American College of Radiology
ACR Appropriateness Criteria®

Shoulder Pain-Traumatic

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

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography shoulder	Usually appropriate	Strong	☢ <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)	2														
13 (21074344)	2														
CT shoulder without IV contrast	Usually not appropriate	Limited	☢☢☢ 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 not appropriate	Strong	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)	2

MRI shoulder without IV contrast	Usually not appropriate	Strong	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

US shoulder	Usually not appropriate	Strong	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 not appropriate	Limited	☢☢☢ 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												
CT shoulder with IV contrast	Usually not appropriate	Limited	☢☢☢ 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												
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	Study Quality												
		15 (25498875)	2												
		17 (24060014)	3												
		19 (19098184)	3												
		20 (24794570)	3												
		18 (23716283)	3												
		16 (25248922)	4												
		14 (24805966)	2												
Bone scan shoulder	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0
		References	Study 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	☢☢☢☢ 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 2: Traumatic shoulder pain. Nonlocalized shoulder pain. Negative radiographs. 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 shoulder without IV contrast	Usually appropriate	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 appropriate	Strong	☢☢☢☢ 10-30 mSv		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 appropriate (Disagreement)	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 appropriate	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											

CT shoulder without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		3	3	2	3	4	0	5	1	0	1	0
Bone scan shoulder	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	12	1	1	0	0	0	0	1	0
MRI shoulder without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	11	0	2	0	1	0	1	0	0
CT shoulder without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	15	0	0	0	0	0	0	0	0
CT shoulder with IV contrast	Usually not appropriate	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 not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0

References	Study Quality
19 (19098184)	3
34 (24560469)	4
35 (21940587)	3
18 (23716283)	3
36 (24172671)	4
37 (19305272)	2

References	Study Quality
30 (12105806)	4
31 (23531735)	2
32 (8444918)	3
33 (23835267)	3

References	Study Quality
34 (24560469)	4
35 (21940587)	3
36 (24172671)	4
37 (19305272)	2

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.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT shoulder without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv		9	9	0	0	0	0	0	0	1	1	13
References			Study Quality												
10 (20206348)			4												
42 (19836976)			3												
MRI shoulder without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	1	2	0	7	0	0	0	0
References			Study Quality												
43 (19685061)			4												
CT arthrography shoulder	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv		1	1	11	2	0	1	0	1	0	0	0
CT shoulder with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	13	1	0	1	0	0	0	0	0
References			Study Quality												
10 (20206348)			4												
42 (19836976)			3												
CT shoulder without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	14	0	0	1	0	0	0	0	0
References			Study Quality												
10 (20206348)			4												
42 (19836976)			3												

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

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

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT shoulder without IV contrast	Usually appropriate	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 not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	1	4	2	3	1	0	0	0
References	Study Quality														
49 (26295635)	4														
CT arthrography shoulder	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv		1	1	14	0	1	0	0	0	0	0	0
CT shoulder without and with IV contrast	Usually not appropriate	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 not appropriate	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 not appropriate	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	Usually not appropriate	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	Usually not appropriate	Limited	☢☢☢ 1-10 mSv		1	1	8	3	0	4	0	0	0	0	0
	References		Study Quality												
	31 (23531735)		2												
	32 (8444918)		3												
US shoulder	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	1	0	0	0	0	0	0	0
MR arthrography shoulder	Usually not appropriate	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.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usually appropriate	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												
	19 (19098184)		3												
	18 (23716283)		3												
	52 (25028704)		3												
	11 (25231817)		3												
MRI shoulder without IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	2	5	3	5
	References		Study Quality												

		12 (19556150)		2											
		17 (24060014)		3											
		19 (19098184)		3											
		20 (24794570)		3											
		18 (23716283)		3											
		52 (25028704)		3											
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											
		18 (23716283)		3											
		11 (25231817)		3											

		53 (24318071)		2											
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	Strong	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	1	2	0	0	0	0
		References		Study Quality											
		12 (19556150)		2											
		17 (24060014)		3											
		19 (19098184)		3											
		20 (24794570)		3											
		18 (23716283)		3											
		52 (25028704)		3											
Bone scan shoulder	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	0	0	0	0	0	1	0	0
US shoulder	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	0	0	1	0	0	0
		References		Study Quality											
		17 (24060014)		3											

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

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usually appropriate	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											
		60 (25218253)		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 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	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)	3
19 (19098184)	3
18 (23716283)	3

Bone scan shoulder	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	0	0	0	0	0	1	0	0
US shoulder	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	0	1	1	2	1	0	0	0

References	Study Quality
17 (24060014)	3
61 (23980228)	3

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

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MR arthrography shoulder	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	0	1	14

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	Usually appropriate	Strong	☢☢☢☢ 10-30 mSv		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	Usually appropriate	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 not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	11	1	1	1	0	0	1	0	0
US shoulder	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	2	0	1	0	0	0	0
Bone scan shoulder	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0
MRI shoulder without and with IV contrast	Usually not appropriate	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 not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	1	0	0	0	0	0	0	0
CT shoulder with IV contrast	Usually not appropriate	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	☢☢☢☢ 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.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	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 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 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 Quality
17 (24060014)	3
70 (18591598)	2
71 (18160242)	3
72 (18449121)	3
22 (20514507)	2
44 (17149764)	2
73 (15674840)	2

		25 (20848574)		2											
		74 (18651142)		2											
		24 (19457838)		M											
CT arthrography shoulder	May be appropriate	Limited	☢☢☢☢ 10-30 mSv		6	6	1	0	0	1	2	7	1	3	0
		References		Study Quality											
		12 (19556150)		2											
CT shoulder with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	13	1	1	0	0	0	0	0	0
CT shoulder without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	14	0	1	0	0	0	0	0	0
CT shoulder without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	12	1	1	0	0	0	0	1	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 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 not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	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 not appropriate	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.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							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 Quality												
76 (24059363)			4												
77 (25504031)			4												
Arteriography shoulder	Usually appropriate	Expert Consensus	☢☢☢ 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 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.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							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

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	☢☢☢ 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.**