

			9 (16424241)		2												
			2 (19733309)		4												
CT temporal bone without and with IV contrast	Usually not appropriate	Strong	☹☹☹ 1-10 mSv		2	2	7	1	3	0	2	2	0	0	0		
		References		Study Quality													
		5 (27430449)		4													
		1 (26491893)		4													
		10 (24625612)		2													
		11 (24162764)		2													
		12 (21739095)		4													
		8 (12563123)		2													
		9 (16424241)		2													
		2 (19733309)		4													
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 0.3-3 mSv [ped]	2	2	7	2	5	1	0	0	0	0	0		
CTA head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	1	3	0	1	0	0	0	0		
CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	10	3	1	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	10	4	0	1	0	0	0	0	0		
MRA head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	2	3	0	0	0	0	0	0		
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	3	0	0	0	0	0	0		
MRI head and internal auditory canal without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	8	2	3	0	1	1	0	0	0		
MRI head and internal auditory canal without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	8	2	4	0	0	0	0	0	1	0	

MRV head without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	11	2	2	0	0	0	0	0	0
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Variant 2: Acquired conductive hearing loss secondary to cholesteatoma or neoplasm with suspected intracranial or inner ear extension. Surgical planning.

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		9	9	0	0	0	1	0	0	2	0	12

References	Study Quality
14 (26351038)	2
1 (26491893)	4
13 (23158050)	4
2 (19733309)	4

MRI head and internal auditory canal without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	0	1	0	0	1	0	2	3	8
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References	Study Quality
5 (27430449)	4
13 (23158050)	4
15 (22877955)	4
2 (19733309)	4

MRI head and internal auditory canal without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	1	1	10	1	0	1
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References	Study Quality
5 (27430449)	4
13 (23158050)	4
15 (22877955)	4
2 (19733309)	4

CTA head with IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	2	2	4	3	2	0	2	0	0
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CT temporal bone with IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv		5	5	1	0	0	6	6	2	0	0	0
		References	Study Quality												
		14 (26351038)	2												
		1 (26491893)	4												
		13 (23158050)	4												
		2 (19733309)	4												
CT temporal bone without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv		3	3	6	1	3	1	2	1	1	0	0
		References	Study Quality												
		14 (26351038)	2												
		1 (26491893)	4												
		13 (23158050)	4												
		2 (19733309)	4												
MRA head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	3	2	8	1	0	0	1	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	6	1	3	2	2	1	0	0	0
MRV head without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	5	1	7	1	0	0	1	0	0
		References	Study Quality												
		5 (27430449)	4												
		13 (23158050)	4												
		15 (22877955)	4												
		2 (19733309)	4												
CT head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	6	2	3	2	0	1	0	0	1
CT head without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	7	2	4	0	0	1	1	0	0

MRV head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	1	7	3	2	0	0	2	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	8	3	1	0	1	2	0	0	0

Variant 3: Acquired sensorineural hearing loss. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI head and internal auditory canal without and with IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	0	2	2	11

References	Study Quality
5 (27430449)	4
27 (24370138)	4
18 (23681028)	3
19 (22980677)	4
24 (306012)	4
20 (15454755)	1
25 (1636533)	4
26 (8279324)	3
22 (14967854)	3
30 (10817038)	2
21 (10512225)	3
2 (19733309)	4
28 (10733180)	4
23 (10782723)	4
29 (9227246)	3

MRI head and internal auditory canal without IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	0	2	4	4	5
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References	Study Quality
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5 (27430449)	4
27 (24370138)	4
18 (23681028)	3
19 (22980677)	4
24 (306012)	4
20 (15454755)	1
25 (1636533)	4
26 (8279324)	3
22 (14967854)	3
30 (10817038)	2
21 (10512225)	3
2 (19733309)	4
28 (10733180)	4
23 (10782723)	4
29 (9227246)	3

CT temporal bone without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv		5	5	0	0	1	1	7	3	3	0	0
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References	Study Quality
16 (23713470)	3
13 (23158050)	4
2 (19733309)	4

CT temporal bone with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv		4	4	3	3	1	1	5	2	0	0	0
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References	Study Quality
16 (23713470)	3
13 (23158050)	4
2 (19733309)	4

CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	3	4	3	2	2	1	0	0	0
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References	Study Quality
17 (28461783)	3

CT head without IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	3	3	3	2	6	2	0	1	1	0	0
		References	Study Quality												
		17 (28461783)	3												
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	6	3	3	2	1	0	0	0	0
CTA head with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	9	1	3	1	1	0	0	0	0
MRA head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRV head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	2	0	0	0	0	0	0	0

Variant 5: Congenital hearing loss or total deafness or cochlear implant candidate. Surgical planning.

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		9	9	0	0	0	0	0	0	0	2	13
		References	Study Quality												
		35 (26810296)	3												
		33 (25573134)	3												
		34 (25208295)	4												
		36 (24232063)	3												
		24 (306012)	4												

MRI head and internal auditory canal without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	8	8	0	0	0	0	1	2	4	5	3	
		References	Study Quality													
		39 (24892366)	4													
		38 (16151346)	3													
		37 (11950658)	4													
MRI head and internal auditory canal without IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	7	7	1	0	0	0	4	0	5	2	3	
		References	Study Quality													
		39 (24892366)	4													
		38 (16151346)	3													
		37 (11950658)	4													
CT temporal bone with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv		3	3	5	2	4	0	2	2	0	0	0	
		References	Study Quality													
		35 (26810296)	3													
		33 (25573134)	3													
		34 (25208295)	4													
		36 (24232063)	3													
		24 (306012)	4													
CT temporal bone without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv		2	2	7	1	3	1	2	1	0	0	0	
		References	Study Quality													
		35 (26810296)	3													
		33 (25573134)	3													
		34 (25208295)	4													
		36 (24232063)	3													
		24 (306012)	4													
CTA head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	10	1	2	1	1	0	0	0	0	

46 (27300452)	3
5 (27430449)	4
53 (26333096)	3
45 (25985318)	2
54 (25956665)	3
49 (25742875)	2
52 (25457542)	2
44 (25251300)	2
51 (24769636)	3
47 (23995329)	4
50 (23474961)	3
48 (22201445)	3
42 (22201289)	3
43 (21330087)	2
4 (18646412)	4
3 (24314796)	4

MRI head and internal auditory canal without IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	7	7	1	0	0	0	2	1	5	5	1
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References	Study Quality
46 (27300452)	3
5 (27430449)	4
53 (26333096)	3
45 (25985318)	2
54 (25956665)	3
49 (25742875)	2
52 (25457542)	2
44 (25251300)	2
51 (24769636)	3
47 (23995329)	4
50 (23474961)	3
48 (22201445)	3

			42 (22201289)		3														
			43 (21330087)		2														
			4 (18646412)		4														
			3 (24314796)		4														
CTA head and neck with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	4	4	1	1	4	5	2	2	0	0	0				
			References		Study Quality														
			41 (28328808)		3														
MRA head and neck without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	4	4	1	2	3	5	2	2	0	0	0				
			References		Study Quality														
			55 (10459295)		3														
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		3	3	5	2	3	1	2	2	0	0	0				
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	4	2	5	1	3	0	0	0	0				
			References		Study Quality														
			40 (22940762)		4														
CT head without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	2	4	3	3	2	0	1	0	0				
			References		Study Quality														
			40 (22940762)		4														
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	4	3	5	3	0	0	0	0	0				
			References		Study Quality														
			40 (22940762)		4														
MRA head and neck without IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	1	3	5	4	1	1	0	0	0				
			References		Study Quality														

56 (27495834)	3
54 (25956665)	3
59 (24920847)	2
57 (23336972)	3
40 (22940762)	4
58 (11698800)	4
3 (24314796)	4

CT head without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	6	6	0	0	1	1	3	7	2	0	1
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References	Study Quality
56 (27495834)	3
54 (25956665)	3
40 (22940762)	4

CTA head and neck with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	1	0	1	8	5	0	0
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References	Study Quality
41 (28328808)	3

MRA head and neck without IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	6	6	0	0	1	0	3	8	3	0	0
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References	Study Quality
55 (10459295)	3

MRA head and neck without and with IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	6	6	0	0	1	0	1	7	6	0	0
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References	Study Quality
55 (10459295)	3

CT head with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	5	5	0	1	5	0	7	1	1	0	0
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References	Study Quality
56 (27495834)	3
54 (25956665)	3

		40 (22940762)		4													
CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	3	3	2	3	5	0	3	2	0	0	0		
		References		Study Quality													
		56 (27495834)		3													
		54 (25956665)		3													
		40 (22940762)		4													
CT temporal bone without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		2	2	7	1	3	2	1	1	0	0	0		
CT temporal bone with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	10	1	2	2	0	0	0	0	0		
CT temporal bone without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	9	2	2	2	0	0	0	0	0		
MRV head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	8	3	2	1	1	0	0	0	0		
MRV head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	3	1	0	1	0	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.