American College of Radiology ACR Appropriateness Criteria®

Stage I Breast Cancer: Initial Workup and Surveillance for Local Recurrence and Distant Metastases in Asymptomatic Women

Variant 1: Newly diagnosed. Stage I breast cancer. Asymptomatic. Rule out bone metastases. Initial imaging.

D 1	Appropri	ateness	COF	All Land	_	n i nni	D 41	N. 11			F	inal	Tabu	latio	ns		
Procedure	Categ	ory	SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
FDG-PET/CT whole body	Usually approp		Strong	⊕⊕⊕⊕ 10-3 mSv	30	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			12 (15668281)				3										
			13 (20516453)				3										
			14 (21969709)				3										
			15 (21076343)				2										
			16 (29025377)				4										
			6 (27422453)				4										
Bone scan whole body	Usually approp		Moderate	��� 1-10 mSv)	���� 3- 10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			19 (3565316)				4										
			20 (4064511)				4										
			22 (7848404)				1										
			18 (3373314)				3										
			11 (3338047)				4										
			17 (8427400)				3										
			21 (213852)				3										

Radiography skeletal survey	Usuall approp	• .	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			References		Study	Quality										
			11 (3338047)			4										

Variant 2: Newly diagnosed. Stage I breast cancer. Asymptomatic. Rule out thoracic metastases. Initial imaging.

D 1	Appropri	iateness	go.E	4 1 14 DD		D I DDI	D (1	3.6.11			F	inal	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	SL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest with IV contrast	Usuall approp	y not oriate	Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			27 (21298335)				3										
CT chest without IV contrast	Usuall approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References 27 (21298335)			Study	Quality										
			27 (21298335)				3										
CT chest without and with IV contrast	Usuall approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
	•		References			Study	Quality										
			27 (21298335)				3										
FDG-PET/CT whole body	Usuall approp		Limited	≎≎≎≎ 10- mSv	30	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			12 (15668281)				3										
			16 (29025377)				4										
			6 (27422453)				4										

Radiography chest	Usuall approp		Limited	≎ <0.1 mS	Sv		1	1	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			23 (8164036)			4											
			24 (12000220)			3											
			25 (2714345)			4											
		25 (2/14345) 12 (15668281)					3										
			26 (8182811)			1											
			11 (3338047)				4										

Variant 3: Newly diagnosed. Stage I breast cancer. Asymptomatic. Rule out abdominal metastases. Initial imaging.

D 1	Appropri	iateness	COF	4 1 14 DD	_	D I DDI	D 4	N. T. 11			F	inal '	Fabu	lation	ıs		
Procedure	Categ		SOE	Adults RR	.L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen with IV contrast	Usually approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			29 (3490743)				4										
			27 (21298335)				3										
CT abdomen without IV contrast	Usually approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			29 (3490743)				4										
			27 (21298335)				3										
CT abdomen without and with IV contrast	Usually approp	y not oriate	Limited	≎≎≎≎ 10∹ mSv	30	����� 10-30 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			29 (3490743)				4										

		27 (21298335)				3										
MRI abdomen without IV contrast	Usuall approp	Limited	O 0 mSv		0 mSv ped]	2	2	0	0	0	0	0	0	0	0	0
		References		•	Study	Quality			•							
		29 (3490743)				4										
MRI abdomen without and with IV contrast	Usuall approp	Limited	O 0 mSv		0 mSv ped]	2	2	0	0	0	0	0	0	0	0	0
		References			Study	Quality										
		29 (3490743)				4										
FDG-PET/CT whole body	Usuall approp	Limited	���� 10-3 mSv	³⁰ 10	9≎≎ 3- 0 mSv ped]	2	2	0	0	0	0	0	0	0	0	0
		References			Study	Quality										
		12 (15668281)				3										
		16 (29025377)				4										
		6 (27422453)				4										
US abdomen	Usuall approp	Limited	O 0 mSv		0 mSv ped]	2	2	0	0	0	0	0	0	0	0	0
		References			Study	Quality										
		26 (8182811)				1										
		30 (6258861)				4										
		31 (7208864)				4										
		11 (3338047)				4										
		32 (11387916)				4										

Variant 4: Newly diagnosed. Stage I breast cancer. Asymptomatic. Rule out brain metastases. Initial imaging.

n 1	Appropriateness	COF	A L L DDI	D I DDI	D. (34 11			F	inal '	Гаbи	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI head without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0

		References		Stud	y Quality										
		33 (3317495)			2										
		37 (3275962)			4										
		38 (1902031)			4			1							
MRI head without and with IV contrast	Usually appropri	Limited	O 0 mSv	O 0 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		33 (3317495)			2										
		37 (3275962)			4										
		 38 (1902031)			4										
FDG-PET/CT whole body	Usually appropri	Limited	���� 10-30 mSv	0	2	2	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		12 (15668281)			3										
		16 (29025377)			4										
		6 (27422453)			4										
CT head with IV contrast	Usually appropri	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		35 (3341548)			4										
		36 (22740201)			4										
CT head without IV contrast	Usually appropri	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		35 (3341548)			4										
		 36 (22740201)			4										
CT head without and with IV contrast	Usually appropri	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
	TIT			[þeu]											

35 (3341548)	4
36 (22740201)	4

Variant 5: Surveillance. Stage I breast cancer. Asymptomatic. Rule out bone, thoracic, abdominal, and brain metastases. Initial imaging.

	Appropri	iateness	go n			D 1 DD1	- ·	3.5.31			I	inal	Tabu	latio	ns		
Procedure	Categ	gory	SOE	Adults RR	RL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen with IV contrast	Usuall approp	y not oriate	Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			10 (23601761)				4										
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)			T	4		_			_					
CT abdomen without IV contrast	Usuall approp		Limited	��� 1-10 mSv	0	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References		Study	Quality											
			10 (23601761)			4											
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)				4					_					
CT abdomen without and with IV contrast	Usuall approp		Limited	���� 10- mSv	30	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			10 (23601761)			4											
			7 (26314782)			4											
			8 (-3146467)				4										
			9 (-3146470)				4										

CT chest with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References			y Quality	•	•			,	•		•		
		10 (23601761)			4										
		7 (26314782)			4										
		8 (-3146467)			4										
		9 (-3146470)			4										
CT chest without IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study	y Quality		•								
		10 (23601761)			4										
		7 (26314782)			4										
		8 (-3146467)			4										
		9 (-3146470)			4										
CT chest without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		10 (23601761)			4										
		7 (26314782)			4										
		8 (-3146467)			4										
		9 (-3146470)			4										
CT head with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		10 (23601761)			4										
		7 (26314782)			4										
		8 (-3146467)			4										
		9 (-3146470)			4										
	•														

CT head without IV contrast	Usually approp		Limited	& & & 1-10 mSv)	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	/ Quality										
			10 (23601761)				4										
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)				4										
CT head without and with IV contrast	Usually approp		Limited	≎≎≎ 1-10 mSv		��� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			10 (23601761)				4										
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)				4										
MRI abdomen without IV contrast	Usually approp		Limited	O 0 mSv		O 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			10 (23601761)				4										
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)				4										
MRI abdomen without and with IV contrast	Usually approp	y not riate	Limited	O 0 mSv		O 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
			References			Study	Quality										
			10 (23601761)				4										
			7 (26314782)				4										
			8 (-3146467)				4										
			9 (-3146470)				4					1	1				
MRI head without IV contrast	Usually approp		Limited	O 0 mSv		O 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

		References		Study											
		10 (23601761)													
		7 (26314782)													
		8 (-3146467)			4										
		9 (-3146470)			4										
MRI head without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study											
		10 (23601761)			4										
		7 (26314782)													
		8 (-3146467)													
		9 (-3146470)			4										
Bone scan whole body	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study	Quality										
		10 (23601761)			4										
		7 (26314782)													
		8 (-3146467)													
		9 (-3146470)													
FDG-PET/CT whole body	Usually not appropriate	Limited	��� � 10-30 mSv	���� 3- 10 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study											
		10 (23601761)			4										
		7 (26314782)			4										
		8 (-3146467)			4										
		9 (-3146470)			4										
US abdomen	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		References		Study	Quanty										

			7 (26314782)			4											
			8 (-3146467)		4												
			9 (-3146470)			4											
Radiography chest	Usuall approp	y not oriate	Limited	� <0.1 mS	Sv		1	n/a	0	0	0	0	0	0	0	0	0
		References 10 (23601761)		Study Quality													
						4											
		7 (26314782)		4													
			8 (-3146467)		4												
			9 (-3146470)		4												
Radiography skeletal survey	Usuall approp	y not oriate	Limited	��� 1-1 mSv	0	��� 0.3- 3 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0
		References		Study Quality													
		10 (23601761) 7 (26314782)			4												
					4												
			8 (-3146467)			4											
			9 (-3146470)		4												

Variant 6: Surveillance. Stage I breast cancer. Asymptomatic. Rule out local recurrence.

Duocadama	Appropriatene	ess cor	4 1 14 DD		Peds RRL	Doting	3.7.11	Final Tabulations										
Procedure	Category	SOE	Adults RR	KL		Rating	Median	1	2	3	4	5	6	7	8	9		
Mammography diagnostic bilateral	Usually appropriate	Limited	�� 0.1-1mSv			9	9	0	0	0	0	0	0	0	0	0		
		References	erences Study Quality															
		6 (27422453)			4													
Digital breast tomosynthesis diagnostic	Usually appropriate	Strong	�� 0.1-1mSv			9	9	0	0	0	0	0	0	0	0	0		
		References	References		Study Quality													
		57 (23345348)	57 (23345348)			2												

			<u> </u>												
		58 (23620367)			2										
		59 (23255766)													
		60 (23844366)													
		6 (27422453)			4							1			
Mammography screening	Usually appropria		�� 0.1-1mS	v	8	8	0	0	0	0	0	0	0	0	0
		References	Study												
		50 (17548838)													
		51 (16409580)													
		52 (18368477)													
		39 (17033037)													
		8 (-3146467)													
		49 (22692036)			3										
		48 (18206623)			0										
Digital breast tomosynthesis screening	Usually appropria		�� 0.1-1mS	v	8	8	0	0	0	0	0	0	0	0	0
		References		Study											
		56 (24475859)													
		54 (24354377)													
		55 (24484063)													
		53 (23175484)													
MRI breast without and with IV contrast bilateral	May be appropria		O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		64 (20651211)			3										
		63 (17392385)			4										
		65 (28655029)													
		61 (23889950)													
62 (22476755)															
US breast bilateral	May be appropria	te Moderate	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	0	0	0	0	0	0

		References			Study Quality												
			68 (18477782)			1											
MRI breast without IV contrast bilateral	Usuall approp	y not oriate	Limited O 0 mSv		,	0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
		References		Study Quality													
			64 (20651211)		3												
			63 (17392385)		4												
			65 (28655029)			4											
			61 (23889950)			3											
			62 (22476755)			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.