

			49 (25810444)		2													
			48 (23863542)		2													
CT chest with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	2	3	4	1	1	0	0	1	0			
			References		Study Quality													
			12 (28033378)		1													
			49 (25810444)		2													
			48 (23863542)		2													
CT chest without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	7	3	1	0	0	0	0	0	0	1		
			References		Study Quality													
			12 (28033378)		1													
			49 (25810444)		2													
			48 (23863542)		2													
MRI chest without IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	7	1	3	0	0	0	0	1	0			
			References		Study Quality													
			53 (18356432)		2													
			50 (28067202)		2													
			51 (27107755)		2													
			52 (26981454)		2													
MRI chest without and with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	7	2	2	0	0	0	1	0	0			
			References		Study Quality													
			53 (18356432)		2													
			50 (28067202)		2													
			51 (27107755)		2													
			52 (26981454)		2													
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	8	2	1	0	0	0	0	0	1			

Variant 2: Occupational exposure, suspected interstitial lung disease. Initial imaging.

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	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	9	9	0	0	0	0	1	0	0	5	6

References	Study Quality
71 (28370144)	2
69 (28614400)	2
6 (27680410)	3
63 (27031972)	4
70 (26901505)	3
64 (26334510)	2
62 (26231253)	3
72 (25810443)	2
68 (25537566)	3
56 (23293132)	3
59 (25286915)	1
73 (25106847)	2
58 (24953093)	2
67 (24811526)	2
60 (24804337)	4
66 (24480143)	4
34 (24360514)	4
57 (24331259)	2
43 (24038345)	2
26 (19997848)	2
61 (24739899)	1
65 (12818850)	2

Radiography chest	Usually appropriate	Strong	☼ <0.1 mSv	☼ <0.03 mSv [ped]	9	9	1	0	0	0	0	1	0	2	7
-------------------	---------------------	--------	------------	-------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
55 (27481079)	2
21 (25043510)	2
24 (26689234)	3
54 (25171783)	3

CT chest with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	0	1	6	1	2	0	1	0	0
---------------------------	-------------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
71 (28370144)	2
69 (28614400)	2
6 (27680410)	3
63 (27031972)	4
70 (26901505)	3
64 (26334510)	2
62 (26231253)	3
72 (25810443)	2
68 (25537566)	3
56 (23293132)	3
59 (25286915)	1
73 (25106847)	2
58 (24953093)	2
67 (24811526)	2
60 (24804337)	4
66 (24480143)	4
34 (24360514)	4
57 (24331259)	2
43 (24038345)	2
26 (19997848)	2

			61 (24739899)		1												
			65 (12818850)		2												
CT chest without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	5	2	3	0	0	0	0	0	0	1	
			References		Study Quality												
			71 (28370144)		2												
			69 (28614400)		2												
			6 (27680410)		3												
			63 (27031972)		4												
			70 (26901505)		3												
			64 (26334510)		2												
			62 (26231253)		3												
			72 (25810443)		2												
			68 (25537566)		3												
			56 (23293132)		3												
			59 (25286915)		1												
			73 (25106847)		2												
			58 (24953093)		2												
			67 (24811526)		2												
			60 (24804337)		4												
			66 (24480143)		4												
			34 (24360514)		4												
			57 (24331259)		2												
			43 (24038345)		2												
			26 (19997848)		2												
			61 (24739899)		1												
			65 (12818850)		2												
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	2	4	0	0	0	0	0	1	0	
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	3	2	1	0	0	1	0	0		

FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	6	3	1	0	0	0	0	0	1
------------------------------------	-------------------------	------------------	----------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

Variant 3: Occupational exposure, suspected interstitial lung disease based on radiography. 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	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	1	0	0	0	0	0	0	3	7

References	Study Quality
63 (27031972)	4
62 (26231253)	3
72 (25810443)	2
56 (23293132)	3
73 (25106847)	2
60 (24804337)	4
66 (24480143)	4
34 (24360514)	4
57 (24331259)	2
43 (24038345)	2
61 (24739899)	1

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

References	Study Quality
75 (20027548)	1
53 (18356432)	2
51 (27107755)	2
52 (26981454)	2

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

References	Study Quality
75 (20027548)	1
53 (18356432)	2
51 (27107755)	2
52 (26981454)	2

CT chest with IV contrast	Usually not appropriate	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	2	5	2	1	1	1	0	0	0
---------------------------	-------------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
63 (27031972)	4
62 (26231253)	3
72 (25810443)	2
56 (23293132)	3
73 (25106847)	2
60 (24804337)	4
66 (24480143)	4
34 (24360514)	4
57 (24331259)	2
43 (24038345)	2
61 (24739899)	1

CT chest without and with IV contrast	Usually not appropriate	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	5	3	2	0	0	0	0	0	1
---------------------------------------	-------------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
63 (27031972)	4
62 (26231253)	3
72 (25810443)	2
56 (23293132)	3
73 (25106847)	2
60 (24804337)	4
66 (24480143)	4
34 (24360514)	4

57 (24331259)	2
43 (24038345)	2
61 (24739899)	1
74 (25790222)	2

Image-guided transthoracic needle biopsy	Usually not appropriate	Expert Consensus	Varies		1	1	7	3	0	0	0	0	0	0	1
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	6	3	1	0	0	0	0	0	1

Variant 4: Occupational exposure, suspected airway disease. Initial imaging.

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	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	8	8	0	1	0	0	1	0	2	2	5

References	Study Quality
76 (19204469)	4
77 (27245779)	2
79 (25888313)	4
33 (24169053)	4
78 (23978646)	4
91 (27816444)	2

Radiography chest	Usually appropriate	Strong	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	8	8	1	0	0	0	2	0	1	2	5
-------------------	---------------------	--------	------------	-------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
55 (27481079)	2
21 (25043510)	2
24 (26689234)	3
54 (25171783)	3

CT chest with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	2	4	5	0	0	1	0	0	0
---------------------------	-------------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
76 (19204469)	4
77 (27245779)	2
79 (25888313)	4
33 (24169053)	4
78 (23978646)	4
91 (27816444)	2

MRI chest without IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	3	3	4	1	2	2	1	1	0	0	0
-------------------------------	-------------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
95 (19932577)	2
96 (29174189)	2
97 (26322908)	3
98 (11891971)	2
99 (17984769)	2
100 (29470939)	2

MRI chest without and with IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	3	3	3	2	3	2	0	1	0	0	0
--	-------------------------	--------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
95 (19932577)	2
96 (29174189)	2
97 (26322908)	3
98 (11891971)	2
99 (17984769)	2
100 (29470939)	2

CT chest without and with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	6	2	1	1	0	0	0	0	1
---------------------------------------	-------------------------	--------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
------------	---------------

76 (19204469)	4
77 (27245779)	2
79 (25888313)	4
33 (24169053)	4
78 (23978646)	4
91 (27816444)	2

FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	7	3	0	0	0	0	0	0	1
------------------------------------	-------------------------	------------------	----------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

Variant 5: Confirmed occupational lung disease, suspected thoracic neoplasm.

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]	8	8	1	0	0	0	1	0	1	3	5

References	Study Quality
103 (25837734)	4
106 (25383951)	1
105 (19357540)	4
104 (17047960)	4
108 (17050560)	2
109 (25077699)	4
101 (21625073)	4
102 (24242366)	3
107 (23355760)	1
111 (28024694)	3
110 (29571785)	2

Image-guided transthoracic needle biopsy	Usually appropriate	Strong	Varies		7	7	0	0	0	0	1	4	3	3	0
--	---------------------	--------	--------	--	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
------------	---------------

104 (17047960)	4
125 (12461267)	3
113 (28361545)	2
118 (19937406)	4
123 (3871271)	4
124 (8659351)	2

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

References	Study Quality
103 (25837734)	4
106 (25383951)	1
105 (19357540)	4
104 (17047960)	4
108 (17050560)	2
109 (25077699)	4
101 (21625073)	4
102 (24242366)	3
107 (23355760)	1
111 (28024694)	3
110 (29571785)	2

FDG-PET/CT skull base to mid-thigh	May be appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	0	0	0	6	2	3	0
------------------------------------	--------------------	---------	----------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
122 (20514576)	3
120 (19875971)	3
119 (19395909)	4
118 (19937406)	4
121 (23206832)	4

Radiography chest	May be appropriate	Limited	☼ <0.1 mSv	☼ <0.03 mSv [ped]	6	6	0	1	0	1	2	2	4	0	1
-------------------	--------------------	---------	------------	-------------------	---	---	---	---	---	---	---	---	---	---	---

		References	Study Quality												
		126 (17923365)	2												
MRI chest without and with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	1	0	0	2	5	3	0	0	0
		References	Study Quality												
		117 (15308938)	2												
		114 (20651171)	3												
		113 (28361545)	2												
		116 (26434850)	2												
		115 (28932538)	2												
MRI chest without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	4	4	1	0	5	4	2	0	0	0	0
		References	Study Quality												
		117 (15308938)	2												
		114 (20651171)	3												
		113 (28361545)	2												
		116 (26434850)	2												
		115 (28932538)	2												
CT chest without and with IV contrast	Usually not appropriate	Strong	☻☻☻ 1-10 mSv	☻☻☻☻ 3-10 mSv [ped]	3	3	4	1	3	0	2	0	1	0	0
		References	Study Quality												
		103 (25837734)	4												
		106 (25383951)	1												
		105 (19357540)	4												
		104 (17047960)	4												
		108 (17050560)	2												
		109 (25077699)	4												
		101 (21625073)	4												
		102 (24242366)	3												
		107 (23355760)	1												
		111 (28024694)	3												

110 (29571785)

2

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.