American College of Radiology
ACR Appropriateness Criteria®

Noninvasive Clinical Staging of Primary Lung Cancer

Variant 1: Noninvasive initial clinical staging of non–small-cell lung carcinoma.

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]	9	9	0	0	0	0	0	1	1	2	9

References	Study Quality
12 (12527573)	4
13 (16731115)	3
14 (18291191)	2
11 (23649440)	4
15 (28651988)	4

FDG-PET/CT skull base to mid-thigh	Usually appropriate	Strong	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	0	0	0	0	2	1	1	9

References	Study Quality
35 (19144446)	3
13 (16731115)	3
17 (14688710)	3
19 (11978336)	1
30 (17588407)	3
29 (18024539)	3
36 (12665681)	4
33 (15140545)	3
22 (19571281)	1

31 (21330566)	Good
11 (23649440)	4
16 (11380213)	2
18 (15197196)	1
20 (10478250)	2
21 (14693872)	2
23 (16151765)	1
24 (15620991)	Good
25 (21587082)	2
26 (24082283)	3
27 (26013292)	4
28 (-3127897)	4
32 (9724372)	2
34 (21354739)	Good
37 (9636830)	3

MRI head without and with IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	3	2	3	5

References	Study Quality
39 (17762336)	4
42 (6094117)	4
11 (23649440)	4
40 (14568686)	3
41 (10189463)	2

CT chest without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	1	0	0	2	2	3	3	2

References	Study Quality
12 (12527573)	4
13 (16731115)	3
14 (18291191)	2
11 (23649440)	4
15 (28651988)	4

CT abdomen and pelvis with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	1	0	3	5	1	0	3

References	Study Quality
11 (23649440)	4

CT head with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	6	6	0	0	1	0	5	4	3	0	0

References	Study Quality
43 (1902031)	4
44 (10084481)	3
11 (23649440)	4

CT head without and with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	2	1	8	2	0	0	0

References	Study Quality
43 (1902031)	4
44 (10084481)	3
11 (23649440)	4

MRI abdomen without and with IV contrast	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	1	9	1	0	0	0

References	Study Quality
31 (21330566)	Good
49 (23549390)	4

MRI chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	1	2	2	5	2	0	0	0

References	Study Quality
45 (18349458)	4
46 (18373824)	3
47 (16028243)	3
48 (23593186)	2

MRI head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	4	1	5	3	0	0	0

References	Study Quality
11 (23649440)	4
40 (14568686)	3

Bone scan whole body	May be appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	1	0	1	4	5	2	0	0	0

References	Study Quality
35 (19144446)	3
34 (21354739)	Good
38 (21094027)	Good

CT abdomen and pelvis without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	2	0	3	3	5	0	0	0	0

References	Study Quality
11 (23649440)	4

CT abdomen and pelvis without and with IV contrast	May be appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	4	4	1	0	3	3	4	2	0	0	0

References	Study Quality
11 (23649440)	4

MRI abdomen without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	1	0	3	5	4	0	0	0	0
CT head without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	3	3	3	1	6	1	2	0	0	0	0

References	Study Quality
43 (1902031)	4
44 (10084481)	3
11 (23649440)	4

MRI chest without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	2	1	4	4	1	1	0	0	0

References	Study Quality
45 (18349458)	4

		46 (18373824)		3											
		47 (16028243)		3											
		48 (23593186)		2											
CT chest without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	2	2	0	0	0	0	1	0
		References		Study Quality											
		12 (12527573)		4											
		13 (16731115)		3											
		14 (18291191)		2											
		11 (23649440)		4											
		15 (28651988)		4											
Radiography chest	Usually not appropriate	Expert Consensus	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	7	1	4	0	0	0	0	1	0

Variant 2: Noninvasive initial clinical staging of small-cell lung carcinoma.

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]	9	9	0	0	0	0	0	1	1	2	9
		References		Study Quality											
		50 (25310425)		4											
		51 (23649448)		4											
MRI head without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	4	8
FDG-PET/CT skull base to mid-thigh	Usually appropriate	Strong	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	0	0	0	0	0	2	2	9
		References		Study Quality											
		33 (15140545)		3											

References	Study Quality
55 (3034008)	3
59 (15310768)	2
60 (15258700)	2
31 (21330566)	Good
34 (21354739)	Good
37 (9636830)	3
51 (23649448)	4
52 (23307985)	4
56 (21409347)	3
57 (19921339)	3
58 (15057156)	3

CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	0	0	0	3	3	1	0	6

References	Study Quality
55 (3034008)	3

CT chest without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	0	1	4	3	2	1	2

References	Study Quality
50 (25310425)	4
51 (23649448)	4

CT head with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	0	0	0	1	7	4	1	0	0

References	Study Quality
51 (23649448)	4

MRI abdomen without and with IV contrast	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	0	5	5	1	0	0

References	Study Quality
31 (21330566)	Good
49 (23549390)	4

MRI head without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	0	0	3	3	6	1	0	0	0
Bone scan whole body	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	1	0	1	4	5	2	0	0	0

References	Study Quality
62 (10473359)	4
51 (23649448)	4
63 (27877227)	3

CT abdomen and pelvis without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	2	0	1	7	2	1	0	0	0

References	Study Quality
55 (3034008)	3

CT abdomen and pelvis without and with IV contrast	May be appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	4	4	1	0	4	3	3	2	0	0	0

References	Study Quality
55 (3034008)	3

CT head without and with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	0	1	4	3	4	1	0	0	0

References	Study Quality
51 (23649448)	4

MRI abdomen without IV contrast	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	4	4	2	0	2	3	4	2	0	0	0

References	Study Quality
31 (21330566)	Good
49 (23549390)	4

MRI chest without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	1	0	2	5	5	0	0	0	0

References	Study Quality

References	Study Quality
45 (18349458)	4
46 (18373824)	3
47 (16028243)	3
64 (6290145)	4
48 (23593186)	2

CT head without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	3	3	2	0	7	2	1	1	0	0	0

References	Study Quality
51 (23649448)	4

MRI chest without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	1	3	4	3	1	1	0	0	0

References	Study Quality
45 (18349458)	4
46 (18373824)	3
47 (16028243)	3
48 (23593186)	2

Radiography chest	Usually not appropriate	Expert Consensus	☢ <0.1 mSv	☢ <0.03 mSv [ped]	2	2	6	5	1	0	0	0	0	1	0
CT chest without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	3	2	0	0	0	0	1	0

References	Study Quality
50 (25310425)	4
51 (23649448)	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.**