

American College of Radiology
ACR Appropriateness Criteria®

Altered Mental Status, Coma, Delirium, and Psychosis

Variant 1: Adult. Altered mental status. Suspected intracranial pathology or focal neurologic deficit. 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	Strong	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	9	9	0	0	0	0	1	0	4	4	10
		References	Study Quality												
		29 (25763568)	1												
		30 (24927985)	2												
		8 (24733711)	4												
		33 (22186148)	4												
		32 (22978732)	4												
		2 (19773662)	2												
		31 (19787177)	2												
		34 (18336626)	2												
		10 (17324689)	4												
MRI head without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	0	0	0	1	5	4	6	0	3
		References	Study Quality												
		35 (27220652)	2												
		29 (25763568)	1												
		38 (25260346)	4												
		36 (22633790)	2												
		33 (22186148)	4												

		34 (18336626)	2													
		37 (34973968)	2													
MRI head without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	0	2	10	4	1	0	0	
		References	Study Quality													
		10 (17324689)	4													
CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	9	9	0	0	0	0	0	0	0	
		References	Study Quality													
		28 (25173368)	4													
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	1	1	10	3	3	1	0	1	0	0	1	
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	1	0	0	0	0	0	1	0	

Variant 2: Adult. Altered mental status with known history of intracranial pathology. 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]	7	7	0	1	0	1	1	1	7	4	3
MRI head without IV contrast	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	1	0	0	3	4	6	2	2
		References		Study Quality											
		2 (19773662)		2											
MRI head without and with IV contrast	Usually appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	7	7	0	0	0	0	5	2	5	4	3

CT head with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	4	4	2	2	0	10	4	0	0	0	0
		References		Study Quality											
		30 (24927985)		2											
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	2	8	2	4	1	1	0	0	0
MRI head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	4	5	0	0	0	0	0	0

Variant 3: Adult. Altered mental status. Suspected medical illness or toxic-metabolic cause. 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	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	5	5	0	1	0	2	9	3	1	2	0
		References		Study Quality											
		39 (27743625)		4											
		15 (22362650)		2											
MRI head without IV contrast	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	1	1	0	1	10	5	0	0	0
		References		Study Quality											
		40 (28298967)		4											
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	9	4	2	0	3	0	1	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	1	1	12	4	1	1	1	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	11	3	2	1	0	1	1	0	0

MRI head with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	11	5	2	0	1	0	0	0	0
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Variant 4: Adult. Altered mental status despite clinical management of known medical illness or toxic-metabolic cause. 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	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	7	7	0	0	0	1	1	4	5	3	5

References	Study Quality
39 (27743625)	4
30 (24927985)	2
15 (22362650)	2
32 (22978732)	4
2 (19773662)	2

MRI head without IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	0	0	0	0	3	7	6	0	3
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References	Study Quality
35 (27220652)	2
29 (25763568)	1
38 (25260346)	4
36 (22633790)	2
41 (19017925)	4

MRI head without and with IV contrast	May be appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	5	5	1	0	0	2	9	4	1	0	2
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CT head with IV contrast	Usually not appropriate	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕ 0.3-3 mSv [ped]	3	3	5	3	4	5	2	0	0	0	0
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References	Study Quality
29 (25763568)	1

			28 (25173368)	4												
			33 (22186148)	4												
			32 (22978732)	4												
			2 (19773662)	2												
			31 (19787177)	2												
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	9	4	5	0	0	0	1	0	0	
MRI head with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	9	5	1	0	4	0	0	0	0	

Variant 5: Adult. New onset psychosis. 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	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	0	1	1	1	10	5	0	0	0
		References		Study Quality											
		45 (22959259)		2											
		49 (15000267)		4											
		48 (28335913)		4											
		46 (25174841)		4											
		47 (20958941)		4											
		42 (19660172)		4											
MRI head without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	0	1	0	2	7	8	0	0	0
		References		Study Quality											
		45 (22959259)		2											
		49 (15000267)		4											
		48 (28335913)		4											
		46 (25174841)		4											

		50 (22416264)		2											
		42 (19660172)		4											
MRI head without and with IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	2	11	3	0	0	0
		References		Study Quality											
		44 (29103181)		2											
		46 (25174841)		4											
MRI head with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	6	1	1	0	1	1	0	0
CT head with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	11	5	0	1	2	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	11	4	1	0	1	1	0	1	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.