American College of Radiology ACR Appropriateness Criteria®

Inflammatory Ear Disease

Variant 1: Adult. Otitis externa, uncomplicated. Initial imaging.

D. I	Appropriateness	COE	A L LA DDI	D I DDI	D 41	3.6.11			F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT temporal bone without IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		2	2	8	0	4	2	1	0	1	0	0
		References		Study	y Quality										
		14 (23351401)			4			_	_						
CT head without IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	8	0	6	1	1	0	0	0	0
		References		Study	y Quality										
		14 (23351401)			4										
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	12	0	3	0	0	0	1	0	0
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	2	0	0	0	1	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	\$\$\$ 0.3- 3 mSv [ped]	1	1	13	0	3	0	0	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	13	0	3	0	0	0	0	0	0
MRI head and internal auditory canal without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	0	1	0	0	0	0	0	0

MRI head and internal auditory canal without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	1	0	0	1	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	0	1	0	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	1	1	0	0	0	0	0
Radiography skull	Usually not appropriate	Expert Consensus	 	�� 0.03- 0.3 mSv [ped]	1	1	15	0	1	0	0	0	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	1	1	0	0	0	0	0
MRI head and internal auditory canal with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	0	1	0	0	1	0	0	0

Variant 2: Adult. Otitis externa, complicated. Initial imaging.

ъ 1	Appropriate	teness	COF	4 1 14 DD		D I DDI	D 4:	3.6.11			F	inal '	Fabul	latio	ns		
Procedure	Categor		SOE	Adults RR	L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI head and internal auditory canal without and with IV contrast	Usually appropria		Limited	O 0 mSv	,	O 0 mSv [ped]	8	8	0	0	0	0	1	0	6	5	4
			References			Study	Quality										
			2 (23089314)				4										
			28 (34966623)				4										
			26 (33502545)				2										
			19 (33511482)				4										
			15 (29738387)				4										
			27 (23439909)				4										
CT temporal bone with IV contrast	Usually appropria		Strong	��� 1-10 mSv	0		7	7	0	0	0	0	3	0	6	3	4
			References			Study	Quality										

	<u> </u>														
		21 (35042578)			2										
		24 (31977136)			2										
		25 (32498757)			4										
		23 (30987522)			4										
		19 (33511482)			4										
		22 (35382682)			2										
		15 (29738387)			4										
		20 (34226993)			2										
CT temporal bone without IV contrast	May be appropriate	Strong	��� 1-10 mSv		6	6	0	0	0	1	5	3	5	1	1
		References		Study	Quality										
		24 (31977136)			2										
		25 (32498757)			4										
		23 (30987522)			4										
		19 (33511482)			4										
		22 (35382682)			2										
MRI head without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	1	3	9	2	0	0	0
		References		Study	Quality										
		2 (23089314)			4										
		26 (33502545)			2										
		19 (33511482)			4										
		15 (29738387)			4										
		27 (23439909)			4	_									
WBC scan with SPECT or SPECT/CT skull base	May be appropriate	Strong	��� 1-10 mSv		5	5	0	0	1	5	8	2	0	0	0
		References		Study	/ Quality										
		2 (23089314)			4										
		18 (21722540)			4										
		28 (34966623)			4										
		24 (31977136)			2										

		26 (33502545)			2										
		19 (33511482)			4										
		22 (35382682)			2										
		15 (29738387)			4										
		17 (26223723)			4		_								
CT head with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	6	2	5	1	1	1	0	0	0
		References		Study	Quality										
		2 (23089314)			4										
		18 (21722540)			4										
		4 (28301961)			4										
		16 (24169084)			4										
		15 (29738387)			4										
		17 (26223723)			4		_								
CT head and neck with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv		3	3	7	0	6	2	1	0	0	0	0
		References		Study	Quality										
		2 (23089314)			4										
		18 (21722540)			4										
		4 (28301961)			4										
		16 (24169084)			4										
		15 (29738387)			4										
		17 (26223723)			4										
MRI head and internal auditory canal without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	7	0	4	1	2	2	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	0	0	1	1	1	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	12	0	3	1	0	0	0	0	0

CT head without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	13	0	1	2	0	0	0	0	0
CT head and neck without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	12	0	2	2	0	0	0	0	0
CT head and neck without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	1	1	1	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	1	3	0	2	0	0	0	0
Radiography skull	Usually not appropriate	Limited	⊕ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
		References		Study	y Quality		_								
		28 (34966623)			4										
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	1	0	1	1	0	0	0
MRI head and internal auditory canal with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	1	1	0	0	1	1	0

Variant 3: Adult. Acute otitis media, uncomplicated. Initial imaging.

	Appropriateness	GOT.	A L L DDY	D I DDI	D (1	3.6.19			F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		1	1	13	0	1	2	0	0	0	0	0
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	1	1	0	0	0	0	1
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	13	0	1	2	0	0	0	0	0

CT head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	0	1	2	0	0	0	0	0
CT head without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	13	0	1	1	0	0	1	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	13	0	1	2	0	0	0	0	0
MRI head and internal auditory canal without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	1	0	0	0	0	0
MRI head and internal auditory canal without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	0	1	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	1	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	1	0	0	0	0	0
Radiography skull	Usually not appropriate	Expert Consensus	≎ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	14	0	1	1	0	0	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	1	0	0	0	0	0
MRI head and internal auditory canal with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	0	2	1	0	0	0	0	0

Variant 4: Adult. Complicated otitis media. Initial imaging.

D 1	Appropriateness	COF	A L L DDI	D I DDI	D 4	3.7.11			F	inal '	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT temporal bone with IV contrast	Usually appropriate	Strong	��� 1-10 mSv		8	8	0	0	0	0	1	0	5	5	5
		References		Study	/ Quality										

	Г														
	_	38 (26607577)			2										
		32 (23589156)			2										
		9 (28801828)			2										
		30 (25447953)			4										
		29 (23852990)			4										
MRI head and internal auditory canal without and with IV contrast	Usual appropi	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	1	6	4	5
		References		Study	Quality										
		38 (26607577)			2										
		9 (28801828)			2										
CTV head with IV contrast	Usual approp	Limited	��� 1-10 mSv	⊕⊕⊕⊕ 3- 10 mSv [ped]	7	7	0	0	0	0	5	1	5	5	0
		References		Study	Quality										
		37 (26590005)			4										
CT temporal bone without IV contrast	May approp	Expert Consensus	≎≎≎ 1-10 mSv		5	5	0	0	0	3	9	2	2	0	0
MRV head without IV contrast	May approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	5	5	3	0	1	4	7	1	0	0	0
MRV head with IV contrast	May approp	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	3	9	3	1	0	0
		References		Study	Quality		•								
		37 (26590005)		-	4										
MRI head without and with IV contrast	Usually approp	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	8	0	1	1	4	1	1	0	0
CT temporal bone without and with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv		1	1	13	1	1	0	0	1	0	0	0
CT head with IV contrast	Usually approp	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	2	3	0	1	0	0	0	0
		References		Study	Quality										
		37 (26590005)			4										

6 (22961223)	2
9 (28801828)	2
35 (33386931)	4
36 (21431950)	2
30 (25447953)	4

CT head without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	12	0	0	2	2	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	1	1	1	0	1	0	0	0
MRI head and internal auditory canal without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	3	1	0	0	0	0	0	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	2	1	0	1	0	0	0
Radiography skull	Usually not appropriate	Expert Consensus	ଡ <0.1 mSv	�� 0.03- 0.3 mSv [ped]	1	1	14	0	2	0	0	0	0	0	0
MRV head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	2	1	0	0	0	0	0
CTV head and neck with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		1	1	11	0	0	2	1	2	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	1	1	0	1	1	0	0
MRI head and internal auditory canal with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	1	1	0	0	0	0	0	0
WBC scan with SPECT or SPECT/CT skull base	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		1	1	12	0	2	1	0	1	0	0	0

Variant 5: Adult. Chronic otitis media. Initial imaging.

ъ .	Appropriateness	COF	4.1.14 DDI	D I DDI	D 41	3.7.11			F	inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT temporal bone without IV contrast	Usually appropriate	Strong	��� 1-10 mSv		9	9	0	0	0	1	0	1	4	2	8
		References	Study	Quality											
		39 (23521408)			2										
		41 (24582323)			2										
		35 (33386931)			4										
		36 (21431950)			2										
		40 (23764962)			2										
		42 (31155942)		2											
		43 (24818630)		1											
MRI head and internal auditory canal without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	1	2	0	9	1	3
		References		Study											
		44 (34509081)			2										
		45 (20927654)													
		46 (30920387)													
		47 (34557138)													
CT temporal bone with IV contrast	Usually not appropriate	Strong	≎≎≎ 1-10 mSv		1	1	10	2	3	0	0	1	0	0	0
		References		Study	Quality										
		39 (23521408)			2										
		35 (33386931) 36 (21431950)			4										
					2										
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus mSv			1	1	15	0	1	0	0	0	0	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	11	0	3	2	0	0	0	0	0

CT head without IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	9 9 9 0.3- 3 mSv [ped]	1	1	11	1	2	2	0	0	0	0	0
CT head without and with IV contrast	Usuall approp		Expert Consensus	��� 1-10 mSv	9	1	1	12	0	2	2	0	0	0	0	0
MRI head and internal auditory canal without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	3	2	0	1	0	0	0	0
MRI head without IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	1	3	1	0	1	0	0	0
MRI head without and with IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	3	2	1	1	0	0	0
Radiography skull	Usuall approp		Limited		& 0.03- 5v 0.3 mSv [ped]	1	1	14	0	2	0	0	0	0	0	0
			References		Study	Quality										
			36 (21431950)			2										
MRI head with IV contrast	Usuall approp	•	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	1	1	1	1	0	0	0
MRI head and internal auditory canal with IV contrast	Usually not Expert consensus			O 0 mSv	O 0 mSv [ped]	1	1	12	0	1	1	1	0	1	0	0

Variant 6: Adult. Postoperative cholesteatoma. Surveillance Imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations											
							1	2	3	4	5	6	7	8	9			
CT temporal bone without IV contrast	Usually appropriate	Limited	≎≎≎ 1-10 mSv		8	8	0	0	0	0	0	0	4	8	4			

References	Study Quality
44 (34509081)	2

MRI head and internal auditory canal without and with IV contrast	Usua approp		Strong	O 0 mSv	O 0 mSv [ped]	8	8	1	0	0	0	1	0	5	3	6
			References		Study Quality											
			50 (20360335)		4											
			48 (33926901)			2										
			49 (33461853)	49 (33461853)		2										
MRI head and internal auditory canal without IV contrast	Usually approp		Limited	O 0 mSv	O 0 mSv [ped]	3	3	6	2	6	0	1	1	0	0	0
			References		Study Quality											
			50 (20360335)		4											
CT temporal bone with IV contrast	Usually approp		Expert Consensus	≎≎≎ 1-10 mSv		1	1	10	0	3	1	0	0	2	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		Expert Consensus	��� 1-10 mSv		1	1	15	0	1	0	0	0	0	0	0
CT head with IV contrast	Usually not appropriate		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	11	1	3	0	1	0	0	0	0
CT head without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	11	1	4	0	0	0	0	0	0
CT head without and with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	��� 3- 10 mSv [ped]	1	1	12	0	3	0	1	0	0	0	0
MRI head without IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	0	3	0	3	0	0	0	0
MRI head without and with IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	2	1	1	1	0	0	1
Radiography skull	Usually approp		Expert Consensus	� <0.1 mSv		1	1	14	1	1	0	0	0	0	0	0
MRI head with IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	1	1	1	1	0	0	0

MRI head and internal auditory canal with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	14	1	0	0	0	1	0	0	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.