













CT head with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	1	1	11	3	2	0	1	1	0	0	1
		References		Study Quality											
		16 (20445969)		4											
CT head without and with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	4	1	0	0	0	0	0	0
		References		Study Quality											
		16 (20445969)		4											
CT head perfusion with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv		1	1	12	5	0	1	0	0	0	0	0
		References		Study Quality											
		28 (22209434)		4											
Arteriography cervicocerebral	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	13	3	2	0	0	0	0	1	0
		References		Study Quality											
		30 (24483252)		4											
		31 (9799310)		4											
US duplex Doppler transcranial	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

**Variant 3: Child. Clinical presentation suggestive of acute stroke, known or suspected arteriopathy, or moyamoya. Not a candidate for emergent treatment. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRA head without IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	9	9	1	0	0	0	0	3	1	3	10
MRI head without IV contrast	Usually appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	9	9	1	0	0	0	0	0	2	1	15
		References		Study Quality											

45 (15703904)	4
44 (24558166)	M
15 (29364767)	1

CTA head with IV contrast	May be appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	6	6	1	0	0	1	6	8	2	0	0
CT head without IV contrast	May be appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	6	6	0	0	0	0	6	9	2	0	1

References	Study Quality
43 (9885601)	2

MRI head without and with IV contrast	May be appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	5	5	1	0	0	4	8	3	2	0	0
---------------------------------------	--------------------	----------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
45 (15703904)	4
44 (24558166)	M
15 (29364767)	1

MRI head perfusion with IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	1	0	0	2	8	5	1	1	0
-------------------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
39 (22462697)	4
46 (24335546)	2
48 (24335813)	4
49 (24055185)	3
47 (29581340)	3

MRI head perfusion without IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	1	1	0	2	11	4	0	1	0
----------------------------------------	--------------------	---------	---------	---------------	---	---	---	---	---	---	----	---	---	---	---

References	Study Quality
39 (22462697)	4
46 (24335546)	2
48 (24335813)	4
49 (24055185)	3





**Variant 4: Child. Known or suspected cervicocranial arterial dissection based on clinical or imaging findings. Next imaging study.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRI head and neck without IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	1	1	6	10
		References	Study Quality												
		52 (21979145)	4												
		50 (25987283)	4												
		53 (19351813)	3												
CTA head and neck with IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	8	8	0	0	1	0	0	3	1	9	5
		References	Study Quality												
		52 (21979145)	4												
		50 (25987283)	4												
MRA head and neck without IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	8	8	1	1	0	0	0	1	1	8	7
		References	Study Quality												
		52 (21979145)	4												
		53 (19351813)	3												
CT head without IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	6	6	1	0	0	2	3	12	0	0	0
		References	Study Quality												
		52 (21979145)	4												
		43 (9885601)	2												
Arteriography cervicocerebral	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	1	0	0	2	5	8	0	2	0
		References	Study Quality												



US duplex Doppler transcranial and carotid artery	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	3	4	0	0	0	0	1	0
---------------------------------------------------	-------------------------	------------------	---------	---------------	---	---	----	---	---	---	---	---	---	---	---

**Variant 5: Child. Clinical presentation suggestive of acute stroke, known or suspected central nervous system vasculitis. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRA head without IV contrast	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	2	2	3	3	9
		References	Study Quality												
		17 (20113901)	4												
MRI head without IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	8	8	0	0	0	0	0	1	2	9	6
CTA head with IV contrast	Usually appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	7	7	0	0	0	0	1	3	7	4	4
		References	Study Quality												
		17 (20113901)	4												
MRI head without and with IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	0	0	0	1	9	4	4
CT head without IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	6	6	1	0	0	2	5	9	1	0	0
		References	Study Quality												
		56 (15986347)	4												
MRA head with IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	6	6	1	0	0	0	6	10	1	0	0
		References	Study Quality												
		17 (20113901)	4												
Arteriography cervicocerebral	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	1	0	0	2	7	6	2	0	0

		References	Study Quality												
		17 (20113901)	4												
MRI head with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	3	0	2	3	6	3	1	0	0
CT head with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	2	2	6	5	6	0	0	1	0	0	1
		References	Study Quality												
		56 (15986347)	4												
CT head without and with IV contrast	Usually not appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	8	5	4	1	0	0	0	1	0
		References	Study Quality												
		56 (15986347)	4												
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

**Variant 6: Child. Nontraumatic intraparenchymal hemorrhage (hematoma) found on CT or MRI. Unknown etiology. Next imaging study.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRA head without IV contrast	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	9	9	0	2	0	0	0	1	1	4	11
CTA head with IV contrast	Usually appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	1	0	0	0	2	6	3	7
Arteriography cervicocerebral	Usually appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	7	7	1	0	0	0	0	2	10	2	3
		References	Study Quality												
		61 (26795616)	4												
		60 (22816607)	4												

MRI head without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	7	7	0	0	0	0	1	1	9	4	3
		References	Study Quality												
		24 (25063989)	3												
MRA head with IV contrast	May be appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	6	6	0	0	0	0	5	7	5	1	0
MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	1	0	1	2	6	3	5	0	0
		References	Study Quality												
		24 (25063989)	3												
MRI head with IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	2	0	0	2	6	5	2	1	0
		References	Study Quality												
		24 (25063989)	3												
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	7	2	7	1	1	0	0	0	0
		References	Study Quality												
		59 (24156863)	4												
CT head without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	7	4	5	0	1	0	1	1	0
		References	Study Quality												
		59 (24156863)	4												
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	10	6	1	0	1	0	0	0	0
		References	Study Quality												
		59 (24156863)	4												

**Variant 7: Child. Nontraumatic subarachnoid hemorrhage (SAH) detected by noncontrast CT. Next imaging study.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRA head without IV contrast	Usually appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	9	9	0	0	2	0	0	1	2	2	12
		References	Study Quality												
		67 (24326447)	Good												
		51 (24156864)	4												
		68 (9933265)	M												
CTA head with IV contrast	Usually appropriate	Moderate	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	8	8	0	0	0	0	0	0	2	8	8
		References	Study Quality												
		66 (21990495)	Good												
		65 (22143927)	2												
Arteriography cervicocerebral	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	7	7	0	0	1	1	1	3	4	1	8
		References	Study Quality												
		51 (24156864)	4												
		60 (22816607)	4												
MRA head with IV contrast	May be appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	4	9	3	2	0
		References	Study Quality												
		67 (24326447)	Good												
		51 (24156864)	4												
		68 (9933265)	M												
MRI head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	0	0	1	11	5	0	0	0

			References		Study Quality													
			63 (19357386)		4													
			60 (22816607)		4													
MRI head without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	5	5	0	0	0	1	11	5	0	0	1			
			References		Study Quality													
			63 (19357386)		4													
			60 (22816607)		4													
MRI head with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	3	3	8	1	5	3	1	0	0	0	0			
			References		Study Quality													
			63 (19357386)		4													
			60 (22816607)		4													
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	6	4	6	1	0	1	1	0	0			
			References		Study Quality													
			59 (24156863)		4													
CT head without IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	9	3	5	1	0	0	0	0	0			
			References		Study Quality													
			59 (24156863)		4													
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	2	6	2	0	1	0	0	0			
			References		Study Quality													
			59 (24156863)		4													
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0			

**Variant 8: Child. Clinical presentation suggestive of acute stroke, known or suspected high-flow vascular anomaly. Initial imaging.**







CTA head with IV contrast	May be appropriate (Disagreement)	Expert Opinion	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	5	5	6	2	5	1	1	3	0	0	0
MRA head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	5	2	6	0	1	0	2	0	2
CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	3	3	7	3	4	0	4	0	0	1	1
		References	Study Quality												
		61 (26795616)	4												
MRA head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	6	2	5	1	3	1	0	0	0
CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	9	4	4	1	0	0	0	0	0
		References	Study Quality												
		61 (26795616)	4												
MRI head with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	7	4	2	3	1	0	1	0	0
		References	Study Quality												
		75 (26272978)	4												
Arteriography cervicocerebral	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	11	2	4	1	0	0	0	0	0
		References	Study Quality												
		61 (26795616)	4												
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

**Variant 10: Child. Clinical presentation suggestive of acute stroke, known or suspected cortical vein or dural venous sinus thrombosis. Initial imaging.**



CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	6	1	5	1	4	0	1	0	0
		References	Study Quality												
		77 (23212594)	4												
		80 (22948810)	4												
		79 (20437556)	1												
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	4	2	2	1	0	1	0	0
		References	Study Quality												
		77 (23212594)	4												
		80 (22948810)	4												
		79 (20437556)	1												
Arteriography cervicocerebral	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	4	3	1	1	0	0	2	0
MRI head with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	7	3	3	0	3	2	0	0	0
		References	Study Quality												
		77 (23212594)	4												
		80 (22948810)	4												
		81 (25938564)	2												
US duplex Doppler transcranial	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0

**Variant 11: Child. Clinical presentation suggestive of acute stroke, sickle cell disease. New focal fixed or worsening neurologic defect. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
MRA head without IV contrast	Usually appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	9	9	1	0	0	0	1	1	0	6	9

References	Study Quality
39 (22462697)	4
84 (8733975)	4
26 (15703900)	4
44 (24558166)	M
85 (24914136)	1

MRI head without IV contrast	Usually appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	9	9	1	0	0	0	0	1	1	0	3	13
CT head without IV contrast	Usually appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	7	7	0	0	0	0	0	0	1	11	3	3

References	Study Quality
26 (15703900)	4

CTA head with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	6	5	2	2	2	1	0	0	0
CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	6	5	5	1	1	0	0	1	0

References	Study Quality
26 (15703900)	4

CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	8	5	2	2	0	0	1	1	0
--------------------------------------	-------------------------	---------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
26 (15703900)	4

Arteriography cervicocerebral	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	9	4	2	0	3	1	0	0	0
-------------------------------	-------------------------	---------	--------------	---------------------	---	---	---	---	---	---	---	---	---	---	---

References	Study Quality
26 (15703900)	4

MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	8	5	4	0	0	0	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).