

American College of Radiology
ACR Appropriateness Criteria®

Chronic Hand and Wrist Pain

Variant 1: Adult. Chronic hand or wrist pain. 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	1	0	0	0	0	0	0	1	11
		References		Study Quality											
		12 (16932876)		4											
		11 (21078815)		4											
		10 (28399787)		4											
		9 (30171275)		4											
		8 (34602133)		4											
		7 (33021575)		4											
		6 (28737618)		4											
US area of interest	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	2	0	4	3	2	2	0	0	0
		References		Study Quality											
		16 (31421023)		2											
		15 (28024659)		3											
		14 (23111854)		4											
		13 (32115082)		4											
		11 (21078815)		4											
		9 (30171275)		4											
		6 (28737618)		4											

		18 (34100996)		4											
		17 (29732587)		4											
CT area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	1	0	0	0	0	0	0	0
CT area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	1	0	0	0	0	0	0
CT area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	1	0	0	0	0	0	0	0
Radiographic arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	10	0	1	0	1	0	0	0	1
MRI area of interest without IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	11	1	0	1	0	0	0	0	0
MRI area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	12	0	1	0	0	0	0	0	0
Bone scan area of interest	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	12	1	0	0	0	0	0	0	0
MR arthrography area of interest	Usually not appropriate	Expert Consensus	0.0 mSv	0.0 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0
CT arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	0	1	0	0	0	0	0	0

Variant 2: Adult. Chronic wrist pain. Radiographs normal or remarkable for nonspecific arthritis. Next imaging study.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI wrist without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	5	6
		References		Study Quality											
		44 (34137663)		4											

43 (27726753)	4
42 (17177022)	4
41 (26117527)	4
40 (34797695)	3
39 (32372253)	3
38 (29700613)	3
37 (28808768)	3
36 (18762112)	2
32 (27426979)	Good
31 (23812413)	3
30 (10194719)	2
13 (32115082)	4
12 (16932876)	4

MR arthrography wrist	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	1	3	1	3	1	3
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References	Study Quality
7 (33021575)	4
13 (32115082)	4
18 (34100996)	4
34 (26700348)	2
33 (31387739)	3
32 (27426979)	Good
31 (23812413)	3
30 (10194719)	2
29 (28488454)	3

US wrist	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	2	2	4	1	2	2
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References	Study Quality
46 (20566255)	4
18 (34100996)	4
17 (29732587)	4

		16 (31421023)	2												
		14 (23111854)	4												
		13 (32115082)	4												
		6 (28737618)	4												
CT arthrography wrist	May be appropriate	Limited	☼ <0.1 mSv		5	5	0	1	1	1	7	3	0	0	0
		References	Study Quality												
		6 (28737618)	4												
		18 (34100996)	4												
		23 (16304116)	2												
		22 (19233582)	3												
		21 (18480484)	4												
CT wrist without IV contrast	May be appropriate	Limited	☼ <0.1 mSv		5	5	0	0	2	0	6	4	1	0	0
		References	Study Quality												
		6 (28737618)	4												
		28 (26710736)	3												
		27 (26553886)	3												
		26 (33040956)	4												
		25 (27554667)	2												
		24 (16615200)	4												
Radiography wrist additional views	May be appropriate	Limited	☼ <0.1 mSv		5	5	2	0	1	3	6	0	0	1	0
		References	Study Quality												
		18 (34100996)	4												
CT wrist with IV contrast	Usually not appropriate	Expert Consensus	☼ <0.1 mSv		1	1	10	0	2	1	0	0	0	0	0
CT wrist without and with IV contrast	Usually not appropriate	Expert Consensus	☼ <0.1 mSv		1	1	10	1	1	1	0	0	0	0	0

Radiographic arthrography wrist	Usually not appropriate	Limited	☢ <0.1 mSv		1	1	13	0	0	0	0	0	0	0	0	0	0
		References		Study Quality													
		45 (21467087)		M													
MRI wrist without and with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	7	1	2	0	3	0	0	0	0	0	0
		References		Study Quality													
		3 (36436971)		4													
		9 (30171275)		4													
		35 (16498112)		3													
		2 (37236743)		4													
Bone scan wrist	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	8	1	2	1	1	0	0	0	0	0	0
		References		Study Quality													
		19 (12364624)		4													
		20 (19756904)		M													

Variant 3: Adult. Chronic hand pain. Radiographs normal or remarkable for nonspecific arthritis. Next imaging study.

		44 (34137663)		4											
		13 (32115082)		4											
US hand	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	4	3	4	1	1
		References		Study Quality											
		6 (28737618)		4											
		17 (29732587)		4											
		16 (31421023)		2											
		15 (28024659)		3											
		14 (23111854)		4											
		13 (32115082)		4											
MRI hand without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	4	1	0	1	5	1	1	0	0
		References		Study Quality											
		48 (30978394)		4											
		47 (28216312)		4											
CT hand with IV contrast	Usually not appropriate	Expert Consensus	☢ <0.1 mSv		1	1	9	1	2	1	0	0	0	0	0
CT hand without IV contrast	Usually not appropriate	Expert Consensus	☢ <0.1 mSv		1	1	9	1	0	0	2	1	0	0	0
CT hand without and with IV contrast	Usually not appropriate	Expert Consensus	☢ <0.1 mSv		1	1	9	1	2	0	1	0	0	0	0
Bone scan hand	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	9	1	2	1	0	0	0	0	0
CT arthrography hand	Usually not appropriate	Expert Consensus	☢☢ 0.1-1mSv		1	1	9	2	1	0	0	1	0	0	0
MR arthrography hand	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	1	0	0	1	1	0	0
Radiographic arthrography hand	Usually not appropriate	Expert Consensus	☢ <0.1 mSv		1	1	9	1	0	1	1	1	0	0	0

Variant 4: Adult. Chronic wrist pain. Radiographs show old scaphoid fracture. Evaluate for nonunion, malunion, osteonecrosis, or post-traumatic osteoarthritis. Next imaging study.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI wrist without IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	0	0	4	2	7
		References		Study Quality											
		57 (17312277)		2											
		59 (20858790)		2											
CT wrist without IV contrast	Usually appropriate	Limited	☼ <0.1 mSv		8	8	0	0	0	0	2	1	3	3	4
		References		Study Quality											
		27 (26553886)		3											
		28 (26710736)		3											
MRI wrist without and with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	1	3	4	2	1	2
		References		Study Quality											
		58 (10628470)		2											
		57 (17312277)		2											
CT arthrography wrist	Usually not appropriate	Limited	☼ <0.1 mSv		1	1	7	0	2	1	1	1	0	1	0
		References		Study Quality											
		22 (19233582)		3											
CT wrist with IV contrast	Usually not appropriate	Limited	☼ <0.1 mSv		1	1	7	4	1	0	0	1	0	0	0
		References		Study Quality											
		55 (30183133)		4											

73 (34812067)	3
72 (32323256)	4
71 (30635201)	2
70 (25187592)	2
69 (34261588)	4
68 (30702462)	Good
67 (28947163)	Good
66 (22244369)	M
65 (20963527)	M
60 (27869627)	4

CT area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	10	3	0	0	0	0	0	0	0
CT area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	0	1	1	0	0	0	0	0
CT area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	1	0	0	0	0	0	0
Radiographic arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	0	0	1	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	10	0	2	0	0	0	1	0	0
Bone scan area of interest	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	13	0	0	0	0	0	0	0	0
Radiography wrist additional views	Usually not appropriate	Expert Consensus	☼ <0.1 mSv		1	1	9	1	1	0	1	1	0	0	0
MR arthrography area of interest	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	1	0	0	0	0	0	0
CT arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	1	0	0	0	0	0	0

Variant 6: Adult. Chronic hand or wrist pain. Radiographs normal or show nonspecific arthritis. Suspect tendon injury, tenosynovitis, or tendon pathology. Next imaging study.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI area of interest without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	2	11
		References		Study Quality											
		13 (32115082)		4											
		43 (27726753)		4											
		76 (12740463)		4											
		77 (31351544)		4											
US area of interest	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	1	2	2	8
		References		Study Quality											
		6 (28737618)		4											
		13 (32115082)		4											
		46 (20566255)		4											
		80 (33934941)		2											
		79 (20033358)		3											
		78 (28960382)		1											
		77 (31351544)		4											
MRI area of interest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	1	3	8	1	0	0	0
		References		Study Quality											
		43 (27726753)		4											
		75 (16941192)		3											
CT area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	1	0	0	0	0	0	0

CT area of interest without IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	10	2	1	0	0	0	0	0	0
CT area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	10	2	0	1	0	0	0	0	0
Radiographic arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	0	0	1	0	0	0	0
Bone scan area of interest	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	12	1	0	0	0	0	0	0	0
MR arthrography area of interest	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	10	1	0	1	0	0	1	0	0
CT arthrography area of interest	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	11	1	1	0	0	0	0	0	0

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.