

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

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

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
66 (20956821)	4
48 (17693177)	2
58 (28750354)	2
73 (20217259)	3
69 (22517955)	3
67 (34342501)	1
59 (29139591)	3
71 (25919321)	Good
60 (24108552)	4
64 (9377507)	4

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
		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
		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
		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
FDG-PET breast dedicated	Usually not appropriate	Strong	☼☼☼ 1-10 mSv		1	1	11	1	2	0	0	0	0	0	0
		References	Study Quality												
		49 (11032590)	2												
		51 (31375867)	2												
		50 (28870933)	4												
		34 (-3196793)	4												
Sestamibi MBI	Usually not appropriate	Moderate	☼☼☼ 1-10 mSv		1	1	8	1	3	1	1	0	0	0	0
		References	Study Quality												
		76 (31166752)	3												
		74 (23151912)	Good												
		75 (22911882)	4												

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

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Digital breast tomosynthesis diagnostic	Usually appropriate	Moderate	☼☼ 0.1-1mSv		9	9	0	0	0	0	1	0	4	2	7
		References		Study Quality											
		86 (28705686)		4											
		87 (-3196799)		2											
Mammography diagnostic	Usually appropriate	Moderate	☼☼ 0.1-1mSv		8	8	0	0	1	0	0	0	6	0	7
		References		Study Quality											
		86 (28705686)		4											
		88 (32125937)		3											
		87 (-3196799)		2											
MRI breast without and with IV contrast	May be appropriate	Strong	○ ○ mSv	○ ○ mSv [ped]	5	5	0	0	0	2	6	1	2	3	0
		References		Study Quality											
		58 (28750354)		2											
		88 (32125937)		3											
		67 (34342501)		1											
		71 (25919321)		Good											
		68 (12734086)		3											
		70 (17443388)		3											
		87 (-3196799)		2											
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		2	2	7	4	3	0	0	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 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
104 (25904721)	3
102 (24113745)	3
113 (22692036)	3
105 (29748762)	3
108 (29064749)	4
110 (27163158)	3
109 (31313678)	3
100 (23129741)	4
103 (24106867)	3
106 (20956827)	4
101 (28675577)	4
111 (32529566)	3

103 (24106867)	3
106 (20956827)	4
101 (28675577)	4
111 (32529566)	3
99 (36436961)	4
27 (-3196789)	4
89 (17579163)	3
90 (9016233)	4
107 (-3196801)	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
104 (25904721)	3
102 (24113745)	3
113 (22692036)	3
105 (29748762)	3
108 (29064749)	4
110 (27163158)	3
109 (31313678)	3
100 (23129741)	4
103 (24106867)	3
106 (20956827)	4
101 (28675577)	4
111 (32529566)	3
99 (36436961)	4
27 (-3196789)	4
89 (17579163)	3
112 (8511295)	2
90 (9016233)	4
107 (-3196801)	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
		References		Study Quality											

		100 (23129741)		4												
		121 (-3196803)		4												
		122 (-3196805)		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												
		100 (23129741)		4												
		121 (-3196803)		4												
		122 (-3196805)		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												
		100 (23129741)		4												
		121 (-3196803)		4												
		122 (-3196805)		4												
Mammography screening	Usually not appropriate	Expert Consensus	☢☢ 0.1-1mSv		1	1	12	2	0	0	0	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	14	0	0	0	0	0	0	0	0	0
		References		Study Quality												
		100 (23129741)		4												
		121 (-3196803)		4												
		122 (-3196805)		4												
MRI breast without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	10	3	0	1	0	0	0	0	0	0
		References		Study Quality												
		100 (23129741)		4												
		123 (32374666)		4												
		121 (-3196803)		4												
		122 (-3196805)		4												

		114 (-3196807)		4												
FDG-PET breast dedicated	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	13	0	1	0	0	0	0	0	0	0
US breast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	11	2	0	1	0	0	0	0	0	0
		References		Study Quality												
		124 (23131395)		3												
Digital breast tomosynthesis screening	Usually not appropriate	Expert Consensus	☢☢ 0.1-1mSv		1	1	12	2	0	0	0	0	0	0	0	0
Sestamibi MBI	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		1	1	13	0	0	0	1	0	0	0	0	0
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☢☢ 0.1-1mSv		1	1	12	0	0	0	1	0	0	0	0	1

Variant 5: Adult. Suspected local recurrence based on symptoms, physical examination, or laboratory value in patient with history of breast conservation therapy 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
Mammography diagnostic	Usually appropriate	Limited	☢☢ 0.1-1mSv		9	9	0	0	0	0	0	0	0	3	11
		References		Study Quality											
		125 (28473077)		4											
		126 (30392596)		4											
		128 (21833567)		4											
Digital breast tomosynthesis diagnostic	Usually appropriate	Strong	☢☢☢ 0.1-1mSv		9	9	0	0	0	0	0	0	1	1	12
		References		Study Quality											
		125 (28473077)		4											
		43 (27411945)		3											

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 0 mSv	0 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	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	4	3	7
		References		Study Quality											
		125 (28473077)		4											
		126 (30392596)		4											
MRI breast without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	7	1	4	0	0	1	1	0	0
		References		Study Quality											
		130 (23046046)		3											
		129 (28754486)		3											
		131 (32108973)		4											
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											
		132 (27866091)		Good											
		133 (22088803)		3											
Image-guided biopsy chest	Usually not appropriate	Moderate	Varies	Varies	1	1	13	0	1	0	0	0	0	0	0
		References		Study Quality											
		132 (27866091)		Good											
		133 (22088803)		3											

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.