American College of Radiology
ACR Appropriateness Criteria®

Incidentally Detected Indeterminate Pulmonary Nodule

Variant 1: Adult greater than or equal to 35 years of age. Incidentally detected indeterminate pulmonary nodule on chest radiograph. 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 without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	0	0	0	0	1	3	5	9

References	Study Quality
3 (18195376)	4
27 (27639313)	4
20 (25658477)	4
25 (10682770)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations 1	2	3	4	5	6	7	8	9
Radiography chest	May be appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	4	4	0	0	2	8	6	2	0	0	0

References	Study Quality
5 (23460160)	4
25 (10682770)	4

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]	2	2	5	7	3	1	1	1	0	0	0

References	Study Quality
27 (27639313)	4

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations 1	2	3	4	5	6	7	8	9
CT chest without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	9	6	3	0	0	0	0	0	0

References	Study Quality

		27 (27639313)				4										
Image-guided transthoracic needle biopsy	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	16	0	1	0	0	1	0	0	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	4	1	1	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	4	1	1	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	12	3	0	2	0	1	0	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	15	1	1	1	0	0	0	0	0

Variant 2: Adult greater than or equal to 35 years of age. Incidentally detected indeterminate pulmonary nodule less than 6 mm on chest CT. 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 without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	1	0	3	9	4	1	0	0
		References			Study Quality										
		27 (27639313)			4										
		20 (25658477)			4										
CT chest with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	5	5	2	3	3	0	0	0	0
		References			Study Quality										
		27 (27639313)			4										
CT chest without and with IV contrast	Usually not appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	9	2	2	2	2	1	0	0	0
		References			Study Quality										

		30 (10644104)		2												
		29 (16244276)		2												
		31 (15304661)		2												
Image-guided transthoracic needle biopsy	Usually not appropriate	Expert Consensus	Varies	Varies	1	1	12	1	3	2	0	0	0	0	0	
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	2	2	1	0	0	0	0	0	
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	2	3	0	0	0	0	0	0	
FDG-PET/CT whole body	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	3	1	1	2	0	0	0	0	
		References		Study Quality												
		1 (24630316)		4												
		5 (23460160)		4												
		32 (16513614)		2												
Radiography chest	Usually not appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	13	3	1	0	1	0	0	0	0	
		References		Study Quality												
		5 (23460160)		4												
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	14	1	2	1	0	0	0	0	0	

Variant 3: Adult greater than or equal to 35 years of age. Incidentally detected indeterminate pulmonary nodule equal to or greater than 6 mm on chest CT. 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 without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	8	8	0	0	0	0	1	1	6	7	3

References	Study Quality
27 (27639313)	4
20 (25658477)	4

FDG-PET/CT whole body	Usually appropriate	Strong	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	7	7	0	1	0	1	3	4	5	2	2

References	Study Quality
36 (17056930)	2
44 (25247519)	Good
40 (27179906)	2
27 (27639313)	4
1 (24630316)	4
45 (24801058)	2
5 (23460160)	4
32 (16513614)	2
41 (9574618)	4
42 (12192561)	2
43 (20822650)	2

Image-guided transthoracic needle biopsy	May be appropriate	Strong	Varies	Varies	5	5	0	1	1	1	10	4	1	0	0

References	Study Quality
55 (26545460)	Good
54 (29573050)	4
52 (32976266)	Good
53 (31206453)	2
56 (27108299)	Good

MRI chest without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	5	3	7	2	1	0	0	0	0

References	Study Quality
65 (15215548)	2
54 (29573050)	4
64 (25658478)	4

		66 (24173597)		2												
CT chest with IV contrast	Usually not appropriate	Moderate	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	5	6	4	0	2	1	0	0	0	
		References		Study Quality												
		38 (18796658)		3												
		37 (10644105)		2												
MRI chest without IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	2	2	6	4	5	2	1	0	0	0	0	
		References		Study Quality												
		60 (16177419)		2												
		54 (29573050)		4												
		63 (26447872)		2												
		57 (29775663)		2												
		58 (25545835)		2												
		59 (28263700)		2												
		61 (21696559)		2												
		62 (30480492)		Good												
FDG-PET/MRI whole body	Usually not appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	6	5	3	2	1	0	1	0	0	
		References		Study Quality												
		50 (26514173)		2												
		49 (27424217)		4												
		47 (33415433)		2												
		46 (27516448)		4												
CT chest without and with IV contrast	Usually not appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	5	2	0	0	0	0	0	0	
		References		Study Quality												
		30 (10644104)		2												
		29 (16244276)		2												
		31 (15304661)		2												

		36 (17056930)		2												
		34 (27161059)		2												
		35 (27161068)		2												
		5 (23460160)		4												
		32 (16513614)		2												
Radiography chest	Usually not appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	11	4	2	0	0	1	0	0	0	
		References		Study Quality												
		5 (23460160)		4												

Variant 4: Adult greater than or equal to 35 years of age. Incidentally detected indeterminate pulmonary nodule on incomplete thoracic CT (eg, CT abdomen, neck, spine, etc). 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 without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	8	8	0	0	0	0	2	2	5	5	4
		References		Study Quality											
		27 (27639313)		4											
		20 (25658477)		4											
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	7	5	2	2	0	1	1	0	0
Image-guided transthoracic needle biopsy	Usually not appropriate	Expert Consensus	Varies	Varies	2	2	9	2	2	1	3	0	1	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	3	2	1	2	1	0	1	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	6	0	0	1	0	0	0	0

MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	1	4	2	1	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	2	4	2	0	0	0	0	0
Radiography chest	Usually not appropriate	Limited	☢ <0.1 mSv	☢ <0.03 mSv [ped]	1	1	12	1	3	1	1	0	0	0	0

References	Study Quality
5 (23460160)	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.**