

**American College of Radiology  
ACR Appropriateness Criteria®**

**Hearing Loss and/or Vertigo**

**Variant 1: Acquired conductive hearing loss in absence of clinically evident mass in the middle ear. Initial 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		☼☼☼ 1-10 mSv		9	9	0	0	0	1	0	0	0	2	12
CT temporal bone with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv		3	3	6	1	4	2	0	1	1	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv		2	2	7	1	3	0	2	2	0	0	0
CT head without IV contrast	Usually not appropriate		☼☼☼ 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		☼☼☼ 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		☼☼☼ 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		☼☼☼ 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		○ 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		○ 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		0 0 mSv	0 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		0 0 mSv	0 0 mSv [ped]	1	1	8	2	4	0	0	0	0	1	0
MRV head without IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	1	1	11	2	2	0	0	0	0	0	0

**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		⊕⊕⊕ 1-10 mSv		9	9	0	0	0	1	0	0	2	0	12
MRI head and internal auditory canal without and with IV contrast	Usually appropriate		0 0 mSv	0 0 mSv [ped]	9	9	0	1	0	0	1	0	2	3	8
MRI head and internal auditory canal without IV contrast	May be appropriate		0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	1	1	10	1	0	1
CTA head with IV contrast	May be appropriate (Disagreement)		⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	3	2	2	4	3	2	0	2	0	0
CT temporal bone with IV contrast	May be appropriate		⊕⊕⊕ 1-10 mSv		5	5	1	0	0	6	6	2	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv		3	3	6	1	3	1	2	1	1	0	0
MRA head without IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	3	3	3	2	8	1	0	0	1	0	0
MRA head without and with IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	3	3	6	1	3	2	2	1	0	0	0
MRV head without IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	3	3	5	1	7	1	0	0	1	0	0

CT head with IV contrast	Usually not appropriate		⊗⊗⊗ 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		⊗⊗⊗ 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		○ 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		⊗⊗⊗ 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		○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	0	2	2	11
MRI head and internal auditory canal without IV contrast	Usually appropriate		○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	0	2	4	4	5
CT temporal bone without IV contrast	May be appropriate		⊗⊗⊗ 1-10 mSv		5	5	0	0	1	1	7	3	3	0	0
CT temporal bone with IV contrast	May be appropriate		⊗⊗⊗ 1-10 mSv		4	4	3	3	1	1	5	2	0	0	0
CT head with IV contrast	Usually not appropriate		⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	3	3	3	4	3	2	2	1	0	0	0
CT head without IV contrast	Usually not appropriate		⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	3	3	3	1	7	2	0	1	1	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		⊗⊗⊗ 1-10 mSv		2	2	6	2	3	0	2	2	0	0	0

CT head without and with IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	5	3	4	1	1	1	0	0	0
CTA head with IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	1	3	0	0	1	0	0	0
MRA head without IV contrast	Usually not appropriate		○ 0 mSv	○ 0 mSv [ped]	1	1	10	2	2	1	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate		○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	2	1	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate		○ 0 mSv	○ 0 mSv [ped]	1	1	11	1	2	1	0	0	0	0	0
MRV head with IV contrast	Usually not appropriate		○ 0 mSv	○ 0 mSv [ped]	1	1	13	1	1	0	0	0	0	0	0

**Variant 4: Mixed conductive and 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
CT temporal bone without IV contrast	Usually appropriate		☹☹☹ 1-10 mSv		9	9	0	0	1	0	1	0	0	1	12
MRI head and internal auditory canal without and with IV contrast	Usually appropriate		○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	1	1	2	7	4
MRI head and internal auditory canal without IV contrast	Usually appropriate		○ 0 mSv	○ 0 mSv [ped]	7	7	1	0	0	0	2	4	6	1	1
CT temporal bone with IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv		3	3	4	1	4	2	3	1	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv		3	3	6	1	4	1	2	1	0	0	0

CT head with IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	3	3	4	3	2	2	3	1	0	0	0
CT head without IV contrast	Usually not appropriate		☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	3	3	3	2	6	2	0	1	1	0	0
CT head without and with IV contrast	Usually not appropriate		☹☹☹ 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		☹☹☹ 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		○ ○ mSv	○ ○ mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	11	1	3	0	0	0	0	0	0
MRV head with IV contrast	Usually not appropriate		○ ○ mSv	○ ○ 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		☹☹☹ 1-10 mSv		9	9	0	0	0	0	0	0	0	2	13
MRI head and internal auditory canal without and with IV contrast	Usually appropriate		○ ○ mSv	○ ○ mSv [ped]	8	8	0	0	0	0	1	2	4	5	3
MRI head and internal auditory canal without IV contrast	Usually appropriate		○ ○ mSv	○ ○ mSv [ped]	7	7	1	0	0	0	4	0	5	2	3

CT temporal bone with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv		3	3	5	2	4	0	2	2	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv		2	2	7	1	3	1	2	1	0	0	0
CTA head with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	10	1	2	1	1	0	0	0	0
CT head with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	8	2	5	0	0	0	0	0	0
CT head without IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	9	0	5	0	0	0	0	1	0
CT head without and with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	9	1	5	0	0	0	0	0	0
MRA head without IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	11	2	2	0	0	0	0	0	0
MRA head without and with IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	11	2	2	0	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	11	2	2	0	0	0	0	0	0
MRV head with IV contrast	Usually not appropriate		○ ○ mSv	○ ○ mSv [ped]	1	1	13	1	0	1	0	0	0	0	0

**Variant 6: Episodic vertigo with or without associated hearing loss or aural fullness (peripheral vertigo). Initial 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		⊕⊕⊕ 1-10 mSv		8	8	0	0	1	0	0	0	1	6	7

MRI head and internal auditory canal without and with IV contrast	Usually appropriate		0 0 mSv	0 0 mSv [ped]	8	8	0	0	0	0	2	0	1	5	7
MRI head and internal auditory canal without IV contrast	Usually appropriate		0 0 mSv	0 0 mSv [ped]	7	7	1	0	0	0	2	1	5	5	1
CTA head and neck with IV contrast	May be appropriate		☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	4	4	1	1	4	5	2	2	0	0	0
MRA head and neck without and with IV contrast	May be appropriate		0 0 mSv	0 0 mSv [ped]	4	4	1	2	3	5	2	2	0	0	0
CT temporal bone with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv		3	3	5	2	3	1	2	2	0	0	0
CT head with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	4	2	5	1	3	0	0	0	0
CT head without IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	2	4	3	3	2	0	1	0	0
CT head without and with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	4	3	5	3	0	0	0	0	0
MRA head and neck without IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	3	3	1	3	5	4	1	1	0	0	0
CT temporal bone without and with IV contrast	Usually not appropriate		☼☼☼ 1-10 mSv		2	2	7	1	3	1	1	2	0	0	0
MRV head without IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	2	2	7	1	3	0	2	1	0	1	0
MRV head with IV contrast	Usually not appropriate		0 0 mSv	0 0 mSv [ped]	1	1	10	2	3	0	0	0	0	0	0

**Variant 7: Persistent vertigo with or without neurological symptoms (central vertigo). 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		O 0 mSv	O 0 mSv [ped]	9	9	0	0	0	0	0	0	1	2	12
MRI head and internal auditory canal without IV contrast	Usually appropriate		O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	1	1	5	5	3
CT head without IV contrast	May be appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	6	6	0	0	1	1	3	7	2	0	1
CTA head and neck with IV contrast	May be appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	0	1	0	1	8	5	0	0
MRA head and neck without IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	0	3	8	3	0	0
MRA head and neck without and with IV contrast	May be appropriate		O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	0	1	7	6	0	0
CT head with IV contrast	May be appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	5	5	0	1	5	0	7	1	1	0	0
CT head without and with IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	2	3	5	0	3	2	0	0	0
CT temporal bone without IV contrast	Usually not appropriate		⊕⊕⊕ 1-10 mSv		2	2	7	1	3	2	1	1	0	0	0
CT temporal bone with IV contrast	Usually not appropriate		⊕⊕⊕ 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		⊕⊕⊕ 1-10 mSv		1	1	9	2	2	2	0	0	0	0	0
MRV head without IV contrast	Usually not appropriate		O 0 mSv	O 0 mSv [ped]	1	1	8	3	2	1	1	0	0	0	0
MRV head with IV contrast	Usually not appropriate		O 0 mSv	O 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](http://www.acr.org/ac).