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.

	Appropriaten	1999							F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	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										
Radiography chest	May be appropriate	Limited	≎ <0.1 mSv		4	4	0	0	2	8	6	2	0	0	0
		References		Study	Quality										
		5 (23460160)			4										
		25 (10682770)			4										
CT chest with IV contrast	Usually not appropriate		��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	5	7	3	1	1	1	0	0	0
		References		Study	Quality										
		27 (27639313)			4										
CT chest without and with IV contrast	Usually not appropriate		��� 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	Usuall approp	Expert Consensus	Varies	Varies	1	1	16	0	1	0	0	1	0	0	0
MRI chest without IV contrast	Usuall approp	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	Usuall approp	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	Usuall approp	Expert Consensus	���� 10- mSv	30	1	1	12	3	0	2	0	1	0	0	0
FDG-PET/MRI whole body	Usuall approp	Expert Consensus	��� 1-10 mSv	0	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.

D 1	Appropria	ateness	COE	4 1 14 DD	. T	n i nni	D 4:	3.6 11			F	inal T	Fabu l	latio	ıs		
Procedure	Catego		SOE	Adults RR	KL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest without IV contrast	May l appropr	be riate	Limited	��� 1-1 mSv	0	���� 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 appropr		20 (25658477) Limited		0	���⊕ 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 appropr		Strong	��� 1-1 mSv	0	���� 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	Usuall approp	Expert Consensus	Varies		Varies	1	1	12	1	3	2	0	0	0	0	0
MRI chest without IV contrast	Usuall approp	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	Usuall approp	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	Usuall approp	Limited	≎≎≎≎ 10- mSv	30	���� 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	Usuall approp	Limited	⊕ <0.1 mS	Sv	≎ <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	Usuall approp	Expert Consensus	��� 1-10 mSv	0	���� 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.

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Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	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

Comparison Com					G: 1	0 11:										
FDG-PET/CT whole body			References		Study											
Strong																
References Study Quality Strong			20 (25658477)		1 00000	<u>4</u>					1					
36 (17056930)	FDG-PE1/CT whole body	Usually appropriate	Strong		10 mSv	7	7	0	1	0	1	3	4	5	2	2
May be appropriate Strong Varies Varies Study Quality Strong Good Start without and with IV Usually not appropriate Strong O 0 mSv Good Study Quality Strong O 0 mSv O 0 mSv Good Study Quality Strong O 0 mSv O 0 mSv Study Quality Strong O 0 mSv Good Study Quality Strong O 0 mSv Study Quality Strong O 0 mSv O 0			References		Study	y Quality										
May be appropriate Strong Varies Study Quality Strong Study Quality Strong Study Quality Strong Stro			36 (17056930)			2										
27 (27639313)			44 (25247519)		(Good										
1 (24630316)			40 (27179906)			2										
45 (24801058)			27 (27639313)			4										
S (23460160)			1 (24630316)			4										
32 (16513614) 2			45 (24801058)			2										
A1 (9574618)			5 (23460160)			4										
May be appropriate Strong Varies Varies Study Quality			32 (16513614)			2										
May be appropriate Strong Varies Varies Study Quality			41 (9574618)			4										
May be appropriate Strong Varies Study Quality			42 (12192561)			2										
Strong Varies Varies Study Quality Strong Study Quality Stong Study Quality Stong Study Quality Stong Study Quality Stong O 0 mSv Study Quality Stong O 0 mSv Study Quality Stong O 0 mSv Study Quality Study Quality Stong O 0 mSv Study Quality Study Qu			43 (20822650)			2										
S5 (26545460) Good S4 (29573050) 4 S2 (32976266) Good S3 (31206453) 2 S6 (27108299) Good Strong O 0 mSv [ped] 3 3 5 3 7 2 1 0 0 References Study Quality Strong S	Image-guided transthoracic needle biopsy	May be appropriate	Strong	Varies	Varies	5	5	0	1	1	1	10	4	1	0	0
S4 (29573050)			References		Study	y Quality										
Sign			55 (26545460)		(Good										
Strong S			54 (29573050)			4										
MRI chest without and with IV Usually not appropriate Strong O 0 mSv [ped] 3 3 5 3 7 2 1 0 0			52 (32976266)		(Good										
MRI chest without and with IV contrast Usually not appropriate Strong O 0 mSv [ped] 3 3 5 3 7 2 1 0 0 References Study Quality 5 3 7 2 1 0 0			53 (31206453)													
Contrast Strong O 0 mSv C 0 mSv S			56 (27108299)		(Good			1							
65 (15215548)			Strong	O 0 mSv	O 0 mSv 3 3			5	3	7	2	1	0	0	0	0
			References													_
			65 (15215548)		2											
54 (29573050) 4			54 (29573050)													
64 (25658478) 4			64 (25658478)													

			66 (24173597)			2										
CT chest with IV contrast	Usually appropri	not iate	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 appropri	not iate	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 2											
			58 (25545835)													
			59 (28263700)		2											
			61 (21696559)		2 2											
			62 (30480492)		(Good			,	,						
FDG-PET/MRI whole body	Usually appropri		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		ļ								
			47 (33415433)			2		ļ								
			46 (27516448)			4	T									
CT chest without and with IV contrast	Usually appropri		Strong	��� 1-10 mSv	1-10			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	Usuall approp	y not oriate	Limited	≎ <0.1 mS	Sv		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.

D	Appropri	ateness	COE	A 314. DDI	D. J. DDI	D - 45	N/ - 32			F	inal '	Гаbu	latio	ns		
Procedure	Categ		SOE	Adults RRI	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest without IV contrast	Usual approp		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 approp		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 approp		Expert Consensus	Varies	Varies	2	2	9	2	2	1	3	0	1	0	0
FDG-PET/CT whole body	Usually approp		Expert Consensus	���� 10-3 mSv	0	2	2	8	3	2	1	2	1	0	1	0
CT chest without and with IV contrast	Usually approp		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		1	1	12	1	3	1	1	0	0	0	0

	References	Study Quality
Ī	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.