

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

**Imaging of Ductal Carcinoma in Situ (DCIS)**

**Variant 1: Adult. Newly diagnosed DCIS. 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	Strong	⊕⊕ 0.1-1mSv		9	9	0	0	0	0	1	0	0	2	11

References	Study Quality
52 (15486214)	3
48 (17693177)	2
47 (33242249)	1
45 (23963140)	Good
44 (30466027)	3
43 (27411945)	3
42 (14684521)	4
41 (8191988)	3
40 (15797293)	4
39 (23370209)	3
38 (8109501)	4
37 (2549563)	4
36 (23826951)	3
35 (2536185)	4
3 (23774990)	3
46 (25599513)	2

Digital breast tomosynthesis diagnostic	Usually appropriate	Strong	☼☼ 0.1-1mSv		9	9	0	0	0	0	1	0	0	1	12
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References	Study Quality
48 (17693177)	2
47 (33242249)	1
46 (25599513)	2
45 (23963140)	Good
44 (30466027)	3
43 (27411945)	3
42 (14684521)	4
41 (8191988)	3
40 (15797293)	4
39 (23370209)	3
38 (8109501)	4
37 (2549563)	4
36 (23826951)	3
35 (2536185)	4
3 (23774990)	3

MRI breast without and with IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	1	4	3	2	2	1
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References	Study Quality
73 (20217259)	3
72 (19375068)	4
71 (25919321)	Good
70 (17443388)	3
69 (22517955)	3
68 (12734086)	3
67 (34342501)	1
66 (20956821)	4
65 (19864520)	4
64 (9377507)	4

63 (18024450)	3
62 (17983393)	3
61 (9015067)	4
60 (24108552)	4
59 (29139591)	3
58 (28750354)	2
48 (17693177)	2

US breast	May be appropriate	Strong	0 mSv	0 mSv [ped]	5	5	0	0	0	4	7	2	1	0	0
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References	Study Quality
84 (33589308)	2
83 (26962097)	1
82 (19575283)	4
81 (34794600)	4
79 (28242086)	4
78 (-3196796)	4
77 (23949917)	3
61 (9015067)	4
52 (15486214)	3
35 (2536185)	4
80 (-3196797)	4

Mammography with IV contrast	Usually not appropriate	Strong	☠☠ 0.1-1mSv		2	2	6	4	2	1	1	0	0	0	0
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References	Study Quality
58 (28750354)	2
57 (27345656)	2
56 (30678480)	2
55 (27611215)	3
54 (-3196794)	3
53 (34503181)	3

CT chest with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
		References		Study Quality												
		34 (-3196793)		4												
CT chest without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
		References		Study Quality												
		34 (-3196793)		4												
CT chest without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
		References		Study Quality												
		34 (-3196793)		4												
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
FDG-PET breast dedicated	Usually not appropriate	Strong	☼☼☼ 1-10 mSv		1	1	11	1	2	0	0	0	0	0	0	0
		References		Study Quality												
		51 (31375867)		2												
		50 (28870933)		4												
		49 (11032590)		2												
		34 (-3196793)		4												
Sestamibi MBI	Usually not appropriate	Moderate	☼☼☼ 1-10 mSv		1	1	8	1	3	1	1	0	0	0	0	0
		References		Study Quality												
		76 (31166752)		3												
		75 (22911882)		4												
		74 (23151912)		Good												

**Variant 2: Adult. Newly diagnosed DCIS. No surgical intervention. Active surveillance.**



CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
FDG-PET breast dedicated	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	13	0	1	0	0	0	0	0	0
US breast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	2	1	1	0	0	0	0	0
Sestamibi MBI	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	12	1	1	0	0	0	0	0	0

**Variant 3: Adult. Evaluation for local recurrence in patient with history of breast conservation therapy for DCIS. Routine surveillance.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Mammography screening	Usually appropriate	Limited	☹☹ 0.1-1mSv		9	9	1	0	0	0	0	0	1	2	10

References	Study Quality
113 (22692036)	3
111 (32529566)	3
110 (27163158)	3
109 (31313678)	3
108 (29064749)	4
107 (-3196801)	4
106 (20956827)	4
105 (29748762)	3
104 (25904721)	3
103 (24106867)	3
102 (24113745)	3
101 (28675577)	4

100 (23129741)	4
99 (36436961)	4
90 (9016233)	4
89 (17579163)	3
27 (-3196789)	4

Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	☹☹ 0.1-1mSv		9	9	0	0	0	0	3	0	0	4	7
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References	Study Quality
108 (29064749)	4
107 (-3196801)	4
106 (20956827)	4
105 (29748762)	3
104 (25904721)	3
103 (24106867)	3
102 (24113745)	3
101 (28675577)	4
100 (23129741)	4
99 (36436961)	4
90 (9016233)	4
89 (17579163)	3
27 (-3196789)	4

Digital breast tomosynthesis screening	Usually appropriate	Limited	☹☹ 0.1-1mSv		9	9	1	0	0	0	0	0	1	1	11
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References	Study Quality
111 (32529566)	3
110 (27163158)	3
109 (31313678)	3
108 (29064749)	4
107 (-3196801)	4
106 (20956827)	4
105 (29748762)	3

104 (25904721)	3
103 (24106867)	3
102 (24113745)	3
101 (28675577)	4
100 (23129741)	4
99 (36436961)	4
90 (9016233)	4
89 (17579163)	3
27 (-3196789)	4

Mammography diagnostic	Usually appropriate	Strong	☼☼ 0.1-1mSv		8	8	0	0	1	0	2	0	0	5	6
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References	Study Quality
113 (22692036)	3
112 (8511295)	2
111 (32529566)	3
110 (27163158)	3
109 (31313678)	3
108 (29064749)	4
107 (-3196801)	4
106 (20956827)	4
105 (29748762)	3
104 (25904721)	3
103 (24106867)	3
102 (24113745)	3
101 (28675577)	4
100 (23129741)	4
99 (36436961)	4
90 (9016233)	4
89 (17579163)	3
27 (-3196789)	4



MRI breast without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	4	6	0	2	2	0	
		References			Study Quality											
		114 (-3196807)			4											
US breast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	7	5	1	0	1	0	0	0	0	
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 0.1-1mSv		2	2	3	6	4	0	1	0	0	0	0	
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	13	1	0	0	0	0	0	0	0	
FDG-PET breast dedicated	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	13	0	0	0	1	0	0	0	0	
Sestamibi MBI	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	11	0	1	0	2	0	0	0	0	

**Variant 4: Adult. Evaluation for ipsilateral local recurrence in a patient with history of mastectomy for DCIS. Routine surveillance.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
CT chest with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
		References			Study Quality											





45 (23963140)	Good
44 (30466027)	3
43 (27411945)	3
42 (14684521)	4
36 (23826951)	3

US breast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	8	8	0	0	0	0	1	0	3	4	6
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References	Study Quality
128 (21833567)	4

Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 0.1-1mSv		3	3	3	2	3	1	4	0	1	0	0
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MRI breast without and with IV contrast	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	2	2	7	4	3	0	0	0	0	0	0
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References	Study Quality
131 (32108973)	4
130 (23046046)	3
129 (28754486)	3
59 (29139591)	3
58 (28750354)	2

CT chest with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
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CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
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CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
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Image-guided core biopsy breast	Usually not appropriate	Limited	Varies	Varies	1	1	13	1	0	0	0	0	0	0	0
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References	Study Quality
127 (22039282)	4

Image-guided fine needle aspiration breast	Usually not appropriate	Limited	Varies	Varies	1	1	10	1	1	0	1	0	0	0	1
		References		Study Quality											
		127 (22039282)		4											
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
FDG-PET breast dedicated	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv		1	1	12	0	1	0	1	0	0	0	0
Sestamibi MBI	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv		1	1	12	0	1	0	0	1	0	0	0

**Variant 6: Adult. Suspected local recurrence based on symptoms, physical examination, or laboratory value in patient with history of mastectomy for DCIS. 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	0	0	0	0	4	3	7
		References		Study Quality											
		126 (30392596)		4											
		125 (28473077)		4											
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	7	1	4	0	0	1	1	0	0
		References		Study Quality											
		131 (32108973)		4											
		130 (23046046)		3											
		129 (28754486)		3											
CT chest with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	13	0	0	0	1	0	0	0	0

CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	13	0	0	0	1	0	0	0	0
Mammography diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	10	2	1	1	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	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	13	0	0	0	0	0	0	0	1
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	10	2	2	0	0	0	0	0	0
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	10	2	1	0	1	0	0	0	0
Image-guided fine needle aspiration chest	Usually not appropriate	Moderate	Varies	Varies	1	1	10	0	1	0	1	1	0	0	1
		References		Study Quality											
		133 (22088803)		3											
		132 (27866091)		Good											
Image-guided biopsy chest	Usually not appropriate	Moderate	Varies	Varies	1	1	13	0	1	0	0	0	0	0	0
		References		Study Quality											
		133 (22088803)		3											
		132 (27866091)		Good											

**Variant 7: Adult. Known DCIS with microinvasion found on prior mammography, ultrasound, or MRI during initial evaluation. Axillary evaluation needed. 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 chest with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
MRI breast without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	0	1	1	0	0	1	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	14	0	0	0	0	0	0	0	0
US axilla	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	8	4	2	0	0	0	0	0	0
US-guided fine needle aspiration biopsy axillary node	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	2	0	1	0	0	0	0	1
US-guided core biopsy axillary node	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	3	0	1	0	0	0	0	1
Mammography with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	13	1	0	0	0	0	0	0	0
Lymphoscintigraphy axilla	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	10	1	1	0	1	1	0	0	0

**Variant 8: Adult. Known DCIS without microinvasion found on prior mammography, ultrasound, or MRI during initial evaluation. Axillary evaluation needed. 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 chest with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	12	1	1	0	0	0	0	0	0
			References		Study Quality										
			139 (34470633)		3										
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	13	1	0	0	0	0	0	0	0
US axilla	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	0	2	1	0	0	0	0	1
US-guided fine needle aspiration biopsy axillary node	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	1	0	0	0	0	0	0	1
US-guided core biopsy axillary node	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	1	0	0	0	0	0	0	1



Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	14	0	0	0	0	0	0	0	0
Lymphoscintigraphy axilla	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	11	0	1	0	2	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](http://www.acr.org/ac).