



		38 (15090339)		4														
MRI head without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	6	3	7	0	0	0	0	0	0	0	0	0
		References	Study Quality															
		37 (16628051)	2															
		38 (15090339)	4															
CT head with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	8	3	3	0	1	0	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	8	3	1	2	1	0	0	0	0	0	0	0
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	13	2	0	0	0	0	0	0	0	0	0	1

**Variant 2: New headache with optic disc edema. 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 without and with IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	2	1	4	4	4			
		References	Study Quality															
		51 (27928402)	4															
		52 (22309765)	2															
CT head without IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	7	7	0	0	0	1	1	0	8	1	5			
		References	Study Quality															
		46 (27679541)	2															
		47 (21293023)	4															
MRI head without IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	1	0	2	4	5	2	1			

			References		Study Quality													
			51 (27928402)		4													
			52 (22309765)		2													
MRV head without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	2	6	7	1	0	0			
			References		Study Quality													
			53 (28104635)		2													
CTV head with IV contrast	May be appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	0	0	1	1	1	5	6	0	1			
			References		Study Quality													
			48 (10094346)		2													
			49 (18437434)		2													
			50 (17114562)		2													
MRV head without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	0	0	1	0	2	6	1	0	5			
			References		Study Quality													
			53 (28104635)		2													
CT head with IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	4	4	0	1	1	7	4	3	0	0	0			
			References		Study Quality													
			46 (27679541)		2													
			47 (21293023)		4													
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	7	4	5	0	0	0	0	0	0			
			References		Study Quality													
			46 (27679541)		2													
			47 (21293023)		4													
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	13	1	1	0	0	0	0	0	0			

**Variant 3: New or progressively worsening headache with one or more of the following ‘red flags’: subacute head trauma, related activity or event (sexual activity, exertion, position), neurological deficit, known or suspected cancer, immunosuppressed or immunocompromised state, currently pregnant, or 50 years of age or older. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	9	9	0	0	0	0	0	1	2	2	10
MRI head without and with IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	1	1	4	4	5
MRI head without IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	7	7	0	1	0	0	1	1	6	2	4
CTA head with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	6	1	4	0	2	1	1	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	3	3	5	2	9	0	0	0	0	0	0
MRA head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	6	1	4	1	1	2	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	8	1	4	2	0	1	0	0	0
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	12	0	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	10	2	4	0	0	0	0	0	0

**Variant 4: New headache. Classic migraine or tension-type primary headache. Normal neurologic examination. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CTA head with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	10	3	0	0	2	0	0	0	0
CT head with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	10	1	3	1	0	0	0	0	0
		References		Study Quality											
		81 (8035914)		4											
CT head without IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	10	3	2	1	0	0	0	0	0
		References		Study Quality											
		81 (8035914)		4											
CT head without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	9	3	0	2	1	0	0	0	0
		References		Study Quality											
		81 (8035914)		4											
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	15	0	0	0	0	0	0	0	0
MRA head without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	10	1	1	1	1	0	1	0	0
		References		Study Quality											
		88 (15885388)		4											
MRA head without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	10	1	1	2	0	0	1	0	0
		References		Study Quality											
		88 (15885388)		4											
MRI head without IV contrast	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	1	1	9	3	4	0	0	0	0	0	0
		References		Study Quality											





22 (24266337)	4
23 (15606567)	3
81 (8035914)	4
98 (19687093)	Good
99 (16256141)	2
100 (29560060)	4

MRI head without IV contrast	Usually not appropriate	Moderate	0 0 mSv	0 0 mSv [ped]	2	2	7	3	3	2	1	0	0	0	0
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References	Study Quality
22 (24266337)	4
23 (15606567)	3
81 (8035914)	4
98 (19687093)	Good
99 (16256141)	2

MRI head without and with IV contrast	Usually not appropriate	Moderate	0 0 mSv	0 0 mSv [ped]	2	2	8	2	4	1	1	0	0	0	0
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References	Study Quality
22 (24266337)	4
23 (15606567)	3
81 (8035914)	4
98 (19687093)	Good
99 (16256141)	2

CTA head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	3	0	1	1	0	0	0	0
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CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	8	2	4	1	0	0	0	0	0
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References	Study Quality
22 (24266337)	4
23 (15606567)	3
81 (8035914)	4



Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
MRI head without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	9	9	0	0	0	0	1	0	2	4	8	
		References	Study Quality													
		22 (24266337)	4													
		103 (-3145949)	4													
MRI head without IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	7	7	0	0	1	0	1	2	4	1	6	
		References	Study Quality													
		22 (24266337)	4													
		103 (-3145949)	4													
CT head without IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	6	6	0	1	0	1	3	3	3	1	3	
		References	Study Quality													
		22 (24266337)	4													
		103 (-3145949)	4													
CT head without and with IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	4	4	5	0	0	5	5	0	0	0	0	
		References	Study Quality													
		22 (24266337)	4													
		103 (-3145949)	4													
CT head with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	2	2	7	2	3	1	0	2	0	0	0	
		References	Study Quality													
		22 (24266337)	4													
		103 (-3145949)	4													
MRA head without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	7	1	4	0	2	1	0	0	0	

CTA head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	9	1	1	0	3	1	0	0	0
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	14	0	1	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	9	0	4	0	2	0	0	0	0
CTV head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	9	2	0	1	1	1	1	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).