

**American College of Radiology
ACR Appropriateness Criteria®**

Breast Implant Evaluation

Variant 1: Evaluation of saline breast implants. Asymptomatic patient. Any age. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography screening	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv		1	1	15	0	0	0	1	0	0	0	0
		References		Study Quality											
		21 (29101979)		4											
MRI breast without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	0	0	0	0	0	0	0
		References		Study Quality											
		22 (24792659)		4											
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	0	0	0	0	0	0	0
		References		Study Quality											
		22 (24792659)		4											
US breast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	0	0	0	0	0	0	1	0
Digital breast tomosynthesis screening	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv		1	1	15	0	1	0	0	0	0	0	0
		References		Study Quality											
		21 (29101979)		4											

Variant 2: Evaluation of saline breast implants. Clinical examination equivocal for implant rupture. Age younger than 30 years. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
US breast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	1	0	1	4	10	
Mammography diagnostic	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv		3	3	3	4	3	3	2	1	0	0	0	
		References	Study Quality													
		22 (24792659)	4													
		23 (16579024)	4													
Digital breast tomosynthesis diagnostic	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv		3	3	3	4	3	2	3	1	0	0	0	
		References	Study Quality													
		22 (24792659)	4													
		23 (16579024)	4													
MRI breast without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	13	2	0	0	0	0	0	1	0	
		References	Study Quality													
		22 (24792659)	4													
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	0	0	0	0	0	1	0	
		References	Study Quality													
		22 (24792659)	4													

Variant 3: Evaluation of saline breast implants. Clinical examination equivocal for implant rupture. Age 30-39 years. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		8	8	0	0	0	2	1	0	5	3	5

		References		Study Quality												
		22 (24792659)		4												
		23 (16579024)		4												
US breast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	1	0	4	4	7	
Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		8	8	0	0	1	0	2	0	4	4	5	
		References		Study Quality												
		22 (24792659)		4												
		23 (16579024)		4												
MRI breast without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	0	0	0	0	0	1	0	
		References		Study Quality												
		22 (24792659)		4												
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	14	1	0	0	0	0	1	0	0	
		References		Study Quality												
		22 (24792659)		4												

Variant 4: Evaluation of saline breast implants. Clinical examination equivocal for implant rupture. Age 40 years or older. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		9	9	0	0	0	1	1	0	0	4	10
		References		Study Quality											
		22 (24792659)		4											
		23 (16579024)		4											
Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		9	9	0	0	1	0	1	0	0	3	11

		References	Study Quality												
		22 (24792659)	4												
		23 (16579024)	4												
US breast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	0	0	1	1	9	4	0	1	0
MRI breast without IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	13	2	0	0	0	0	0	1	0
		References	Study Quality												
		22 (24792659)	4												
MRI breast without and with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	13	2	0	0	0	0	0	1	0
		References	Study Quality												
		22 (24792659)	4												

Variant 5: Evaluation of silicone breast implants. Asymptomatic patient. Any age. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography screening	Usually not appropriate	Limited	☼☼ 0.1-1mSv		1	1	13	1	1	0	1	0	0	0	0
		References	Study Quality												
		21 (29101979)	4												
MRI breast without IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	1	1	9	3	2	0	1	0	0	1	0
		References	Study Quality												
		13 (25028829)	3												
		14 (15257358)	2												
		15 (15664285)	2												
		18 (21364405)	M												
		21 (29101979)	4												

26 (18349629)	4
27 (17898620)	2
28 (17051096)	3
29 (16874191)	3
30 (22751081)	1

MRI breast without and with IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	1	1	11	2	1	0	1	0	1	0	0
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References	Study Quality
13 (25028829)	3
14 (15257358)	2
15 (15664285)	2
18 (21364405)	M
21 (29101979)	4
26 (18349629)	4
27 (17898620)	2
28 (17051096)	3
29 (16874191)	3
30 (22751081)	1

US breast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	11	3	1	0	0	0	0	1	0
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References	Study Quality
7 (18090814)	4
8 (23623260)	4
9 (21427311)	4
13 (25028829)	3
24 (23928244)	4
25 (22743887)	4

Digital breast tomosynthesis screening	Usually not appropriate	Limited	☼☼ 0.1-1mSv		1	1	13	1	0	0	2	0	0	0	0
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References	Study Quality
21 (29101979)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
MRI breast without IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	1	0	0	0	0	1	3	2	9	
		References	Study Quality													
		7 (18090814)	4													
		9 (21427311)	4													
		10 (22328687)	2													
		18 (21364405)	M													
		19 (22430679)	3													
		22 (24792659)	4													
		31 (23622796)	4													
Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		8	8	0	0	0	0	0	1	7	4	4	
		References	Study Quality													
		7 (18090814)	4													
		8 (23623260)	4													
		9 (21427311)	4													
		24 (23928244)	4													
		31 (23622796)	4													
Mammography diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		7	7	0	0	1	1	3	0	4	3	4	
		References	Study Quality													
		7 (18090814)	4													
		8 (23623260)	4													
		9 (21427311)	4													
		24 (23928244)	4													
		31 (23622796)	4													
US breast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	1	0	2	0	6	0	6	0	1	

References	Study Quality
7 (18090814)	4
8 (23623260)	4
9 (21427311)	4
10 (22328687)	2
11 (23668948)	3
12 (19054000)	3
13 (25028829)	3
14 (15257358)	2
24 (23928244)	4
25 (22743887)	4
31 (23622796)	4

MRI breast without and with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	12	3	0	0	0	1	0	0	0
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References	Study Quality
7 (18090814)	4
9 (21427311)	4
10 (22328687)	2
18 (21364405)	M
19 (22430679)	3
22 (24792659)	4
31 (23622796)	4

Variant 9: Evaluation of unexplained axillary adenopathy. Silicone breast implants (current or prior). Age younger than 30 years. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US axilla	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	0	1	0	1	14

References	Study Quality
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		8 (23623260)			4										
Mammography diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		2	2	5	5	2	2	2	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	7	4	3	0	0	1	0	1	0
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		2	2	4	5	3	2	2	0	0	0	0
MRI breast without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	3	0	1	1	0	0	1	0

Variant 10: Evaluation of unexplained axillary adenopathy. Silicone breast implants (current or prior). Age 30-39 years. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
Mammography diagnostic	Usually appropriate	Expert Consensus	☼☼ 0.1-1mSv		9	9	0	0	1	1	2	0	3	1	8	
Digital breast tomosynthesis diagnostic	Usually appropriate	Expert Consensus	☼☼ 0.1-1mSv		9	9	0	0	1	0	2	1	3	1	8	
US axilla	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	1	3	0	12	
		References			Study Quality											
		8 (23623260)			4											
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	7	5	2	0	0	1	0	1	0	
MRI breast without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	3	0	2	1	0	0	1	0	

Variant 11: Evaluation of unexplained axillary adenopathy. Silicone breast implants (current or prior). Age 40 years or older. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography diagnostic	Usually appropriate	Expert Consensus	⊕⊕ 0.1-1mSv		9	9	0	0	0	1	1	0	1	2	11
Digital breast tomosynthesis diagnostic	Usually appropriate	Expert Consensus	⊕⊕ 0.1-1mSv		9	9	0	0	1	0	1	0	1	1	12
US axilla	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	1	1	4	10
		References		Study Quality											
		8 (23623260)		4											
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	7	5	2	0	0	1	0	1	0
MRI breast without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	4	0	1	1	0	0	1	0

Variant 12: Suspected breast implant associated anaplastic large cell lymphoma (BIA-ALCL) (delayed seroma, swelling, mass, pain but no erythema, warmth or skin changes that would raise concern for inflammatory breast cancer or mastitis). Any age. Breast implant of any type. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US breast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	1	0	0	0	1	2	12
		References		Study Quality											
		1 (25073777)		3											
Mammography diagnostic	May be appropriate (Disagreement)	Expert Opinion	⊕⊕ 0.1-1mSv		5	5	0	0	2	2	6	4	1	0	1
		References		Study Quality											
		1 (25073777)		3											

MRI breast without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	2	1	5	1	3	2	1	1	0
		References	Study Quality												
		1 (25073777)	3												
Digital breast tomosynthesis diagnostic	May be appropriate	Limited	☼☼ 0.1-1mSv		5	5	0	0	1	2	7	4	1	0	1
		References	Study Quality												
		1 (25073777)	3												
MRI breast without IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	9	5	1	0	0	0	0	1	0
		References	Study Quality												
		1 (25073777)	3												

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.