American College of Radiology ACR Appropriateness Criteria®

Chronic Hip Pain

Variant 1: Chronic hip pain. Initial Imaging.

D 1	Appropriatene	SS GOT	4 1 14 BB1	. D 1 DD1	D	3.6.11			F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRI	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography hip	Usually appropriate	Limited	��� 1-10 mSv		9	9	0	0	0	0	0	0	0	2	13
		References		Stud	y Quality										
		12 (12783223)			3										
		14 (12578996)			4										
		13 (22915391)			4										
		15 (11567537)			4		_								
Radiography pelvis	Usually appropriate	Limited	�� 0.1-1mS		9	9	0	0	0	0	0	0	0	6	9
		References		Stud	y Quality										
		12 (12783223)			3										
		14 (12578996)			4										
		13 (22915391)			4										
		15 (11567537)			4		_								
CT arthrography hip	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT hip without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	12	1	2	0	0	0	0	0	0
MR arthrography hip	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	0	0	1	0	0	0	0

MRI hip without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	1	1	0	1	0	0	0	0
MRI hip without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	1	0	1	0	0	0	0	0
Bone scan hip	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0
US hip	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	1	2	0	0	0	0
CT hip with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0
CT hip without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
Fluoride PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv		1	1	15	0	0	0	0	0	0	0	0
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	14	1	0	0	0	0	0	0	0

Variant 2: Chronic hip pain. Suspect noninfectious extra-articular abnormality, such as tendonitis or bursitis. Radiographs negative or nondiagnostic. Next imaging study.

D 1	Appropriateness	COF	A L L DDI	D I DDI	D.	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
MRI hip without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	1	12

References	Study Quality
25 (16275576)	4
26 (16275579)	4
27 (16275574)	4
28 (16275584)	4
29 (16275577)	4

								,								
			31 (16275583)			4										
			32 (16275580)			4										
			33 (16275578)			4										
			34 (16275571)			4										
			30 (19887296)			4										
			23 (22038311)			M										
			24 (31243547)			2										
			37 (26102391)			3										
			36 (33474984)			4										
			35 (22403167)			2										
US hip	Usua approp	lly oriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	5	2	4	2	2
			References		Study	Quality										
			41 (21381497)			3										
			38 (8596860)			4										
			23 (22038311)			M										
			40 (18287424)			4										
			39 (21136580)			4	_									
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	May approp	be oriate	Moderate	Varies	Varies	5	5	0	0	0	1	9	2	2	0	1
			References		Study	Quality										
			19 (16177412)			4										
			22 (23852899)			2]								
			21 (15494331)			3										
			20 (-3195116)			4										
CT hip without IV contrast	Usually approp		Limited	��� 1-10 mSv		2	2	7	2	4	2	0	0	0	0	0
			References		Study	Quality										_
			18 (21298428)			2										

CT arthrography hip	Usually appropr	Strong	��� 1-10 mSv		1	1	9	1	2	0	2	1	0	0	0
		References		Study	Quality										
		18 (21298428)			2										
		17 (24071389)			2										
		 16 (20716653)			3		_								_
MR arthrography hip	Usually appropr	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	2	0	2	1	0	0	0
MRI hip without and with IV contrast	Usually appropr	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	1	1	3	1	0	0	0
Bone scan hip	Usually appropr	Expert Consensus	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT hip with IV contrast	Usually appropr	Expert Consensus	��� 1-10 mSv		1	1	10	4	1	0	0	0	0	0	0
CT hip without and with IV contrast	Usually appropr	Expert Consensus	��� 1-10 mSv		1	1	13	2	0	0	0	0	0	0	0
Fluoride PET/CT skull base to mid-thigh	Usually appropr	Expert Consensus	���� 10-30 mSv		1	1	14	1	0	0	0	0	0	0	0

Variant 3: Chronic hip pain. Suspect impingement or dysplasia. Radiographs negative or nondiagnostic. Next imaging study.

ъ	Appropriateness	COF	A L L DDI	D I DDI	D 41	3.6 12			F	inal '	Гabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography hip	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	0	3	7	5

References	Study Quality
60 (19455497)	3
69 (16530635)	4
70 (16530634)	4
68 (17114529)	2

58 (15800516)	2
18 (21298428)	2
65 (22933489)	3
66 (20872764)	2
67 (21048174)	2
56 (20859632)	M
16 (20716653)	3
57 (23073899)	2
59 (22878728)	2
71 (30048144)	3
53 (31023206)	3
72 (31633993)	2
52 (24656977)	2
55 (24370140)	2
54 (25022979)	2

MRI hip without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	0	2	8	5	
-----------------------------	------------------------	--------	---------	------------------	---	---	---	---	---	---	---	---	---	---	---	--

References		Study	Quality	
64 (2290747:	5)		2	
69 (16530633	5)		4	
70 (16530634	4)		4	
68 (17114529	9)		2	
58 (1580051)	6)		2	
47 (18984718	8)		4	
65 (22933489	9)		3	
48 (2555837)	7)		3	
44 (23395032	2)		4	
45 (2298573)	3)		2	
46 (22492172	2)		4	
42 (16211385	5)		4	
43 (16721954	4)		4	

		71 (30048144)			3										
		72 (31633993)			2										
Radiography hip additional views	May be appropriate	Timber	⊕⊕ 0.1-1mSv		6	6	0	0	0	2	3	3	1	0	6
		References		Stud	y Quality		•	•			•	•			
		47 (18984718)			4										
CT arthrography hip	May be appropriate	Limited	≎≎≎ 1-10 mSv		5	5	0	0	0	1	12	2	0	0	0
		References		Stud	y Quality		•				•	!			
		17 (24071389)			2										
		16 (20716653)			3										
		44 (23395032)			4										
		42 (16211385)			4										
		43 (16721954)		_	4										
CT hip without IV contrast	May be appropriate	Limited	≎≎≎ 1-10 mSv		5	5	0	1	0	1	6	3	2	1	1
		References		Stud	y Quality										
		62 (8451409)			4										
		47 (18984718)			4										
		48 (25558377)			3										
		44 (23395032)			4										
		45 (22985733)			2										
		46 (22492172)			4										
		42 (16211385)			4										
		43 (16721954)			4										
		49 (29406341)		T	4				ı		1	1			_
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	May be appropriate	Moderate	Varies	Varies	5	5	0	0	2	0	11	2	0	0	0
		References		Stud	y Quality										
		19 (16177412)		4											

		22 (222 7222)													
		22 (23852899)			2										
		21 (15494331)			3										
TIG 1:		20 (-3195116)			4					1					
US hip	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	4	3	2	2	3	0	1	0	0
		References		Study	Quality										
		41 (21381497)			3										
		17 (24071389)			2										
		39 (21136580)			4										
		73 (27405494)			2										
MRI hip without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	8	2	5	0	0	0	0	0	0
		References		Study	Quality										
		64 (22907475)			2										
		34 (16275571)			4										
		61 (8657921)			3										
		62 (8451409)			4										
		63 (12606867)			4										
		65 (22933489)			3										
		66 (20872764)			2										
		67 (21048174)		T	2		1			_					
Bone scan hip	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT hip with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		1	1	12	1	1	1	0	0	0	0	0
		References		Study	Quality										
		44 (23395032)			4										
		42 (16211385)			4										
		43 (16721954)			4										
CT hip without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		1	1	12	2	1	0	0	0	0	0	0

			References			Study	Quality										
			44 (23395032)				4										
			42 (16211385)				4										
			43 (16721954)				4										
Fluoride PET/CT skull base to mid-thigh	Usually approp	y not riate	· ·				1	1	12	1	2	0	0	0	0	0	0
			References			Study	Quality										
			50 (26745810)				4										
			51 (31470763)				4										

Variant 4: Chronic hip pain. Suspect labral tear. Radiographs negative or nondiagnostic. Next imaging study.

n 1	Appropr	iateness	COL	A L L DDI	D 1 DD1	D 4	3.5 11			F	inal	Tabu	ılatio	ns		
Procedure	Categ		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography hip	Usua approp		Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	2	11
			References		Study	Quality										
			76 (10430132)			2										
			77 (17383908)			3										
			78 (11479747)			4										

References	Study Quality
76 (10430132)	2
77 (17383908)	3
78 (11479747)	4
80 (19380568)	3
81 (15972331)	4
58 (15800516)	2
82 (16857978)	2
18 (21298428)	2
75 (22865251)	2
56 (20859632)	M
16 (20716653)	3
57 (23073899)	2
59 (22878728)	2

								1									
			79 (17712555)				4										
			52 (24656977)				2	Γ		1		1					
MRI hip without IV contrast	Usua approp	ally oriate	Strong	O 0 mSv	0 0 [p	mSv ped]	8	8	0	0	0	0	0	0	3	6	6
			References		·	Study	Quality										
			76 (10430132)				2										
			77 (17383908)				3										
			78 (11479747)				4										
			69 (16530635)				4										
			70 (16530634)				4										
			86 (16436825)				4										
			68 (17114529)				2										
			58 (15800516)				2										
			79 (17712555)				4										
			85 (29843749)				2										
CT arthrography hip	May approp	be briate	Strong	��� 1-10 mSv)		6	6	0	0	0	0	6	3	4	1	1
			References			Study	Quality										
			18 (21298428)				2										
			17 (24071389)				2										
			74 (30838104)				3										
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	May approp		Moderate	Varies	Va	aries	5	5	0	0	0	2	12	1	0	0	0
			References			Study	Quality										
			22 (23852899)				2										
			21 (15494331)				3										
			20 (-3195116)				4										
US hip	Usuall	v not		O 0 mSv	0.0) mSv	2	2	6	3	2	2	1	0	1	0	0
CS IIIp	approp		Strong	0 0 11150	[p	oed]			0	3			1	U	1		

		88 (19421915)			1										
		41 (21381497)			3										
		17 (24071389)			2										
		39 (21136580)			4										
		87 (30203593)			3										
CT hip without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		1	1	12	1	1	1	0	0	0	0	0
MRI hip without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	8	2	3	0	2	0	0	0	0
		References		Study	Quality										
		34 (16275571)		4 3											
		61 (8657921)			3										
		62 (8451409)			4										
		63 (12606867)			4										
		84 (20173149)			3										
		83 (25277527)			3										
Bone scan hip	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT hip with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	11	3	0	1	0	0	0	0	0
CT hip without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	1	1	0	0	0	0	0	0
Fluoride PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv		1	1	15	0	0	0	0	0	0	0	0

Variant 5: Chronic hip pain. Radiographs equivocal or positive for mild osteoarthritis. Evaluate articular cartilage integrity. Next imaging study.

	Appropriateness	30 0	A L L DDI	D 1 DD1	.	3.6.31			F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography hip	Usually	Strong	O 0 mSv	O 0 mSv	9	9	0	0	0	1	0	0	2	3	9

Procedure	Appropriaten Category	ess SOE	Adults RRL	Peds RRL	Rating	Median	1	2				lation		8	9
	appropriate			[ped]											
		References		Study	Quality		•								
		89 (21822939)			4										
		95 (26001258)			4										
		52 (24656977)			2										
		55 (24370140)			2										
MRI hip without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	3	4	8
		References		Study	Quality										
		98 (27325163)			4										
		93 (25352941)			3										
		91 (16037508)			1										
		18 (21298428)			2										
		89 (21822939)			4										
		85 (29843749)			2										
CT arthrography hip	May be appropriate	Strong	��� 1-10 mSv		6	6	0	0	0	2	2	4	2	3	2
		References		Study	Quality										
		93 (25352941)			3										
		90 (16242374)			3										
		91 (16037508)			1										
		92 (16990027)			2										
		18 (21298428)			2										
		89 (21822939)			4										
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	Usually not appropriate		Varies	Varies	2	2	7	1	2	2	1	1	0	1	0
		References		Study	Quality										

		94 (30415421)			4										
CT hip without IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	0	1	1	12	2	0	1	0	0	0	0	0
MRI hip without and with IV contrast	Usuall approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	9	2	4	0	0	0	0	0	0
		References		Stud	y Quality										
		97 (26304042)			3										
		96 (28209142)		Ina	dequate		_								
Bone scan hip	Usuall approp	Expert Consensus	��� 1-10 mSv	0	1	1	15	0	0	0	0	0	0	0	0
US hip	Usuall approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	1	1	0	0	0	0	0
CT hip with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	0	1	1	13	1	0	1	0	0	0	0	0
CT hip without and with IV contrast	Usuall approp	Expert Consensus	��� 1-10 mSv	0	1	1	13	2	0	0	0	0	0	0	0
Fluoride PET/CT skull base to mid-thigh	Usuall approp	Expert Consensus	���� 10- mSv	30	1	1	15	0	0	0	0	0	0	0	0

Variant 6: Chronic hip pain. Radiographs suspicious for intra-articular synovial hyperplasia or neoplasia, including nodular synovitis, diffuse tenosynovial giant cell tumor, osteochondromatosis, other synovial neoplasm. Next imaging study.

D 1	Appropriateness	COF	A L L DDY	D I DDI	- ·	3.6.11			F	inal [Гabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI hip without IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	1	0	1	8	5
MRI hip without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	8	8	0	0	1	1	0	2	1	4	6
CT arthrography hip	May be appropriate	Expert Consensus	��� 1-10 mSv		4	4	1	1	3	4	5	0	0	0	1

				1	1		1	1		1		1			l
CT hip without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		3	3	4	3	4	2	2	0	0	0	0
Image-guided aspiration hip	Usually not appropriate	Limited	Varies	Varies	3	3	6	0	2	3	4	0	0	0	0
		References		Study	Quality			•	•						•
		99 (2845469)			4										
		100 (2383449)			4										
MR arthrography hip	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	2	5	1	0	0	0	0	0
Bone scan hip	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0
US hip	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	1	2	1	0	0	1	0	0
CT hip with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	0	2	0	0	0	0	0
CT hip without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	10	0	3	0	0	0	1	0	1
Fluoride PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv		1	1	13	0	0	1	0	0	1	0	0
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	14	0	1	0	0	0	0	0	0

Variant 7: Chronic hip pain with low back or knee pathology or pain. Radiographs demonstrate hip osteoarthritis. Want to quantify amount of pain related to the hip. Next imaging study.

D 1	Appropriateness	305	A L L DDI	n i nni	D (1	3.6.11			F	inal T	[abu]	lation	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Image-guided anesthetic +/- corticosteroid injection hip joint or surrounding structures	Usually appropriate	Moderate	Varies	Varies	9	9	0	0	0	0	2	1	0	3	9

		References			Study Quality											
	19 (16177412)			4												
		22 (23852899)			2											
		21 (15494331)														
			20 (-3195116)	4												
CT arthrography hip	Usuall approp		Strong	��� 1-10 mSv		1	1	11	2	2	0	0	0	0	0	0
	References			Study Quality												
	93 (25352941)			3												
90 (16242374)				3												
91 (16			91 (16037508)		1											
92 (16990027)				2												
13 (22915391)			4													
		18 (21298428)			2											
CT hip without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv		1	1	13	0	1	0	0	1	0	0	0
MR arthrography hip	Usually not appropriate		Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	1	1	2	1	0	0	0	0
			References		Study Quality											
		13 (22915391)			4											
MRI hip without IV contrast	Usually not appropriate		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	2	0	0	0	0	0	0
MRI hip without and with IV contrast	Usually not appropriate		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	1	0	1	1	0	0	0
Bone scan hip			Expert Consensus	��� 1-10 mSv		1	1	12	0	1	1	0	0	0	0	1
US hip	Usually not Expert Consensus		O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	0	1	0	0	0	0	
CT hip with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0

CT hip without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	1	1	14	1	0	0	0	0	0	0	0
Fluoride PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���⊕ 10-30 mSv	1	1	14	0	0	0	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.