

CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	3	1	9	3	4	0	0	0	0	0	0
		References		Study Quality											
		17 (27430454)		4											
		16 (23676306)		4											
		15 (15897958)		4											
CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	2	7	3	1	3	2	0	0	0	0
		References		Study Quality											
		17 (27430454)		4											
		16 (23676306)		4											
		15 (15897958)		4											
MEG	Usually not appropriate	Expert Consensus	○ 0 mSv		1	1	13	1	1	1	1	0	0	0	0
MRI functional (fMRI) head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	10	1	4	0	0	2	0	0	0
FDG-PET/CT brain	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	5	1	1	0	2	5	6	1	0	0
HMPAO SPECT or SPECT/CT brain ictal and interictal	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	2	7	2	3	1	2	1	1	0	0

Variant 2: New-onset seizure. Unrelated to trauma. 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	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	8	8	0	0	0	0	0	2	4	4	7
		References		Study Quality											

MEG	Usually not appropriate	Expert Consensus	0 0 mSv		1	1	17	0	0	0	0	0	0	0	0
MRI functional (fMRI) head without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0
FDG-PET/CT brain	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0
HMPAO SPECT or SPECT/CT brain ictal and interictal	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	15	1	1	0	0	0	0	0	0

Variant 3: New-onset seizure. History of trauma. 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	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	9	9	0	0	0	0	0	0	0	2	15
			References	Study Quality											
			19 (25456317)	4											
			17 (27430454)	4											
			16 (23676306)	4											
			15 (15897958)	4											
			14 (-3149353)	4											
MRI head without IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	6	6	1	0	1	0	3	4	5	3	0
			References	Study Quality											
			19 (25456317)	4											
			17 (27430454)	4											
			16 (23676306)	4											
			18 (27740984)	4											
			15 (15897958)	4											

			22 (27183405)		4													
MRI head without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	4	4	0	2	2	8	3	1	0	0	0			
			References		Study Quality													
			19 (25456317)		4													
			17 (27430454)		4													
			16 (23676306)		4													
			18 (27740984)		4													
			15 (15897958)		4													
			22 (27183405)		4													
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	5	1	1	0	1	1	0	0			
			References		Study Quality													
			19 (25456317)		4													
			17 (27430454)		4													
			16 (23676306)		4													
			15 (15897958)		4													
			14 (-3149353)		4													
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	9	5	0	1	1	1	0	0	0			
			References		Study Quality													
			19 (25456317)		4													
			17 (27430454)		4													
			16 (23676306)		4													
			15 (15897958)		4													
			14 (-3149353)		4													
MEG	Usually not appropriate	Expert Consensus	0 0 mSv		1	1	17	0	0	0	0	0	0	0	0			
MRI functional (fMRI) head without IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	1	1	14	2	1	0	0	0	0	0	0			

			17 (27430454)		4														
			31 (25341150)		4														
			8 (26550535)		4														
			33 (23538269)		3														
			32 (28670168)		3														
FDG-PET/CT brain	May be appropriate (Disagreement)	Expert Opinion	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	2	0	3	1	2	6	2	0	0				
		References	Study Quality																
		29 (8206016)	4																
		28 (26118354)	2																
		8 (26550535)	4																
		24 (10319744)	3																
		25 (7824101)	3																
		26 (12215554)	3																
		27 (9403474)	2																
		30 (28258205)	4																
CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	2	2	8	1	1	3	2	2	0	0	0				
		References	Study Quality																
		16 (23676306)	4																
		23 (19513318)	4																
CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	8	2	1	1	3	2	0	0	0				
		References	Study Quality																
		16 (23676306)	4																
		23 (19513318)	4																
MEG	Usually not appropriate	Expert Consensus	○ 0 mSv		1	1	13	2	1	1	0	0	0	0	0				
MRI functional (fMRI) head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	13	1	3	0	0	0	0	0	0				

References	Study Quality
29 (8206016)	4
28 (26118354)	2
8 (26550535)	4
24 (10319744)	3
25 (7824101)	3
26 (12215554)	3
27 (9403474)	2
30 (28258205)	4

CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	n/a	0	0	0	0	0	0	0	0	0	0
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References	Study Quality
17 (27430454)	4
16 (23676306)	4
23 (19513318)	4

HMPAO SPECT or SPECT/CT brain ictal and interictal	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	n/a	0	0	0	0	0	0	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	n/a	0	0	0	0	0	0	0	0	0	0
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References	Study Quality
17 (27430454)	4
16 (23676306)	4
23 (19513318)	4

MEG	Usually not appropriate	Expert Consensus	○ 0 mSv		1	n/a	0	0	0	0	0	0	0	0	0	0
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MRI functional (fMRI) head without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	n/a	0	0	0	0	0	0	0	0	0	0
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Variant 6: Known seizure disorder. History of tumor.

53 (23294162)	2
55 (20308450)	2
56 (22957237)	4

HMPAO SPECT or SPECT/CT brain ictal and interictal	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3- 10 mSv [ped]	6	6	1	0	0	2	5	6	2	1	0
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References	Study Quality
43 (23719051)	4
6 (-3091614)	4
59 (12352114)	3

CT head with IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3- 3 mSv [ped]	5	5	1	1	5	1	6	1	1	0	0
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References	Study Quality
43 (23719051)	4
41 (824125)	4
40 (810737)	4
42 (2492137)	3
16 (23676306)	4
23 (19513318)	4

CT head without IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3- 3 mSv [ped]	5	5	0	0	1	2	7	6	0	0	0
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References	Study Quality
43 (23719051)	4
41 (824125)	4
40 (810737)	4
42 (2492137)	3
16 (23676306)	4
23 (19513318)	4

MEG	May be appropriate	Limited	0 0 mSv		5	5	1	0	0	1	8	5	2	0	0
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References	Study Quality
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47 (18265877)	4
48 (25921215)	2
49 (18759617)	4
50 (12876149)	4
51 (24791076)	4

CT head without and with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	9	5	1	0	0	0	1	0	0
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References	Study Quality
43 (23719051)	4
41 (824125)	4
40 (810737)	4
42 (2492137)	3
16 (23676306)	4
23 (19513318)	4

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.