# American College of Radiology ACR Appropriateness Criteria®

# **Shoulder Pain-Traumatic**

Variant 1: Traumatic shoulder pain. Any etiology. Initial imaging.

	Appropriateness	207							F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography shoulder	Usually appropriate	Strong	<b></b> <0.1 mSv		9	9	0	0	0	0	0	0	0	0	15
		References		Study	Quality										
		8 (22639204)			2										
		5 (17692769)			3										
		7 (24124199)			3										
		6 (19166638)			3										
		4 (25227533)			2								_		
CT arthrography shoulder	Usually not appropriate	Strong	���� 10-30 mSv	)	1	1	15	0	0	0	0	0	0	0	0
		References		Study	Quality										
		12 (19556150)	I		2										
		13 (21074344)			2								_		
CT shoulder without IV contrast	Usually not appropriate	Limited	<b>���</b> 1-10 mSv		1	1	9	0	3	1	2	0	0	0	0
		References		Study	Quality		-								
		9 (18029890)			2										
		10 (20206348)			4										
		11 (25231817)			3										

MR arthrography shoulder	Usually no appropriat		O 0 mSv	O 0 mSv [ped]	1	1	14	0	0	0	1	0	0	0	0
		References		Study	Quality										
		12 (19556150)			2										
		17 (24060014)			3										
		19 (19098184)			3										
		18 (23716283)			3										
		4 (25227533)			2										
		21 (24122001)		1	2					1					
MRI shoulder without IV contrast	Usually no appropriat		O 0 mSv	O 0 mSv [ped]	1	1	11	0	2	0	1	1	0	0	0
		References		Study	Quality										
		15 (25498875)			2										
		17 (24060014)			3										
		19 (19098184)			3										
		20 (24794570)			3										
		18 (23716283)			3										
		16 (25248922)			4										
		14 (24805966)			2					1					
US shoulder	Usually no appropriat		O 0 mSv	O 0 mSv [ped]	1	1	12	1	1	1	0	0	0	0	0
		References		Study	Quality										
		17 (24060014)			3										
		23 (22717835)			2										
		22 (20514507)			2										
		25 (20848574)			2										
		24 (19457838)			M										
CT shoulder without and with IV contrast	Usually no appropriat		≎≎≎ 1-10 mSv		1	1	13	1	1	0	0	0	0	0	0
		References		Study	Quality				_					_	
		9 (18029890)			2										

		10 (20206348)			4										
		11 (25231817)			3					1			1		
CT shoulder with IV contrast	Usually not appropriate	Limited	<b>≎≎≎</b> 1-10 mSv		1	1	13	1	1	0	0	0	0	0	0
		References		Stud	y Quality										
		9 (18029890)			2										
		10 (20206348)			4										
		11 (25231817)			3										
MRI shoulder without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	14	0	0	0	1	0	0	0	0
		References		Stud	y Quality										
		15 (25498875)			2										
		17 (24060014)			3										
		19 (19098184)			3										
		20 (24794570)			3										
		18 (23716283)			3										
		16 (25248922)			4										
		14 (24805966)		ı	2					1					
Bone scan shoulder	Usually not appropriate	Limited	<b>≎≎≎</b> 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0
		References		Stud	y Quality										
		30 (12105806)			4										
		31 (23531735)			2										
		32 (8444918)			3										
		33 (23835267)			3										
FDG-PET/CT skull base to mid- thigh	Usually not appropriate	Limited	���� 10-30 mSv	0	1	1	15	0	0	0	0	0	0	0	0
		References		Stud	y Quality										
		26 (24177044)			3										
		27 (18309481)			3										

28 (24012359)	3
29 (17042899)	3

Variant 2: Traumatic shoulder pain. Nonlocalized shoulder pain. Negative radiographs. Next imaging study.

	Appropriat	teness	607		_						F	inal	Tabu	latio	ns		
Procedure	Categor	ry	SOE	Adults RR	RL .	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI shoulder without IV contrast	Usually appropria		Limited	O 0 mSv	,	O 0 mSv [ped]	9	9	0	0	0	0	0	1	2	3	9
			References			Study	Quality										
			34 (24560469)				4										
			35 (21940587)				3										
			36 (24172671)				4										
			37 (19305272)				2										
CT arthrography shoulder	May be appropria	e ate	Strong	<b>≎≎≎≎</b> 10- mSv	30		5	5	6	0	0	1	6	2	0	0	0
			References			Study	Quality		•		•					•	
			12 (19556150)				2										
			18 (23716283)				3										
			39 (17186246)				2										
US shoulder	May be appropria (Disagreen	ate	Expert Opinion	O 0 mSv	′	O 0 mSv [ped]	5	5	3	1	5	1	4	0	2	0	0
			References			Study	Quality										
			17 (24060014)				3										
			38 (24916105)				4										
			25 (20848574)				2		_								
MR arthrography shoulder	May be appropria		Strong	O 0 mSv	′	O 0 mSv [ped]	5	5	0	0	1	0	9	2	3	0	1
			References			Study	Quality		_								
			17 (24060014)				3										

	_														
		19 (19098184)			3										
		34 (24560469)			4										
		35 (21940587)			3										
		18 (23716283)			3										
		36 (24172671)			4										
		37 (19305272)			2										
CT shoulder without IV contrast	Usually n appropria	Expert Consensus	<b>≎≎≎</b> 1-10 mSv		3	3	2	3	4	0	5	1	0	1	0
Bone scan shoulder	Usually nappropria	Limited	<b>≎≎≎</b> 1-10 mSv		1	1	12	1	1	0	0	0	0	1	0
		References		Study	Quality		•								
		30 (12105806)			4										
		31 (23531735)			2										
		32 (8444918)			3										
		33 (23835267)			3										
MRI shoulder without and with IV contrast	Usually nappropria	Limited	O 0 mSv	O 0 mSv [ped]	1	1	11	0	2	0	1	0	1	0	0
		References		Study	Quality										
		34 (24560469)			4										
		35 (21940587)			3										
		36 (24172671)			4										
		37 (19305272)			2										
CT shoulder without and with IV contrast	Usually n appropria	Expert Consensus	<b>≎≎≎</b> 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT shoulder with IV contrast	Usually n	Expert Consensus	��� 1-10 mSv		1	1	13	1	1	0	0	0	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually r	Limited	���� 10-30 mSv	9999 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0
		References		Study	Quality										
		26 (24177044)			3										

27 (18309481)	3
28 (24012359)	3
29 (17042899)	3

Variant 3: Traumatic shoulder pain. Radiographs show humeral head or neck fracture. Next imaging study.

	Appropri	ateness	207		D 1 DD7		3.5.31			F	inal	Tabu	latio	ns		
Procedure	Categ	ory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT shoulder without IV contrast	Usua approp		Limited	<b>≎≎≎</b> 1-10 mSv		9	9	0	0	0	0	0	0	1	1	13
			References		Study	y Quality										
			10 (20206348)			4										
			42 (19836976)			3										
MRI shoulder without IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	1	2	0	7	0	0	0	0
			References		Study	y Quality										
,			43 (19685061)			4										
CT arthrography shoulder	Usually approp		Expert Consensus	���� 10-30 mSv		1	1	11	2	0	1	0	1	0	0	0
CT shoulder with IV contrast	Usually approp		Limited	��� 1-10 mSv		1	1	13	1	0	1	0	0	0	0	0
			References		Study	y Quality										
			10 (20206348)			4										
			42 (19836976)			3										
CT shoulder without and with IV contrast	Usually approp		Limited	<b>≎≎≎</b> 1-10 mSv		1	1	14	0	0	1	0	0	0	0	0
			References		Study	y Quality										
			10 (20206348)		<u>-</u>	4										
			42 (19836976)			3										

FDG-PET/CT skull base to mid-thigh	Usuall approp		Limited	���� 10- mSv	30	1	1	11	1	1	2	0	0	0	0	0
			References		Stud	y Quality										
			27 (18309481)			3										
MR arthrography shoulder	Usuall approp	y not oriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	13	0	0	0	1	1	0	0	0
			References		Stud	y Quality										
			17 (24060014)			3										
			19 (19098184)			3										
			18 (23716283)			3										
MRI shoulder without and with IV contrast	Usuall approp		Limited	O 0 mSv	O 0 mSv [ped]	1	1	12	1	1	0	1	0	0	0	0
			References		Stud	y Quality										
			43 (19685061)			4										
Bone scan shoulder	Usuall approp	y not oriate	Limited	��� 1-10 mSv	0	1	1	8	2	0	3	1	1	0	0	0
			References		Stud	y Quality										
			31 (23531735)			2										
			32 (8444918)			3										
US shoulder	Usuall approp	y not oriate	Strong	O 0 mSv	O 0 mSv [ped]	1	1	9	2	1	2	0	1	0	0	0
	•		References		Stud	y Quality										
			17 (24060014)			3										
			22 (20514507)			2										
			44 (17149764)			2										

Variant 4: Traumatic shoulder pain. Radiographs show scapula fracture. Next imaging study.

The Approximation of the Appro	priateness	000	A I II DDI	D I DDI	D 41	3.5 11			F	inal	Tabu	llatio	ns		
Procedure	tegory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9

	Appropri	ateness	GOT			- ·	3.5.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT shoulder without IV contrast	Usua approp		Strong	��� 1-10 mSv		9	9	0	0	0	0	0	0	0	1	14
			References		Study	Quality										
			46 (19724000)			4										
			47 (17325929)			2										
			48 (16054146)			2										
MRI shoulder without IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	1	4	2	3	1	0	0	0
			References		Study	Quality										
	İ		49 (26295635)		-	4										
CT arthrography shoulder	Usually		Expert Consensus	���� 10-30 mSv		1	1	14	0	1	0	0	0	0	0	0
CT shoulder without and with IV contrast	Usually approp		Strong	��� 1-10 mSv		1	1	14	0	0	1	0	0	0	0	0
			References		Study	Quality				•			•			
			46 (19724000)			4										
			47 (17325929)			2										
	•		48 (16054146)			2										
FDG-PET/CT skull base to mid-thigh	Usually approp		Limited	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	11	0	1	3	0	0	0	0	0
			References		Study	Quality										
			27 (18309481)			3		_								
CT shoulder with IV contrast	Usually approp		Strong	��� 1-10 mSv		1	1	13	1	0	1	0	0	0	0	0
			References		Study	Quality										
			46 (19724000)			4										
			47 (17325929)			2										
			48 (16054146)			2										

MRI shoulder without and with IV contrast	Usuall approp	Limited	O 0 mSv	′	O 0 mSv [ped]	1	1	13	1	0	1	0	0	0	0	0
		References			Study	Quality										
		49 (26295635)				4										
Bone scan shoulder	Usuall approp			0		1	1	8	3	0	4	0	0	0	0	0
		References			Study	Quality										
		31 (23531735)				2										
		32 (8444918)				3										
US shoulder	Usuall approp	32 (8444918) bt Expert O 0 mSv		O 0 mSv [ped]	1	1	14	1	0	0	0	0	0	0	0	
MR arthrography shoulder	Usuall approp	Expert Consensus	O 0 mSv	′	O 0 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0

Variant 5: Traumatic shoulder pain. Radiographs show Bankart or Hill-Sachs lesion. Next imaging study.

ъ 1	Appropri	ateness	COF	4 1 14 DD	· T	D I DDI	D 41	37.11			F	inal '	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usua approp		Strong	O 0 mSv	′	O 0 mSv [ped]	9	9	1	0	0	0	1	0	0	1	12
			References			Study	Quality										
			12 (19556150)				2										
			17 (24060014)				3										
			17 (24060014) 3 19 (19098184) 3														
			18 (23716283)		3												
			52 (25028704)				3										
			11 (25231817)				3		_								
MRI shoulder without IV contrast	Usua approp		Strong	O 0 mSv	′	O 0 mSv [ped]	8	8	0	0	0	0	0	2	5	3	5
			References			Study	Quality										

						7								
		12 (19556150)		2										
		17 (24060014)		3										
		19 (19098184)		3										
		20 (24794570)		3		<u> </u>								
		18 (23716283)		3										
		52 (25028704)		3						1				
CT arthrography shoulder	May be appropriate	Strong	���� 10-30 mSv	6	6	0	1	0	0	5	4	3	2	0
		References		Study Quality										
		12 (19556150)		2										
		13 (21074344)		2										
CT shoulder without IV contrast	May be appropriate	Strong	��� 1-10 mSv	6	6	0	0	0	0	6	3	5	2	0
		References		Study Quality										
		12 (19556150)		2										
		18 (23716283)		3										
		11 (25231817)		3										
		53 (24318071)		2										
CT shoulder with IV contrast	Usually not appropriate	Strong	��� 1-10 mSv	1	1	15	0	0	0	0	0	0	0	0
		References		Study Quality										
		12 (19556150)		2										
		18 (23716283)		3										
		11 (25231817)		3										
		53 (24318071)		2										
CT shoulder without and with IV contrast	Usually not appropriate	Strong	��� 1-10 mSv	1	1	15	0	0	0	0	0	0	0	0
		References		Study Quality										
		12 (19556150)		2										
		12 (1)000100)				4								
		18 (23716283)		3										

		53 (24318071)			2										
FDG-PET/CT skull base to mid-thigh	Usuall approp	Expert Consensus	���� 10∹ mSv	30 <b>♦♦♦♦</b> 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0
MRI shoulder without and with IV contrast	Usuall approp	Strong	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	1	2	0	0	0	0
		References		Stu	dy Quality										
		12 (19556150)			2										
		17 (24060014)			3										
		19 (19098184)			3										
		20 (24794570)			3										
		18 (23716283)			3										
		52 (25028704)			3										
Bone scan shoulder	Usuall approp	Expert Consensus	��� 1-10 mSv	0	1	1	14	0	0	0	0	0	1	0	0
US shoulder	Usuall approp	Limited	O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	0	0	1	0	0	0
		References		Stu	dy Quality		•	-		-		•			
		17 (24060014)			3										

Variant 6: Traumatic shoulder pain. Radiographs normal. Physical examination and history consistent with dislocation event or instability. Next imaging study.

60 (25218253)

D 1	Appropr	iateness	COL	4.1.14 DD		D I DDI	D .:	3.6.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	KL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usua approp	.*	Strong	O 0 mSv	,	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	0	14
			References			Study	Quality				•				•		
			12 (19556150)				2										
			17 (24060014)				3										
			19 (19098184)				3										

		59 (22401678)			3										
		18 (23716283)			3										
		58 (16944235)			4										
MRI shoulder without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	2	3	3	5	2
		References		Study	Quality										
		12 (19556150)			2										
		17 (24060014)			3										
		19 (19098184)			3										
		18 (23716283)			3										
CT arthrography shoulder	May be appropriate	Limited	���� 10-30 mSv		6	6	0	0	0	0	4	4	4	1	2
		References		Study	Quality		•		•				•		
		12 (19556150)			2										
CT shoulder without IV contrast	May be appropriate	Limited	��� 1-10 mSv		4	4	5	0	2	1	6	0	1	0	0
		References		Study	Quality										
		12 (19556150)			2										
		18 (23716283)			3										
CT shoulder with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		1	1	12	1	1	0	0	1	0	0	0
		References		Study	Quality										
		12 (19556150)			2										
		18 (23716283)			3										
CT shoulder without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
		References		Study	Quality										
		12 (19556150)			2										
		18 (23716283)			3										

FDG-PET/CT skull base to mid-thigh	Usually approp		Expert Consensus	<b>≎≎≎≎</b> 10- mSv	30	���� 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0
MRI shoulder without and with IV contrast	Usually approp	y not riate	Strong	O 0 mSv	,	O 0 mSv [ped]	1	1	12	0	0	2	0	1	0	0	0
			References			Study	Quality										
			12 (19556150)				2										
			17 (24060014) 19 (19098184)				3										
			19 (19098184)			3											
			18 (23716283)			3		_									
Bone scan shoulder	Usually approp		18 (23716283) not Expert ❖❖❖ 1-10		0		1	1	14	0	0	0	0	0	1	0	0
US shoulder	Usually approp				,	O 0 mSv [ped]	1	1	10	0	1	1	2	1	0	0	0
		References				Study	Quality		_								
			References 17 (24060014)				3										
			61 (23980228)				3										

Variant 7: Traumatic shoulder pain. Radiographs normal. Physical examination findings consistent with labral tear. Next imaging study.

D 1	Appropri	ateness	COF	414 DD		n i nnr	D 41	3.7.11			F	inal '	Tabul	latio	ns		
Procedure	Categ		SOE	Adults RR	KL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usua approp	.*	Strong	O 0 mSv	/	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	1	14
			References			Study	Ouality										

References	Study Quality
19 (19098184)	3
20 (24794570)	3
60 (25218253)	3
62 (17896393)	4
63 (21907516)	2
64 (20950767)	3

	-															
			59 (22401678)			3										
			65 (23801390)			3										
			66 (17504318)			4										
CT arthrography shoulder	Usual approp		Strong	���� 10-30 mSv	0	7	7	0	0	0	0	3	3	6	3	0
			References		Study	Quality								•		
			12 (19556150)			2										
			13 (21074344)			2										
			67 (22358006)			2										
MRI shoulder without IV contrast	Usual approp		Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	1	2	5	3	3
			References		Study	Quality										
			17 (24060014)			3										
			19 (19098184)			3										
CT shoulder without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv		1	1	11	1	1	1	0	0	1	0	0
US shoulder	Usually		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	2	0	1	0	0	0	0
Bone scan shoulder	Usually approp		Expert Consensus	��� 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0
MRI shoulder without and with IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	1	1	12	1	0	0	1	1	0	0	0
			References		Study	Quality			•	•	•	•	•	•		
			17 (24060014)		-	3										
			19 (19098184)			3										
CT shoulder without and with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0
CT shoulder with IV contrast	Usually approp	not riate	Expert Consensus	��� 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0

FDG-PET/CT skull base to mid- thigh	Usually not appropriate	Expert Consensus	ଡ଼େଡ଼େଡ଼ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0	
--	-------------------------	---------------------	-----------------------	----------------------------	---	---	----	---	---	---	---	---	---	---	---	--

### Variant 8: Traumatic shoulder pain. Radiographs normal. Physical examination findings consistent with rotator cuff tear. Next imaging study.

P 1	Appropriateness	COF	A L L DDY	D 1 DD1	<b>D</b>	3.5 11			I	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5		7	8	9
MRI shoulder without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	2	3	10
		References		Study	y Quality										
		12 (19556150)			2										
		17 (24060014)			3										
		68 (25677796)			M										
		69 (17724551)			4										
MR arthrography shoulder	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	2	1	4	3	5
		References		Study	y Quality		•	•	•		•	•	•		
		17 (24060014)			3										
		19 (19098184)			3										
		54 (22173386)			3										
US shoulder	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	1	0	4	5	5
		References		Study	y Quality										
		17 (24060014)			3										
		70 (18591598)			2										
		71 (18160242)			3										
		72 (18449121)			3										
		22 (20514507)			2										
		44 (17149764)			2										
		73 (15674840)			2										

	ı															
		25 (20848574)				2										
		74 (18651142)				2										
		24 (19457838)				M										
CT arthrography shoulder	May approp	Limited	���� 10-3 mSv	30		6	6	1	0	0	1	2	7	1	3	0
		References			Study	Quality										
		12 (19556150)				2										
CT shoulder with IV contrast	Usually approp	Expert Consensus	<b>ॐॐ</b> 1-10 mSv	)		1	1	13	1	1	0	0	0	0	0	0
CT shoulder without and with IV contrast	Usually approp	Expert Consensus	<b>≎≎≎</b> 1-10 mSv	)		1	1	14	0	1	0	0	0	0	0	0
CT shoulder without IV contrast	Usually approp	Expert Consensus	<b>≎≎≎</b> 1-10 mSv	)		1	1	12	1	1	0	0	0	0	1	0
FDG-PET/CT skull base to mid- thigh	Usually approp	Limited	���� 10-3 mSv	<sup>30</sup>   10	\$\$ 3- mSv ped]	1	1	15	0	0	0	0	0	0	0	0
		References			Study	Quality										
		28 (24012359)				3										
		29 (17042899)				3										
MRI shoulder without and with IV contrast	Usually approp	Limited	O 0 mSv		mSv ed]	1	1	12	1	1	0	1	0	0	0	0
		References			Study	Quality										
		12 (19556150)				2										
		17 (24060014)				3										
		68 (25677796)				M										
		69 (17724551)				4										
Bone scan shoulder	Usually approp	Limited	��� 1-10 mSv	)		1	1	14	1	0	0	0	0	0	0	0
		References			Study	Quality										
		33 (23835267)				3										

Variant 9: Traumatic shoulder pain. Radiographs already performed. Physical examination consistent with vascular compromise. Next imaging study.

	Appropriateness	207			<b>5</b>	3.5.11	Final Tabulations										
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9		
CTA shoulder with IV contrast	Usually appropriate	Limited	��� 1-10 mSv		9	9	1	0	0	0	0	0	0	1	13		
		References		Study	y Quality												
		76 (24059363)			4												
		77 (25504031)			4												
Arteriography shoulder	Usually appropriate	Expert Consensus	<b>≎≎≎</b> 1-10 mSv		7	7	1	0	0	0	4	0	5	1	4		
US duplex Doppler shoulder	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	5	1	0	3	6	1	0	0	0		
CT shoulder without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	1	0	1	0	0	0	0		
CT shoulder without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	11	0	2	0	2	0	0	0	0		
FDG-PET/CT skull base to mid- thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0		
MRI shoulder without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	1	1	0	0	0	0	1	0		
MRI shoulder without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	1	0	0	0	0	0		
3-phase bone scan shoulder	Usually not appropriate	Limited	≎≎≎ 1-10 mSv		1	1	12	1	1	0	0	1	0	0	0		
		References		Study	y Quality												
		70 (6006220)			2												

References	Study Quality
78 (6886338)	3

CT shoulder with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	14	0	1	0	0	0	0	0	1
MRA shoulder with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	3	1	0	1	0	0	0	0

# Variant 10: Traumatic shoulder pain. Radiographs already performed. Neuropathic syndrome (excluding plexopathy). Next imaging study.

D 1	Appropriateness SOE Adulta DDI Boda DD		D I DDI	D 4	3.6 11	Final Tabulations									
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI shoulder without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	2	1	3	3	5
		References		Study	Quality										
		83 (22976233)			4										
		81 (25953287)			4										
		82 (27999953)			4										
Bone scan shoulder	May be appropriate	Limited	≎≎≎ 1-10 mSv		4	4	4	1	1	6	2	2	0	0	0
		References		Study	Quality										
		84 (6544813)			4										
		85 (8228057)			3										
		86 (19851172)			3										
		87 (22473897)			M										
		88 (17515744)			2										
		89 (7642927)			M										
		90 (28301606)			M						1				
CT shoulder without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		3	3	5	0	4	3	2	0	1	0	0
CT arthrography shoulder	Usually not appropriate	Expert Consensus	≎≎≎≎ 10-30 mSv		1	1	13	0	2	0	0	0	0	0	0

CT shoulder with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv		1	1	9	0	4	0	1	0	0	1	0
CT shoulder without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	12	0	1	0	2	0	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0
MR arthrography shoulder	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	1	0	0	0	0	0	0
US shoulder	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	0	1	2	1	0	0	0
MRI shoulder without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	3	1	0	2	0	0	0	0

References	Study Quality
83 (22976233)	4
81 (25953287)	4
82 (27999953)	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.