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.

ъ .	Appropriateness	COL	A L L DDI	D I DDI	D (1	3.5.11			F	inal '	Tabu	lation	ıs		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	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)		1	2		_								
MRI head without IV contrast	Usually appropriate	Strong	O 0 mSv	O 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	O 0 mSv	O 0 mSv [ped]	6	6	0	0	1	1	3	5	2	4	2

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		References		Study	y 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	0	5	5	1	0	3	2	8	4	0	0	0
		References		Study	y 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	��� 1-1(mSv	0	3	3	4	1	5	5	1	1	1	0	0
		References			y 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.

n 1	Appropri	ateness	COF	4.1.14 DD	, D 1 DD1	D 41	3.6.11			F	inal '	Гаbu	latio	ns		
Procedure	Categ		SOE	Adults RR	L Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usua approp	.*	Limited	��� 1-10 mSv	9	9	9	0	0	0	0	0	1	2	5	10
			References		Study	Ouality		-			-		-			

 References
 Study Quality

 27 (24927985)
 2

MRI head without IV contrast	Usua approp		Limited	O 0 mSv	O 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	Usua approp		Limited	O 0 mSv	O 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 approp	be beriate	Limited	��� 1-10 mSv	0	5	5	1	0	2	3	7	4	1	0	0
	•		References			Quality		•								
			27 (24927985)			2										
CT head with IV contrast	May approp	be priate	Limited	��� 1-10 mSv	0	4	4	0	0	9	6	2	1	0	0	0
			References		Study	Quality										
			27 (24927985)			2										
			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.

D 1	Appropriateness	COF	A L L DDY	D I DDY	D 41	37.11			F	inal [Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	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)	References 36 (27743625)		4										
		17 (22362650)			2										
MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	1	0	4	9	1	2	0	0

			References		Study	y Quality										
			37 (28298967)			4										
MRI head without and with IV contrast	May approp	be riate	Limited	O 0 mSv	O 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 approp	y not riate	Limited	��� 1-10 mSv	0	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 approp	y not riate	Limited	��� 1-10 mSv	0	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.

P 1	Appropri	iateness	GOT.	4.1.4. DD		D 1 DD1	D 4	3.6.11			F	inal '	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR		Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
MRI head without IV contrast	Usua approp		Strong	O 0 mSv	,	O 0 mSv [ped]	8	8	0	0	0	0	4	0	4	8	2
	-		References			Study	Quality				•						
			32 (27220652)				2										
			26 (25763568)				1										

4

35 (25260346)

33 (22633790) 34 (19017925)

MRI head without and with IV contrast	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	1	2	1	5	6	3
		References		Study	y Quality										
		32 (27220652)			2										
		26 (25763568)			1										
		35 (25260346)			4										
		33 (22633790)			2										
		34 (19017925)			4										
CT head without IV contrast	Usually appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	7	7	0	0	0	0	1	2	7	3	5
		References		Study	y Quality										
		36 (27743625)			4										
		27 (24927985)			2										
		17 (22362650)			2										
		29 (22978732)			4										
		2 (19773662)			2										
CT head without and with IV contrast	May be appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	4	4	1	1	6	6	1	2	0	1	0
		References		Study	y Quality		•				•				
		26 (25763568)			1										
		31 (25173368)			4										
		27 (24927985)			2										
		17 (22362650)			2										
		30 (22186148)			4										
		29 (22978732)			4										
		2 (19773662)			2										
		28 (19787177)			2										
CT head with IV contrast	Usually not appropriate	Strong	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	3	3	3	3	6	5	0	1	0	0	0
		References		Study	y Quality										

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.

D .	Appropriateness	go p			- ·	3.5 31			F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRI	L Peds RRL	Rating	Median	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) 38 (18973639)			4										
		,			2										
		41 (18336626)			2										
		41 (18336626) 11 (17324689)			4					_					
MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 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	O 0 mSv	O 0 mSv [ped]	5	5	0	1	1	2	8	3	3	0	0
		References		Study	Quality										

			41 (18336626)				2										
			11 (17324689)				4										
CT head without and with IV contrast	Usuall approp	y not oriate	Strong	ᢒ ᢒᢒ 1-10 mSv	0	���� 3- 10 mSv [ped]	3	3	4	3	5	4	2	0	0	0	0
			References			Study	Quality										
			40 (25839350)				4										
			8 (24733711)				4										
			39 (21118407)				4										
			38 (18973639)				2										
			41 (18336626)				2										
			11 (17324689)				4										
CT head with IV contrast	Usuall approp	y not oriate	Strong	��� 1-10 mSv	0	��� 0.3- 3 mSv [ped]	2	2	5	8	3	2	0	0	0	0	0
			References			Study	Quality										
			40 (25839350)				4										
			8 (24733711)				4										
			39 (21118407)				4										
			38 (18973639)				2										
			41 (18336626)				2										
			11 (17324689)				4										

Variant 6: New onset psychosis. Initial imaging.

CT head without IV contrast May be Convergists Limited Limited Category Adults RRL Feds RRL Rating Median 1 2 3 4 5 6 CT head without IV contrast May be Convergists Limited Category Limited	B 1	Appropriateness	COF	A L L DDI	D I DDI	D 41	3.7.19			I	inal	Tabu	latio	ns		
Limited 3 mSv 5 5 0 0 4 2 7 4	Procedure		SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
appropriate [ped] [ped]	CT head without IV contrast	May be appropriate	Limited	��� 1-10 mSv		5	5	0	0	4	2	7	4	1	0	0

References	Study Quality
47 (22959259)	2

		49 (15000267)													
		48 (28335913)													
		45 (25174841)			4										
		46 (20958941)													
		42 (19660172)			4										
MRI head without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	0	0	5	1	8	3	1	0	0
		References		Study	Quality										
		51 (26231441)			4										
		47 (22959259)													
		52 (18757979)													
		49 (15000267)													
		48 (28335913)													
		45 (25174841)													
		50 (22416264)			2										
		42 (19660172)													
MRI head without and with IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	5	5	0	0	5	3	7	3	0	0	0
		References		Study											
		51 (26231441)													
		47 (22959259)													
		52 (18757979)													
		49 (15000267)													
48 (28335913) 45 (25174841) 50 (22416264)															
				2											
		42 (19660172)			4										
CT head without and with IV	Usually not	Limited	⊕⊕⊕ 1-10	���� 3- 10 mSv	3	3	3	6	2	5	1	1	0	0	0
contrast	appropriate	2	mSv	[ped]							_	1			
contrast		References	msv		Quality						•	1			

		49 (15000267) 48 (28335913) 45 (25174841) 46 (20958941)			4 4 4												
		42 (19660172)			4												
CT head with IV contrast	Usuall approp	ly not priate	ì)	��� 0.3- 3 mSv [ped]	2	2	5	7	4	2	0	0	0	0	0
		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.