

## American College of Radiology ACR Appropriateness Criteria®

### Imaging of Invasive Breast Cancer

**Variant 1: Newly diagnosed. Clinical stage I-IIA (early stage) breast cancer at presentation. Evaluation for locoregional disease (includes invasive ductal carcinoma [IDC], or invasive lobular carcinoma [ILC], or not otherwise specified [NOS]).**

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	2	0	0	0	0	0	3	11
		References		Study Quality											
		37 (28130619)		3											
		36 (26711795)		1											
		34 (26492903)		4											
		33 (29927337)		4											
		32 (28516226)		Good											
		31 (27920631)		4											
		30 (22941162)		3											
		29 (30466027)		3											
		28 (28055247)		2											
		27 (27411945)		3											
		26 (23826951)		3											
		25 (25086999)		2											
		24 (30964425)		3											
		23 (26376882)		2											
		22 (15486214)		3											
US breast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	0	0	3	1	13

References	Study Quality
22 (15486214)	3
25 (25086999)	2
114 (16500539)	4
113 (30131246)	3
112 (17574805)	3
111 (16442946)	3
110 (25119022)	Good
109 (28221238)	4
108 (7602346)	4
107 (11015105)	4
106 (24596363)	2
105 (24780784)	4
104 (29641226)	3
26 (23826951)	3

Digital breast tomosynthesis diagnostic	Usually appropriate	Strong	☼☼ 0.1-1mSv		9	9	0	2	0	0	0	0	1	4	9
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References	Study Quality
37 (28130619)	3
36 (26711795)	1
34 (26492903)	4
33 (29927337)	4
32 (28516226)	Good
31 (27920631)	4
30 (22941162)	3
29 (30466027)	3
28 (28055247)	2
27 (27411945)	3
26 (23826951)	3
25 (25086999)	2
24 (30964425)	3

		23 (26376882)			2													
		22 (15486214)			3													
MRI breast without and with IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	7	7	0	0	0	0	2	1	7	7	0			
		References	Study Quality															
		85 (24395846)	4															
		84 (28053631)	4															
		83 (30617471)	4															
		82 (32863709)	4															
		80 (30046588)	4															
		78 (24034548)	4															
		77 (21460377)	4															
		76 (29388904)	4															
		75 (26639066)	4															
		73 (26853509)	2															
		72 (32828998)	4															
		70 (20159292)	1															
		69 (34643778)	3															
		68 (24848838)	4															
		67 (28712698)	4															
		66 (26387498)	3															
		64 (24817517)	3															
		63 (31361209)	4															
		61 (22446897)	4															
		59 (27566960)	4															
		58 (19805685)	Inadequate															
		56 (33120285)	4															
		55 (21751044)	4															
		23 (26376882)	2															
		16 (31660801)	3															
		86 (34611701)	3															

		87 (35471109)		3															
US axilla	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	0	9	5	3	0	0				

References	Study Quality
103 (22227922)	3
100 (21597359)	Good
99 (22972506)	2
98 (23436877)	2
97 (31562691)	2
96 (16632729)	4
95 (18955508)	3
94 (24859939)	2
93 (23664535)	3
92 (24455284)	3
91 (23515655)	3
89 (28898379)	1
88 (35550807)	4
36 (26711795)	1

Mammography with IV contrast	May be appropriate	Strong	☼☼ 0.1-1mSv		5	5	0	0	1	0	10	6	0	0	0				
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References	Study Quality
16 (31660801)	3
54 (33178931)	3
53 (28654337)	2
52 (24986697)	3
51 (32000448)	3
49 (23220903)	1
48 (24048724)	1
47 (33650905)	4
28 (28055247)	2

CT chest abdomen pelvis with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	5	3	0	0	0	0	0	0
		References		Study Quality											
		20 (22751517)		4											
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	8	6	2	0	0	0	0	0	0
		References		Study Quality											
		21 (-3196411)		4											
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Strong	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	6	5	4	0	1	0	0	0	0
		References		Study Quality											
		45 (24866608)		3											
		44 (31339353)		4											
		43 (2910416)		4											
		42 (24108553)		4											
		41 (21935602)		4											
		40 (27058014)		3											
		39 (26115367)		1											
		38 (26477029)		2											
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	2	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	14	0	1	0	1	0	0	0	0
Bone scan whole body	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	0	0	0	0	0	0	0	0

**VARIANT 2: Newly diagnosed. Clinical stage I-IIA (early stage) breast cancer at presentation. Evaluation for distant disease (includes IDC, or ILC, or NOS).**



137 (31063423)	4
136 (23243198)	3
135 (31907750)	4
134 (32886897)	4
133 (34416711)	4
130 (31236598)	4
129 (30443868)	4
128 (-3195171)	4
126 (-3195169)	4

CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	3	0	2	0	0	0	0	0
Mammography diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	14	1	1	0	0	0	0	0	0
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	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	15	0	1	0	0	0	0	0	0
US breast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	0	0	0	0	0	0	0	0
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	15	1	0	0	0	0	0	0	0
US axilla	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	0	0	1	0	0	0	0	0
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	15	1	0	0	0	0	0	0	0

**Variant 3: Newly diagnosed. Clinical stage IIB-III (late stage) breast cancer at presentation. Evaluation for locoregional disease (includes IDC, or ILC, or NOS).**

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	2	0	0	0	0	2	3	9

References	Study Quality
126 (-3195169)	4
46 (28861372)	3
36 (26711795)	1
34 (26492903)	4
33 (29927337)	4
32 (28516226)	Good
31 (27920631)	4
30 (22941162)	3
29 (30466027)	3
28 (28055247)	2
27 (27411945)	3
26 (23826951)	3
25 (25086999)	2
24 (30964425)	3
23 (26376882)	2
22 (15486214)	3

US breast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	9	9	0	2	0	0	0	0	2	3	9
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References	Study Quality
22 (15486214)	3
25 (25086999)	2
114 (16500539)	4
113 (30131246)	3
112 (17574805)	3
111 (16442946)	3
110 (25119022)	Good



109 (28221238)	4
108 (7602346)	4
107 (11015105)	4
106 (24596363)	2
105 (24780784)	4
104 (29641226)	3
26 (23826951)	3

MRI breast without and with IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	8	8	0	0	0	0	0	0	3	12	2
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References	Study Quality
85 (24395846)	4
84 (28053631)	4
83 (30617471)	4
82 (32863709)	4
80 (30046588)	4
78 (24034548)	4
77 (21460377)	4
76 (29388904)	4
75 (26639066)	4
73 (26853509)	2
72 (32828998)	4
70 (20159292)	1
69 (34643778)	3
68 (24848838)	4
67 (28712698)	4
66 (26387498)	3
64 (24817517)	3
63 (31361209)	4
61 (22446897)	4
59 (27566960)	4
58 (19805685)	Inadequate

56 (33120285)	4
55 (21751044)	4
23 (26376882)	2
16 (31660801)	3

Digital breast tomosynthesis diagnostic	Usually appropriate	Strong	☼☼ 0.1-1mSv		8	8	0	2	0	0	0	0	3	5	6
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References	Study Quality
24 (30964425)	3
29 (30466027)	3
23 (26376882)	2
28 (28055247)	2
46 (28861372)	3
36 (26711795)	1
34 (26492903)	4
33 (29927337)	4
32 (28516226)	Good
31 (27920631)	4
30 (22941162)	3
27 (27411945)	3
26 (23826951)	3
25 (25086999)	2
22 (15486214)	3
126 (-3195169)	4

FDG-PET/CT skull base to mid-thigh	Usually appropriate	Moderate	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	0	1	0	2	9	5	0
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References	Study Quality
15 (33894709)	Good
14 (30292261)	Inadequate
13 (33651022)	Inadequate
126 (-3195169)	4
139 (28456837)	2





160 (20516453)	3
159 (29313949)	4
158 (17653852)	4
157 (27129866)	2
156 (21070439)	4
155 (25214641)	2
154 (18632831)	3
153 (18436392)	2
152 (18695254)	3
151 (23640467)	3
150 (19164229)	4
149 (19645022)	3
139 (28456837)	2
138 (21880576)	3
137 (31063423)	4
136 (23243198)	3
126 (-3195169)	4

CT chest abdomen pelvis with IV contrast	Usually appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	1	1	0	2	6	2	4
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References	Study Quality
17 (22006539)	3
126 (-3195169)	4
132 (30797241)	3
145 (22342788)	4
147 (27642105)	4
148 (27551013)	4

Bone scan whole body	Usually appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	1	1	1	1	6	3	3
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References	Study Quality
146 (23287962)	4

145 (22342788)	4
144 (28786907)	3
143 (15254062)	4
124 (1174812)	4
123 (28194227)	4
122 (27083181)	4
117 (20498394)	4

CT chest abdomen pelvis without IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	12	0	3	0	1	0	0	0	0
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References	Study Quality
17 (22006539)	3
132 (30797241)	3
147 (27642105)	4
148 (27551013)	4

CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼☼ 10-30 mSv [ped]	1	1	13	2	2	0	0	0	0	0	0
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References	Study Quality
21 (-3196411)	4

Mammography diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	16	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	16	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	15	0	0	0	0	1	0	0	0
US breast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	0	0	0	0	0	0	0	0
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	15	1	0	0	0	0	0	0	0

US axilla	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	16	0	0	0	0	0	0	0	0

**Variant 5: Newly diagnosed. Clinical stage IIB-III (late stage) breast cancer at presentation. Evaluation for distant disease. IDC or ILC that is HER2 or triple negative (ER, PR, and HER2-).**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT chest abdomen pelvis with IV contrast	Usually appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	8	8	0	0	1	1	0	1	4	2	7

References	Study Quality
148 (27551013)	4
147 (27642105)	4
145 (22342788)	4
132 (30797241)	3
126 (-3195169)	4
17 (22006539)	3

FDG-PET/CT skull base to mid-thigh	Usually appropriate	Strong	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	8	8	0	0	1	1	0	1	3	4	6
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References	Study Quality
126 (-3195169)	4
162 (-3111285)	4
161 (21765193)	4
160 (20516453)	3
159 (29313949)	4
158 (17653852)	4
157 (27129866)	2
156 (21070439)	4

155 (25214641)	2
154 (18632831)	3
153 (18436392)	2
152 (18695254)	3
151 (23640467)	3
150 (19164229)	4
149 (19645022)	3
139 (28456837)	2
138 (21880576)	3
137 (31063423)	4
136 (23243198)	3
41 (21935602)	4

Bone scan whole body	Usually appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	0	0	1	1	2	2	3	3	4
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References	Study Quality
146 (23287962)	4
145 (22342788)	4
144 (28786907)	3
143 (15254062)	4
124 (1174812)	4
123 (28194227)	4
122 (27083181)	4
117 (20498394)	4

MRI head without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	5	2	3	2	2	2	0	0	0
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References	Study Quality
126 (-3195169)	4
165 (28301662)	4
164 (17577662)	4
163 (15254054)	4







		179 (23860534)			4													
		180 (30207076)			4													
Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	☼☼ 0.1-1mSv		9	9	0	0	2	0	0	0	0	5	9			
		References			Study Quality													
		184 (29748762)			3													
		183 (26893205)			4													
		182 (34003059)			4													
		181 (32966113)			3													
		180 (30207076)			4													
		179 (23860534)			4													
		178 (27810132)			4													
		177 (28341031)			4													
		176 (27422453)			4													
		175 (22766990)			4													
		174 (22692036)			3													
		173 (-3195175)			4													
		172 (-3195173)			4													
Digital breast tomosynthesis screening	Usually appropriate	Limited	☼☼ 0.1-1mSv		9	9	1	0	0	0	0	0	1	2	2	11		
		References			Study Quality													
		172 (-3195173)			4													
		173 (-3195175)			4													
		174 (22692036)			3													
		175 (22766990)			4													
		176 (27422453)			4													
		177 (28341031)			4													
		178 (27810132)			4													
		179 (23860534)			4													
		180 (30207076)			4													

MRI breast without and with IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	2	5	2	5	0	1
		References	Study Quality												
		196 (32303988)	Inadequate												
		195 (29435556)	3												
		193 (26322264)	3												
		192 (26744477)	3												
		191 (24635678)	3												
		190 (26142951)	3												
		189 (22474203)	1												
		188 (31161975)	4												
		186 (29371086)	4												
Mammography with IV contrast	May be appropriate	Limited	☼☼ 0.1-1mSv		5	5	0	1	0	1	10	4	1	0	0
		References	Study Quality												
		185 (31453765)	2												
US breast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	6	4	5	0	0	1	0	0	1
		References	Study Quality												
		197 (23695431)	3												
		198 (24959654)	4												
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	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	16	0	0	0	0	0	0	0	0

**Variant 7: Surveillance. Regardless of clinical stage of breast cancer at time of original presentation. Evaluation for local recurrence in patient with history of mastectomy.**

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	
MRI breast without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	5	5	1	0	3	1	9	0	2	0	0	
Mammography diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	14	2	0	0	0	0	0	0	0	
Mammography screening	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	16	1	0	0	0	0	0	0	0	
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	1	0	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	11	0	4	0	0	1	0	0	0	
		References	Study Quality													
		172 (-3195173)														
		173 (-3195175)														
		200 (-3195384)														
US breast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	3	1	0	0	0	0	0	0	
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	14	1	1	0	0	0	0	0	0	
Digital breast tomosynthesis screening	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	16	1	0	0	0	0	0	0	0	
Mammography with IV contrast	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	15	1	0	0	0	0	0	0	0	

**Variant 8: Suspected local recurrence of breast cancer based on symptoms, physical examination, or laboratory value in patient with history of BCT. Regardless of clinical stage at time of original presentation.**

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	1	0	0	0	0	0	3	2	10	
		References	Study Quality													
		202 (23345348)	2													
Digital breast tomosynthesis diagnostic	Usually appropriate	Limited	⊕⊕ 0.1-1mSv		9	9	1	0	0	0	0	0	2	4	9	
		References	Study Quality													
		202 (23345348)	2													
US breast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	1	1	0	1	4	2	7	
		References	Study Quality													
		207 (28473077)	4													
		208 (30392596)	4													
MRI breast without and with IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	1	3	1	1	9	2	0	0	0	
		References	Study Quality													
		204 (23046046)	3													
		205 (28754486)	3													
		206 (32108973)	4													
Mammography with IV contrast	May be appropriate	Limited	⊕⊕ 0.1-1mSv		5	5	0	1	0	1	12	2	1	0	0	
		References	Study Quality													
		203 (30240292)	2													
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	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	13	0	1	2	0	0	0	0	0	

**Variant 9: Suspected local recurrence of breast cancer based on symptoms, physical examination, or laboratory value in patient with history of mastectomy. Regardless of clinical stage at time of original presentation.**

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	6	2	9	
		References			Study Quality											
		207 (28473077)			4											
		208 (30392596)			4											
MRI breast without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	5	2	3	4	0	1	1	0	0	
Mammography diagnostic	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	11	0	2	0	2	1	0	0	0	
MRI breast without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	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	14	1	0	0	0	1	0	0	0	
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	12	0	1	0	2	1	0	0	0	
Mammography with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗ 0.1-1mSv		1	1	12	0	1	1	2	0	0	0	0	

**Variant 10: Surveillance. Regardless of clinical stage of breast cancer at time of original presentation. Evaluation for distant metastatic disease.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT chest abdomen pelvis with IV	Usually not	Limited	⊗⊗⊗⊗ 10-30	⊗⊗⊗⊗ 3-	1	1	11	0	4	0	0	1	0	0	0





			References		Study Quality														
			126 (-3195169)		4														
			128 (-3195171)		4														
			209 (23601761)		4														
			210 (26314782)		4														
Bone scan whole body	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	1	3	0	0	1	0	0	0	0	0	0	0
			References		Study Quality														
			126 (-3195169)		4														
			128 (-3195171)		4														
			209 (23601761)		4														
			210 (26314782)		4														
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	11	0	4	0	0	1	0	0	0	0	0	0	0
			References		Study Quality														
			126 (-3195169)		4														
			128 (-3195171)		4														
			209 (23601761)		4														
			210 (26314782)		4														
Digital breast tomosynthesis diagnostic	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	15	0	1	0	0	0	0	0	0	0	0	0	0
US axilla	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0	0	0	0	0

**Variant 11: Suspected distant recurrence of breast cancer based on symptoms, physical examination, or laboratory value. Regardless of clinical stage at time of original presentation.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations													
							1	2	3	4	5	6	7	8	9					
CT chest abdomen pelvis with IV	Usually	Limited	☼☼☼☼ 10-30	☼☼☼☼ 3-	9	9	0	0	1	0	1	2	2	1	9					

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations													
							1	2	3	4	5	6	7	8	9					
contrast	appropriate		mSv	10 mSv [ped]																
		References		Study Quality																
		172 (-3195173)		4																
Bone scan whole body	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	9	9	0	0	1	1	0	2	2	1	9					
		References		Study Quality																
		126 (-3195169)		4																
FDG-PET/CT skull base to mid-high	Usually appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	8	8	0	0	1	1	0	2	3	3	6					
		References		Study Quality																
		126 (-3195169)		4																
MRI head without and with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	0	0	0	2	7	4	4					
		References		Study Quality																
		164 (17577662)		4																
		165 (28301662)		4																
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	15	0	0	0	1	0	0	0	0					
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 10-30 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0					
		References		Study Quality																
		21 (-3196411)		4																
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	15	0	0	0	1	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).