American College of Radiology ACR Appropriateness Criteria®

Tracheobronchial Disease

Variant 1: Adult. Clinically suspected tracheal or bronchial stenosis. Initial imaging.

	Appropriatene	SS GOT	4.1.1. P.5.	D I DET	D //				F	inal '	Tabu	latio	ns		
Procedure	Appropriatenes Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8 9	9
CT chest without IV contrast	Usually appropriate	Strong	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	8	8	0	0	0	0	1	0	3	8	2
		References		Study	/ Quality										
		21 (17430592)			2										
		22 (11752944)			2										
		19 (33992979)			2										
		20 (14605057)			2										
		23 (22013293)			4										
CT chest with IV contrast	Usually appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	7	7	0	0	0	0	5	1	4	1	3
		References		Study	Quality										
		21 (17430592)			2										
		22 (11752944)			2										
		19 (33992979)			2										
		20 (14605057)			2										
		23 (22013293)		4											
Radiography chest	Usually appropriate	Limited	3 <0.1 mSv		7	7	0	0	0	0	2	1	5	4	1
		References		Study	Quality										

22 (11752944) 2

		22 (11/32944)													
CTA chest with IV contrast	May be appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	1	1	2	0	8	2	0	0	0
CT neck and chest with IV contrast	May be appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	≎≎≎≎ 3- 10 mSv [ped]	5	5	0	0	0	1	9	1	2	0	0
CT neck and chest without IV contrast	May be appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	0	8	1	4	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	4	3	4	0	2	1	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	ଡ଼େଡ 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	3	5	1	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	3	5	1	1	3	0	0	0	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	2	3	0	3	0	0	0	0
Radiography neck	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	2	2	4	6	2	1	0	0	0	0	0
CT neck and chest without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	���� 3- 10 mSv [ped]	2	2	6	6	1	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	7	5	1	0	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	8	1	1	1	1	1	1	0	0
FDG-PET/CT skull base to mid- thigh	Usually not appropriate	Expert Consensus	ଡ଼େଡ଼େଡ଼ 10-30 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	9	1	2	1	0	0	1	0	0

Variant 2: Adult. Tracheal or bronchial stenosis. Pre- or posttreatment assessment.

	Appropriateness	207							F	inal '	Tabu	latior	ıs		
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	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	8	8	0	0	0	1	0	0	4	7	2
		References		Study	Quality										
		24 (25384279)			4										
		12 (26332466)			4										
		11 (8784012)			4										
		13 (19002699)			2										
		25 (23168655)			4										
		26 (11776117)			2		_								
CT chest with IV contrast	Usually appropriate	Strong	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	7	7	0	0	1	0	4	1	3	2	3
		References		Study	Quality										
		24 (25384279)			4										
		12 (26332466)			4										
		19 (33992979)			2										
		11 (8784012)			4										
		13 (19002699)			2										
		25 (23168655)			4										
		26 (11776117)			2										
Radiography chest	Usually appropriate	Expert Consensus	⊕ <0.1 mSv		7	7	1	0	0	0	4	0	3	3	2
CT neck and chest without IV contrast	May be appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	6	6	0	1	0	1	4	2	2	3	1

CTA chest with IV contrast	May approp		Expert Consensus	��� 1-10 mSv		5	5	0	0	0	1	11	1	0	0	0
CT neck without IV contrast	May approp (Disagre	oriate	Expert Opinion	��� 1-10 mSv	9	5	5	3	5	1	0	2	0	2	0	0
FDG-PET/CT skull base to mid-thigh	May approp		Strong	���� 10-3 mSv	30	5	5	0	0	2	2	6	3	0	0	0
			References		Study	y Quality										
			27 (27055141)			2										
			28 (33236543)			2										
CT neck and chest with IV contrast	May approp		Expert Consensus	���� 10-3 mSv	30	5	5	0	0	0	0	12	0	1	0	0
MRI chest without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	4	3	3	2	2	0	0	0	0
MRI chest without and with IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	4	3	3	2	2	0	0	0	0
CT chest without and with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv		2	2	5	7	1	0	0	0	0	0	0
CT neck with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	9	2	2	2	6	1	0	3	1	0	0	0
CT neck without and with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	9	2	2	7	1	1	1	3	0	1	0	0
Radiography neck	Usuall approp		Expert Consensus	�� 0.1-1m	Sv 0.03- 0.3 mSv [ped]	2	2	6	2	1	1	4	0	0	0	0
CT neck and chest without and with IV contrast	Usuall approp		Expert Consensus	���� 10-3 mSv	30	1	1	7	5	1	0	0	0	0	0	0

Variant 3: Adult. Clinically suspected tracheomalacia or bronchomalacia. Initial imaging.

	Appropri	ateness	COF		D 1 DD1	- ·				F	inal '	Tabu	latio	ns		
Procedure	Catego		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT chest without IV contrast	Usual appropi		Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	0	0	1	0	1	3	9
			References		Study	Quality										
			31 (24361144)			3										
			30 (11419175)			2										
			17 (19420322)			2										
			29 (15798155)			2		_								
Radiography chest	May l appropi (Disagree	riate	Expert Opinion	≎ <0.1 mSv		5	5	0	4	1	2	0	0	3	2	1
CT neck and chest without IV contrast	May appropri (Disagree	riate	Expert Opinion	���� 10-30 mSv	���� 3- 10 mSv [ped]	5	5	0	1	2	1	5	2	2	0	0
CT chest with IV contrast	Usually appropi		Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	3	3	3	1	5	0	3	1	1	0	0
CTA chest with IV contrast	Usually appropi		Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	2	2	5	3	0	1	4	1	0	0	0
CT neck with IV contrast	Usually appropi		Expert Consensus	⊕⊕⊕ 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	3	5	2	0	3	1	0	0	0
CT neck without IV contrast	Usually appropi		Expert Consensus	⊕⊕⊕ 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	4	6	3	0	0	0	0	0	0
MRI chest without IV contrast	Usually appropi		Strong	O 0 mSv	O 0 mSv [ped]	2	2	5	7	1	0	0	0	0	0	0

References	Study Quality
32 (28796542)	2
33 (15517280)	2

MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	6	1	0	0	0	0	0	0
Radiography neck	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	2	2	7	2	2	1	2	0	0	0	0
CT neck and chest with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	2	2	3	5	1	1	3	0	0	0	1
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	1	1	0	2	1	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	8	3	1	0	1	1	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	11	1	1	0	0	1	0	0	0
CT neck and chest without and with IV contrast	Usually not appropriate	Expert Consensus	���≎ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	7	5	1	0	0	0	0	0	0

Variant 4: Adult. Tracheomalacia or bronchomalacia. Pre- or posttreatment assessment.

D 1	Appropriateness	COE	A L L DDI	D 1 DD1	ь.	3.6.11			F	inal '	Гаbu	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	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	8	8	0	0	0	0	1	2	3	4	4

References	Study Quality
30 (11419175)	2
36 (18520570)	2
8 (29957676)	2
35 (15855094)	4

CTA chest with IV contrast	May approp	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	2	0	1	8	1	1	0	0
CT chest with IV contrast	May approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	0	8	4	1	0	0
CT neck and chest with IV contrast	May approp	Expert Consensus	���� 10-3 mSv	0	5	5	0	0	1	0	10	1	1	0	0
CT neck and chest without IV contrast	May approp	Expert Consensus	���� 10-3 mSv	0	5	5	0	0	0	1	11	0	1	0	0
Radiography chest	Usually	Expert Consensus	� <0.1 mSv		3	3	3	2	3	1	3	1	1	0	0
CT neck with IV contrast	Usually	Expert Consensus	&&& 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	4	4	2	0	3	0	1	0	0
CT neck without IV contrast	Usually	Expert Consensus	&&& 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	5	5	2	1	0	0	0	0	0
MRI chest without IV contrast	Usually	Strong	O 0 mSv	O 0 mSv [ped]	2	2	5	6	2	0	0	0	0	0	0
		References	Study	Quality											
		32 (28796542)		2											

33 (15517280) 2

MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	6	1	0	0	0	0	0	0
Radiography neck	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	2	2	6	2	4	0	2	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	0	2	0	2	0	1	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	2	1	0	1	0	1	0	0

FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	10	1	2	0	1	0	0	0	0
CT neck and chest without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	7	5	1	0	0	0	0	0	0

Variant 5: Adult. Clinically suspected bronchiectasis. Initial imaging.

	Appropri	iateness	GOF.	4.1.14. DD		D I DDI	D (1	3.6.11	Final Tabulations					ıs						
Procedure	Categ	gory	SOE	Adults RR	aL .	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9			
CT chest without IV contrast	Usua approp	ally oriate			0	���� 3- 10 mSv [ped]	9	9	0	0	0	0	0	0	1	4	9			
			References		Study	Quality														
			37 (18195376)			4														
			43 (32843159)				4													
			38 (10397098)	2																
			39 (8536394)				2													
			40 (20627931)				4													
			41 (7618537)				2													
			44 (24328736)				2													
			45 (10397099)		2															
			42 (34292274)																	
	1		46 (27296814)		2															
Radiography chest	Usua approp		Limited	⊕ <0.1 mS	Sv	≎ <0.03 mSv [ped]	7	7	1	0	0	0	3	1	6	2	1			
			References			Study	Quality													
			9 (30442957)				4													
			10 (26024063)				4													
			40 (20627931)				4													

CTA chest with IV contrast	May be appropriate	Expert Consensus	��� 1-10 mSv	9999 3- 10 mSv [ped]	5	5	0	2	1	0	8	1	1	0	0
MRI chest without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	5	0	2	3	2	1	1	0	0
		References		Study	y Quality		•			•		•	•		
		47 (26707785)		2											
CT chest with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	2	5	3	0	2	0	0	1	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	7	4	2	0	0	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	1	2	1	0	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	0	4	0	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	0	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	8	1	2	1	2	0	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	12	0	2	0	0	0	0	0	0
Radiography neck	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	1	1	11	1	1	0	0	1	0	0	0
CT neck and chest with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	8	2	2	0	1	1	0	0	0
CT neck and chest without IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	9	1	3	0	1	0	0	0	0

CT neck and chest without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	10	0	2	0	1	1	0	0	0
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Variant 6: Adult. Bronchiectasis. Assessment of complications or treatment response.

Procedure	Appropriateness	GOT		D 1 DE-		35.11			F	inal '	Tabu	latior	ıs		
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	Strong	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	8	8	0	0	0	0	1	0	3	4	6
		References		Study											
		52 (28968457)													
		54 (28427555)			2										
		49 (28150579)			2										
		43 (32843159)			4										
		40 (20627931)			4										
		50 (30531034)			2										
		55 (33172424)			2										
		53 (24059365)			2										
		42 (34292274)													
		56 (34380092)													
		51 (28275170)			2										
Radiography chest	Usually appropriate	Limited	⊕ <0.1 mSv		7	7	0	0	0	0	3	1	3	2	2
		References		Study	y Quality										
		40 (20627931)			4										
CTA chest with IV contrast	May be appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	1	0	1	8	2	1	0	0
CT chest with IV contrast	May be appropriate	Expert Consensus	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	1	0	2	9	1	0	0	0

MRI chest without IV contrast	Usually not	Expert	O 0 mSv	O 0 mSv	2	2	6	4	3	0	0	0	0	0	0
CT chest without and with IV contrast	appropriate Usually not appropriate	Expert Consensus	��� 1-10 mSv	[ped] \$ \$ \$ \$ \$ 3 - 10 mSv	1	1	8	4	1	0	0	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	[ped]	1	1	9	1	3	0	0	1	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	%%% 0.3- 3 mSv [ped]	1	1	10	1	3	0	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	0	3	0	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	9	0	2	0	2	0	1	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	11	2	1	0	0	0	0	0	0
Radiography neck	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	�� 0.03- 0.3 mSv [ped]	1	1	11	1	2	0	0	0	0	0	0
CT neck and chest with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	8	2	2	0	1	0	0	1	0
CT neck and chest without IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	8	1	4	0	0	0	1	0	0
CT neck and chest without and with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	���� 3- 10 mSv [ped]	1	1	10	0	3	0	0	0	0	1	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.