

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

Acute Mental Status Change, Delirium, and New Onset Psychosis

Variant 1: Acute mental status change. Increased risk for intracranial bleeding (ie, anticoagulant use, coagulopathy), hypertensive emergency, or clinical suspicion for intracranial infection, mass, or elevated intracranial pressure. 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	0	0	0	1	17
			References	Study Quality											
			26 (25763568)	1											
			27 (24927985)	2											
			30 (22186148)	4											
			29 (22978732)	4											
			2 (19773662)	2											
			28 (19787177)	2											
MRI head without IV contrast	Usually appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	7	7	0	0	1	0	4	3	4	5	1
			References	Study Quality											
			32 (27220652)	2											
			26 (25763568)	1											
			35 (25260346)	4											
			33 (22633790)	2											
			34 (19017925)	4											
MRI head without and with IV contrast	May be appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	6	6	0	0	1	1	3	5	2	4	2

References	Study Quality
32 (27220652)	2
26 (25763568)	1
35 (25260346)	4
33 (22633790)	2
34 (19017925)	4

CT head without and with IV contrast	May be appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	1	0	3	2	8	4	0	0	0
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References	Study Quality
26 (25763568)	1
31 (25173368)	4
27 (24927985)	2
30 (22186148)	4
29 (22978732)	4
2 (19773662)	2
28 (19787177)	2

CT head with IV contrast	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	3	3	4	1	5	5	1	1	1	0	0
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References	Study Quality
31 (25173368)	4

Variant 2: Acute or progressively worsening mental status change in patient with a known intracranial process (mass, recent hemorrhage, recent infarct, central nervous system infection, etc). 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	1	2	5	10

References	Study Quality
27 (24927985)	2

MRI head without IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	8	8	0	0	1	1	3	2	2	7	2
		References		Study Quality											
		2 (19773662)		2											
MRI head without and with IV contrast	Usually appropriate	Limited	0 0 mSv	0 0 mSv [ped]	8	8	0	0	1	1	3	3	1	3	6
		References		Study Quality											
		2 (19773662)		2											
CT head without and with IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	1	0	2	3	7	4	1	0	0
		References		Study Quality											
		27 (24927985)		2											
CT head with IV contrast	May be appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗ 0.3-3 mSv [ped]	4	4	0	0	9	6	2	1	0	0	0
		References		Study Quality											
		27 (24927985)		2											

Variant 3: Acute mental status change. Suspected cause(s) found on initial clinical or lab assessment (intoxication, medication-related, hypoglycemia, sepsis, etc). Low clinical suspicion for trauma, intracranial hemorrhage, stroke, mass, or intracranial infection. 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	0	3	3	4	6	2	0	0
		References		Study Quality											
		36 (27743625)		4											
		17 (22362650)		2											
MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	0 0 mSv	0 0 mSv [ped]	5	5	1	1	0	4	9	1	2	0	0

		References	Study Quality												
		37 (28298967)	4												
MRI head without and with IV contrast	May be appropriate	Limited	0 0 mSv	0 0 mSv [ped]	4	4	1	2	2	7	4	1	1	0	0
		References	Study Quality												
		37 (28298967)	4												
CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	3	3	3	4	4	4	1	1	1	0	0
		References	Study Quality												
		36 (27743625)	4												
		17 (22362650)	2												
CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	5	7	3	3	0	0	0	0	0
		References	Study Quality												
		36 (27743625)	4												
		17 (22362650)	2												

Variant 4: Persistent or worsening mental status change despite clinical management of the suspected underlying cause (intoxication, medication-related, hypoglycemia, sepsis, etc) or acute change in mental status of unknown cause. 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 IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	8	8	0	0	0	0	4	0	4	8	2
		References	Study Quality												
		32 (27220652)	2												
		26 (25763568)	1												
		35 (25260346)	4												
		33 (22633790)	2												
		34 (19017925)	4												

32 (27220652)	2
26 (25763568)	1
31 (25173368)	4
30 (22186148)	4
29 (22978732)	4
2 (19773662)	2
28 (19787177)	2

Variant 5: New onset delirium. 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	2	2	10	2	1
			References	Study Quality											
			40 (25839350)	4											
			8 (24733711)	4											
			39 (21118407)	4											
			38 (18973639)	2											
			41 (18336626)	2											
			11 (17324689)	4											
MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	0	1	1	2	3	6	5	0	0
			References	Study Quality											
			41 (18336626)	2											
			11 (17324689)	4											
MRI head without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	0	1	1	2	8	3	3	0	0
			References	Study Quality											

49 (15000267)	4
48 (28335913)	4
45 (25174841)	4
46 (20958941)	4
42 (19660172)	4

MRI head without IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	0	0	5	1	8	3	1	0	0
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References	Study Quality
51 (26231441)	4
47 (22959259)	2
52 (18757979)	4
49 (15000267)	4
48 (28335913)	4
45 (25174841)	4
50 (22416264)	2
42 (19660172)	4

MRI head without and with IV contrast	May be appropriate	Strong	0 0 mSv	0 0 mSv [ped]	5	5	0	0	5	3	7	3	0	0	0
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References	Study Quality
51 (26231441)	4
47 (22959259)	2
52 (18757979)	4
49 (15000267)	4
48 (28335913)	4
45 (25174841)	4
50 (22416264)	2
42 (19660172)	4

CT head without and with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	3	3	3	6	2	5	1	1	0	0	0
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References	Study Quality
47 (22959259)	2

49 (15000267)	4
48 (28335913)	4
45 (25174841)	4
46 (20958941)	4
42 (19660172)	4

CT head with IV contrast	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	5	7	4	2	0	0	0	0	0
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References	Study Quality
47 (22959259)	2
49 (15000267)	4
48 (28335913)	4
45 (25174841)	4
46 (20958941)	4
42 (19660172)	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.