporomandibular joint	Usually not appropriate	Expert Opinion		☢☢ 0.03-0.3 mSv [ped]	3	3	3	1	6	4	1	1	0	1	0
		References	Study Quality												
		47 (36782277)	3												
CT maxillofacial with IV contrast	Usually not appropriate	Expert Consensus	☢☢ 0.1-1mSv	☢☢☢ 0.3-3 mSv [ped]	1	1	10	0	1	3	2	0	0	1	0
CT maxillofacial without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	1	1	14	1	0	1	0	0	0	1	0
Bone scan whole body	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	16	0	0	1	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	2	1	4	1	0	0	0	0
		References	Study Quality												
		49 (20523983)	1												
FDG-PET/MRI whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	2	0	3	2	0	1	0	0
		References	Study Quality												
		49 (20523983)	1												

Bone scan with SPECT or SPECT/CT maxillofacial	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	1	2	0	0	0	0
US head and neck	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	12	2	1	2	0	0	0	0	0
		References		Study Quality											
		48 (31396836)		4											

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.