

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

**Lung Cancer: Surveillance After Therapy**

**Variant 1: Adult. Noninvasive imaging surveillance following treatment of stage I-III non-small-cell lung cancer. 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 appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	9	9	1	0	0	0	0	1	3	2	11	
		References	Study Quality													
		15 (23127371)	4													
		16 (22859511)	2													
		19 (28225653)	4													
		14 (28881918)	4													
		13 (23649451)	4													
		11 (-3196828)	4													
		12 (34481037)	4													
		17 (21892108)	Good													
		18 (34051381)	2													
CT chest without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	0	3	0	1	4	4	4	
		References	Study Quality													
		5 (31829901)	4													
		20 (23996838)	4													
CT abdomen and pelvis with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	5	3	5	1	2	1	1	0	0	



21 (22051278)	2
27 (19398291)	2
4 (22305958)	4
23 (22914804)	2
22 (17257962)	2
24 (19046631)	2
25 (25012832)	2
28 (20005529)	2

CT abdomen and pelvis without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	9	3	2	1	2	1	0	0	0
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References	Study Quality
5 (31829901)	4
3 (35545176)	4

CTA chest with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	5	4	7	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]	2	2	6	5	4	1	0	0	0	0	0
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CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	7	5	2	1	1	1	1	0	0
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References	Study Quality
5 (31829901)	4
3 (35545176)	4

CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	8	5	1	1	2	1	0	0	0
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References	Study Quality
5 (31829901)	4
3 (35545176)	4

CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	9	2	4	1	0	1	1	0	0
MRI chest without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	9	4	2	0	2	0	1	0	0
		References		Study Quality											
		33 (22434450)		4											
		32 (18374761)		2											
		34 (21928189)		4											
MRI head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	8	4	0	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	2	2	6	5	4	0	1	0	0	0	0
		References		Study Quality											
		5 (31829901)		4											
		35 (24606446)		Good											
		36 (23860613)		4											
Radiography chest	Usually not appropriate	Strong	☼ <0.1 mSv	☼ <0.03 mSv [ped]	2	2	5	6	5	0	0	0	0	0	0
		References		Study Quality											
		37 (24139896)		2											
		8 (30292847)		1											
CTA chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	9	1	4	0	2	1	0	1	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	1	1	11	1	2	1	2	1	0	0	0
		References		Study Quality											
		5 (31829901)		4											
		3 (35545176)		4											

CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	10	1	3	3	0	1	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	9	3	2	0	0	2	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	3	2	1	0	1	1	0	0
Bone scan whole body	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	3	2	1	1	0	1	0	0

**Variant 2: Adult. Noninvasive imaging surveillance following treatment of stage I-III small-cell lung cancer. 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 appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	8	8	1	0	1	0	2	0	2	4	8
		References		Study Quality											
		46 (25310425)		4											
		44 (23649448)		4											
		45 (30323087)		4											
		42 (34902832)		4											
MRI head without IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	7	7	0	1	0	1	3	2	6	3	0
MRI head without and with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	7	7	0	1	0	0	0	0	8	4	3
		References		Study Quality											
		5 (31829901)		4											
		50 (23307984)		4											



			41 (21354739)		Good													
			40 (-3196830)		4													
CT abdomen and pelvis with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	5	5	5	1	0	0	0	0	0	0	0	0
			References		Study Quality													
			5 (31829901)		4													
			42 (34902832)		4													
CT abdomen and pelvis without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	7	5	2	1	1	1	1	1	0	0	0	0
			References		Study Quality													
			5 (31829901)		4													
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	8	2	3	1	2	2	0	0	0	0	0	0
			References		Study Quality													
			5 (31829901)		4													
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	7	5	3	1	0	0	0	0	0	0	0	0
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	5	7	3	1	0	0	0	0	0	0	0	0
			References		Study Quality													
			5 (31829901)		4													
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	6	3	2	1	4	0	0	0	0	0	0	0
			References		Study Quality													
			42 (34902832)		4													
CT head without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	6	4	3	1	4	0	0	0	0	0	0	0

		References	Study Quality												
		42 (34902832)	4												
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	8	4	2	0	1	1	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	2	2	9	2	3	1	2	0	1	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	2	2	8	3	3	0	2	0	2	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	9	2	3	1	2	0	1	0	0
MRI chest without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	9	3	1	2	2	1	0	0	0
		References	Study Quality												
		33 (22434450)	4												
		32 (18374761)	2												
		34 (21928189)	4												
Radiography chest	Usually not appropriate	Limited	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	2	2	7	4	4	0	1	0	0	0	0
		References	Study Quality												
		5 (31829901)	4												
		52 (19819917)	4												
		53 (12527585)	4												
CTA chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	8	4	4	0	0	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	9	5	2	0	0	0	0	0	0

**Variant 3: Adult. Posttreatment evaluation of stage I-III non-small-cell lung cancer. Suspected recurrence or progression.**



			19 (28225653)		4													
			20 (23996838)		4													
			18 (34051381)		2													
MRI head without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	7	7	1	0	1	0	0	0	7	2	5			
			References		Study Quality													
			64 (23649440)		4													
			6 (-3196827)		4													
CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	6	6	0	0	0	0	4	5	2	5	0			
			References		Study Quality													
			20 (23996838)		4													
CT abdomen and pelvis with IV contrast	May be appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	1	0	0	5	6	4	0	0	0			
CTA chest with IV contrast	May be appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	0	0	0	3	12	1	0	0	0			
CT head with IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	5	5	0	0	0	3	8	4	1	0	0			
			References		Study Quality													
			64 (23649440)		4													
CT neck with IV contrast	May be appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	5	5	0	1	4	2	8	2	1	0	0			
MRI chest without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	2	0	4	9	1	0	0	0			
			References		Study Quality													
			67 (23593186)		2													
MRI head without IV contrast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	5	5	0	1	0	1	9	3	2	0	0			

Radiography chest	May be appropriate	Strong	☼ <0.1 mSv	☼ <0.03 mSv [ped]	5	5	1	1	1	1	8	4	0	0	0
		References	Study Quality												
		37 (24139896)	2												
		8 (30292847)	1												
Bone scan whole body	May be appropriate	Moderate	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	4	4	1	1	4	5	7	0	0	0	0
		References	Study Quality												
		41 (21354739)	Good												
		59 (18300765)	4												
CT chest abdomen pelvis without IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	2	2	6	2	4	1	1	0	0
		References	Study Quality												
		46 (25310425)	4												
CT head without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	2	5	3	5	1	1	1	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	3	4	4	4	2	0	1	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	4	3	5	3	1	0	2	0	0
MRI chest without IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	3	3	3	4	6	1	3	0	1	0	0
		References	Study Quality												
		33 (22434450)	4												
		32 (18374761)	2												
		34 (21928189)	4												
		68 (30856554)	2												

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	3	10	2	1	0	0	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗⊗ 10-30 mSv [ped]	2	2	5	7	3	1	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	5	5	5	1	0	0	0	0	0
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗⊗ 10-30 mSv [ped]	2	2	4	6	5	1	0	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	4	6	4	1	0	1	0	0	0
CTA chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	6	5	4	1	0	0	0	0	0

**Variant 4: Adult. Posttreatment evaluation of stage I-III small-cell lung cancer. Suspected recurrence or progression.**

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 appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	0	0	0	1	0	7	4	4
		References		Study Quality											
		5 (31829901)		4											
		42 (34902832)		4											
CT chest abdomen pelvis with IV contrast	Usually appropriate	Limited	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	0	0	0	0	1	5	5	5
		References		Study Quality											
		43 (32723523)		4											



CT chest abdomen pelvis without IV contrast	May be appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	2	0	1	9	4	0	0	0
CT head with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	0	0	0	1	9	5	1	0	0
		References	Study Quality												
		43 (32723523)	4												
		42 (34902832)	4												
CT neck with IV contrast	May be appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	0	1	0	1	11	3	0	0	0
MRI head without IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	5	5	0	0	0	2	10	4	0	0	0
Bone scan whole body	May be appropriate	Moderate	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	0	0	2	1	12	1	0	0	0
		References	Study Quality												
		41 (21354739)	Good												
		40 (-3196830)	4												
Radiography chest	May be appropriate	Limited	☼ <0.1 mSv	☼ <0.03 mSv [ped]	5	5	1	1	0	3	7	3	0	1	0
		References	Study Quality												
		37 (24139896)	2												
		52 (19819917)	4												
CT head without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	4	4	3	3	3	7	1	0	1	0	0
		References	Study Quality												
		42 (34902832)	4												
MRI chest without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	4	4	2	3	3	3	5	1	1	0	0

CT neck without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	2	3	6	6	0	0	1	0	0
MRI chest without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	2	5	4	5	2	0	0	0	0
		References		Study Quality											
		68 (30856554)		2											
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	3	8	4	0	0	1	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	7	3	2	2	2	0	1	0	1
		References		Study Quality											
		43 (32723523)		4											
		42 (34902832)		4											
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	4	5	7	0	0	0	0	0	0
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	5	4	6	0	0	1	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	4	6	4	0	0	2	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	6	4	4	2	0	0	2	0	0
CTA chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	2	4	2	1	0	1	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).