American College of Radiology ACR Appropriateness Criteria®

Acute Pancreatitis

Variant 1: Suspected acute pancreatitis. First time presentation. Epigastric pain and increased amylase and lipase. Less than 48 to 72 hours after symptom onset. Initial imaging.

	Appropri	ateness	gg-							F	inal '	Tabu	latio	ns		
Procedure	Categ	ory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
US abdomen	Usua approp		Limited	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	1	4	1	1	8	2
			References		Study	y Quality										
			14 (26209440)			3										
			15 (24512896)			4										
			12 (24679420)			4		_	_							
CT abdomen and pelvis with IV contrast	May approp	be riate	Limited	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	2	6	8	1	0	0	0
			References		Study	y Quality										
			4 (12034923)			4										
			7 (22186977)			3										
			1 (28840381)			3										
			6 (27426674)			3										
			5 (25239388)			3										
			8 (25078061)			3		_								
MRI abdomen without IV contrast with MRCP	May approp	be riate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	2	6	9	0	0	0	0
			References	Study	y Quality											
			9 (18253063)		3											

			13 (27446845)				3										
			11 (25200693)				3										
			12 (24679420)				4										
			10 (20972954)				3										
MRI abdomen without and with IV contrast with MRCP	May approp	be priate	Limited	O 0 mSv		mSv ed]	5	5	0	0	2	2	8	5	0	0	0
			References			Study	Quality										
			9 (18253063)				3										
			13 (27446845)				3										
			11 (25200693)				3										
			12 (24679420)				4										
			10 (20972954)				3										
US duplex Doppler abdomen	May approp		Limited	O 0 mSv		mSv ed]	4	4	0	1	4	7	3	0	1	0	1
			References			Study	Quality			•	•			•		•	
			1 (28840381)				3										
			12 (24679420)				4										
CT abdomen and pelvis without IV contrast	Usuall approp		Limited	��� 1-10 mSv	10	∂≎ 3- mSv ed]	3	3	1	2	8	3	2	1	0	0	0
			References			Study	Quality										
			4 (12034923)				4										
			7 (22186977)				3										
			1 (28840381)				3										
			6 (27426674)				3										
			5 (25239388)				3										
			8 (25078061)				3										
CT abdomen and pelvis without and with IV contrast	Usuall approp		Limited	≎≎≎≎ 10-: mSv	30 10 m	��� I-30 ISv ed]	3	3	3	1	9	1	1	2	0	0	0
			References			Study	Quality										

			4 (12034923)				4										
			7 (22186977)				3										
			1 (28840381)				3										
			6 (27426674)				3										
			5 (25239388)				3										
			8 (25078061)				3										
US abdomen with IV contrast	Usually approp	y not riate	Limited	O 0 mSv	/	O 0 mSv [ped]	3	3	1	8	5	1	0	2	0	0	0
			References			Study	Quality										
			15 (24512896)				4										

Variant 2: Suspected acute pancreatitis. Initial presentation with atypical signs and symptoms; including equivocal amylase and lipase values (possibly confounded by acute kidney injury or chronic kidney disease) and when diagnoses other than pancreatitis may be possible (bowel perforation, bowel ischemia, etc.). Initial imaging.

D 1	Appropriateness	COF	4 1 14 DDI	D I DDI	D 4	3.5 11			F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	8	8	1	0	0	0	0	2	0	7	7
		References		Study	Quality										
		16 (19896558)	ı		4										
		14 (26209440)	ı		3										
		3 (23100216)			4		_								
MRI abdomen without and with IV contrast with MRCP	Usually appropriate	Limited	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	2	5	4	4	1
		References		Study	Quality										
		6 (27426674)			3										
		18 (26102416)			4										
		20 (25457519)	ı		2										
		8 (25078061)			3										
		19 (25585483)			4										

		17 (25	356038))			4										
CT abdomen and pelvis without IV contrast	May be appropria	Limi	ted	��� 1-10 mSv)	���� 3- 10 mSv [ped]	5	5	0	0	1	4	11	1	0	0	0
		Refe	rences			Study	Quality										
		16 (19	896558))			4										
		14 (26	209440))			3										
		3 (23	100216)				4										
MRI abdomen without IV contrast with MRCP	May be appropria		ted	O 0 mSv		O 0 mSv [ped]	5	5	0	0	0	2	8	7	0	0	0
		Refe	rences			Study	Quality										
		6 (27-	426674)				3										
		18 (26	102416))			4										
		20 (25	457519))			2										
		8 (25)	078061)				3										
		19 (25	585483))			4										
		17 (25	356038))			4										
US abdomen	May be appropria		ted	O 0 mSv		O 0 mSv [ped]	5	5	0	0	1	3	8	3	1	0	1
		Refe	rences			Study	Quality										
		15 (24	512896))			4										
US duplex Doppler abdomen	May be appropria	Limi	ted	O 0 mSv		O 0 mSv [ped]	4	4	0	0	7	3	6	0	0	0	1
		Refe	rences		·	Study	Quality										
		24 (22	613509))			2										
CT abdomen and pelvis without and with IV contrast	Usually n appropria		ted	୫୫୫୫ 10-3 mSv	30	����� 10-30 mSv [ped]	3	3	2	2	5	2	4	1	1	0	0
		Refe	rences			Study	Quality										
		16 (19896558)					4										
		14 (26209440)					3										

			3 (23100216)				4										
US abdomen with IV contrast	Usuall approp	· .	Limited	O 0 mSv	/	O 0 mSv [ped]	3	3	1	5	9	0	1	1	0	0	0
			References			Study	Quality										
			15 (24512896)			<u> </u>	4										

Variant 3: Acute pancreatitis. Critically ill, systemic inflammatory response syndrome (SIRS), severe clinical scores (eg, Acute Physiology, Age, and Chronic Health Evaluation [APACHE]-II, Bedside Index for Severity in AP [BISAP], or Marshall). Greater than 48 to 72 hours after onset of symptoms.

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Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	0	0	0	0	3	6	8
		References		Study	Quality										
		6 (27426674)			3										
		18 (26102416)			4										
		8 (25078061)			3										
		2 (25208277)			4										
		3 (23100216)			4										
		21 (22584543)			4				,						
MRI abdomen without and with IV contrast with MRCP	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	7	7	0	0	1	0	1	3	7	3	2
		References		Study	Quality										
		11 (25200693)			3										
		22 (24015276)			2										
		24 (22613509)			2										
		23 (22366559)			2										
MRI abdomen without IV contrast with MRCP	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	7	3	5	1	0
		References	Study	Quality											

		11 (25200693)			3										
		22 (24015276)			2										
		24 (22613509)			2										
		23 (22366559)			2										
CT abdomen and pelvis without IV contrast	May be appropriate	Limited	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	4	2	8	2	0	0	1
		References		Study	Quality										
		6 (27426674)			3										
		18 (26102416)			4										
		8 (25078061)			3										
		2 (25208277)			4										
		3 (23100216)			4										
		21 (22584543)			4										
US duplex Doppler abdomen	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	1	3	4	4	3	1	1	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	୫୫୫୫ 10-30 mSv	����� 10-30 mSv [ped]	3	3	1	2	6	2	5	0	1	0	0
		References		Study	Quality										
		6 (27426674)			3										
		18 (26102416)			4										
		8 (25078061)			3										
		2 (25208277)			4										
		3 (23100216)			4										
		21 (22584543)			4										
US abdomen	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	0	2	7	2	4	1	1	0	0
US abdomen with IV contrast	Usually not	Limited	O 0 mSv	O 0 mSv	3	3	1	3	6	2	3	2	0	0	0
	appropriate	Lillited	0 0 1110 0	[ped]			1	3	0						

15 (24512896)	4
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Variant 4: Acute pancreatitis. Continued SIRS, severe clinical scores, leukocytosis, and fever. Greater than 7 to 21 days after onset of symptoms.

	Appropriateness	~ ~ -							F	inal	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	0	0	0	0	0	4	13
		References		Study	Quality										
		27 (27592205)			2										
		26 (25425489)			2										
		3 (23100216)			4										
		21 (22584543)			4										
MRI abdomen without and with IV contrast with MRCP	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	1	6	8	2
		References		Study	Quality										
		26 (25425489)			2										
		22 (24015276)			2										
		21 (22584543)			4										
MRI abdomen without IV contrast with MRCP	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	6	6	3	1	1
		References		Study	Quality										
		26 (25425489)			2										
		22 (24015276)			2										
		21 (22584543)			4										
CT abdomen and pelvis without IV contrast	May be appropriate	Strong	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	1	0	0	3	11	2	0	0	0
		References		Study	Quality										
		27 (27592205)			2										
		26 (25425489)			2										

	Γ	3 (23100216)					4										
			· · · · · · · · · · · · · · · · · · ·				4										
			21 (22584543)				4				1						
US abdomen	May appropri		Limited	O 0 mSv		O 0 mSv [ped]	5	5	0	1	5	2	4	4	1	0	0
			References			Study	Quality										
			21 (22584543)				4										
US duplex Doppler abdomen	May appropri		Expert Consensus	O 0 mSv		O 0 mSv [ped]	4	4	0	2	3	6	2	3	0	1	0
CT abdomen and pelvis without and with IV contrast	Usually appropr		not ate Strong			❤❤❤❤ 10-30 mSv [ped]	3	3	3	2	4	0	8	0	0	0	0
			References			Study	Quality										
	Ī		27 (27592205)				2										
			26 (25425489)				2										
			3 (23100216)				4										
			21 (22584543)				4										
US abdomen with IV contrast	Usually appropri		Limited	O 0 mSv		O 0 mSv [ped]	3	3	1	2	6	6	1	0	1	0	0
			References			Study	Quality			•		•	•		•		
			15 (24512896)				4										
		28 (24574783)				3											

Variant 5: Known necrotizing pancreatitis. Significant deterioration in clinical status, including abrupt decrease in hemoglobin or hematocrit, hypotension, tachycardia, tachypnea, abrupt change in fever curve, or increase in white blood cells.

D 1	Appropriate	ness	4 1 1/ DDI	D I DDY	D (1	3.5.11			F	inal '	Гаbu	latio	ns		
Procedure	Category		Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	e Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	0	0	0	0	0	3	14
		References		Study	Quality										

		20 (24/41501)		1											
		Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	0	7	9	0	1	0
		References		Study Quality			•							•	
	29 (24441591)														
		Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	1	1	8	2	4	1	0
	References			Study Quality			•								
		29 (24441591)		1											
		Limited	ଡେଡେଡ 10-30 mSv		5	5	0	0	1	5	6	4	1	0	0
	References			Study Quality											
		29 (24441591)													
		Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	4	12	0	1	0	0
		References		Study Quality			•								
		29 (24441591)		1											
		Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	0	3	4	4	4	2	0	0	0
		Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	0	3	5	6	1	2	0	0	0
Usually not appropriate		Limited	O 0 mSv	O 0 mSv [ped]	3	3	0	3	8	4	2	0	0	0	0
	References			Study	Quality		•								
	28 (24574783)				3										
	May approp May approp May approp May approp May approp May approp Usually	appropriate Usually not	appropriate References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate Limited References 29 (24441591) May be appropriate Limited References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate Consensus May be appropriate Limited Expert Consensus Usually not appropriate References Limited	May be appropriate References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate Limited References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate Limited References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate References 29 (24441591) May be appropriate Expert Consensus O 0 mSv Usually not appropriate Limited O 0 mSv References	May be appropriate Limited O 0 mSv [ped] References Study 29 (24441591) Study May be appropriate Limited \$\frac{\phi \phi \phi}{\pm 1} \phi \phi \phi \phi \phi \phi \phi \phi	May be appropriate Limited O 0 mSv [ped] 6 References Study Quality 29 (24441591) 1 May be appropriate Limited \$\frac{2000}{4000} \frac{2}{4} = 1.10 \\ mSv \text{10 mSv} \text{5 [ped]} \\ \text{10 mSv} \text{5 [ped]} \\ \text{10 mSv} \text{10 mSv} \text{5 [ped]} \\ \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \text{10 mSv} \	May be appropriate	May be appropriate Limited O 0 mSv [ped] 6 6 6 0 References Study Quality 1 29 (24441591) 1 1 May be appropriate Limited \$\pi \pi \pi \pi \pi \pi \pi \pi \pi \pi	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 References Study Quality 29 (24441591) 1 Study Quality May be appropriate Limited \$\pi \pi \pi \pi \pi \pi \pi \pi \pi \pi	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 0 References Study Quality 1	May be appropriate Limited O 0 mSv [ped] 6 6 6 0 0 0 0 0 References 29 (24441591) Study Quality 1 2 1 2 2 2 2 2 2 2 2 2 2 3 3 3 4 4	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 0 0 7	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 0 0 7 9	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 0 0 7 9 0	May be appropriate Limited O 0 mSv [ped] 6 6 0 0 0 0 7 9 0 1

Variant 6: Acute pancreatitis. Known pancreatic or peripancreatic fluid collections with continued abdominal pain, early satiety, nausea, vomiting, or signs of infection. Greater than 4 weeks after symptom onset.

Procedure	Appropriateness								F	inal	Tabu	latio	ns		
	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	9	9	0	0	0	0	0	1	2	4	10
		References			Quality										
		26 (25425489)		2											
MRI abdomen without and with IV contrast with MRCP	Usually appropriate	Strong	O 0 mSv	O 0 mSv [ped]	8	8	0	0	0	0	0	1	3	9	4
		References			Study Quality										
		31 (26730150)													
		26 (25425489)													
		22 (24015276)													
MRI abdomen without IV contrast with MRCP	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	1	4	4	5	3	0
		References		Study							•	•			
		31 (26730150)		_											
		26 (25425489)													
		22 (24015276)													
CT abdomen and pelvis without IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	0	4	10	3	0	0	0
		References		Study											
		26 (25425489)								_					
US abdomen	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	2	6	6	3	0	0	0
		References		Study Quality				•	•	•	•	•		•	
		21 (22584543)		-	4										
US duplex Doppler abdomen	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	4	4	0	2	5	6	2	1	1	0	0

CT abdomen and pelvis without and with IV contrast	Usuall approp		Limited	୫୫୫୫ 10-3 mSv	\$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	3	3	2	4	5	0	4	2	0	0	0
		References			Study											
			26 (25425489)													
US abdomen with IV contrast	Usuall approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	1	4	7	4	1	0	0	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.